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# POLITICAL PARTIES AND THE SIZE OF GOVERNMENT IN MULTIPARTY LEGISLATURES
## Examining Cross-Country and Panel Data Evidence

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This article tests the effect of an increase in the number of represented political parties and the size of the majority party on the size of government—proxied by central government expenditure as a percentage of GDP—in multiparty legislatures. The author argues that an increase in the number of represented parties leads to higher central government expenditure. Conversely, as the size of the majority party grows from a bare-minimum majority to above the supermajority level, it has a nonlinear, specifically "cube" effect on central government expenditure. Panel data on central government expenditure from 110 countries are used to test these arguments. The results corroborate the theoretical claims and are robust in regression models where fixed-effects were introduced and endogeneity was corrected. Finally, an increase in the number of represented parties leads to higher government spending on subsidies and transfers but to lower spending on public goods.

***Keywords:*** *party competition; ENPP; distributive benefits*

**Political scientists and economists** have recently begun to examine how political institutions and electoral systems shape fiscal policy choices. For instance, economists such as Persson and Tabellini (1999, 2000, 2001), Poterba and Von Hagen (1999), and Milesi-Ferretti, Perotti, and Rostagno (2000) have analyzed how presidential versus parliamentary regimes and plurality versus proportional representation systems affect fiscal policy choices made by democratic governments. They also focus on how variation in political institutions and electoral systems across advanced, industrial democracies affects (a) the size of government that is measured by the size (i.e., amount) of central government expenditure as a percentage of GDP and

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(b) the composition of government expenditure in these countries, which includes spending on public goods and on subsidies and transfers.

Unlike economists, political scientists have largely examined how political institutions and electoral rules affect political variables such as the number of political parties that are formed and the frequency of elections across democracies (Laakso & Taagepera, 1979; Lijphart, 1994, 1999). However, some political scientists including Alvarez, Cheibub, Limongi, and Przeworski et al. (2000), Lijphart (1999), and Castles (1998) have analyzed how political institutions and electoral systems affect economic growth and certain fiscal policy variables.

Although insightful, existing studies of the impact of political institutions on the size and composition of government expenditure suffer from two main weaknesses. First, the empirical analysis is typically confined to Organization for Economic Cooperation and Development (OECD) countries. Hence, we do not have results on how political institutions and electoral systems affect the size and composition of government expenditure across non-OECD countries.[1] Second, the existing literature does not examine empirically the structure of party competition, namely (a) how an increase (or decrease) in the number of represented political parties engendered by different electoral systems[2] and (b) an increase in the size of the majority party affect central government expenditure (i.e., the size of government) across countries.

The absence of empirical work on the issue area previously mentioned is puzzling. This is because there exists a large literature in political science and economics that theoretically explores how variation in (a) the number of represented political parties and (b) the size of the majority party in national legislatures may affect the size and composition of central government expenditure (Inman & Fitts, 1990; Milesi-Ferretti et al., 2000; Weingast, Shepsle, & Johnsen, 1981). Yet, no attempt has been made to rigorously test these theoretical claims. Furthermore, some economists have also found that key economic variables such as income inequality cannot statistically account for

1. Milesi-Ferretti, Perotti, and Rostagno (2000) examine the impact of proportional and majoritarian electoral systems on the size of government in a sample of 20 Organization for Economic Cooperation and Development (OECD) and 20 Latin American countries. However, their work does not test the effect of the number of political parties and the size of the majority party on government expenditure in a large cross-country sample of 110 countries as done in this article.

2. Based on Duverger's law, it is well known that a plurality electoral system favors a two-party system and (typically) the representation of only two parties in the legislature, whereas a proportional representation system favors the representation of multiple parties (strictly greater than two parties) in a national legislature. Duverger's law has been extended and empirically tested by Amorin Neto and Cox (1997).

variation in the size of government across countries.[3] The inability of economic variables to statistically account for the dependent variable being examined here suggests that political variables such as variation in the number of parties and in the size of the majority party (if a majority party exists) in different legislatures could be statistically correlated with variation in the size of government across countries.

Given the aforementioned empirical possibilities, this article has two objectives. First, using the seminal papers of Weingast (1979), Weingast et al. (1981), and Inman and Fitts (1990), I briefly develop some theoretical arguments that provide testable hypotheses. Specifically, I claim that an increase in the number of represented political parties leads to an increase in central government expenditure as a percentage of GDP that acts as a proxy for the size of government. I also argue that an increase in the number of political parties in a multiparty legislature leads to a reduction in central government spending on public goods but serves to increase spending on subsidies and transfers.

In contrast, I will demonstrate that there exists a nonlinear—in particular, a "cube"—relationship between an increase in the size of the majority party and the size of government. In particular, I predict that central government expenditure will first decrease when the size of the majority party is marginally above the bare-minimum majority size, that is, when the majority party has approximately a 54% to 55% share of the total seats in a multiparty legislature. I then argue that government spending increases when the majority party's size is well above the bare-minimum majority size, that is, when the majority has approximately a 56% to 68% share of the seats. Finally, I claim that expenditure decreases again when the majority party's size is greater than or equal to a "supermajority" size, namely, a size equal to or above a 68% share of the seats in the legislature.

The second objective of this article is to test these theoretical claims on two cross-country samples. The first sample only contains panel data from OECD countries. The second sample, which includes OECD and non-OECD countries, is a large cross-country panel sample that contains 110 "free" and "partially free" countries. These countries are taken from the Freedom House Index that ranks the degree of political freedom in these countries based on a

3. Rodrik (1998) and Persson and Tabellini (1999, 2000) empirically demonstrate that there exists tremendous variation in the size of government across countries, where the size of government is proxied by central government expenditure as a percentage of GDP. On the other hand, scholars such as Mueller (1989) and Holsey and Borcherding (1997) show that economic variables such as income inequality fail to statistically account for variation in the size of government across developed and developing countries.

democracy score scaled from 1 (*most free*) to 7 (*low freedom or not free*).[4] For the tests, I included countries with a democracy score lower than or equal to 4.5.[5] Countries ranked higher than 4.5 on the Freedom House Index are excluded because they neither hold elections regularly nor have fully accountable legislative institutions where fiscal policy is determined by bargaining between different political parties.[6]

The tests provide three main results. First, I found that for each effective political party that gains representation in the legislature, central government expenditure as a share of GDP increases by roughly 2.39 percentage points in OECD countries, whereas it increases by 2.62 percentage points in the entire sample of 110 countries. The substantive significance behind these results is discussed later. Second, the results show that when a single party holds a majority share of the seats in the legislature, an increase in the size of the majority party's share is significantly correlated in a cube manner with the size of government. Third, I found that government spending on public goods declines, whereas spending on subsidies and transfers increases when the number of political parties increases in the legislature.

This article is organized as follows. In Section 1, testable hypotheses are derived to examine the correlation between the number of represented political parties and variation in the size of the majority party with central government expenditure. In Section 2, I present the statistical results from testing these hypotheses. I conclude with a summary of the results.

## DERIVING TESTABLE HYPOTHESES

Before deriving the main hypotheses, I mention some important descriptive statistics in Tables 1 and 2. Table 1 shows the number of parties represented in the lower chambers of parliament for various regions in 1996. Table 2 shows the percentage of seats held by the largest party in the lower chambers across different regions.

Observe in Table 1 that the median number of parties with representation in the lower house for the entire sample (110 countries) equals five, whereas the median among the regions ranges from three parties in Central American

4. For details of the Freedom House Democracy Index and the list of countries that are ranked according to their level of democracy based on this index, see Freedom House (2000).

5. The list of OECD and the entire sample of OECD and non-OECD countries that were used for the tests conducted in this article are available from the author on request.

6. Put differently, I excluded countries from the test that are classified as "autocratic" in the Freedom House Index because political parties in the legislature of autocracies (if they have one) do not determine the choice of fiscal policies.

