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The Multidimensional Impact of Proportionality: Electoral Districts and Deficit Spending

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Abstract

Why might a democratically elected government choose to run a sustained fiscal deficit in the face of many potential drawbacks? In this paper, I contribute in two important ways to our understanding of the political causes of fiscal outcomes. First, I develop a theoretical argument that democracies with a few large districts will have greater political incentives to provide balanced budgets than democracies with many small districts. Second, I test my theory (and, preliminarily, other theories) with a much broader empirical model than those generally used in the literature. The project helps bring to light the multidimensional impact of electoral proportionality on deficit spending, a theoretical development that has the potential to improve greatly our understanding of policy formation in a variety of areas. It also helps pull developing countries and diverse democratic institutions into a literature that has centered on explaining behavior in wealthy, parliamentary systems.

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There are few better ways to understand the behavior of states than to examine how they spend money. Control over fiscal policy is clearly among the most important powers that governments, however constituted, enjoy. In this paper, I focus my attention on the institutional determinants of budget deficits in democracies, a key aspect of fiscal policy-making.

Budget deficits are generated when governments spend more money than they take in from taxes and other sources of revenue. While short-term budget deficits can be a prudent response to temporary fiscal shocks, most economists agree that sustained deficits can damage a country's economy. Among the potential harms associated with sustained budget deficits are contracted national savings, reduced future incomes (Gale and Orszag 2003), and long-term current account deficits (Yellen 1989). Further, in less stable developing economies, long-term deficits can lead to capital flight in anticipation of possible future government default or monetary expansion. As a result, while individual recipients of government largess may benefit from sustained deficit spending, the aggregate, long-term national impact is likely to be negative.

Why might a democratically elected government choose to run a sustained fiscal deficit in the face of these potential drawbacks? A large literature explores the role of domestic political and fiscal institutions in influencing a government's spending decisions. The primary insight of this literature is that a government's budget can be thought of as a common pooled resource (e.g. Hallerberg 2004, Roubini and Sachs 1988). As a result, political institutions that centralize responsibility over the budget will tend to discourage fiscal deficits, whereas institutions that diffuse responsibility will tend to encourage them. Building from this insight, among others, scholars have sought to link deficit spending to a variety of institutional characteristics, including government fragmentation, fiscal decentralization, and rapid government turnover.

I seek to contribute to this literature in two ways. First, I introduce the role of electoral district size and present a novel theory to clarify the impact of electoral system characteristics on deficit spending. Scholars have debated the precise impact of relative electoral system proportionality on the formation of a variety of public policies.[1] Consequently, ironing out the role of electoral rules in one area of public policy – budgetary politics – can contribute more broadly to our understanding of governmental decision-making in democracies. I propose to do that here.

In the literature on deficit spending, research has examined the potential role of electoral system largely through its impact on government turnover and party fragmentation in governing coalitions and legislatures. Many political economists have found that, as the number of parties in a democracy's governing coalition or legislature increases, its propensity to engage in deficit spending also increases (e.g. Roubini and Sachs 1988, Roubini and Sachs 1989, Volkerink and de Haan 2001, Hallerberg and von Hagen 1999, Kontopoulos and Perotti 1999). A related finding of the literature is that more government turnover tends to produce higher public deficits (Roubini and Sachs 1988, Grilli, Masciandaro, and Tabellini 1991, Franzese 2002). Because party fragmentation and government turnover are associated with proportional electoral rules (e.g. Duverger 1954, Lijphart 1999), scholars have gone on to conclude that proportional representation (PR) tends to give rise to budget deficits (e.g. Roubini and Sachs 1988, Grilli, Masciandaro, and Tabellini 1991, Alesina and Perotti 1999, Persson and Tabellini 2003).

In this article, I do not dispute that electoral system proportionality, through its association with party fragmentation or government turnover, may lead to deficits. Rather, I highlight that PR systems are also associated with another important institutional characteristic – electoral district size and number. Countries with more proportional electoral rules will also tend

to have larger and fewer electoral districts. I build a theory, roughly similar to that proposed for trade policy by Rogowski (1987), relating electoral district characteristics to government spending outcomes. I argue that democracies with a few large districts will have greater political incentives to provide the public good of balanced budgets than democracies with many small districts. Consequently, I suggest in this article that proportional systems may tend towards deficits by their effects on party fragmentation, but away from deficits by their impact on electoral district size.

It may appear at first glance that this argument is logically contradictory, but it is not. The association between electoral rules, party fragmentation, and electoral district size is an imperfect one, contingent on a variety of other factors. As a result, PR produces relatively small districts and relatively high party fragmentation in some countries, and the opposite in others. This country-dependent impact of electoral proportionality may have given rise to the ambiguous findings of many previous studies relating electoral rules to public policy outcomes.[2] Therefore, I argue here that, if we seek to understand the influence of electoral system characteristics on governmental decision-making, we must examine party fragmentation and electoral district size separately.

My second contribution in this paper is to provide one of the most comprehensive empirical tests yet undertaken of the cross-national relationship between political institutions and budget deficits. Previous scholars have tested their contentions primarily with data from the OECD countries and, to a lesser extent, Latin America. Further, many of these tests have not drawn observations from a very wide swath of years. In this paper, I look at all democracies from 1975 to 2000. With allowances for the significant holes in data availability, I include in my dataset 853 observations coming from 66 different countries for an average of 13 years each.[3]

Such a comprehensive dataset is especially useful because it allows an evaluation of the theory's relevance for both rich and poor democracies. I use this broad empirical model to test my theoretical propositions and to provide some initial evidence for the generalizability of other arguments prevalent in the literature.

In the next section, I provide a summary of what we already know about the relationship between domestic institutions and budgetary outcomes. I then develop my own theory that relates electoral district size and number to budget deficits, placing it within the context of the prior literature. In the fourth section, I discuss my data and methods for the empirical test, and, in the fifth section, I present and discuss the results. In the paper's final section, I draw some conclusions and implications from the research.

