Electoral Rules and the Size of the Prize: How Political Institutions Shape Presidential Party Systems

Allen Hicken University of Michigan
Heather Stoll University of California, Santa Barbara

This paper explores how political institutions besides electoral rules shape the presidential party system. Our focus is upon what we call the "size of the presidential prize": the degree to which authority is concentrated in the presidency vis-à-vis the legislature (horizontal centralization) as well as in the national level of government vis-à-vis the subnational levels (vertical centralization). We find a significant but nonlinear relationship between the horizontal centralization of authority in the presidency, operationalized either as an index of presidential powers or as regime type, and the presidential party system, operationalized as the effective number of presidential candidates. Specifically, for moderately powerful presidents, increasing presidential powers leads to fewer presidential candidates; however, for either extremely weak or extremely powerful presidents, increasing presidential powers produces a larger number of candidates. Further, we find that the substantive effect of horizontal centralization is generally larger than the effect of the electoral formula—heretofore the most discussed determinant. Our findings regarding vertical centralization, operationalized either as central government revenue as a percentage of GDP or central government revenue as a percentage of total government revenue, are similar to if weaker than our findings regarding horizontal centralization.

What are the factors that affect the number of candidates competing in presidential elections? While the comparative party and electoral systems literature has tended to focus on legislative elections, the presidential party (or candidate) system is important in its own right. At the simplest level, the number of presidential candidates in a race can affect who is elected, and by extension, which policies a government pursues. For example, when multiple candidates from the same side of the political spectrum compete against each other, they can open the door to victory for a candidate from the opposing side. In the 2002 French presidential election, the splintering of the vote among several leftist candidates resulted in the candidate of the radical right, Jean-Marie Le Pen, placing second behind the united mainstream right's candidate, Jacques Chirac. The second round of competition thus saw Chirac facing Le Pen and the left excluded, handing victory to Chirac. More generally, the larger the number of candidates competing for executive office, the better is the chance that a dark horse or outsider candidate will be able to secure an electoral victory. In the 1992 Philippine elections, Fidel Ramos became president after securing less than 24% of the vote. Ramos, a former army general, had no prior experience in elected office and headed a brand new political party formed just prior to the election. Still, in a field crowded with several viable presidential contenders, less than a quarter of the votes handed him a victory.

The number of presidential candidates is also important because of its influence on the legislative party system.[1] Where presidential and legislative elections are proximate, there tend to be fewer legislative parties, ceteris paribus (e.g., Jones 1994; Shugart 1995). However, the effect of proximate presidential elections is more accurately described as conditional on the number of viable presidential candidates (e.g., Amorim Neto and Cox 1997; Cox 1997; Golder 2006; Golder and Clark 2006; Mozzafar, Scarritt and Gladich 2003). Specifically, proximate elections only have a reductive effect on the legislative party system when there are few

[1]The influence of presidentialism upon legislative elections is a topic beyond the scope of this paper. While the arrow may also be reversed to run from legislative to presidential electoral contests, as initially posited by Shugart and Carey (1992) and elaborated upon by Amorim Neto and Cox (1997), this paper follows most scholars in assuming that such influence is generally negligible.

The Journal of Politics, Vol. 70, No. 4, October 2008, Pp. 1109–1127 doi:10.1017/S0022381608081097

ISSN 0022-3816

viable presidential candidates; with a large number of candidates, they conversely have an inflationary effect (Golder 2006). The legislative party system in turn has broad practical and normative consequences for a host of issues of interest to political science: for example, the quality of democratic representation (see Powell 2000) and the stability of public policies (see Tsebelis 1995).

For a variety of reasons, then, we might want to know about the determinants of the presidential party system. But while we know a great deal about the determinants of the legislative party system, there has been very little research into the factors that shape the number of competitors in presidential elections. Recently, this has begun to change: several scholars have launched an exploration of the role that presidential electoral rules and social heterogeneity play in determining the number of presidential candidates (e.g., Amorim Neto and Cox 1997; Cox 1997; Golder 2006; Jones 1999, 2004). In this paper, we seek to investigate other factors that help shape the presidential party system, specifically other *political institutional* factors. First, we study the effect of the centralization of policymaking authority in the presidency vis-à-vis the legislature on the number of presidential candidates. We label this *horizontal centralization* to distinguish it from Chhibber and Kollman's (1998, 2004) recent work that focuses on the distribution of policymaking authority between national and subnational governments, which we label *vertical centralization*. Second, we extend Chhibber and Kollman's argument about the effect of vertical centralization on the number of legislative parties to the realm of presidential elections. We argue that the degree to which power is concentrated in the national level of government (vertical centralization) and the degree to which power is concentrated in the presidency within the national level of government (horizontal centralization) should *together* determine the relative value of presidential office. We label the combination of these two factors the *size of the presidential prize*.

This leads us to the simple question that motivates this paper: does the size of the presidential prize affect coordination in presidential elections? We argue that it should, and based upon a quantitative analysis of all minimally democratic postwar presidential elections, our key finding is that it does. Specifically, we find a statistically significant curvilinear relationship between horizontal centralization and the number of presidential candidates: the number of candidates tends to be high where presidents are either moderately weak or extremely powerful, and low where they are either very weak or moderately powerful. Moreover, our results suggest that the degree of horizontal centralization of authority in the presidency has a larger substantive effect upon the number of presidential candidates than the heretofore most studied variable, the restrictiveness of the electoral system. By contrast, while we find that the effect of vertical centralization is similar to the effect of horizontal centralization, it is sensitive to a variety of modeling choices such as the specific measure employed. Our results have important implications for both comparativists and Americanists involved in the study of political institutions, as well as for constitutional engineers.