Table 1
*Effective Number of Represented Political Parties in Different National Legislatures (in 1996) per Region*

| Regions | Mean | Median | Standard Deviation | *N* |
|---|---|---|---|---|
| Organization for Economic Cooperation and Development | 7.0 | 7 | 2.3 | 29 |
| Latin America | 5.0 | 4 | 2.4 | 20 |
| Africa | 5.5 | 5 | 3.4 | 20 |
| Asia | 7.6 | 5.5 | 4.5 | 14 |
| Central America and the Caribbean | 3.6 | 3 | 1.4 | 6 |
| Middle East | 9.2 | 9.5 | 1.7 | 4 |
| Oceania | 5.0 | 5 | 1.6 | 3 |
| South East Europe | 6.7 | 7 | 2.1 | 5 |
| Ex-communist countries | 7.4 | 7 | 1.6 | 9 |
| All countries | 6.1 | 5 | 3.0 | 110 |

Table 2
*Share (%) of Seats Held by Largest Party in Different National Legislatures (in 1996) per Region*

| Regions | Mean | Median | Standard Deviation | *N* |
|---|---|---|---|---|
| Organization for Economic Cooperation and Development | 0.41 | 0.42 | 0.10 | 29 |
| Latin America | 0.49 | 0.49 | 0.13 | 20 |
| Africa | 0.68 | 0.68 | 0.24 | 20 |
| Asia | 0.49 | 0.48 | 0.16 | 14 |
| Central America and the Caribbean | 0.58 | 0.53 | 0.15 | 6 |
| Middle East | 0.36 | 0.35 | 0.14 | 4 |
| Oceania | 0.45 | 0.44 | 0.05 | 3 |
| South East Europe | 0.44 | 0.41 | 0.12 | 5 |
| Ex-communist countries | 0.41 | 0.40 | 0.11 | 9 |
| All countries | 0.50 | 0.49 | 0.18 | 110 |

and Caribbean countries to 9.5 parties in the Middle East. This indicates that there exists tremendous variation in the median number of represented political parties in legislatures across different regions. Table 2 shows that a single party emerges as the majority party in Africa, Central America, and the Caribbean. I also found that 40 countries (i.e., less than 50% of the entire sample) have a single party with majority status in their legislatures (this is not explicitly reported in Table 2). Finally, Table 2 also shows that there is significant variation in the size of the majority party across different regions.

The results in Tables 1 and 2 are important because they arguably suggest that variation in the number of represented political parties and the size of the majority party (if it exists) in different legislatures could explain why central government expenditure may vary significantly across countries. Whether this claim is true will be tested rigorously in the next section.

I now provide a concise literature review of three articles by Weingast (1979), Weingast et al. (1981), and Inman and Fitts (1990) because I use ideas from these articles to develop hypotheses that are tested later. To begin with, Weingast and Weingast et al. explained in the context of the United States how the "norm of universalism," defined as "the tendency to seek unanimous passage of distributive programs through inclusion of a project for all legislators who want one" (Weingast, 1979, p. 249), engenders an outcome where an increase in the number of legislators leads to higher government expenditure. More specifically, Weingast argued that in the absence of legally binding contracts among legislators, minimum winning coalitions (MWC) consisting of only 51% of the legislators, which are required to successfully pass budget proposals, are inherently unstable because a small percentage of MWC members could always "break" from the MWC and form a new coalition. Given the inherent uncertainty associated with MWC, rational legislators thus turn to the norm of universalism to seek ratification of their budgetary proposals because it acts as a hedge against this uncertainty.

Now observe that under the norm of universalism—and assuming that public finances are financed by a general uniform tax—each legislator will favor a level of expenditure for his or her district such that the marginal benefit equals $1 / n$ of its marginal costs, where $n$ equals the number of legislators. The fact that the marginal costs of increasing expenditure is $1 / n$ in Weingast's (1979) model is important because as $n$, the total number of legislators, increases, the marginal cost ($1 / n$) incurred from higher expenditure to each legislator decreases. Consequently, owing to decreasing marginal costs, legislators are less prone to internalize the costs of increased expenditure and have higher incentives to increase spending on pork-barrel projects to appease their constituencies. It is precisely this incentive to spend more—which is termed by Weingast (1979) and Weingast et al. (1981) as the "law of $1 / n$"—that explains why an increase in the number of legislators engenders an increase in central government expenditure and budgetary outlays.

Based on Weingast's (1979) concept of universalism, Inman and Fitts (1990) use their idea of "constrained universalism" to examine the impact of an increase in the majority party's size (rather than the number of legislators) on government expenditure. In this regard, they first claim that when the size of the majority party (denoted here as $maj / n$) initially rises to a certain

threshold level, government expenditures increase owing to the effect of the law of 1 / *n*.

Second, Inman and Fitts (1990) show that when the majority party size increases above that certain threshold level, the tax cost shared by members of the majority party rises. In particular, they argue that the share of the tax cost that is typically exported to the constituencies of nonparty members falls as the size of the majority party increases above that threshold. Majority party members in this situation, therefore, have to bear the burden of a larger share of tax costs. This, in turn, gives majority party members incentives to reduce government expenditure because higher expenditures contribute to larger tax costs. As a result, government spending will decline once the size of the majority party increases beyond that certain threshold level. In short, in Inman and Fitts's framework, there exists a quadratic relationship between the size of the majority party and government expenditure where government expenditure grows as *maj/n* increases from 0.5 (half the size of the legislature) but then falls as *maj/n* approaches 1.[7]

I extend Weingast's (1979) and Inman and Fitts's (1990) analyses to a multiparty legislature with no majority party, which is characteristic of most democracies (see Table 2). To do so, I follow Weingast and introduce the concept of universalism in multiparty environments, which is defined here as the tendency to seek unanimous passage of expenditure programs through inclusion of projects for all political parties that want one. To understand how universalism in multiparty environments affects government spending, first note that as the number of parties in a legislature increases, coalitions become unstable. For example, in a five-party legislature, a minimum-size majority of three parties can be overturned easily by a new coalition formed by one of those parties and the two remaining parties. Hence, political parties in multiparty legislatures (with no majority party) face a similar kind of ex ante uncertainty that legislators in the U.S face with respect to MWC when seeking to ratify their budgetary proposals. How will political parties who seek to propose legislation on spending rationally respond to such ex ante uncertainty?

To answer this question, first observe that in the absence of uncertainty, the party leaders' ideal choice in multiparty legislatures will be to spend nothing on the projects that could benefit other parties and spend only on the projects that can benefit their own supporters. However, when a legislative majority does not exist, that proposal is sure to lose in the legislature unless proponents can secure additional votes by including projects favored by other parties. Hence, to prevent their budget proposals from being defeated in the legislature, the parties' optimal choice will be to include the preferred objects

7. Note that *n* denotes the total number of legislators and 1 the size of the whole legislature.

of other political parties in their own budget proposals so as to induce other parties to vote for their proposal.

Note, however, that including projects to appease other parties will clearly raise government expenditure because larger amounts of revenue have to be allocated to pay for these projects that are preferred by other parties. Furthermore, observe that the greater the number of represented political parties with heterogeneous preferences in a legislature—which is typically the case in countries with a proportional representation system (Persson & Tabellini, 2001)—the higher is the number of additional projects that would have to be included in budget proposals by respective party leaders. This, in turn, leads to higher levels of government expenditure because more revenue has to be allocated to pay for these additional projects. These arguments generate the following hypotheses:

*Hypothesis 1:* An increase in the number of effective parties represented in the legislature will lead to an increase in central government expenditure as a share of GDP or, in other words, the size of government.

The result in Hypothesis 1 is important, but it does not address the issue of how an increase in the number of represented parties in a multiparty legislature affects government spending on public goods and on subsidies and transfers. To address this question, first note that unlike subsidies and transfers that can be targeted to specific social groups, the benefits from public goods cannot be targeted to specific well-organized or socioeconomic (e.g., class-based) groups in different geographic regions. The fact that the benefits enjoyed from public goods are widely dispersed whereas the benefits from subsidies and transfers can be targeted toward specific groups has two implications.

For one, in multiparty legislatures with no majority party, each party usually represents a particular "target-specific" constituent that could be class-based or based on demographic or geographic characteristics. This implies that no single party will be able to derive political mileage from spending on public goods because the constituencies that support these parties cannot enjoy the benefits from expenditure on public goods.[8] As a result, different

8. Alternatively, the benefits from spending on certain "local" public goods (e.g., a bridge in some town) might at times be so highly concentrated that barring a particular party (which represents that town), no other party in the legislature will politically benefit from it, thus ensuring once again that a budget proposal to spend on such local public goods is also extremely likely to be defeated in a multiparty legislature. Milesi-Ferretti et al. (2000) make a similar point in their article.

political parties in the legislature have no political incentives to support or propose allocation of spending on public goods because proposals to spend on public goods are likely to be defeated in multiparty legislatures with no majority party. Furthermore, also observe that when the number of represented political parties increases in a multiparty legislature where each party represents some specific interest groups or constituencies, the incentives to support and/or propose government spending on public goods will decline even further. This is because when the number of represented parties increases, the probability that a proposal on spending for public goods will be defeated in the legislature is likely to increase. Hence, I predict that an increase in the number of represented political parties will lead to a decline in government expenditure on public goods.