The Literature: Political Institutions and Deficit Spending

Scholars have sought explanations for deficit spending in government fragmentation, fiscal process fragmentation, or government turnover. Theories relating the first two of these institutional characteristics to deficits generally rely on similar logical foundations. Typically, they begin by recognizing that government budgets are common pooled resources and balanced budgets a public good (eg. Roubini and Sachs 1988, Roubini and Sachs 1989, Volkerink and de Haan 2001, Hallerberg and von Hagen 1999, Hallerberg 2004).[4] Sustained balanced budgets can have a variety of beneficial effects on a country's aggregate economic welfare. Most importantly, they can help sustain a high level of savings, contribute to a future growth in national income, and maintain balance in the current account (Gale and Orszag 2003, Yellen

1989). Developing countries that practice fiscal responsibility are also less likely to suffer from capital flight than their more profligate counterparts.

As governments seek to capture these benefits by balancing their budgets, however, they often run headlong into a collective action problem. In countries with a decentralized policy environment, a number of influential individuals (whether cabinet ministers, legislators, or other actors) have significant influence over the budget. In such systems, each influential official has an incentive to direct as much spending as possible to her constituents, but no single individual has final authority over the total amount spent. A prisoner's dilemma game ensues, with no player wanting a budget deficit but each unwilling to relinquish unilaterally the piece of the fiscal pie that he has won.

Conversely, when budget-making is centralized, overcoming the collective action problem and providing a balanced budget is significantly easier. In this situation, final authority over the budget is in the hands of one individual (or at least a small number of individuals). This individual is presumably responsive to the national interest in maintaining a balanced budget and is also empowered to put an end to any fiscal free riding.

Using this logic, political scientists and economists have argued that budget deficits are more likely in countries with fragmented or decentralized governments. This fragmentation may take a number of forms. For example, many scholars have identified a relationship between governing coalition size and budget deficits (Roubini and Sachs 1988, Roubini and Sachs 1989, Volkerink and de Haan 2001, Hallerberg and von Hagen 1999, Kontopoulos and Perotti 1999). The argument here is simple; the more political parties are represented in a governing coalition, the more participants there will be in the budget process. If several parties are needed to maintain a government's parliamentary majority, it will be difficult even for a prime minister to

reign in spending. As a result, the collective action problem highlighted above will not be overcome.[5]

Examining a related form of government fragmentation, Volkerink and de Haan (2001) identify a relationship between the number of parties in a country's legislature and the probability that the country will run a budget deficit. Likewise, Edin and Ohlsson (1991) find that minority parliamentary governments are more likely to engage in deficit spending, while Volkerink and de Haan (2001) extend that argument to governments with very small majorities. Franzese (2002) argues that presidential democracies are less prone to deficit spending than parliamentary democracies because they empower an executive with a national constituency. These findings indicate that weak governments, greater party system fragmentation, and parliamentarianism may lead to a decentralized budget process and a reduced chance of overcoming the fiscal collective action problem.

In a similar vein, Hallerberg and Marier (2004) show that, in Latin American presidential systems, a strong executive is necessary to tame legislative spending when party and electoral rules provide an "incentive to cultivate a personal vote".[6] In other words, when factors such as candidate selection encourage party decentralization, higher budget deficits will tend to result unless a strong executive is present to provide centralized leadership. Nielson (2003) and Hankla (Forthcoming), in a related finding from the trade literature, argue for a direct relationship between party decentralization and protectionism.

Turning their attention from the broader institutions of government, other scholars have focused on the more specific issue of fiscal process fragmentation. Taking as their starting point the common pooled resource logic, these political economists have found evidence that budget deficits are higher when there are more spending ministers in a country's cabinet (Kontopoulos

and Perotti 1999, Volkerink and de Haan 2001) and when finance ministers are weak (Hahm, Kamlet, and Mowery 1996). Hallerberg (2004) seeks to integrate this research with the literature on government fragmentation. In a series of essays, he argues that European countries with high levels of party competition generally produce balanced budgets. Within this high competition group, however, the precise strategy that a country uses to overcome deficit spending will vary according to the nature of its party system.

Beyond government and fiscal process fragmentation, researchers have also considered the potential role of rapid government turnover in generating budget deficits (Roubini and Sachs 1988, Grilli, Masciandaro, and Tabellini 1991, Franzese 2002). They have argued that, when a government's expected tenure in office is short, political leaders have relatively short time horizons. Consequently, they have an incentive to spend as much money on their constituents as possible while leaving future governments holding the fiscal bag. In other words, when government turnover is rapid, political leaders expect to be safely out of office when the economic consequences of their deficit spending finally surface. The inverse is true of politicians with longer expected tenures in office. These leaders know that they may still be in office to be blamed if their spending policies do economic damage.

The Literature: Electoral System Characteristics and Public Policy

Political scientists and economists have examined the influence of electoral system characteristics on a variety of policy outcomes, but some of the literature's findings remain ambiguous. For example, in his examination of trade, Rogowski (1987) argues that democracies with large, proportional electoral districts generally have lower barriers than those with small,

single-member districts. For him, large electoral districts tend to dilute the influence of protectionist interests, which are often geographically concentrated. Likewise electoral system proportionality, which Rogowski fully associates with large district size, tends to produce highly disciplined parties with an incentive to provide the public good of free trade. By contrast, Mansfield and Busch (1995) dispute the one-to-one relationship between proportional representation and free trade, arguing that it is mediated by country size and macroeconomic conditions. As a result, they argue that majoritarian institutions can, in some instances, produce more liberal outcomes than proportional institutions.

For the most part, scholars of public finance have used electoral rules to explain the composition and level of a government's spending rather than its propensity to run a deficit. For example, researchers have found that proportional electoral systems encourage more spending on public goods than do majoritarian electoral systems, which tend to emphasize private goods (Persson and Tabellini 2000, Lizzeri and Persico 2001, Milesi-Ferretti, Perotti, and Rostagno 2002, Persson and Tabellini 2003). Persson and Tabellini (2000, 2003) also associate proportional electoral systems with more overall spending, while Edwards and Thames (2005) contend that countries with mixed electoral systems are likely to spend the most, as they must provide both public and private goods.