Literature and Hypotheses

There is every reason to expect that the number of candidates contesting presidential elections will reflect the incentives generated by the interaction between a country's electoral system and social heterogeneity. Indeed, several scholars have found that more restrictive electoral systems, e.g., those employing a plurality electoral formula, are associated with fewer presidential candidates than more permissive systems, e.g., those employing a majority run-off or dual ballot electoral formula (see, for example, Amorim Neto and Cox 1997; Cox 1997; Golder 2006; Jones 1999, 2004). To elaborate, consistent with Duverger's Law and the 'M+1' proposition (see Cox 1997; Reed 1990), restrictive electoral formulas such as the plurality rule push the number of presidential candidates towards two, given a district magnitude ("M") of one in presidential elections. In contrast, more permissive formulas offer less incentive for strategic coordination. For example, the relevant district magnitude for the dual ballot formula is the number of candidates that can legally qualify for the second round (Cox 1997, 123), not the actual district magnitude, and this number is at least two. Regardless, all of these electoral systems establish an upper bound on the number of candidates competing in the district in equilibrium. They only have a reductive effect when the natural number of candidates based on a country's social structure exceeds this upper bound (see, for example, Cox 1997; Golder 2006; Jones 2004).[2]

But are there other factors besides the electoral system and social heterogeneity that affect the number of presidential candidates? Surprisingly little attention has been paid to this question. With respect to nonpolitical institutional variables, scholars have identified other factors such as the presence of an incumbent

[2]However, while this theoretical argument for an interactive relationship between social heterogeneity and electoral rules is compelling, there is some disagreement in the literature about the empirical evidence for it (see, for example, Jones 2004; Stoll 2008).

(e.g., Jones 1999; Hicken N.d.) as determinants. With respect to political institutional variables, the focus of this paper, we are aware of no studies that either theoretically or empirically explore the relationship between nonelectoral political institutions and the number of presidential candidates. However, there is a literature that explores how nonelectoral political institutions affect *legislative* elections. Specifically, a growing number of scholars highlight the way in which the distribution of political authority in a polity shapes the incentives of actors to coordinate during legislative elections (e.g., Chhibber and Kollman 1998, 2004; Cox 1997, 1999; Hicken forthcoming; Hicken and Stoll 2007; Stoll 2005). Some of the most extensive work along these lines to date is by Chhibber and Kollman (1998, 2004), who focus on the distribution of political authority between national and subnational governments. They argue that the greater the centralization of policymaking authority at the national level of government, the stronger the incentives of both voters and elites to coordinate across districts in national legislative elections, resulting in fewer legislative competitors (i.e., parties). While existing studies of the distribution of authority between the national and subnational levels of government (which we dub "vertical centralization") focus on the legislative realm, the logic of the argument would seem to naturally extend to the presidential realm, although no one has yet offered such an extension. We do so here. A straightforward application of the logic would suggest a negative relationship between vertical centralization and the number of presidential candidates. Ceteris paribus, greater vertical centralization of authority at the national level of government provides stronger incentives to coordinate within the national presidential electoral district in order to capture the presidency, resulting in fewer presidential candidates.[3]

However, the concept of vertical centralization captures only a single dimension of the authority distribution within a political system. Polities can also vary in terms of the distribution of power *within* the national level of government. For example, Chhibber and Kollman (2004, 236) concede that if the policymaking role of the legislature varies, holding vertical centralization constant, then different degrees of coordination may obtain in legislative elections.[4] We thus have a second dimension of a country's authority distribution, which we dub its "horizontal centralization" (Hicken N.d.; Hicken and Stoll 2006; Stoll 2005). This too should have an effect on the number of presidential candidates. Akin to our earlier definition of vertical centralization, we define horizontal centralization as the degree to which policymaking authority is concentrated. However, the focus is now upon its concentration in the presidency (i.e., in the popularly elected chief executive) relative to other national level political bodies such as the legislature. The higher the *de jure* concentration of authority in the hands of the president, the higher the value that office should have for potential office holders, which in turn should shape the number of presidential candidates when other factors such as vertical centralization and electoral rules are held constant. Hence, one simple hypothesis in keeping with the prior argument about vertical centralization is that greater horizontal centralization of authority in the presidency provides stronger coordination incentives in the contest for presidential office, ceteris paribus, resulting in fewer presidential candidates. Together, the horizontal centralization of power in the presidency and the vertical centralization of power in the national level of government determine the overall payoff to capturing the presidency, which we label "the size of the presidential prize".[5]

However, we believe that these linear hypotheses paint too simple a picture of the relationship between each component of the size of the prize and the number of presidential candidates. Take the variable of horizontal centralization. Holding all else constant, in a country where the president is very weak vis-à-vis the legislature—i.e., where the president has a largely ceremonial role as the head of state—partisan interest

[3]Most presidential elections take place within a single, nationwide district, akin to the legislative elections of The Netherlands and Israel. The United States, with its state-based electoral college, is one of the few exceptions to this rule. Accordingly, the issue of party aggregation/cross-district coordination as defined by Chhibber and Kollman does not arise in most presidential elections because there are no districts to be formally spanned; however, informally, similar aggregatory processes are usually at work.

[4]The dominant approach in the literature has been to simply compare the number of (legislative) parties in parliamentary and presidential regimes (e.g., Lijphart 1999). Some studies have viewed this relationship as mediated by the presidential party system itself and the proximity of presidential and legislative elections (e.g., Amorim Neto and Cox 1997; Cox 1997; Golder and Clark 2006). However, it is well-known that neither all presidential nor all parliamentary regimes function according to the same logic (e.g., Shugart and Carey 1992; Tsebelis 1995). While we accordingly believe that the effect of presidentialism is undertheorized in studies of legislative elections, such a topic is beyond the scope of this paper (but see Hicken N.d. and Hicken and Stoll 2007).