In contrast with the dispersed nature of benefits from spending on public goods, the benefits from spending on subsidies and transfers can easily be targeted to "special interests" and core support constituencies inclusive of specific socioeconomic, demographic, and organized groups in society, which typically form the core support base of particular political parties.[9] As a consequence, each political party in multiparty legislatures has strong incentives to initiate and support proposals for higher spending on subsidies and transfers because doing so will allow them to maximize their political support.

In addition, it should be noted that when the number of represented political parties in a multiparty legislature increases, therein implying greater representation of special interests and different constituencies, individual parties have stronger incentives to support spending on subsidies and transfers as it provides more "pork" to satisfy the demands of their constituencies. Thus, in contrast with public goods, an increase in the number of represented parties in a multiparty legislature will lead to higher spending on subsidies and transfers. Put together, the brief arguments presented in the preceding paragraphs can be summarized as follows:

> *Hypothesis 2:* When the number of effective parties represented in a multiparty legislature increases, government spending on public goods will decline but expenditure on subsidies and transfers will increase.

I now provide a brief theoretical rationale to defend my claim that there exists a "cube" relationship between an increase in the size of the majority party (if it exists) and central government expenditure. The logic behind this

9. See Persson and Tabellini (1999) and Milesi-Ferretti et al. (2000), who also claim that the benefits from spending on subsidies and transfers can easily be targeted to certain socioeconomic and demographic groups.

cube relationship is as follows. First, note that in a certain range marginally above a bare 50% majority size, an increase in the size of the majority party to roughly a 54% to 55% share of the seats in the legislature reduces the need to include other parties in the winning coalition. In other words, a majority party size marginally above the bare-minimum majority size provides a useful hedge against member party defections, which means that after a certain threshold, the probability that party defections will be decisive tends toward zero.

If the probability of decisiveness of party defections tends toward zero when the majority party size has a share of 54% to 55% of the seats, then the incentives for the majority party leader to put forth proposals that include additional pork barrel projects to appease other minority parties declines significantly. As a result, budget proposals will not include additional projects preferred by other minority parties in the legislature, which in turn implies that government expenditure will exhibit a downward trend. Thus government expenditure will decrease when the majority party's size is marginally higher than the bare-minimum majority level.

However, once the increase in the majority party's size reaches a certain threshold, say 56%, I claim that government expenditure will rise again and that it will do so monotonically until the majority party's size reaches a supermajority level of 68%. Why is this so? First, following Weingast et al.'s (1981) model, one can easily check that when the majority party's size lies in the range of a 56% to 68% share of the seats, the marginal costs incurred by each majority party member from higher expenditure declines dramatically relative to a situation in which the majority party only comprises a bare minimum majority in the legislature. Second, when the majority party's size is in the 56% to 68% range, the majority party is relatively secure against the political risks that might arise from adopting fiscal policies that require high government expenditure. Third, note than when the majority party's size lies in the 57% to 68% range, there exists a sizeable minority of nonmajority party members in the legislature. This implies that the majority party can credibly "export" or "buck pass" some amount of the higher tax costs that arise from higher expenditure to these nonmajority party legislators.

The three factors mentioned previously have the following adverse effects. First, the possibility of buck passing tax costs to other nonmajority party legislators will clearly give incentives to majority party members to increase government spending. Second, when the marginal costs of increased expenditure decline rapidly, the $1 / n$ effect will occur and the majority members will not internalize the costs associated with higher spending. These two

effects will consequently generate a common pool resource problem in which individual party members will have incentives to "overgraze the commons" and therefore increase spending. In the aggregate, this will engender a rapid increase in government spending when the size of the majority party lies between 56% and 68% share of the seats.

In contrast, once the majority party's size rises above the supermajority level of 68%, then central government expenditure will again decline. Two reasons explain this claim. First, following Inman and Fitts (1990), the share of the tax cost that the majority party might seek to export to nonmajority party members will fall as the size of the majority party increases beyond the supermajority level. Indeed, as the size of the majority party consistently increases above a supermajority level, there will progressively be lesser nonmajority party members to whom majority party members can export or buck pass their increased tax costs. Individual majority party members will thus have to bear the burden of a larger share of tax costs when their party size increases above the supermajority level. As a consequence, majority party members will have incentives to decrease spending because doing so will lower their burden of tax costs. Second, once the majority party crosses the supermajority level, consistently raising expenditure linearly as the size of the majority party grows above the supermajority level will become unsustainable because the majority party—which constitutes the government—designs policy under a finite budget constraint. Hence, as noted previously, these two factors explain why we will observe a decline in government spending after the majority party's size crosses the supermajority level.

The arguments presented in the preceding paragraphs thus predict that government expenditure (a) first decreases when the majority party's size is marginally above 50%, (b) then increases when its size is between the range of a 57% and 68% share of the seats in the legislature, and (c) decreases again when its size is greater than or equal to the 68% supermajority level. This can be stated more formally as follows:

> *Hypothesis 3:* In cases in which a single party holds a majority of the legislative seats, there exists a cube relationship between an increase in the size of the majority party and the size of government measured by central government expenditure as a percentage of GDP.

In the following section, I will first test Hypotheses 1 and 3 and then Hypothesis 2.

## EMPIRICAL EVIDENCE

For the statistical sets, I used a panel data set that is composed of yearly observations from a cross-section of OECD countries for the period from 1978 to 1996 and non-OECD countries for 1980 to 1996. For the tests, I deliberately avoided the use of only time-series and longitudinal data and instead conducted a time-series, cross-sectional analysis because of three reasons. First, the degree of variation in "pure" time-series data (i.e., longitudinal data for each country) for some control variables and the degree of institutional variation in a number of countries in the sample is far too limited to adequately test the three hypotheses posited earlier. Combining time-series and cross-sectional analyses thus helps to increase variation in the observations that are necessary for the tests. Second, using time-series, cross-sectional analysis not only increases the sample size for the tests but also minimizes the possibility of selection bias. Third, note that for some countries in the sample, especially non-OECD countries in the developing world, the time-series data for certain key variables are either inconsistent or missing for certain time periods. Using a time-series, cross-sectional analysis increases the sample and introduces observations with more consistent data for the tests, allowing for more efficient estimation and statistical inference. At the same time, however, the kind of time-series, cross-sectional data used here often suffer from problems of contemporaneous correlation, heteroskedasticity, and serial correlation. Hence I estimated all my models (see the following) by using panel-corrected standard errors (Beck & Katz, 1995) to correct for contemporaneous correlation plus heteroscedasticity and included a lag of the dependent variable to correct for serial correlation.

I describe some basic results in Table 3 before constructing the empirical specification to test Hypotheses 1 through 3. In Table 3, I split the sample into OECD countries (bottom panel) and the entire sample of countries in the world (top panel) by the median of the effective number of represented political parties (ENPP) in the legislature. The ENPP as measured and operationalized here is the inverse of the Hirschman-Herfindahl concentration index and equals

$$\frac{1}{\sum s_i^2},$$

where $s$ represents the share of seats in the chamber held by each party (see Taagepera & Shugart, 1989). This measure of ENPP that has been used to construct an ENPP index also incorporates the relative bargaining strength of

Table 3
*Summary Statistics of Countries Above and Below the ENPP Median*[a]

| | Countries Below ENPP Median | Countries Above ENPP Median |
|---|---|---|
| World sample[b] 1980-1996 | | |
| Mean | 28.1 | 34.2 |
| Median | 26.0 | 33.6 |
| Standard deviation | 10.8 | 13.2 |
| Organization for Economic Cooperation and Development countries[c] 1978-1996 | | |
| Mean | 30.3 | 35.4 |
| Median | 30.6 | 36.0 |
| Standard deviation | 9.3 | 10.3 |

*Note:* ENPP = the effective number of represented political parties.
a. Values in table correspond with central government expenditure as a percentage of GDP.
b. Median value of ENPP in world sample from 1980 to 1996: 3.2 parties.
c. Median value of ENPP in Organization for Economic Cooperation and Development countries from 1978 to 1996: 2.7 countries. The differences in the means are statistically significant at the 1% level.

each party[10] and measures the number of parties of similar size included in the legislature.[11]

In Table 3, for countries with bicameral legislatures, I used the number of represented parties in the lower chamber.[12] Column 1 in Table 3 reports the average size of government for those countries with a below-median value of ENPP, whereas column 2 reports the average size of government for those countries with an above-median value of ENPP.

The top and bottom panels of Table 3 indicate that central government expenditures as a percentage of GDP in countries with an above-median

10. Note that in multiparty legislatures where no party holds a majority of the seats, bargaining on bills and public projects relies on the party leadership and not on every legislator. This reduces the actual number of relevant bargaining agents to the number of parties. Furthermore, the leader of each political party in a multiparty legislature reflects an amount of bargaining power proportional to the number of seats his or her party holds in the legislature.