In the budget deficit literature itself, researchers have tended to view electoral rules as influencing government behavior primarily through their impact on party systems and governing coalitions. As we have seen, the evidence indicates that party fragmentation, as well as rapid government turnover, leads to a higher incidence of budget deficits. Further, scholars of political institutions have long noted that party systems are more likely to be fragmented and government tenure is likely to be shorter when legislators are elected under proportional rather than

majoritarian rules (e.g. Duverger 1954, Lijphart 1999). Proportional electoral systems allow parties to win legislative seats with a smaller percentage of the vote than do majoritarian systems, often leading to more partisan diversity in governing coalitions and legislatures. The ideological diversity that results frequently complicates the maintenance of government stability, increasing the chances of rapid turnover.

These observations have led many scholars to argue that democracies using proportional representation (PR) tend to have higher budget deficits and lower budget surpluses (e.g. Roubini and Sachs 1988, Grilli, Masciandaro, and Tabellini 1991, Alesina and Perotti 1999, Persson and Tabellini 2003). An impressive cross-sectional analysis by Persson and Tabellini (2003) provides empirical evidence for this position, although ambiguous results from the larger cross-sectional, time-series component of their book call this finding somewhat into question.[7]

The Theory: Political Parties and Deficit Spending

I present in this section a more nuanced understanding of the impact of electoral system characteristics on deficit spending, one that may help explain the ambiguous results mentioned above. It is true that the literature identifies a clear link between party system fragmentation and budget deficits. It is also true that decades of research, beginning with Maurice Duverger's classic 1954 treatise, have confirmed the association of electoral proportionality with party system fragmentation. I do not dispute these findings. However, I contend that another consequence of electoral system proportionality – its association with large electoral districts – must not be ignored.

Indeed, I argue here that democracies with a few large electoral districts (relative to population) will tend to engage in less deficit spending than democracies with many small districts. To put it differently, I contend that countries whose legislatures are elected from a small number of large constituencies are better able to overcome the collective action problem that impedes balanced budgets. When legislators in a democracy are elected from a few large districts, they represent sizeable constituencies that are not likely to be dominated by a single special interest. As a result, each elected representative will be forced to consider the interests of a wide variety of groups when deciding a political course of action. By contrast, when legislators are elected from many small districts, each of them will represent a small number of special interests. The needs of these special interests will therefore be an important consideration for the elected officials in their political decision-making.

As a result, when political leaders are elected from larger districts, they have a greater incentive to consider economic policies that benefit the broader interest. One such economic policy is fiscal responsibility; a balanced budget, as I have noted, can help improve national saving and raise future national income. The larger an elected official's district, the harder for her to satisfy all relevant constituent groups with private financial transfers. Likewise, the larger her district, the more the district's joint interests approximate the national interest in a balanced budget.

When legislators are elected from numerous small districts, on the other hand, they will be tempted to build political support by transferring funds to the special interests that dominate the constituency. These transfers will be likely to happen at the expense of achieving a balanced budget. Furthermore, the presence of more elected representatives in a parliament or legislature

will increase the number of potential participants in the budgetary process, exacerbating the free-rider problem.

An analysis of the United States senate, where district size varies by state, can help illustrate this concept. Bailey and Brady (1998) have shown that senators from heterogeneous states are freer to pursue policies in keeping with their party ideologies than senators from homogenous states, who must appease specific constituent interests in order to be reelected. Larger districts are of course more likely to be heterogeneous, and their elected representatives will likely be unable to provide particularistic benefits to all of their constituents. As a result, while they might individually prefer balanced budgets, these politicians will have an incentive to free-ride on the fiscal concessions of others, leading to deficits.

While Rogowski (1987) has presented a similar argument in his classic examination of trade policy, I am aware of no previous study that has considered electoral district size or number as a factor in deficit spending. Furthermore, Rogowski considers electoral system proportionality and electoral district size to be directly related, and so does not evaluate whether they might have different effects. Indeed, to my knowledge, no prior study has attempted to parse out systematically the differing, and potentially contradictory, ways in which electoral rules may influence policy-making.

My analysis suggests that PR can tend toward budget deficits through its impact on party fragmentation, but can also tend towards budget surpluses through its link to large electoral districts. To avoid mixed results, I believe that the two potential tendencies of electoral system proportionality must be analyzed separately, both theoretically and empirically. Such an approach is possible because the association between proportionality, party fragmentation, and electoral district size is not perfect. While systems with a high effective number of parties also

tend to have large electoral districts, there are also democracies with fragmented party systems and many smaller districts (e.g. India) and democracies with relatively cohesive party systems and a few larger districts (e.g. Colombia, Austria). Table 1 presents correlation coefficients measuring the relationship among electoral system, the effective number of legislative parties, and electoral district number. It shows the expected association between electoral system proportionality, a small number of large districts, and multiple legislative parties, but also demonstrates that these relationships are not deterministic.

Insert Table 1

Several factors may account for the imperfect association of district number and effective number of legislative parties. For example, as scholars of the social origins of parties have long argued, party systems reflect salient societal cleavages as much as they reflect ballot rules (Neumann 1956, Lipset and Rokkan 1967, Kitschelt et al. 1999). A country with a highly proportional electoral system and large districts may still have two major parties if only one significant cleavage is present in its society. Neto and Cox (1997), for example, argue that, in countries with proportional electoral systems, an increase in salient social cleavages will lead to an increase in effective parties.[8]

Likewise, as Chhibber (1999) has pointed out in his analysis of India, even countries with majoritarian electoral systems and small districts (relative to population size) can have highly fragmented party systems when regional identities are politically salient. In such a case, Duverger's law may operate at the district level, but different parties may compete in each district, leading to fragmentation at the national level. Finally, specific institutional features of

countries, such as the number of seats in their legislatures, may influence district number and party fragmentation independent of electoral system proportionality. In any case, the necessary empirical variation exists to discuss party system fragmentation and electoral district size separately, an approach which will allow us to appreciate their independent impacts on budgetary politics. The insights thus gained may also be useful in helping to explain other public policies such as trade. They can help move the literature beyond simple tests of electoral system type, which may produce contradictory findings, and towards more nuanced examinations of party system and electoral district characteristics.