[5]We paraphrase Cox (1997, 189) here, who hypothesized that presidential power (whether or not the presidency was a "big prize, worth considerable effort to attain") should be an important intervening factor in the link between presidential and legislative elections.

in the presidency may be low enough that the office will often be uncontested.[6] As presidential authority increases from this initially low level, more interest in the office should be generated, leading additional candidates to enter the race. But as long as the presidency remains relatively weak, i.e., as long as substantial policymaking authority is still vested in the legislature, all concerned (e.g., voters, donors, parties, and potential candidates) should not have sufficient interest in capturing the office to engage in strategic coordination in response to electoral system incentives. Hence, the number of candidates should increase as limited policymaking authority is given to a previously ceremonial president. As the relative authority of the president continues to grow, however, actors should begin to face incentives to coordinate their behavior in order to maximize their chances of capturing the increasingly valuable presidential prize. That is, as attention and resources are concentrated on the front-runners, weaker presidential candidates should have an incentive to exit the race (strategic entry), and voters should have an incentive to choose a candidate from amongst the front-runners, even if their first preference is for a less viable candidate (strategic voting). The net effect of this strategic behavior should be a reduction in the number of candidates. Once the presidency wields enough authority to generate coordination on two candidates, however, further increases in presidential power should have no additional effect.[7] A similar argument can be made for a nonlinear relationship between vertical centralization and the number of presidential candidates, which we do not make here in the interests of space.[8]

Accordingly, our argument implies that the number of presidential candidates should be a nonlinear function of both vertical and horizontal centralization. More specifically, it implies that in the function's dependency upon horizontal centralization, it should have two inflection points, and thus be at least a third degree polynomial in this variable. The same should hold for vertical centralization. This yields the following two hypotheses:

H1: The number of presidential candidates is at least a third degree polynomial function of horizontal centralization, ceteris paribus. Specifically, horizontal centralization is positively related to the number of presidential candidates at low levels of horizontal centralization; negatively related at medium levels; and unrelated at high levels.

H2: The number of presidential candidates is at least a third degree polynomial function of vertical centralization, ceteris paribus. Specifically, vertical centralization is positively related to the number of presidential candidates at low levels of vertical centralization; negatively related at medium levels; and unrelated at high levels.

Variable Operationalization and Measures

We now turn to an empirical test of our hypotheses. We operationalize our dependent variable, the number of presidential candidates, as is conventional: as the size-weighted number of presidential candidates. Specifically, we use the well-known effective number statistic of Laakso and Taagepera (1979), which is applied to the vote distribution for the presidential candidates in a given country and election.[9]

[6]In these circumstances, the candidate will often be an elder statesman or public dignitary. For example, Ireland has a ceremonial presidency. The current president, Mary McAleese, was reelected without opposition and with no political party affiliation in 2004. Before becoming president in 1997, she had served as the Pro-Vice Chancellor of the Queen's University of Belfast, capping off prominent careers in both journalism and academia. We note, however, that even ceremonial presidencies like Ireland's are not formally nonpartisan offices. Rather, the empirical observation that competition for such offices is often, but not always, nonpartisan is part of the puzzle to be explained. Specifically, our goal is to explain why and how the nature of competition for the presidency varies with the size of the prize, and for that reason, electoral contests for even the weakest presidencies need to be included in the analysis.

[7]In making this argument, we take the position that when the presidency is extremely powerful, the effective district magnitude is ultimately one, regardless of the permissiveness of the electoral system. We leave to future research the possibility that the effect of an increase in presidential authority may instead be conditional upon electoral system permissiveness: i.e., that the number of candidates will only be driven to what the theoretical literature recognizes as the equilibrium carrying capacity of the electoral system, which is greater than two for relatively permissive (nonplurality) electoral formulae.

[8]It is perhaps more accurate to think of vertical and horizontal centralization as interacting to shape coordination incentives (Hicken N.d.; Hicken and Stoll 2006). This suggests that the effect of vertical centralization on the number of candidates might in fact be conditional upon the level of horizontal centralization, and vice versa. While we leave both the development of hypotheses about and the modeling of this interaction to future work, we note that our preliminary analyses found statistical support for at least the most basic form of interaction between horizontal and vertical centralization. This model, like all other models discussed but not presented here, can be found in the supplemental paper.

[9]Letting v_i represent the ith candidate's vote share in a given country and election, the effective number of presidential candidates, *ENPRES*, is calculated as follows:

$$ENPRES = 1/\Sigma_{i=1}^{n} v_i^2.$$

Our independent variable of vertical centralization is operationalized in two ways. The first is central (national) government revenue as a percentage of total government revenue for a given country and election year, which directly measures the power of the central government vis-à-vis subnational governments.[10] However, data for this operationalization is unfortunately available for only a few of the countries and time periods that we analyze. This practical drawback leads us to a second operationalization for which data is more widely available: central government revenue as a percentage of gross domestic product (GDP). The theoretical advantage of this operationalization relative to the prior is that it captures the extent to which it is the national level of government instead of the private sector that provides goods and services. As Chhibber and Kollman (2004, 224) argue, this is an important component of "the role of the government in peoples' lives", the most fundamental understanding of vertical centralization. The disadvantage is that it might really be tapping the overall size of government, which may to some extent serve as a proxy for either economic development or democratic consolidation or both. To address this problem, we control for region in our analyses, where one of the "regions" is the advanced industrial democracies (discussed below). Regardless, the practical concerns of data availability lead us to treat the latter operationalization as our primary one, in spite of the theoretical advantages of the former.[11] We note that our preference for revenues over expenditures as a measure of the scope of the public economy follows the classic rationale laid out by Cameron (1978).[12]

We also employ two operationalizations of our independent variable of horizontal centralization. The first and the most preferred is an index of *de jure* presidential powers. To create this index, we relied upon a coding scheme first developed by Shugart and Carey (1992) and later modified by Frye, Hellman, and Tucker (2000). This scheme measures 10 dimensions of presidential power. The first six dimensions relate to the president's legislative powers and include: package veto/override; partial veto/override; decree power; exclusive introduction of legislation (in reserved policy areas); budgetary powers; and referenda proposal. The remaining four dimensions relate to the nonlegislative powers of the president: cabinet formation; cabinet dismissal; censure; and dissolution of the assembly. For a given election year, a country is assigned a score ranging from zero (minimal presidential authority) to four (maximal presidential authority) on each dimension, based on the constitution in effect at that time.[13] We follow Shugart and Carey in then creating two additive indices from these scores, an index of legislative powers and an index of nonlegislative powers, each of which assigns the related dimensions an equal weight. Finally, we sum across all 10 dimensions (i.e., additively combine the prior two indices) to create an overall index of presidential powers.[14] This index ranges from a minimum of zero to a maximum of 24.[15]

As Table 1 illustrates for our set of cases (discussed below), both subindices vary predictably with the three basic types of political regimes: the parliamentary, the mixed, and the presidential.[16] This finding mirrors Shugart and Carey's. Our overall

[10]Chhibber and Kollman (2004, 234) use the proportion of total government wages attributed to the national government as their quantitative operationalization of vertical centralization, an operationalization that closely resembles ours.