11. For instance, if there are four parties in which each party has a 25% share of the seats, then the effective number of represented political parties (ENPP) is equal to 4. If one party has 85% of the seats and the other three parties have only 5% each, then the ENPP is approximately equal to 1.

12. The data differ to some extent because two different data sources were used. The ENPP data for the entire sample of 110 countries were obtained from Inter-Parliamentary Union, Chronicle of Parliamentary Elections and Developments (2000). The ENPP for OECD countries was obtained from Mackie and Rose (1991) and Lijphart (1994, 1999).

value of ENPP is more than 20% larger than those countries with a below-median value of ENPP. Thus the descriptive evidence in Table 3 shows that the higher the number of political parties in the legislature, the larger is the size of government.

The following empirical model is used to test Hypotheses 1 through 3:

$$(\text{GOVEX / GDP})_{i,\,t} = \alpha + \gamma(\text{GOVEX / GDP})_{i,\,t-1} + \beta_1\text{ENPP}_{i,\,t} + \beta_2\text{P}_{i,\,t} + \beta_3\text{X}_{i,\,t} + \mathbf{z}_R + \mathbf{z}_t + \varepsilon_{i,\,t}. \quad (1)$$

In Equation 1, subscript *i* represents an observation for a particular country, whereas subscript *t* represents an observation in a specific year. The dependent variable is central government expenditure as a share of GDP, which is labeled here as *GOVEX / GDP*. As mentioned earlier, the lag of the dependent variable $\gamma(\text{GOVEX / GDP})_{i,\,t-1}$ is included in each specification to correct for serial correlation. The vectors $\mathbf{z}_R$ and $\mathbf{z}_t$ in Equation 1 are vectors of fixed-effects variables. $\mathbf{z}_R$ controls for region-specific effects with dummies for Northwest Europe, Southeast Europe, South America, North America, Central America and the Caribbean, Asia, the Middle East, Oceania, and the ex-communist countries. $\mathbf{z}_t$ controls for year-specific effects. *ENPP* denotes the number of effective parties represented in the lower chamber. *ENPP* is predicted to be positively correlated with government expenditure and spending on subsidies and transfers but negatively correlated with government spending on public goods.

The vector **X** in Equation 1 includes the following economic control variables. First, the log of GDP per capita (purchasing power parity, international dollars) is a proxy for the level of a country's development. Based on Rodrik's (1998) study, I expect that the log of GDP per capita will be negatively correlated with the size and composition of government expenditure.[13] Second, I included the variable openness, which is measured as the sum of exports plus imports as a percentage of GDP. Taken from Rodrik, I expect openness to be positively correlated with the size and composition of government expenditure. Third, I included two demographic variables, the log of population and senior population that following earlier works, are expected

13. On the basis of Wagner's law, which demonstrates that the level of development could influence voters' preference for private versus public consumption and the availability of the tax base (see Mueller, 1989), it is widely accepted by scholars that per capita income is expected to be positively correlated with government expenditure and consumption (see Persson & Tabellini, 1999). However, a number of empirical studies, including Rodrik's (1998) seminal work, show that Wagner's law does not hold true in the data—a finding that is consistent with the results on the variable of log per capital income in the tests, which I conduct in this article.

to be positively correlated with the size of government and spending on subsidies and transfers but negatively correlated with spending on public goods (Milesi-Ferretti et al., 2000; Rodrik, 1998). The sources for these economic variables and the political control variables (described as follows) are provided in the appendix.

The vector *P* indicates the set of political control variables that are as follows. MajorP50 is a dummy variable equal to one in cases where a single party holds more than 50% of the total number of seats in the legislature. Major/S reflects the percentage of seats held by the largest party in the chamber,[14] with "S" denoting the total size of the legislature. The variable democracy captures the degree of democracy across countries in the sample and is normalized on a 0 (low level of democracy) to 1 (high level of democracy) scale for the tests. This variable is taken from the Freedom House Index, although for the tests, I restrict the index by excluding countries that rank higher than 4.5. I expect democracy to be positively correlated with government spending because more democratic governments are more likely to appease the electorate with populist economic policies that lead to higher expenditures. I also introduced the variable ideology that denotes the ideological configuration of the executive (or cabinets) in central governments across countries. Taken from Kontopoulos and Perotti (1999), this variable takes values from 1 (*dominant right-wing government*) to 5 (*dominant left-wing government*). Ideology is predicted to be positively correlated with government spending on the presumption that left-oriented governments are more likely to resort to higher levels of expenditure than more conservative, right-oriented governments. Because governments have incentives to spend more during election years (Persson & Tabellini, 2001), I included a dummy variable for election years, election, which is taken from the World Bank's (1999) database of domestic political institutions. I expect election to be positively correlated with government expenditure.

Before listing additional control variables, let me mention two results in the literature that are relevant to my analysis. The first result by Shugart and Carey (1992) and Taagepera and Shugart (1992) is their finding that parliamentary regimes not only tend to have a higher district magnitude but also often follow a proportional representation electoral system that fosters multiparty legislatures. As a consequence, the number of political parties in the legislature of parliamentary regimes is usually higher than the number of parties in presidential regimes (Shugart & Carey, 1992; Taagepera & Shugart, 1992). Second, economists such as Persson and Tabellini (2001) have found

14. See the list of variables in the appendix for a brief description and data sources for the variable size of the majority party.

Table 4
*Regime Type, Federal Structure, and Size of Government*[a]

| | Presidential | Parliamentary |
|---|---|---|
| World sample 1980 to 1996 | | |
| Mean | 23.40 | 35.63 |
| Median | 21.07 | 35.14 |
| Standard deviation | 10.15 | 11.18 |
| | **Federal** | **Unitary** |
| Mean | 26.37 | 32.38 |
| Median | 24.29 | 32.45 |
| Standard deviation | 9.92 | 12.65 |

*Note:* The differences in the means are statistically significant at the 1% level.
a. The size of government is operationalized and measured by central government expenditure as percentage of GDP.

Table 5
*Size of the Government per Region, 1980 to 1996*[a]

| Central Government Expenditure / GDP | Mean | Median | Standard Deviation |
|---|---|---|---|
| Western Europe | 40.48 | 40.90 | 7.90 |
| Organization for Economic Cooperation and Development countries | 37.65 | 39.48 | 9.75 |
| Middle East | 40.30 | 35.72 | 1.51 |
| Ex-soviet countries | 40.35 | 40.65 | 10.45 |
| South East Europe | 36.77 | 36.65 | 10.05 |
| Oceania | 30.60 | 27.64 | 6.54 |
| Africa | 28.59 | 29.67 | 8.46 |
| Central America and the Caribbean | 28.52 | 26.19 | 15.21 |
| North America | 23.54 | 23.48 | 1.10 |
| Latin America | 23.01 | 20.45 | 12.84 |
| Southeast Asia | 20.11 | 18.42 | 5.90 |
| South America | 18.91 | 17.40 | 6.67 |

a. Values in the table correspond to the size of government that is proxied by central government expenditure as a percentage of GDP.

that central government expenditure in parliamentary regimes is higher than government expenditure in presidential regimes. The latter result is confirmed in my data because I found, as reported in Table 4, that the mean level of government expenditure in parliamentary regimes is higher than the mean level of government expenditure in presidential regimes.

The fact that both the number of represented political parties and the mean government expenditure level in parliamentary regimes is higher than presidential regimes arguably suggests that the number of political parties may have a more significant effect on government spending in parliamentary relative to presidential regimes. Hence, to examine (and control) the effect of interacting the number of political parties with parliamentary regimes, I included the interaction term ENPP × parliament, which is predicted to be positively correlated with central government expenditure. Given that the mean level of government expenditure in presidential regimes is lower than in parliamentary regimes (see Table 4), I introduced a dummy variable presidential regime that is coded as 0 and is expected to be negatively correlated with the dependent variable. This dummy is taken from the World Bank (1999) domestic political institutions, which codes presidential regimes as 0 and parliamentary regimes as 1.

Another variable in the specification is seats in lower chamber, which controls for the size of the legislature. Because a larger lower chamber is likely to have a higher number of represented political parties, I expect this variable to be positively correlated with government expenditure. Table 4 also shows that the mean level of government expenditure in federal countries is lower than the mean expenditure in unitary countries. Hence, I included a variable federal country that is set equal to 1 for federal countries and 0 for unitary countries. I expect federal country to be negatively correlated with government expenditure.

To test whether there exists a cube relationship between an increase in the majority party's size and government expenditure, I included the following three interaction terms: (a) major/S × majorP50, (b) $(\text{major/S} \times \text{majorP50})^2$, and (c) $(\text{major/S} \times \text{majorP50})^3$. Major/S × majorP50 and $(\text{major/S} \times \text{majorP50})^3$ are predicted to be negatively correlated with government spending, whereas $(\text{major/S} \times \text{majorP50})^2$ will be positively correlated with government expenditure.