Data and Methods

I test my argument with a very broad dataset that includes all democracies from 1975 to the present. The analysis, somewhat restricted due to data availability, considers 853 observations – 66 countries for an average of 13 years each. Examining all democracies for which data are available, and across a reasonably wide swath of time, is, I believe, an important empirical contribution to the literature. Most studies of the political economy of deficit spending have focused on the OECD countries, a group consisting primarily of rich democracies with parliamentary institutions.[9] It is true that I consider here only democracies, as my theory requires an electoral element to be valid. Nevertheless, I examine representative governments of all income levels, from the poorest African and Asian states to the richest European ones. I also examine countries that use a wide variety of political institutions, including those with proportional and majoritarian electoral systems and those with parliamentary and presidential executive arrangements. This broad empirical examination provides a more extensive test of the

generalizability of my theory than would a more geographically limited study. It also allows me the opportunity to say something preliminary about the global relevance of other explanations common in the literature.

For my dependent variable, I make use of each country's total national budget surplus divided by its gross domestic product (GDP) and multiplied by one hundred. A negative surplus is of course a deficit. A variety of measures have been used in the budget literature, from reported deficit values to per capita changes in net public debt. I adopt this measure because it is a direct measure of each country's budget balance, it is available for a large number of country-years, and it comes from a reputable source – the International Monetary Fund (2006). Dividing each country's budget surplus by the size of its national economy is necessary because, for example, a $1 million deficit means something different to a country with a $10 million economy than to a country with a $10 billion economy.

I use the total number electoral districts in a country's lower house (controlling for national population) to measure my key independent variable – electorate district size. The more electoral districts in a democracy, the smaller the population of each district is likely to be. I calculate this variable by dividing the total number of legislators in a country's lower house by the country's mean district magnitude.[10] For one of my robustness tests, I also compute the average population of each electoral district by dividing each country's national population by its district number and then taking the natural log. I expect electoral district number to be negatively associated with budget surpluses and electoral district size to be positively associated.

To measure the role of government fragmentation in increasing the likelihood of deficit spending, I include four dummy variables in the model.[11] The variable "presidential divided" is coded "1" in the presence of divided presidential government, and "0" otherwise.[12] The variable

"parliamentary majoritarian" is coded "1" in the presence of a majoritarian parliamentary government, and "0" otherwise.[13] The variable "parliamentary coalition" is coded "1" in the presence of a coalition parliamentary government, and "0" otherwise.[14] Lastly, the variable "parliamentary minority" is coded "1" in the presence of a minority parliamentary government, and "0" otherwise.[15] All four of these variables are coded "0" in the presence of a unitary presidential government, my omitted category.

Why do I include information about the form of a country's government when operationalizing party fragmentation? It is well understood that the effect of party fragmentation in a country's legislature depends sensitively on its legislative-executive arrangements. In parliamentary systems, legislatures must choose and support the government, whereas in presidential systems they have no such function. As a result, fragmented legislatures will only produce diverse coalition governments in parliamentary systems. Further, as Huber (1996) has shown, the need to maintain support for a government can have important repercussions for party discipline in parliamentary systems. For these reasons, and many others, it is possible to consider the impact of party fragmentation only in the context of form of government.

The literature leads us to expect that all four of the variables will be negatively associated with budget surpluses, and that the variable "parliamentary coalition" will have the highest coefficient. The omitted variable is "presidential unitary," and, as I have already discussed, most research indicates that such systems should be the least likely to engage in deficit spending. Parliamentary systems with fragmented, coalition governments, on the other hand, should be the most likely to engage in deficit spending. The other three systems should be somewhere in between these two extremes.[16]

I also estimate a model using only a three-way variable measuring electoral system and a dummy variable coded "1" for parliamentary systems.[17] In code the electoral system variable "0" when a country uses a PR system, "1" when it uses a mixed system, and "2" when it uses a majoritarian system. This analysis allows me to test whether a single measurement of electoral system proportionality is preferable to my system of measuring district size and party fragmentation separately. I expect the country-specific effects of electoral system to generate an ambiguous, insignificant finding for the variable. By contrast, following Franzese (2002), I expect the parliamentary system dummy to co-vary negatively with budget surpluses.

To operationalize government turnover in each of my country-years, I make use of the political system's "electoral volatility".[18] Electoral volatility is the average partisan turnover in legislative seats from one election to the next (Mainwaring and Scully 1995). It is a good measure of the probability of government change because it captures the average reliability of voting support enjoyed by political parties in each system. When the parties that make up a governing coalition do not enjoy stable voting support, they will expect their tenure in office to be short, creating (perhaps) an incentive to pass deficits on to future leaders. I compute electoral volatility by summing the absolute value of the differences in lower house seats won by each party across the two elections and dividing by two. I then take the result and divide it by the number of years between each set of elections, thereby ensuring *ceteris paribus* that electoral volatility will be higher in systems with frequent elections. Finally, I enter this number as the country's electoral volatility for every year until the next election. If the literature is correct, this variable should be negatively associated with budget surpluses.

I also include in the model several variables meant to capture some additional political determinants of deficit spending identified by the literature. I operationalize party centralization

as the power of party leaders to control access to the ballot in national legislative elections. This measure is the "ballot" variable introduced by Carey and Shugart (1995) to explain better a legislator's "incentive to cultivate a personal vote."[19]

My variable "party decentralization 1" is coded "1" when party leaders have nomination power but voters can reorder the list, and "0" otherwise. Similarly, my variable "party decentralization 2" is coded "1" when party leaders have almost no control over ballot access, and "0" otherwise. Country-years coded "1" for "party decentralization 1" are therefore characterized by moderately decentralized parties, whereas country-years coded "1" for "party decentralization 2" are characterized by highly decentralized parties. Country-years where parties were centralized received a "0" for both variables. I expect both variables to be negatively associated with budget surpluses.