[11]Another alternative would be to use institutional proxies of vertical centralization, such as the presence or absence of federalism. The disadvantage of such an approach is two-fold: first, the definition of whether or not a system is "federal" can vary greatly depending on the source (see Treisman 2002); second, this approach would mask the substantial variation in the amount of authority wielded by subnational units *within* federal or unitary states.

[12]The first operationalization is sensitive to the use of expenditures instead of revenues, but the second is effectively not (the results obtained are similar, if statistically weaker).

[13]Table 26 in the supplemental paper presents the coding rules for all ten dimensions.

[14]This index is not without its flaws. For one, it does not take into account the informal powers of the president, from media technology to presidential popularity and personality (see, for example, Woolley 2005 for a discussion of these matters with respect to the United States). For another, intercoder reliability can be an issue. To deal with the latter concern, we use both our and existing versions of the index where there is disagreement over how to code a given constitution (discussed below). Despite these shortcomings, a recent survey of different methods of measuring presidential power "identifies the measure developed by Shugart and Carey as the most useful" (Metcalf 2000, 660). Moreover, comparative scholars regularly employ Shugart and Carey's index in both quantitative and qualitative analyses (see for example, Clark and Wittrock 2005; Kitschelt 1999; Nielson 2003; Nijzink, Mozaffar, and Azevedo 2006; Pennings 2003; Protsyk 2005; and Whitefield 2006). For a recent critique of this way of operationalizing presidential powers, see Tsebelis and Aleman (2005) and Tsebelis and Rizova (2007). These authors have recently developed an intriguing measure of a president's agenda-setting powers based on an analysis of veto procedures, which could be a useful alternative to the one that we employ once it is available for more cases.

[15]The theoretical maximum is actually 40. Twenty-four is the highest score obtained by the countries in our sample: specifically, the score by Chile under its 1969 constitution. The lowest score of zero is obtained throughout the postwar period by Ireland with its ceremonial presidency.

[16]This typology was developed by Alvarez et al. (1996). It also corresponds to Shugart and Carey's typology (1992) with minor modifications, such as combining the rare president-parliamentary regime and the more common premier- or semipresidential regime in one "mixed" category.

TABLE 1 **Mean presidential powers for both different political regimes and different regions, as well as descriptive statistics for all cases. Calculations are performed prior to the list-wise deletion of non-fully observed cases and statistics are rounded to three significant digits. (Note that the values obtained after list-wise deleting non-fully observed cases for Models 1 and 2 as per the Appendix are very similar, as are median values.) The index of powers combines the non-legislative and legislative powers of the president.**

	Nonlegislative Powers	Legislative Powers	Total Powers (Index)
Regime Type			
Parliamentary	3.77	0.533	4.30
Mixed	6.80	2.32	9.12
Presidential	11.2	3.66	14.9
Region			
Advanced Industrial	7.53	1.26	8.79
Latin America	11.7	3.44	15.1
Eastern Europe	4.94	3.31	8.24
Africa	9.70	3.70	13.4
Asia	9.28	5.72	15.0
Other	1.00	1.00	2.00
All			
Median	11.0	2.00	13.0
Mean	9.12	2.93	12.1
1st Quartile	7.00	1.00	9.00
3rd Quartile	12.0	4.00	15.0
Standard Deviation	3.51	2.74	4.99

index also varies predictably with the regime type for our set of cases, as Table 1 again illustrates. To elaborate, the average nonlegislative, legislative, and overall index values increase from parliamentary to mixed regimes, as well as from mixed to presidential regimes. More specifically, presidents in parliamentary regimes wield few powers across the board and hence score low on the overall index, while presidents in presidential regimes wield almost twice as many legislative and nonlegislative powers as presidents in mixed regimes on average, and hence receive higher overall index scores.

Our second, alternate operationalization is simply the type of political regime. We classify countries in a given election year as one of the three regime types discussed above, with the parliamentary category serving as our baseline and the mixed and presidential categories appearing as dummy variables.[17] This well-known typology captures basic differences in presidential authority across countries, as reflected by the different average index values of presidential powers reported in Table 1. Nevertheless, our overall index of presidential powers reveals variation within each type of regime that the simple trichotomy obscures. It is this greater level of precision that leads us to prefer the index. For example, while both Colombia and the United States are classified as presidential regimes, the United States' president receives a score of 13 on the overall index of presidential powers whereas Colombia's receives a score of 20 prior to 1991, reflecting the substantially greater legislative powers that the Colombian president was constitutionally granted for most of the postwar period.

Finally, we come to our control variables. The first control variable, the restrictiveness of the presidential electoral system, is operationalized as a dummy variable that is coded "1" if a restrictive electoral system is employed for the election at hand and "0" otherwise. In the former category, we place elections for which the electoral formula is simple plurality. The latter category includes all remaining elections: those for which there are provisions for a run-off election of some sort; the electoral formula is the more permissive single transferable vote; or the voters select an electoral college, with one exception. That exception is our coding of the United States as possessing a restrictive presidential electoral system in spite of its electoral college (discussed in more detail below). While previous work has confined itself to comparing "pure" plurality to "pure" dual ballot electoral systems (see, for example, Golder 2006; Jones 1999, 2004), we are interested in also studying

[17]For example, using this coding scheme, Ireland is classified as parliamentary; France as mixed; and both the United States and Colombia as presidential.