Finally, note that an increase in the number of political parties in the legislature might not be the only cause of higher government expenditure. Instead, an increase in the number of parties represented (i.e., higher partisan fragmentation) in the cabinet in parliamentary regimes or in the executive in presidential regimes could lead to higher government expenditure. This could especially be true in presidential and parliamentary countries that have a proportional representation system because these countries are more likely to have multiple political parties in their governments relative to countries with a majoritarian system (Persson & Tabellini, 2001). Hence, to control for the effect of the number of parties in the cabinet on government spending in parliamentary regimes, I introduced a variable denoted as FRAGPARL, which is

taken from the index of political cohesion developed by Roubini and Sachs (1989). FRAGPARL is coded as 0 for a cabinet formed by a single party, 1 for a cabinet formed by two parties in a coalition, 2 for a cabinet formed by three parties, and 3 for a cabinet formed by more than three parties. For presidential regimes, I introduced the variable FRAGPRES that is also derived from the Roubini and Sachs index and is also coded on a 0-to-3 scale as described previously. I expect FRAGPRES and FRAGPARL to be positively correlated with the dependent variable.

In Table 6, I report the results for only the sample of OECD countries between 1978 and 1996 for four regression models. In model 1, Table 6, I did not exclude any observation and ran the panel regression by including all the independent variables, control variables, and interaction terms. In this model, I found that the coefficient of the independent variable ENPP is positive and significant, which therefore statistically supports Hypothesis 1. The coefficient of ENPP, which is equal to 2.39 in this case, indicates that for each effective political party that gains representation, central government expenditure increases by 2.39% of GDP in OECD countries. This is quite substantial because it implies that in OECD countries that have a mean GDP size (in purchasing power parity terms) equal to US$906.35 billion,[15] government expenditure increases annually by almost US$22 billion for each party that gains representation in the lower chamber in a single OECD country. Moreover, because the mean number of political parties in OECD countries is 7 (see Table 1), the coefficient of ENPP (i.e., 2.39) in this case suggests that the accumulated effect that the number of political parties has per year with respect to increasing government spending in each OECD country is, on average, 16.73% of GDP, which is fairly large. Finally, observe that the size of the coefficient of ENPP is relatively larger than the size of the coefficients of other variables in Model 1. This indicates the significant effect that ENPP has on government spending.

The coefficient of the interaction term ENPP $\times$ parliament in Model 1 is positive and significant at all standard levels. This result is not surprising because, as I mentioned earlier, parliamentary regimes are likely to have high levels of central government expenditure. The coefficient of presidential regime is, however, negatively correlated and statistically significant in Model 1, thus confirming the descriptive statistics in Table 4.

The coefficients of the three interaction terms, major/S $\times$ majorP50, $(\text{major/S} \times \text{majorP50})^2$ and $(\text{major/S} \times \text{majorP50})^3$ in Model 1 have the pre-

15. In the year 2000, the sum of the total GDP of all 30 OECD countries was roughly equal to US$27.190 trillion. Simple calculation shows that the mean GDP size of OECD countries in 2000 was thus equal to approximately US$906 billion. For these figures, see OECD (2001).

Table 6
*Panel Regressions Using Sample of Organization for Economic Cooperation and Development Countries, 1978-1996*

| | Dependent Variable in Models 1 Through 4: Central Government Expenditure as a Percentage of GDP | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| Lag dependent variable | 0.567*** | (0.011) | 0.534*** | (0.008) | 0.571*** | (0.010) | 0.592*** | (0.015) |
| ENPP | 2.39*** | (0.46) | 1.94*** | (0.21) | 0.51* | (0.18) | 2.34*** | (0.21) |
| Seats in lower chamber | 0.04*** | (0.001) | 0.03*** | (0.001) | 0.01*** | (0.002) | 0.02*** | (0.004) |
| Presidential regime | –1.08*** | (0.16) | –0.92*** | (0.23) | –3.07*** | (0.89) | –0.96*** | (0.21) |
| Federal country | –1.04*** | (0.42) | –0.81*** | (0.15) | –1.03*** | (0.24) | –0.88*** | (0.25) |
| Log of GDP per capita | –1.17*** | (0.35) | –0.86*** | (0.17) | –1.12*** | (0.41) | –1.22*** | (0.31) |
| Log of population | 0.350** | (0.17) | 0.970** | (0.34) | .672** | (0.15) | 0.143* | (0.18) |
| Senior population | 1.16*** | (0.24) | 1.05*** | (0.16) | 1.02*** | (0.09) | 0.78* | (0.30) |
| Openness | 0.15*** | (0.01) | 0.17*** | (0.01) | 0.18*** | (0.02) | 0.11*** | (0.07) |
| Ideology | 0.044 | (0.114) | 0.026 | (0.58) | 0.019 | (0.117) | 0.022 | (0.119) |
| Democracy | 0.018** | (0.009) | 0.020** | (0.014) | 0.013** | (0.006) | 0.029** | (0.008) |
| Election | 0.005 | (0.094) | 0.001 | (0.095) | 0.004 | (0.102) | 0.002 | (0.101) |
| FRAGPARL | 0.007* | (0.002) | 0.006* | (0.002) | 0.002 | (0.020) | 0.006* | (0.002) |
| FRAGPRES | 0.090 | (0.107) | 0.014 | (0.101) | 0.005 | (0.103) | 0.010 | (0.096) |
| ENPP × parliament | 0.740*** | (0.23) | 0.735*** | (0.40) | 0.014 | (0.08) | 0.629*** | (0.219) |
| Major/S × majorP50 | –1.439*** | (0.490) | –1.438*** | (0.490) | –3.21*** | (0.901) | –1.437*** | (0.481) |
| $(\text{Major/S} \times \text{majorP50})^2$ | 0.966*** | (0.221) | 0.760*** | (0.175) | 2.02*** | (0.85) | 0.724*** | (0.108) |
| $(\text{Major/S} \times \text{majorP50})^3$ | –0.739*** | (0.235) | –0.814*** | (0.331) | –3.25*** | (1.01) | –0.721*** | (0.142) |
| MajorP50 | 0.451*** | (0.156) | 0.521*** | (0.173) | 1.56*** | (0.40) | 0.319*** | (0.081) |
| Region fixed effects | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | |
| Number of countries (Organization for Economic Cooperation and Development) | 29 | | 14 | | 29 | | 29 | |
| Adjusted $R^2$ | 0.59 | | 0.51 | | 0.55 | | 0.57 | |

*Note:* ENPP = the effective number of represented political parties. Numbers reported in parentheses are panel-corrected standard errors. The lag of the dependent variable is included in each specification to correct for serial correlation. Results from regional and year dummies are not reported.
*$p$ = .1. **$p$ = .05. ***$p$ = .01.

dicted sign and are statistically significant at all standard levels. Based on the estimated coefficients, I found that government expenditure as a share of GDP falls until the majority party's share of seats reaches 55% of the legislature. Beyond this majority size, expenditure again increases and reaches a maximum at a 68% majority share, after which expenditure again declines. Hence, in OECD countries for the period between 1978 and 1996, there clearly exists a cube relationship between the size of government and an increase in the size of the majority party, as predicted in Hypothesis 3.

The variable FRAGPARL in Model 1 is positive and statistically significant only at the 10% level, and the size of its coefficient, 0.007, is extremely small. This indicates that the marginal effect of FRAGPARL on government spending is much lower than the marginal effect that the independent variable, ENPP has on central government expenditure. FRAGPRES is not statistically significant in Model 1, which means that the number of parties in the executive in presidential regimes across OECD countries does not have a statistically significant effect on the level of government spending. Furthermore, ideology and election are not statistically significant in this case, which implies that in OECD countries, neither electoral cycles nor the ideological configuration of governments have a significant effect on central government expenditure. Other economic and demographic control variables have the predicted sign and are statistically significant. Finally, the Durbin's *m* test from Model 1 reveals that there is no serial correlation in the error term,[16] thus indicating that including the lag of the dependent variable helps to correct for first-order serial correlation.

As a test of robustness, I excluded two outliers from the OECD sample in Model 2.[17] The coefficient of ENPP and ENPP × parliament in Model 2 continues to remain positive and statistically significant at all standard levels. Likewise, the coefficient of the three interaction terms in Model 2 that examine the impact of an increase in the majority party's size on government spending also have the predicted sign and are statistically significant. Hence,

16. The Durbin's *m* test from the model in column 1 of Table 6 yielded a chi-square value of 26.585 with a *p* value of 0.9023. Durbin's *m* test from the model in column 2 of Table 6 yielded a chi-square value of 29.316 with a *p* value of 0.8761. Likewise, Durbin's *m* test from the model in column 3 of Table 6 yielded a chi-square value of 23.842 with a *p* value of 0.9149. Finally, Durbin's *m* test from Model 4 yielded a chi-square value of 26.514 with a *p* value of 0.8741. The aforementioned test results indicate that one cannot reject the null of any first-order serial correlation in each of these models.