While Carey and Shugart (1995) developed a coding scheme for the variable that I use here, they only coded it for a few illustrative countries. I have therefore compiled, to my knowledge, the first broadly cross-national and cross-temporal dataset of this variable.[20] This coding constituted a very complex data task, as locating information on party nomination procedures across all democracies, and especially across three decades for each democracy, is difficult. I have made use of a wide variety of sources to complete the coding, and have triangulated results wherever possible.[21]

To test for the importance of ideology on deficit outcome, I include a dummy variable coded "1" in the presence of a leftist governing party.[22] Volkerink and de Haan (2001) and Oatley (1999) find some evidence that leftist governing parties are more likely to run budget deficits than rightist governing parties, but Hahm, Kamlet, and Mowery (1996) find no relationship.

Likewise, to test for the presence of a political-business cycle in deficit spending, I make use of a variable coded "1" if an election occurs in that year.[23] If governments are spending more to reduce unemployment and improve growth immediately prior to elections, we would expect this variable to be negative and significant. Next, I include in the analysis a measure of the ability of legislatures and other institutions to constrain the executive. This variable, coming from Marshall and Jaggers (2000), takes a coding from "1", indicating a highly independent executive, to "7", indicating a highly constrained executive. When executives are able to exercise unconstrained power, they may be better able to overcome the collective action problem and discipline spending.

To test for the regional spread of ideas and economic conditions, I estimate one of my robustness tests with dummy variables for each of the regions of the world.[24] Finally, to control for development bank conditionality, I generate a dummy variable coded "1" when a country is a net recipient of funds from either the World Bank or the IMF in a particular year.[25] Each of my political variables (except "election year") is lagged one year vis-à-vis the dependent variable. I summarize the characteristics of these variables and their expected relationships with budget surplus in Table 2.

Insert Table 2

I also include in the analysis a series of economic variables. I control for a country's development status with its logged GDP per capita and for its potential welfare burden with the percentage of its population over 64 years old. Further, I use a variable measuring each country's annual percentage change in GDP to control for economic shocks. I also include the

total value of a country's trade divided by its GDP to control for a country's sensitivity to world markets, and logged annual percentage changes in each country's exchange rate with the United States dollar to measure changes in the value of traded goods. Further, I make use of the logged national population for each observation to control for country size when electoral district number is also included in the model.[26]

Finally, to wash-out the potentially important effect of world energy prices, I include in the models the interaction of the value of domestic energy production and world oil prices (as a proxy for the overall value of energy resources).[27] Countries with high domestic energy production should be more likely to have surplus budgets when energy prices are elevated, and I therefore expect the interactive variable to be positively associated with budget surplus. On the other hand, when domestic energy production is low and world oil prices are high (represented by the "price of oil" variable), I expect budget deficits to be greater. Finally, when the world price of oil is low and domestic energy production high (represented by the "energy production" variable), budgets should either be in deficit or there should be no discernable impact. I provide information about the economic control variables in Table 3.

Insert Table 3

To ensure the validity of my primary model, I estimate it with three different statistical techniques – random effects regression, fixed effects regression, and maximum likelihood estimation (MLE). Further, to evaluate the robustness of these results, I use random effects regression to estimate an additional three models with alternate specifications of certain key variables. One of these models, the third, tests for the impact of electoral system proportionality

independent of electoral district size, party fragmentation, and government turnover. When estimating each of my models, I include a lagged dependent variable on the right side of the equation to correct for any first-order autocorrelation that may be present.

There are advantages and disadvantages to using each of the three statistical techniques that I adopt. Given the nature of my data, I believe that the most appropriate technique is random effects regression, and I therefore use it both for my primary model and for each of my robustness tests. Unlike a simple OLS estimator with panel corrected standard errors, this approach recognizes that there may be effects on the dependent variable specific to each cross-section.[28] On the downside, however, it makes the dubious assumption that these effects are distributed randomly.

In practice, estimating specific country effects, as in fixed effects regression, is generally preferable to making the assumption of random distribution. However, much of the interesting variation in my data is cross-national, and fixed effects regression has the major drawback of emphasizing cross-temporal variation when computing the coefficients. As a result, while fixed effects regression minimizes the bias caused by omitted variables, it also washes out some potentially interesting variation from my model. Finally, making use of maximum likelihood estimation, a completely different technique, has the benefit of reducing errors that may result from any non-linearity in my hypothesized relationships. If my results are unchanged when each of these statistical techniques is used, and if they are robust to the battery of alternate operationalizations to which I subject them, it is highly likely that they reveal a genuine relationship.

Results

I present the results of my primary empirical models in Table 4. The analyses provide strong support for the role of electoral district number and size in encouraging deficit spending. They also provide evidence that another factor related to electoral system proportionality – party fragmentation – can have the opposite impact on fiscal behavior. They do not, however, support the role of government turnover in generating budget deficits. These results are strikingly robust regardless of the statistical technique used to estimate them.

Insert Table 4

District number, controlling for each country's population size, is in the expected direction and strongly significant in each of the three models. The coefficient of the random effects model indicates that an increase of one electoral district produces on average a .003% decrease in budget surplus (or increase in budget deficit) as a percent of GDP. The impact of district number on budgetary politics is therefore important; on average, an increase of one standard deviation in a country's electoral district number will lead to a 0.48% increase in deficit spending/GDP. This effect is estimated to be an incredible twelve times greater by the fixed effects model. If we take the fixed effects results, therefore, an increase in district number of one standard deviation leads to an average reduction of 5.7% in surplus spending as a percent of GDP. Given the range of the dependent variable, this is a very strong effect. The statistical model therefore provides robust support for my argument.

Turning to the four dummy variables measuring party fragmentation and form of government, the results provide some support for the arguments found in the literature. The "parliamentary coalition" variable is significant in the expected direction for two of the three models, and it also has the largest coefficient among the dummies. The insignificance of "parliamentary coalition" in the fixed effects model and the similarity of its coefficient with that of "parliamentary majoritarian" should give us some pause when drawing a firm association between party fragmentation and budget deficits. Nevertheless, I believe that the evidence broadly supports the common contention that fragmented governing coalitions will tend to produce more deficit spending than other forms of democratic government.