presidential elections where the electoral systems do not fall neatly into one of these two categories, given our primary focus on nonelectoral political institutions. Moreover, we believe that there is good reason to expect less coordination relative to simple plurality when the single transferable vote formula is employed (see, for example, Cox 1997, 144). We are not aware of extant predictions regarding the relative amounts of coordination in elections with and without electoral colleges, but we opt to err on the side of caution by grouping electoral colleges with the permissive electoral systems, with the exception of the United States.[18] Accordingly, we contrast electoral systems employing a simple plurality formula to all others. The second control variable, social heterogeneity, is operationalized as the ethnic fractionalization index, a transformation of the commonly employed effective number of ethnic groups (see, for example, Amorim Neto and Cox 1997; Cox 1997; Golder 2006).[19] Finally, because electoral coordination should develop over time as a learning process, we include a control variable that is designed to tap potentially confounding differences in the degree of democratic consolidation across regions of the world. This variable classifies countries as belonging to one of six "regions" (not necessarily geographic): the advanced industrial democracies; Asia; Latin America; Eastern Europe; Africa; or "Other" (Pacific and Caribbean islands). The first of these categories serves as our baseline, and the others appear as dummy variables. This approach enables us to contrast the less democratically consolidated countries, subdivided into geographic groupings, with the democratically consolidated advanced industrial democracies.[20] Controlling for region in this way has the added benefit of removing other potentially confounding regional effects, from the cultural to political institutional. For example, as Table 1 also makes clear, presidential powers vary by region.

Measures of the dependent variable come from Golder (2005), as do the following independent variables: political regime type, presidential electoral system restrictiveness, and region. Only minor recoding of these independent variables is needed, as described elsewhere in this section. For the index of presidential powers variable, we utilize an original data set. We obtained copies of countries' constitutions from a variety of sources and used the modified Shugart and Carey (1992) coding scheme described above to code them through 2000.[21] For the few cases for which we ourselves were not able to code the appropriate constitution (always older ones, such as the 1925 Chilean constitution), we (1) used extant codings where they were available; and (2) otherwise extrapolated our earliest coding backwards in time.[22] For central government revenue as a percentage of

[18]In our data set, Finland, Argentina, and the United States have utilized an electoral college in at least some of their presidential elections. Both Finland and Argentina's electoral colleges (no longer in use) were selected using a permissive electoral formula and thus strike us as examples of permissive electoral systems. In contrast, the United States' electors are for the most part chosen using a plurality formula, which is why we view the United States as possessing a restrictive electoral system. The alternative, coding the United States' electoral college as permissive and Argentina's electoral college as restrictive (because of the provisions governing circumstances when an electoral college majority is not obtained), does not substantively affect our conclusions. Further, eliminating elections with electoral colleges from the analysis because they are both difficult to classify and semidirect (i.e., not perfectly commensurate with direct elections, where our true interest lies) leaves our conclusions regarding horizontal centralization largely unaltered (see footnote 39), although our findings regarding vertical centralization are somewhat sensitive.

[19]The fractionalization index theoretically ranges from 0, representing perfect homogeneity (everyone belongs to the same group), to 1, representing perfect heterogeneity (everyone belongs to his or her own group). If the index is represented by F and the effective number of ethnic groups by E, then $F = 1 - 1/E$. In contrast to much of the empirical literature such as Golder (2006), we employ the fractionalization index instead of the effective number because of the latter's greater distributional skew (see Fearon 2003).

[20]We obtain equivalent results when we instead include a dummy variable for pre-1990 OECD membership. We also obtain equivalent results when we additionally include a dummy variable for elections that were the first since either independence or a transition to democracy. Further, countries that only appear in the data set once, either before or after the list-wise deletion of cases with missing data, are all either new or short-lived democracies; eliminating them does not affect our conclusions about horizontal centralization, although our conclusions about vertical centralization are somewhat sensitive. The same holds for African countries.

[21]We collected this data at the University of Michigan in collaboration with Orit Kedar and we are grateful for her permission to use it here.

[22]Our sources of extant codings were Shugart and Carey (1992), a data set focusing largely on the Americas and running through 1992, and Frye, Hellman, and Tucker (2000), a data set running from the early 1990s through 1995 and focusing on Eastern Europe and the former Soviet republics. The second of the two choices, extrapolation, is clearly the most problematic. There were a maximum of 18 such cases included in the analyses reported here. The alternative, coding these cases as missing and hence list-wise deleting them, does not substantively alter our conclusions. Additionally deleting the maximum of 25 cases for which we drew upon extant codings, i.e., using only the cases that we ourselves coded, also leaves our conclusions unaltered. There were only four countries for which no extant coding was available and which we were unable to code (and hence which are coded as missing throughout): Comoros, Guyana, Palau, and Sao Tome and Principe. Finally, there were a few cases for which we disagreed with an extant coding. These disagreements were usually minor, e.g., assigning South Korea's 1987 constitution an index value of 16 to Shugart and Carey's 15. Our conclusions again remain unchanged when we substitute such extant values for ours.

GDP, we turn to the World Bank's World Development Indicators (WDI; World Bank Group 2007), which we supplement with data from Polity II (Gurr 1990) since the earliest year for which the WDI data is available is 1970.[23] For central government revenue as a percentage of total government revenue, we draw upon the World Bank's Fiscal Decentralization Indicators (World Bank Group N. d.).[24] To construct the ethnic fractionalization index, we use the list of ethnic groups and their population shares compiled by Soviet geographers in the early 1960s, which yields the well-known ethno-linguistic fractionalization index (ELF). We rely upon Fearon and Laitin (2003) for this data.[25]