17. The two outliers in the OECD sample are countries where average central government expenditure between 1970 and 1996 is close to 50% of GDP. These two outliers are the Netherlands (central government expenditure equal to 47.9% of GDP) and Belgium (47.7% of GDP) (International Monetary Fund, 1998).

Hypotheses 1 and 3 are supported statistically in Model 2. FRAGPARL is weakly significant in Model 2, but FRAGPRES is statistically insignificant in this case. The reported results for all other control variables in Model 2 are similar to their results in Model 1 and will hence not be repeated here.

For the tests in Model 3, I only included observations in the OECD sample that have a majority party and excluded remaining observations and outliers. The results in Model 3 are as follows. First, the coefficient of the three interaction terms that are used to test Hypothesis 3, major/S majorP50, (major/S majorP50)$^2$, and (major/S majorP50)$^3$ have the predicted sign and are also statistically significant at all standard levels. More important, note that the size of the coefficients for each of the three aforementioned interaction terms in Model 3 is much higher relative to the size of these coefficients in Models 1 and 2. This indicates that Hypothesis 3 finds stronger statistical support when the OECD sample is restricted only to countries that have a majority party.

The coefficient of ENPP in Model 3 barely retains statistical significance at the 10% level. Also, note that that the size of the coefficient of ENPP in this case drops dramatically relative to its coefficient in Model 1, thus indicating that the marginal effect of ENPP on government spending is much weaker in Model 3. The interaction term ENPP $\times$ parliament loses statistical significance in Model 3. This result is not surprising because observations with a majority party in the OECD sample (as used for the test in Model 3) are likely to be cases in which either the number of political parties in the legislature is low or party competition between different political parties in the legislature will be negligible in determining the level of government spending. FRAGPARL and FRAGPRES are also not statistically significant in Model 3. I expected the aforementioned result because it is possible that in parliamentary and presidential countries with a majority party, the degree of policy-making and ideological fragmentation in either regime may be far too low to significantly affect the level of government spending. In Model 3, presidential regime has the predicted sign and is statistically significant, but neither ideology nor election is statistically significant. The signs and significance of all other control variables are similar to their results in Model 2.

A statistical problem that could be adversely affecting the results reported in Models 1 through 3 is the potential presence of endogeneity between the size of government and the number of political parties in the legislature. To minimize this endogeneity problem, I used a standard instrumental variable estimation technique in which I instrumented all the independent and control variables by their 3-year lagged values in Model 4. I also excluded outliers in the OECD sample for the instrumental variable estimation. As reported in Model 4 (see Table 6), the signs and significance of the coefficients of all the

Table 7
*Panel Regressions Using Entire Sample of Countries, 1978-1996*

| Variables | Dependent Variable in Models 1 Through 4: Central Government Expenditure as a Percentage of GDP | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 5 | | Model 6 | | Model 7 | | Model 8 | |
| Lag dependent variable | 0.541*** | (0.010) | 0.525*** | (0.009) | 0.558*** | (0.012) | 0.576*** | (0.014) |
| ENPP | 2.62*** | (0.51) | 2.03*** | (0.78) | 0.38* | (0.14) | 1.99*** | (0.21) |
| Seats in lower chamber | 0.009*** | (0.002) | 0.011*** | (0.003) | 0.005*** | (0.003) | 0.003*** | (0.001) |
| Presidential regime | –0.77*** | (0.10) | –1.08 | (0.35)*** | –4.16*** | (1.33) | –0.83*** | (0.19) |
| Federal Country | –0.39*** | (0.06) | –0.55*** | (0.08) | –0.40*** | (0.13) | –0.57*** | (0.20) |
| Log of GDP per capita | –1.38*** | (0.29) | –1.21*** | (0.11) | –1.15*** | (0.32) | –1.76*** | (0.25) |
| Log of population | 0.081 | (0.126) | 0.49 | (0.116) | 0.29 | (0.108) | 0.130 | (0.225) |
| Senior population | 0.060 | (0.180) | 0.43 | (0.109) | 0.32 | (0.104) | 0.095 | (0.178) |
| Openness | 0.12*** | (0.03) | 0.15*** | (0.02) | 0.27*** | (0.05) | 0.17*** | (0.06) |
| Ideology | 0.032 | (0.157) | 0.014 | (0.63) | 0.029 | (0.035) | 0.046 | (0.091) |
| Democracy | 0.034** | (0.005) | 0.066** | (0.015) | 0.058** | (0.003) | 0.080** | (0.017) |
| Election | 0.003 | (0.091) | 0.002 | (0.083) | 0.001 | (0.101) | 0.004 | (0.099) |
| FRAGPARL | 0.005 | (0.033) | 0.003 | (0.041) | 0.002 | (0.020) | 0.007 | (0.035) |
| FRAGPRES | 0.060 | (0.123) | 0.018 | (0.102) | 0.009 | (0.131) | 0.016 | (0.107) |
| ENPP × parliament | 0.910*** | (0.17) | 0.735*** | (0.40) | 0.014 | (0.18) | 0.629*** | (0.219) |
| Major/S × majorP50 | –0.536*** | (0.216) | –0.514*** | (0.227) | –2.52*** | (0.315) | –0.620*** | (0.195) |
| $(\text{Major/S} \times \text{majorP50})^2$ | 0.851*** | (0.172) | 0.860*** | (0.174) | 1.91*** | (0.74) | 0.840*** | (0.197) |
| $(\text{Major/S} \times \text{majorP50})^3$ | –0.724*** | (0.208) | –0.760*** | (0.175) | –2.80*** | (0.94) | –0.711*** | (0.206) |
| MajorP50 | 0.619*** | (0.113) | 0.423*** | (0.151) | 2.05*** | (0.130) | 0.662*** | (0.204) |
| Region fixed effects | Yes | | Yes | | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | | Yes | | Yes | |
| Number of countries | 110 | | 110 | | 110 | | 110 | |
| Adjusted $R^2$ | 0.60 | | 0.54 | | 0.61 | | 0.58 | |

*Note:* ENPP = the effective number of represented political parties. Numbers reported in parentheses are panel-corrected standard errors. The lag of the dependent variable is included in each specification to correct for serial correlation. Results from regional and year dummies are not reported.
*$p$ = .1. **$p$ = .05. ***$p$ = .01.

instrumented variables are similar to the results of these variables in Model 1. Moreover, the adjusted $R^2$ of 0.57 in Model 4 is almost equal to the adjusted $R^2$ of 0.59 in Model 1. This shows that the results in Models 1 and 2 in Table 6 are robust to endogeneity problems.

In Table 7, I report the results of estimating Equation 1 for the entire sample of 110 countries between 1980 and 1996. In Model 5, Table 7, no observations were excluded and for the regression, I included all the independent and control variables as well as the four interaction terms. The estimated coefficient of ENPP is positive and statistically significant in Model 5, which thus statistically corroborates Hypothesis 1 for the entire sample of 110 countries. More specifically, the coefficient of ENPP here, which is equal to 2.62, indicates that for each effective political party that gains representation, central government expenditure increases by 2.62% of GDP, which is quite substantial. To see why, note that the mean number of political parties across legislatures in all countries is 6.1 (see Table 1). Hence, the coefficient of ENPP in Model 5, which is 2.62, suggests that the accumulated effect that the mean number of political parties has per year on government spending in each country is, on average, 15.982% of GDP, which is clearly significant. Also, observe that the size of the coefficient of ENPPis larger relative to the size of the coefficients of other variables in Model 5. This implies that ENPP is certainly playing an important role in influencing the level of government expenditure across all countries in the sample.