In two of the three models, the "parliamentary minority" and "parliamentary coalition" variables are significant in the expected direction, indicating that these systems are more likely to generate deficits than unified presidential governments, the omitted variable. The dummy for presidential divided government is not significant, perhaps because of the rarity of such systems in my dataset; its predicted effect is, however, in the expected direction. These findings support Franzese (2002) in pointing to a clear relationship between parliamentary systems and deficit spending.

Interesting, my models provide no support for another contention commonly found in the literature, that government turnover produces higher budget deficits. The phenomenon of government turnover, closely related to electoral system proportionality, is measured indirectly here with electoral volatility. That variable remains steadfastly insignificant in each of my three primary models, but more research will need to be done before we can conclude that there is no effect.

What do the models reveal about some of the other political variables highlighted in the public finance literature? The "party decentralization 1" dummy, measuring moderate decentralization and the "incentive to cultivate a personal vote" (Carey and Shugart 1995) is significant and in the expected direction in two of the three models. The "party decentralization 2" variable, on the other hand, lacks significance in the random effects and MLE models, and is dropped from the fixed effects model due to its time invariance. These results, taken together, provide moderate support for the relationship between party decentralization and budget deficits.

Strangely, the executive constraint variable is positively associated with budget surpluses in each of the three models, a relationship that is significant at the 1% level. It may be that this variable is picking up the effects of democratic consolidation, as it is generally coded "7", the maximum level of constraint, for all types of established democracies. I find no support for the impact of governing party ideology on the tendency to run-up deficits. These results are in keeping with the findings of other studies questioning the impact of leftist ideology (Hahm, Kamlet, and Mowery 1996) on fiscal profligacy. While a governing party's belief system is no doubt important when explaining the type and even the level of public spending, it does not seem to impact deficits.

As expected, the dummy "election year" is significant and negatively associated with budget surpluses; this relationship is present across all three of the models. It supports the existence of a political-business cycle, with governments ramping-up public spending just before elections to build political support. The results also indicate that participation in an IMF or World Bank program promotes fiscal restraint, with the "World Bank/IMF" dummy strongly significant in each of the models.

The results for the economic control variables also reveal some interesting information. The price of oil interacted with domestic energy production is significant and positively associated with budget surplus, as expected. Of the two components of that variable, only "price of oil" is separately significant and only in one of the three estimations. The variable "trade/GDP" is statistically significant and positively associated with budget surpluses in two of the models, a finding that is consistent with the literature (Persson and Tabellini 2003). My measure of GDP per capita is significant at the 1% level in all three models, but co-varies positively with surpluses in the random effects and MLE models and negatively with surpluses in the fixed effects model. The results for the first two models indicate that richer states are more likely to run budget surpluses, an intuitive finding. The results for the fixed effects model are more surprising, but no doubt reflect its emphasis on cross-temporal variation; they indicate that, within the same country, an increase in national income leads to an increase in deficit spending. Perhaps this result reflects a temptation to overspend in economic good times.

The variable measuring change in exchange rate is negative and highly significant across all of the models. This result indicates an association between currency depreciation and budget deficits, perhaps due to the rising cost of foreign goods. Economic crises, as measured by change in GDP, have no discernable impact on budget deficits, but logged population, inserted to clarify the impact of electoral district number, is significant and positively related to surplus spending in two of the models. Finally, the percentage of a country's population over 64 years old is significantly related to deficit spending in each of the models, indicating that governments with aging populations suffer from greater fiscal stress.

Insert Table 5

What do the additional robustness tests reveal about the relationship between electoral district size and deficit spending? The first model substitutes "electoral district population" for "electoral district number" and the population control. The results are essentially the same as for the primary models, with "electoral district population" significant and co-varying positively with deficit spending. Likewise, the results for the dummy variables measuring party fragmentation and form of government, as well as the results for all of the control variables, support the same conclusions drawn from the primary models. The second robustness test replicates the primary model with the addition of a series of regional dummy variables. This addition has no discernable impact on the results.

The final robustness test is perhaps the most interesting. It substitutes the variables related to electoral system proportionality – electoral district number, electoral volatility, and the four party fragmentation dummies – with simple measures of electoral proportionality and form of government. I describe these new measures, "electoral system" and "parliamentary system", in the previous section. As expected, the variable "electoral system" is insignificant, providing evidence for my proposition that the independent, and sometimes contradictory, implications of proportionality should be measured separately. The insignificance of the variable does not indicate irrelevance; rather, it provides evidence that the mixed and contradictory effects of electoral system are, in effect, cancelling each other out. Interestingly, the "parliamentary system" dummy is significant in the expected direction, supporting the notion that presidential systems are less inclined toward deficit spending.

Conclusions

The insights generated by prior studies on the political economy of deficit spending are impressive but incomplete. In this paper, I contribute in two important ways to our understanding of the political causes of budget deficits. First, I present a new theory linking electoral district size with fiscal outcomes and argue that the impact of electoral system proportionality on deficit spending is multidimensional. Second, I test my theory (and, preliminarily, other theories) with a much broader empirical model than those generally used to examine arguments in public finance. The quantitative analysis strongly supports the argument that countries with a few large electoral districts will be less inclined to overspend than countries with many small districts. The results also support the association of party fragmentation, parliamentary systems, election year cycles, and party decentralization with deficit spending, and the role of development bank programs in supporting balanced budgets. Preliminarily, they provide no support for the role of legislative and government turnover in fiscal profligacy, but more expansive and direct tests will be needed to confirm this finding.

Moreover, the research also indicates that two institutional features related to electoral proportionality – party fragmentation and large district size – can have contradictory impacts on budgetary outcomes. This finding helps bring to light the complex impact of electoral proportionality on deficit spending, a theoretical development that has the potential to greatly improve our understanding of policy formation in a variety of areas. On the empirical side, the project helps pull developing countries and diverse democratic institutions into a literature that has centered on explaining the behavior of wealthy, parliamentary systems. As our knowledge of the determinants of fiscal profligacy expands, we will be in a better position to advise

governments and development banks in the creation of budgetary institutions. We will also understand better the exercise of one of the most important responsibilities of government – deciding how to spend public resources. It is hoped that this paper can help take the literature another step in that direction.