Research Design, Model Specifications and Data

We use a quantitative, observational research design to test our hypotheses about the relationship between the vertical and horizontal centralization of policy-making authority in the presidency on the one hand and the number of presidential candidates on the other (H1 and H2).[26] Specifically, we estimate the following linear-in-variables model[27]:

$$\begin{aligned}\text{ENPRES}_{i,t} = {} & \beta_0 + \beta_1 \text{PLURALITY}_{i,t} + \beta_2 \text{ELF}_{i,t} \\ & + \beta_3\, \text{PLURALITY} * \text{ELF}_{i,t} \\ & + \beta_4\, \text{PRESPOWER}_{i,t} + \beta_5\, \text{PRESPOWER}^2_{i,t} \\ & + \beta_6\, \text{PRESPOWER}^3_{i,t} + \beta_7\, \text{GOVREV}_{i,t} \\ & + \beta_8\, \text{GOVREV}^2_{i,t} + \beta_9 \text{GOVREV}^3_{i,t} \\ & + \beta_{10}\, \text{ASIA}_i + \beta_{11} \text{LAMER}_i + \beta_{12} \text{EEUROPE}_i \\ & + \beta_{13}\, \text{AFRICA}_i + \beta_{14} \text{OTHER}_i + \varepsilon_{i,t}, \end{aligned} \tag{1}$$

In Equation (1), ENPRES is the effective number of presidential candidates; PLURALITY is the dummy variable for a restrictive (plurality) electoral system; ELF is the ethno-linguistic fractionalization index; GOVREV is the percentage of central government revenue as a percentage of GDP; PRESPOWER is the presidential powers index; ASIA is a dummy variable for Asia; LAMER is a dummy variable for Latin America; EEUROPE is a dummy variable for Eastern Europe; AFRICA is a dummy variable for Africa; and OTHER is a dummy variable for the Pacific and Caribbean islands. Hence, this model controls for region, the omitted (baseline) category for which is the advanced industrial democracies, as well as for an interactive relationship between electoral system restrictiveness and social heterogeneity. Note that *i* indexes cross-sections (i.e., countries) and *t* indexes time periods (i.e., elections). We call this the *preferred model specification* (Model 1) because it employs

[23]For the periods of overlap between the Polity II and WDI data sets (from 1970 to 1986), the Pearson correlation coefficient for the two separate measures is a reasonable 0.72. However, a concern is that Polity II provides different national account information (such as the gross national product as opposed to the gross domestic product) for some countries. Using the WDI data alone, which obviously necessitates restricting the analysis to the time period for which these data are available, yields different results for vertical centralization. However, in light of the similarity of the results from the combined and the theoretically preferred (central government revenue as a percentage of total government revenue) measures, we report the results from the combined measure here.

[24]For both this and the prior vertical centralization measure, if data was missing for election year *t*, we took data from year *t-1*, *t-2*, *t+1*, or *t+2* in that order, if it was available. For central government revenue as a percentage of GDP, there were six such cases included in the analyses reported here; for central government revenue as a percentage of total government revenue, there were 19 such cases. Confining ourselves to election year data alone does not affect our results.

[25]Golder (2006) instead employs Fearon's (2003) more recent list of ethnic groups and their population shares. We prefer ELF both for its greater exogeneity (Stoll 2008) and because the Fearon data set lacks information on Iceland. Our conclusions regarding horizontal centralization are not altered by the use of this alternative measure and our conclusions regarding vertical centralization are only somewhat sensitive. Regarding electoral restrictiveness and social heterogeneity themselves, the Fearon measure does not yield results that are unequivocally more favorable to the literature's hypotheses.

[26]Others have employed quasi-experimental research designs to test related hypotheses about legislative elections. These case studies have generally confirmed the conclusions obtained from quantitative analyses, while providing increased confidence that the effects identified are causal (see Campbell and Ross 1968 for a classic discussion of the benefits as well as the perils of quasi-experiments). Chhibber and Kollman (2004) are prominent examples for vertical centralization in the cases of the United States, India, the United Kingdom, and Canada; see also Hicken (N.d.) for both vertical and horizontal centralization in the cases of Thailand and the Philippines. No existing qualitative study looks directly at the link between the size of the prize and the number of presidential candidates, though Hicken does note an increase in the number of candidates coincident with a decrease in the powers of the Philippine president, consistent with our theory. Future work might usefully employ this type of design to directly study the effect of institutional changes on presidential elections for specific cases. We do not do so here in the interests of space.

[27]Although higher than third order polynomial models could also yield the hypothesized relationships, we fit a third-order model out of a preference for parsimony. We do not include country fixed effects due to the time invariance of our measure of social heterogeneity.

our preferred measures of vertical and horizontal centralization.

The cases that we use to estimate Model 1 consist of all popular elections for chief executives (usually but not always known as presidents) that took place under minimally democratic conditions in the postwar period, specifically between 1946 and 2000.[28] Regarding the "minimally democratic" criterion, we turn to the minimalist definition of democracy developed by Alvarez et al. (1996), as originally coded by Alvarez et al. (1999) and updated by Golder (2005). Regarding the "popular" criterion, we (like Golder 2005) only study elections where voters are *directly* involved in the selection of the president, even if it is to choose an electoral college as in the United States. In other words, we exclude presidential elections where the president is elected solely by the legislature with no voter participation (save indirectly to elect the legislature itself), as in Turkey: the causal mechanisms and hence the hypotheses discussed above obviously do not apply in such circumstances. We depart from Golder (2005) in three ways, however. First, we eliminate all elections held under fused electoral systems following the reasons laid out in Cox (1997), among others.[29] Second, we include the Israeli 1996 and 1999 direct prime ministerial elections.[30] Third and finally, following Golder (2006), we eliminate all elections held in Kiribati due to the limits its constitution imposes on the number of presidential candidates.

The resulting data set consists of 258 elections in 61 countries from all regions of the world. However, even data on central government revenue as a percent of GDP is not available for a significant minority of the countries and time periods in our data set, particularly for the less developed (such as the Central African Republic) and smaller (such as Macedonia) democracies. Employing list-wise deletion as our missing data strategy leaves 216 elections in 47 (generally larger and more stable) democracies, with between one and 14 elections observed per country. The structure of the data set is accordingly extremely nonrectangular and somewhere between time series cross-sectional and panel.[31] We note that employing multiple imputation as implemented in AMELIA II as an alternative missing data strategy (King et al. 2001; Honaker and King 2006; Honaker, King, and Blackwell 2006) does not alter the conclusions reported below.[32] In the appendix, we list the number of elections per country in both the original and list-wise deleted data sets.