The coefficient of the interaction term ENPP × parliament in Model 5 is also positive and statistically significant, whereas the coefficient of presidential regime is negative and statistically significant. In Model 5, ideology, election, FRAGPARL, and FRAGPRES are not statistically significant. The other control variables in this model have the predicted sign, and most of these variables are statistically significant except for the log of population and senior population.[18]

Each of the three interaction terms in Model 5 that examines the impact of the changing size of the majority party on government spending have the predicted sign and are statistically significant. The parameter estimates for this sample in Model 5 indicate that government expenditure reaches a minimum when the majority party has a 54% share of seats in the legislature. It then reaches a maximum when the majority party enjoys a 76% share of the seats

18. In Model 5, Durbin's *m* test yielded a chi-square value of 22.189 with a *p* value of 0.9011. In Model 6, Durbin's *m* test yielded a chi-square value of 27.134 with a *p* value of 0.8788. In Model 7, Durbin's *m* test yielded a chi-square value of 26.502 with a *p* value of 0.8144 and finally, in Model 8, Durbin's *m* test yielded a chi-square value of 27.631 with a *p* value of 0.9027. Each of these test results indicate that we cannot reject the null of any first-order serial correlations.

in the legislature before declining again after 76%. Hence, for the entire sample of countries in the data, there statistically exists a cube relationship between an increase in the size of the majority party and the size of government as predicted in Hypothesis 3.

For the regression in Model 6 (see Table 7), I excluded four outliers from the sample of 110 countries (i.e., OECD and non-OECD countries).[19] In this model, the coefficient of ENPP and ENPP × parliament have the predicted sign and are statistically significant at all standard levels. Likewise, the coefficient of each of the three interaction terms that test the impact of change in the majority party's size on government spending also have the predicted sign and are statistically significant. The signs and significance of the coefficients of all other control variables in Model 6 are similar to their results in Model 5. The results in Models 5 and 6 are thus robust even after excluding outliers from the sample for the tests.

For the test in Model 7 (see Table 7), I only included those countries in the sample that have a majority party and excluded all other cases and outliers. The coefficients of the three interaction terms, major/S × majorP50, $(\text{major/S} \times \text{majorP50})^2$, and $(\text{major/S} \times \text{majorP50})^3$, have the predicted sign and are statistically significant at all standard levels. Observe that the size of the coefficients of these interaction terms in Model 7 is larger than the size of their coefficients in Model 5. This implies that Hypothesis 3 finds strong statistical support when one only includes cases in the sample that have a majority party. The variable ENPP in Model 7 is positive but statistically significant only at the 10% level. Although this provides statistical support for Hypothesis 1, ENPP's marginal effect on government spending drops from 2.62 percentage points in Model 5 to only 0.38 percentage points in Model 7. Similar to Model 3 in Table 6, I found that the coefficient of the interaction term ENPP × parliament is not statistically significant in Model 7. Finally, FRAGPARL and FRAGPRES are also not statistically significant in Model 7, which is similar to the results obtained for these variables in Model 3 of Table 6. Ideology and election are not statistically significant here. However, I found that except for log of population and senior population, all other control variables have the predicted sign and are statistically significant in Model 7.

Although encouraging, the results in Models 5 to 7 could suffer from endogeneity problems. Hence, to minimize the adverse effect of endogeneity,

19. The four outliers in the entire sample are the Netherlands, Belgium from OECD countries, Democratic Republic of Congo (average central government expenditure equal to 58.2% of GDP), and Kuwait (60.6% of GDP) (International Monetary Fund, 1998).

I instrumented all the independent and control variables by their 3-year lagged values and excluded outliers for the test in Model 8. It is interesting that the signs and significance of the coefficient of the independent variables, the four interaction terms, and all the control variables are similar to their results in Models 5 and 6. The adjusted $R^2$ of 0.58 in Model 8 is almost equal to the adjusted $R^2$ of 0.60 in Model 5, which indicates that the reported coefficients in Models 5 and 6 are robust to endogeneity problems. Put together, the reported results in Tables 6 and 7 thus statistically corroborate Hypotheses 1 and 2.

## THE NUMBER OF PARTIES AND COMPOSITION OF GOVERNMENT SPENDING

In this section, I test Hypothesis 2, which predicts that government spending on public goods decreases while spending on subsidies and transfers increases when the ENPP in a multiparty legislature increases.[20] The results of testing the effect of ENPP on government spending on public goods and subsidies and transfers for the entire sample of 110 countries between 1980 and 1996 is reported respectively in Models 9 and 10 in Table 8.[21]

Observe in Table 8 that an increase in one effective party in the legislature reduces expenditure on public goods as a share of GDP by almost 0.86 percentage points, whereas it increases spending on subsidies and transfers by 1.14% of GDP. These two results are both significant at the 1% level, thus statistically corroborating Hypothesis 2. More substantively, the aforementioned results suggest that having more political parties in a multiparty legislature reduces public (i.e., government) investment in public goods that is often a critical component of a country's infrastructure. This, in turn, can have detrimental economic consequences. To exacerbate matters, a higher ENPP increases spending on subsidies and transfers that promotes economic inefficiency and deadweight losses.

The tests in Models 9 and 10 in Table 8 show that government expenditure on public goods and spending on subsidies and transfers decreases in federal countries and in countries with presidential regimes relative to unitary and

20. Government expenditure on transfers equals the sum of spending on subsides and transfers. Expenditures on public goods are equal to the sum of spending on goods and services as well as on capital.

21. I do not report the results on government spending on public goods and on subsidies and transfers for only the OECD as they are similar to the entire sample of 110 countries. The results for OECD countries are, however, available from the author on request.

Table 8
*Panel Regressions Using Entire Sample of Countries, 1980-1996*

| | Public Goods | | Subsidies and Transfers | |
|---|---|---|---|---|
| Variables | Model 9 | | Model 10 | |
| Lag expenditure on public good | 0.721*** | (0.009) | | |
| Lag expenditure on subsidies and transfers | | | 0.689*** | (0.005) |
| ENPP | –0.86** | (0.11) | 1.14** | (0.23) |
| Seats in lower chamber | 0.05*** | (0.001) | 0.02*** | (0.003) |
| Presidential regime | –0.65** | (0.21) | –0.91** | (0.16) |
| Federal country | –0.31** | (0.12) | –0.21** | (0.10) |
| Log of GDP per capita | –1.45*** | (0.36) | –1.08*** | (0.14) |
| Log of population | –0.60*** | (0.12) | 0.52*** | (0.33) |
| Senior population | –0.22*** | (0.06) | 0.13*** | (0.02) |
| Openness | 0.12*** | (0.007) | 0.16*** | (0.003) |
| Ideology | 0.007 | (0.015) | 0.003 | (0.086) |
| Democracy | 0.045** | (0.021) | 0.083** | (0.012) |
| Election | 0.001 | (0.040) | 0.002 | (0.033) |
| FRAGPARL | 0.003 | (0.016) | 0.011 | (0.025) |
| FRAGPRES | 0.008 | (0.072) | 0.005 | (0.044) |
| Region fixed effects | Yes | | Yes | |
| Year fixed effects | Yes | | Yes | |
| Number of countries | 110 | | 110 | |
| Adjusted $R^2$ | 0.56 | | 0.53 | |

*Note:* ENPP = the effective number of represented political parties. Regressions use panel-corrected standard errors method according to Beck and Katz (1995). Numbers in parentheses indicate standard errors. In Model 9, the dependent variable is the sum of government expenditure on goods, services, and capital. In Model 10, the dependent variable equals the sum of spending on subsidies and transfers.
*$p$ = .1. **$p$ = .05. ***$p$ = .01.

parliamentary countries.[22] This is consistent with Persson and Tabellini's (2001) result. In addition, in Table 8, openness is positively and significantly correlated with subsidies and transfers, which is similar to Rodrik's (1998) result. The log of GDP per capita is negatively and significantly correlated with spending on public goods but is negatively and significantly correlated with spending on subsidies and transfers. The log of population and senior population is also positively and significantly correlated with spending on subsidies and transfers but negatively and significantly correlated with spending on public goods. Ideology and election are not statistically signifi-

22. Durbin's *m* test from Models 9 and 10 in Table 8 reveals that there is no serial correlation in the error term after including the lag of the dependent variable in each case. In Model 9, Durbin's *m* test yielded a chi-square) value of 20.726 with a *p* value of 0.8926, whereas in Model 10, Durbin's *m* test yielded a chi-square) value of 26.029 with a *p* value of 0.9112. Both tests thus fail to reject the null hypothesis of no serial correlation.

cant in Models 9 and 10 in Table 8, which means that neither of these two variables significantly affects government spending on public goods or subsidies and transfers.[23] Finally, note that neither FRAGPARL nor FRAGPRES is statistically significant in Models 9 and 10. This implies that ENPP significantly affects the composition of government expenditure and not the number of parties in the cabinets of parliamentary regimes or in the executive of presidential regimes.

In summary, this brief section demonstrates that Hypothesis 2 finds statistical support in the data. Unfortunately, owing to a lack of space, I did not examine here how the composition of government expenditure is affected by an increase in the size of the majority party. In the future, I hope to rectify this drawback.