[1] Electoral proportionality is the extent to which the legislative seat share of parties reflects their percentage vote share in the electorate. See Powell 2000 and Lijphart 1999.

[2] In the trade literature, for example, compare the findings of Rogowski 1987 and Mansfield and Busch 1995. In the budget literature, compare the statistical findings of Persson and Tabellini 2003 in their cross-sectional and cross-sectional, time-series models.

[3] To my knowledge, the only broader quantitative examination of the role of political institutions on budget deficits is Persson and Tabellini 2003. Mukherjee 2003 and Persson, Roland, and Tabellini 2000 examine a wide variety of countries, but they use their data to explain government spending.

[4] For more on common pooled resource problems and collective action problems, see Olson 1971 and Ostrom 1990.

[5] Hahm, Kamlet, and Mowery 1996 dispute this finding.

[6] This concept was developed and measured by Carey and Shugart 1995.

[7] Their cross-sectional, time-series analysis indicates that exogenous shocks may actually increase budget deficits more in majoritarian than in PR systems, or at least that the impact is ambiguous.

[8] See the discussion of this point in Hallerberg 2004.

[9] An important exception is Persson and Tabellini 2003.

[10] The data for total legislative seats are from Henisz 2003, and the data for mean district magnitude are from Beck et al. 2001 and Wallack et al. 2003. I merge these last two datasets where possible to achieve the largest number of available N's.

[11] Due to data availability, I am not able to test arguments about fiscal process fragmentation in this model.

[12] For my purposes, a divided presidential government is one where the executive is popularly elected and where the president's party does not enjoy a majority in the lower legislative house.

[13] For my purposes, a majoritarian parliamentary government is one where the government is selected by the legislature and a single party controls more than 50% of seats in the lower house.

[14] For my purposes, a coalition parliamentary government is one where the government is selected by the legislature, no single party controls 50% of lower house seats, but the government coalition enjoys a parliamentary majority.

[15] For my purposes, a minority parliamentary government is one where the government is selected by the legislature and the government coalition does not enjoy a parliamentary majority. All of these four variables are computed using data from Beck et al. 2001.

[16] Edin and Ohlsson 1991 also find evidence that parliamentary systems with minority governments should have a strong proclivity towards deficit spending, but parliamentary coalition systems have received much more attention in the literature.

[17] The data come from Beck et al. 2001.

[18] I compute this variable myself using data from Henisz 2003, Beck et al. 2001, and Inter-Parliamentary Union 1973-2000.

[19] Carey and Shugart 1995 propose three variables to measure a legislator's "incentive to cultivate a personal vote." Hallerberg and Marier 2004 make use of all three of these variables to explain budget deficits in Latin America. I only consider party ballot control here because, due to data availability, it was impractical to code all three of the variables for wider swath cases that

I consider. Further, unlike Hallerberg and Marier 2004, I do not interact the variable with executive constraint.

[20] Hallerberg and Marier 2004 and Nielson 2003 have coded the "ballot" variable for a limited number of country-years. Wallack and her colleagues (2003) have compiled it for a broader number of cases, but they used a significantly different coding scheme from the one proposed by Carey and Shugart 1995.

[21] John Carey, Kenneth Janda, and Robert Harmel provided advice on the coding. Among the data sources used to code this variable are Carey and Shugart 1995, Hallerberg and Marier 2004, Janda 1980, Delury 1987, Ware 1996, Inter-Parliamentary Union (1973-2000), and the web sites of national election authorities, IDEA, and the National Democratic Institute.

[22] This variable is taken from Beck et al. 2001.

[23] This variable is taken from Beck et al. 2001 and Henisz 2003.

[24] I use Polity country codes for the regional classification scheme.

[25] The data for this variable come from World Bank 2005.

[26] Data for all of these variables are taken from World Bank 2005.

[27] World oil prices are from British Petroleum 2003 and are converted to 1996 dollars. Domestic energy production is from World Bank 2005 and is a measure of the value of primary energy production in kilotons of oil equivalent.

[28] In any case, I do not have balanced panels, a precondition for normal regression with panel corrected standard errors. See Beck and Katz 1995.

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Table 1: Three Partially Related Variables

	Electoral System	Effective Number of Parties	Electoral District Number
Electoral System (0=PR, 1=Mixed, 2=Majoritarian)	1.00		
Effective Number of Parties	-.366	1.00	
Electoral District Number	.535	-.249	1.00

The variable Effective Number of Parties was developed by Laakso and Taagepera 1979. It is computed using data from Beck et al. using a formula from Lijphart 1999. See the "Data and Methods" section for information about the other variables. The numbers displayed are correlation coefficients. N=837.

Table 2: The Key Variables

Variable	How Computed	Range	Mean	Expectations (Y=Budget Surplus/GDP)
Surplus/GDP	(Total National Budget Surplus / GDP) X 100	-121 to 9.23	-2.78	N/A
Electoral District Number	Number of electoral districts for the lower house	1 to 659	97.1	Negative
Electoral Volatility	Average seat turnover by party between legislative elections	0 to .890	0.75	Negative
Presidential Divided	"1" = Divided presidential government	Dummy Variable	.120	Negative
Parliamentary Majoritarian	"1" = Majoritarian parliamentary government	Dummy Variable	.225	Negative
Parliamentary Coalition	"1" = Coalition parliamentary government	Dummy Variable	.297	Negative and with the highest coefficient of the four system dummies
Parliamentary Minority	"1" = Minority parliamentary government	Dummy Variable	.143	Negative
Party Decentralization 1	"1" = party nomination with voter control over ordering "0" = total party ballot control OR free candidate access to ballot	Dummy Variable	.237	Negative
Party Decentralization 2	"1" = free candidate access to ballot "0" = total party ballot control OR party nomination with voter control over ordering	Dummy Variable	.190	Negative
Executive Constraint	Degree of constraint on the executive	0 to 6	5.63	Negative
Leftist Government	"1" = Leftist government	Dummy	.324	Negative (?)
Election Year	"1" = Election Year	Dummy	.278	Negative
World Bank / IMF	"1" = Net receipt of funds from the IMF or World Bank	Dummy	.309	Positive
Electoral District Population	Natural log of the average population within each lower house electoral district	9.70 to 16.6	12.8	Positive
Electoral System	"0" = PR "1"= Mixed "2" = Plurality	0, 1, or 2	.639	Ambiguous
Parliamentary System	"1" = Parliamentary System	Dummy	.665	Negative