We also estimate two additional models, which employ our alternate measures of vertical and horizontal centralization. The first of these uses the same set of cases as Model 1, but substitutes two dummy variables (one for mixed regimes and one for presidential regimes) for the three terms involving the index of presidential powers in Equation (1) (i.e., the index, its square, and its cube). We label this model the *alternate horizontal specification* (Model 2). The second of these additional models, labeled the *alternate vertical specification* (Model 3), substitutes central government revenue as a percentage of total government revenue for central government revenue as a percentage of GDP wherever it appears in equation (1). This model, however, must be estimated using a different set of cases from Models 1 and 2. Unfortunately, the World Bank's Fiscal Decentralization Indicators are only available from 1972 onwards and for larger countries. Confining our analysis to the cases for which we have data on this alternate

[28]These are the years for which Golder (2005) has (1) collected data on both the presidential electoral system and the effective number of presidential candidates, and (2) made a determination that the elections were minimally democratic. Another reason for ending the data set in 2000 is that it is difficult to find more recent data on government revenues.

[29]For such countries, it is not clear to which electoral system's incentives both voters and elites respond: that of the legislature (generally with a large district magnitude and hence a relatively permissive electoral system) or that of the presidency (with a district magnitude of one and hence a relatively restrictive electoral system). From the 1980s on, Bolivia is an example of a presidential regime that employs a fused electoral system. However, our substantive conclusions are not changed by including these countries in our analysis.

[30]From 1996 to 2001, Israel had a popularly elected chief executive and a president-parliamentary (i.e., mixed) regime (Hazan 1996). We accordingly include the 1996 and 1999 Israeli elections in our analysis, although we note that excluding them does not affect our substantive conclusions.

[31]The asymptotics are arguably in T for our data set, which suggests viewing it as time series cross-sectional in structure; however, the fact that we have $T < N$ suggests that we should instead view it as panel in structure (Beck and Katz 1995). We lean towards the former. Note that this effectively rules out the use of a random effects model specification: our inferences, like those for most time series cross-sectional analyses, should be conditional on the observed cross-sectional units, here the set of minimally democratic countries with popularly elected presidents existing during the postwar period. See Beck and Katz (1996).

[32]Our missing data is missing completely at random (MCAR) for a few cases but missing at random (MAR) for most cases. The latter means that the missingness can largely be predicted on the basis of both region as we have defined it here and population. Accordingly, list-wise deletion is likely to be biased as well as inefficient relative to multiple imputation, which should be unbiased (King et al. 2001). However, list-wise deletion is a desirable strategy from the perspective that it confines our attention to the larger and more democratically consolidated countries. (See also footnote 20.)

measure of vertical centralization, as well as list-wise deleting any other cases for which we are missing data, leaves us with 102 elections in 32 countries. The appendix also lists these countries and elections.

Results

We use OLS to estimate Models 1 through 3. The resulting coefficient estimates are shown below in Table 2, along with robust standard errors in parentheses.[33]

Horizontal Centralization

First, what does the empirical evidence say about the hypothesized relationship between horizontal centralization and the number of presidential candidates (H1)?

We initially use our preferred model specification (Model 1) to test H1. The obvious testable hypothesis with which to begin is whether there is a statistically significant relationship between the index of presidential powers and the effective number of presidential candidates as posited. Because an F-test rejects the null hypothesis that the coefficients on all three presidential powers terms in equation (1) (β_4, β_5 and β_6) are jointly zero ($F = 3.85$; $p = 0.0104$), this testable hypothesis receives empirical support. A second testable hypothesis subjects the nonlinearity at the core of H1 to empirical scrutiny. Table 2 shows that the coefficients on both higher order presidential power terms in equation (1) (β_5 and β_6) individually attain conventional levels of significance. Hence, the empirical evidence suggests that the horizontal centralization of policymaking authority in the presidency is both statistically and nonlinearly related to the number of presidential candidates.

For a third and final testable hypothesis, we examine the estimated effect of horizontal centralization on the number of presidential candidates, which provides the most direct test of H1. With a nonlinear model, this effect cannot be obtained by simply examining the signs and magnitudes of the estimated coefficients on the three presidential powers terms (Brambor, Clark, and Golder 2005). Instead, we must calculate the *marginal effect* of horizontal centralization, the partial derivative of equation (1) with respect to the index of presidential powers.[34] Our hypothesis is supported if the predicted marginal effect is positively signed and statistically significant using a one-sided test for low levels of presidential powers; negatively signed and statistically significant using a one-sided test for medium to high levels; and close to zero and statistically insignificant using a two-sided test for very high levels.

The left portion of Figure 1 shows the estimated marginal effect, evaluated over the observed range of presidential powers, as a solid black line. From this figure, we see that increasing presidential powers is predicted to increase the effective number of presidential candidates, i.e., to promote contestation, when the president initially wields very few powers, as per our hypothesis. Specifically, the marginal effect is positive for countries that score less than seven on the index. The countries that fall in this category are Bulgaria, post-1999 Finland, France, Haiti, Ireland, Lithuania, Macedonia, Mongolia, post-1997 Poland, Romania, Slovakia, and Slovenia. Conversely, increasing presidential powers is predicted to decrease the effective number of presidential candidates, i.e., to promote coordination, when presidential powers are initially moderate to high, also as per our hypothesis. Specifically, the marginal effect is negative for countries that score between 7 and 17 on the index, inclusive. Examples of countries in this category are pre-1994 Argentina, Austria, Croatia, pre-1999 Finland, Mexico, Panama, South Korea, and the United States. Surprisingly, however, an increase in presidential powers for extremely powerful presidents is predicted to *increase* the effective number of presidential candidates, i.e., to decrease coordination, *contra* to our hypothesis. Specifically, the marginal effect is again positive for countries that score higher than 17 on the index. The countries in this category are post-1994 Argentina, Benin, Brazil, Chile, pre-1991 Colombia,

[33]OLS assumptions that are often violated in the context of panel and time series cross-sectional data structures like ours are homoskedasticity and no autocorrelation. Not surprisingly, then, Breusch-Pagan tests either reject the null hypothesis of homoskedasticity or come close enough to doing so that we consider heteroskedasticity to be present. Further, simple regressions of the OLS residuals on their lags reveal unignorable autocorrelation. The exception is Model 3, for which the time series are shorter. Accordingly, for Models 1 and 2, we estimate Newey-West standard errors (Newey and West 1987), which are robust to both autocorrelation and heteroskedasticity. For Model 3, we estimate White's (1980) heteroskedastic-consistent standard errors modified for small samples by MacKinnon and White (1985; "HC3"). We note that Beck and Katz (1995) also raised the issue of cross-country contemporaneous correlation in the context of TSCS models. However, they were dealing with political economy data. This problem seems unlikely to surface in our *electoral* data. For example, there are few equivalents of even global economic shocks in presidential elections. Moreover, it is difficult to obtain a good estimate of the contemporaneous correlation when there are hardly any common time periods across countries, as is the case in our data set.