## CONCLUSION

To sum up, the tests reveal that an increase in the number of political parties in multiparty legislatures leads to higher central government expenditure and spending on subsidies and transfers but is negatively correlated with spending on public goods. Furthermore, it was shown that central government expenditure follows a nonlinear ("cube") relationship with respect to an increase in the majority party's size in the legislature. The statistical results mentioned previously have two implications. First, the existing literature shows that government expenditure in the United States decreases when the majority party's size reaches and grows above the supermajority level (Inman & Fitts, 1990). This article extended this finding to a cross-country framework that has not been done before by scholars.

Second, the results presented here indicate that an increase in the number of political parties in a national legislature has inefficient consequences because it raises government expenditure that, in turn, can have adverse effects on private investment and economic growth. Furthermore, the results suggest indirectly that a proportional representation system that promotes representation of multiple parties can have a more inefficient effect on government expenditure relative to a plurality voting system that fosters two-party competition. Thus the empirical analysis in this article also demonstrates that in addition to the number and size of parties in different legislatures, the type of the electoral system could influence the size of government across countries.

23. Milesi-Ferretti et al. (2000) also find that the ideological configuration of governments does not have a statistically significant effect on the composition of government expenditure.

## APPENDIX
## List of Variables and Sources

*Log of GDP per capita:* Log of real GDP per capita in constant dollars (international prices, base year 1985; Heston & Summers, 1991).

*Openness:* Total of imports and exports divided by GDP (World Bank, 1999). Also see Rodrik (1998).

*Log of population:* Log of share of population between 15 and 64 year of age (World Bank, 1999).

*Senior population:* Share of population older than 65 (World Bank, 1999).

*Seats in lower chamber:* Size of the lower chamber operationalized in terms of the total number of seats in the national legislature across Organization for Economic Cooperation and Development (OECD) and non-OECD countries. For OECD countries, the data were taken from Mackie and Rose (1991). For all other non-OECD countries, I used data from the Inter-Parliamentary Union, Chronicle of Parliamentary Elections (2000) and Delury (1999).

*Federal country:* Dummy variable that takes a value of 1 for federal countries and a value of 0 for unitary countries (Persson & Tabellini, 2001).

*Presidential regime:* Dummy variable taking a value of 1 for presidential regimes and 0 for parliamentary regimes (Beck, Clarke, Groff, Keefer, & Walsh, 1999).

*Government expenditure as a percentage of GDP:* Central government expenditure as a percentage of GDP (International Monetary Fund, 1998).

*Government spending on public goods:* Central government expenditure on public goods and services (as a percentage of GDP) that equals the sum of government consumption and investment net of depreciation (International Monetary Fund, 1998).

*Government spending on subsidies and transfers:* Central government expenditure on transfers to households (as a percentage of GDP), which is equal to the sum of social security benefits and other transfers to households. (International Monetary Fund, 1998).

*Effective number of represented political parties (ENPP):* Effective number of parties, which is, operationalized as

$$\frac{1}{\sum s_i^2}$$

where $s_i$ is the share of party $i$ in the legislature. For OECD countries, I used Lijphart (1994) and unpublished data from Lijphart from the 1990s based on various national sources. For Latin American and other non-OECD countries, I used data from Mackie and Rose (1991) and Inter-Parliamentary Union, Chronicle of Parliamentary Elections (2000).

*Size of majority party:* Percentage of seats held by the largest party in the lower chamber is based on the proportion of seats held by the largest party in the lower cham-

ber (or house of representatives). For OECD countries, the data were taken from Mackie and Rose (1991). For all other non-OECD countries in the sample, I used data from the Inter-Parliamentary Union (2000) and Delury (1999).

*Ideology:* Ideological configuration of executive in central government. The variable takes values from 1 (*dominant right-wing party*) to 5 (*dominant left-wing party*) (Kontopoulos & Perotti, 1999).

*Democracy:* Taken from Freedom House 1-7 Index of Democracy.

*FRAGPARL* and *FRAGPRES*: Number of political parties in the cabinet of parliamentary regimes and in the executive of presidential regimes (Roubini & Sachs, 1989).

*Election:* Dummy variable (Beck, Clarke, Groff, Keefer, & Walsh, 1999).

## REFERENCES

Alvarez, M., Cheibub, Jose A., Limongi, Fernando, & Przeworski, Adam. (2000). *Democracy and development: Political institutions and well-being in the world, 1950-90*. Cambridge, UK: Cambridge University Press.

Amorin Neto, O., & Cox, Gary. (1997). Electoral institutions, cleavage structures and the number of parties. *American Journal of Political Science*, *41*, 149-174.

Beck, T., Clarke, George, Groff, Alberto, Keefer, Philip & Walsh, Patrick. (1999). New tools and new tests in comparative political economy: The database of political institutions. Washington, DC: The World Bank.

Beck, N., & Katz, Jonathan. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review, 89*, 634-647.

Castles, F. G. (1998). *Comparative public policy: Patterns of postwar transformation*. Northampton, MA: Edward Elgar.

Delury, G. E. (Ed.). (1999). *World encyclopedia of political systems and parties, 1980-1997*. New York: Facts on File.

Freedom House. (2000). *Freedom in the world: The annual survey of political rights, 1970-1999*. New York: Freedom House.

Heston, A., & Summers, R. (1991, May). The Penn World Tables, Version 5.6. *Quarterly Journal of Economics*, pp. 327-368.

Holsey, C., & Borcherding, T. E. (1997). Why does government's share of national income grow? In D. C. Mueller (Ed.), *Perspectives on public choice*. New York: Cambridge University Press.

Inman, Robert, & Fitts, M. (1990). Political institutions and fiscal policy: Evidence from the U.S. historical record. *Journal of Law, Economics and Organization*, *6*(Special issue), 79-132.

International Monetary Fund. (1998). *Government finance statistics tape, 1970-1997*. Washington, DC: IMF Publication Services.

Inter-Parliamentary Union. (2000). *Chronicle of Parliamentary elections, 1970-1997*. Geneva: International Center For Parliamentary Documentation.

Kontopoulos, Y., & Perotti, Roberto. (1999). *Fragmented fiscal policy*. Unpublished manuscript, Columbia University.

Laakso, M., & Taagepera, Rein. (1979). Effective number of political parties: A measure with application to Western Europe. *Comparative Political Studies, 12*, 3-27.

Lijphart, A. (1994). *Electoral systems and party systems: A study of twenty seven democracies, 1945-1990*. New Haven, CT: Yale University Press.

Lijphart, A. (1999). *Patterns of democracy: Government forms and performance in thirty-six countries*. New Haven, CT: Yale University Press.

Mackie, Thomas T., & Rose, Richard. (1991). *The international almanac of electoral history* (3rd ed.). Washington, DC: Congressional Quarterly.

Milesi-Ferretti, G., Perotti, Roberto, & Rostagno, Massimo. (2000). *Electoral systems and public spending. Washington, DC: International Monetary Fund.*

Mueller, D. C. (1989). *Public choice 2*. Cambridge, UK: Cambridge University Press.

Organization for Economic Cooperation and Development. (2001). *Main economic indicators*. Paris: National Accounts Division.

Persson, T., & Tabellini, Guido. (1999). The size and scope of government: Comparative politics with rational politicians. *European Economic Review, 43*, 699-735.

Persson, T., & Tabellini, Guido. (2000). *Political economics: Explaining economic policy.* Cambridge, MA: MIT Press.

Persson, T., & Tabellini, Guido. (2001). *Political institutions and policy outcomes: What are the stylized facts?* London: Center For Economic Policy Research.

Poterba, J., & Von Hagen, Jurgen (Eds.). (1999). *Fiscal institutions and fiscal performance*. Chicago: University of Chicago Press.

Rodrik, D. (1998). Why do more open economies have bigger governments? *Journal of Political Economy, 106*, 997-1032.

Roubini, N., & Sachs, Jeffrey. (1989). Political and economic determinants of budget deficits in the industrial democracies. *European Economic Review, 33*, 903-938.

Shugart, M., & Carey, John. (1992). *Presidents and assemblies: Constitutional design and electoral dynamics*. Cambridge, UK: Cambridge University Press.

Taagepera, R., & Shugart, Mathew. (1989). *Seats and votes*. New Haven, CT: Yale University Press.

Taagepera, R., & Shugart, Mathew. (1992). *Theory of the number of parliamentary parties: A quantitative model of Duverger's mechanical effect.* Unpublished manuscript.

Weingast, B. (1979). A rational choice perspective on congressional norms. *American Journal of Political Science, 23*, 245-262.

Weingast, Barry, Shepsle, K., & Johnsen, Christopher. (1981). The political economy of benefits and costs: A neoclassical approach to distributive politics. *Journal of Political Economy, 89*, 642-664.

World Bank. (1999). *World development indicators* [CD-Rom]. Washington, DC: Author.

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