Table 3: Economic Control Variables

Variable	How Computed	Range	Mean	Expectations (Y=Budget Surplus/GDP)
Price of Oil X Energy Production	Price of Oil X Energy Production	.000129 to .997	.0816	Positive
Price of Oil	Price of oil per barrel in constant US dollars	12.6 to 68.3	30.5	Negative
Energy Production	Domestic production of primary energy in kilotons of oil equivalent	.00000696 to .0488	.00269	Negative (?)
Trade/GDP	(Total value of trade / GDP) X 100	12.3 to 226	64.8	Positive
Δ Exchange Rate	Natural log of the annual change in XR with the US Dollar	-.347 to 4.94	.144	Negative
lnGDPpc	Natural log of GDP per capita	5.38 to 10.8	8.97	Positive
Δ GDP	Annual percentage change in GDP	-.119 to .128	.0289	Positive
Pop Over 64	Percentage of the population older than 64	2.33 to 17.9	10.1	Negative
lnPop	Natural log of the population	12.3 to 20.7	16.3	Unknown

Table 4: Results of the Primary Empirical Models
Dependent Variable = Budget Surplus/GDP
N=853

Variable	Random Effects	MLE	Fixed Effects
Electoral District Number	-.003** (.001)	-.006** (.003)	-.036** (.017)
Electoral Volatility	.819 (1.93)	-.231 (1.95)	-2.58 (2.03)
Presidential Divided	-.127 (.646)	-.416 (.696)	-.469 (.740)
Parliamentary Majoritarian	-1.33** (.629)	-2.08** (.935)	-3.08** (1.53)
Parliamentary Coalition	-1.38** (.654)	-2.14** (.966)	-2.34 (1.52)
Parliamentary Minority	-.891 (.724)	-1.77* (1.02)	-2.58* (1.54)
Party Decentralization 1	-.603 (.493)	-1.71* (.921)	-8.60*** (1.64)
Party Decentralization 2	-.0511 (.507)	.201 (1.09)	Dropped
Executive Constraint	.743*** (.252)	1.58*** (.321)	2.15*** (.343)
Leftist Government	-.232 (.387)	-.043 (.428)	.500 (.461)
Election Year	-.921** (.381)	-.722** (.351)	-.614* (.344)
World Bank / IMF	3.98*** (.648)	3.74*** (.708)	3.10*** (.753)
Price of Oil X Energy Production	5.52* (2.89)	5.09* (2.98)	8.12** (3.36)
Price of Oil	-.016 (.014)	.000 (.014)	-.031* (.018)
Energy Production	-106 (83.3)	-73.0 (.820)	26.6 (84.7)
Trade/GDP	.007 (.007)	.041*** (.014)	.112*** (.021)
Δ Exchange Rate	-4.04*** (.461)	-5.78*** (.563)	-7.46*** (.552)
lnGDPpc	2.32*** (.335)	2.41*** (.504)	-6.27*** (2.14)
Δ GDP	5.88 (5.74)	-.357 (5.76)	-5.56 (5.81)
Pop Over 64	-.288*** (.080)	-.405*** (.139)	-.635** (.297)
lnPop	.315* (.170)	1.02*** (.356)	3.85 (3.00)

***p<.01, **p<.05, *p<.10 All tests are 2-tailed.
All analyses include a lagged dependent variable.
Standard errors are in parenthesis.

Table 5: Results of the Robustness Tests
Dependent Variable = Budget Surplus/GDP
N=853

Variable	Model 1	Model 2 (With Regional Dummies)	Model 3
Electoral District Number		-.003** (.001)	
Electoral District Population	.231* (.139)		
Electoral Volatility	.785 (1.93)	.109 (1.95)	
Presidential Divided	-.115 (.640)	-.046 (.656)	
Parliamentary Majoritarian	-1.32** (.626)	-2.00*** (.702)	
Parliamentary Coalition	-1.42** (.657)	-2.23*** (.754)	
Parliamentary Minority	-.863 (.722)	-1.51* (.826)	
Party Decentralization 1	-.476 (.494)	-.807 (.514)	.163 (.466)
Party Decentralization 2	.030 (.507)	-.106 (.552)	.261 (.519)
Executive Constraint	.738*** (.252)	.781*** (.264)	.127 (.266)
Leftist Government	-.273 (.390)	-.187 (.405)	-.002 (.396)
Election Year	-.932** (.381)	-.903** (.379)	-.868** (.392)
Electoral System			-.157 (.263)
Parliamentary System			-.901* (.513)
World Bank / IMF	4.05*** (.644)	4.59*** (.677)	2.84*** (.626)
Price of Oil X Energy Production	5.46* (2.89)	6.42** (2.92)	5.65* (2.95)
Price of Oil	-.017 (.014)	-.018 (.014)	-.025* (.014)
Energy Production	-106 (83.4)	-104 (82.9)	-105 (78.7)
Trade/GDP	.004 (.006)	.003 (.008)	.008 (.007)
Δ Exchange Rate	-4.01*** (.461)	-4.18*** (.467)	-3.18*** (.458)
lnGDPpc	2.32*** (.328)	2.46*** (.376)	1.63*** (.308)
Δ GDP	5.44 (5.73)	5.44 (5.83)	5.81 (5.37)
Pop Over 64	-.288*** (.079)	-.461*** (.128)	-.197** (.078)
lnPop		.385* (.213)	.139 (.149)

***p<.01, **p<.05, *p<.10 All tests are 2-tailed.
All analyses are random effects models with a lagged dependent variable.
Standard errors are in parenthesis.