[34]The equation for the marginal effects of presidential power is: $\beta_4 + 2\beta_5 \text{PRESPOWER} + 3\beta_6 \text{PRESPOWER}^2$.

TABLE 2 **Coefficient estimates and robust standard errors (Newey-West for Models 1 and 2; HC3 for Model 3) for Models 1-3. Dependent variable is the effective number of presidential candidates. Omitted (baseline) regional category is the advanced industrial democracies; omitted (baseline) regime type category is the parliamentary. For Models 1 and 2, GOVREV is central government revenue as a percentage of GDP; for Model 3, it is central government revenue as a percentage of total government revenue. Significance codes are for two-sided tests, all calculated prior to rounding to three significant digits: 0.01, ***; 0.05, **; 0.10, *.**

	Model 1	*Model 2*	*Model 3*
Intercept	1.20 (0.751)	1.17 (0.725)	−92.7* (48.2)
PLURALITY	−0.458** (0.225)	−0.513** (0.230)	−0.675 (0.415)
ELF	0.959 (0.602)	1.21** (0.585)	2.32** (0.976)
PLURALITY*ELF	0.495 (0.751)	0.602 (0.732)	1.82 (2.59)
PRESPOWER	0.374*** (0.115)		0.392** (0.177)
PRESPOWER^2	−0.0407*** (0.0127)		−0.0524** (0.0217)
PRESPOWER^3	0.00114*** (0.000377)		0.00173** (0.000692)
GOVREV	9.48 (10.8)	12.6 (10.9)	3.80** (1.87)
GOVREV^2	−40.7 (54.1)	−52.2 (55.2)	−0.0500** (0.0237)
GOVREV^3	53.2 (81.0)	65.8 (83.1)	0.000217** (0.0000998)
ASIA	−0.010 (0.385)	−0.243 (0.400)	−1.23 (0.762)
LAMER	0.580** (0.250)	0.717*** (0.276)	0.0470 (0.515)
EEUROPE	0.0613 (0.291)	0.169 (0.291)	−0.105 (0.376)
AFRICA	0.0565 (0.523)	−0.0359 (0.500)	
OTHER	−1.07** (0.420)	−1.51*** (0.433)	
MIXED		0.881*** (0.245)	
PRESIDENT		0.0718 (0.283)	
N	216	216	102
Root MSE	1.07	1.06	1.05
R^2	0.166	0.180	0.271

Niger, the Philippines, and post-1996 Zambia. The left of Figure 1 additionally shows both upper and lower one-sided 95% confidence intervals for the marginal effect of presidential powers. Using these confidence intervals, we can see that the marginal effect is statistically significant over much of its range.[35]

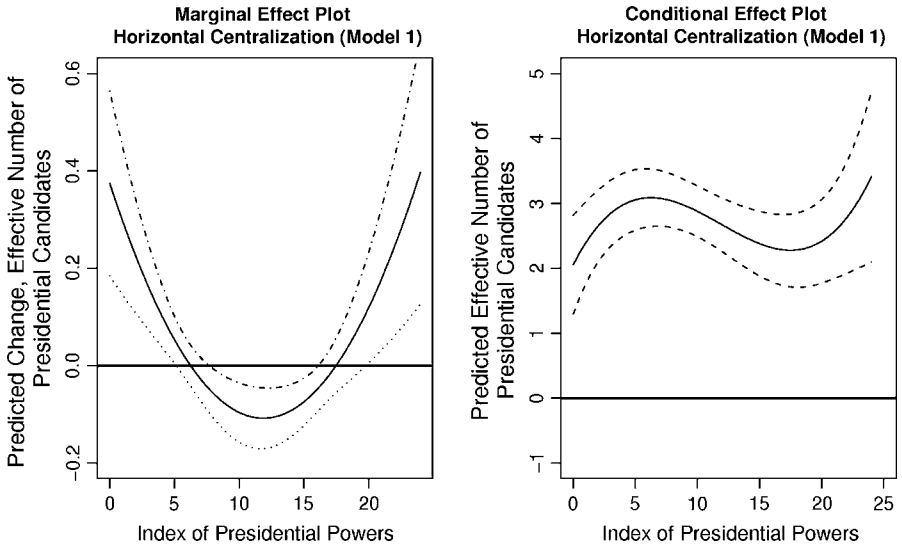
To further illustrate our findings, the right portion of Figure 1 plots the predicted effect of presidential powers on the effective number of presidential candidates, as well as 95% confidence intervals. All other variables are generally held at their medians or modes, following convention.[36] The predicted relationship takes the form of a sideways, elongated "S": the number of presidential candidates initially increases sharply as presidential powers increase; then decreases; and finally (and surprisingly) again increases sharply. Hence, all in all, we find that the horizontal centralization of policymaking authority in the presidency has both a positive and a statistically significant relationship with the number of presidential candidates when horizontal centralization is low; a negative and statistically significant relationship when horizontal centralization is moderate to high; and a positive and statistically significant relationship when horizontal centralization is very high. While the first two findings are in accord with our hypothesis, the final finding is not: we had instead posited that there should be neither a substantively nor a statistically significant relationship between the two variables at very high levels of horizontal centralization.

Turning to our alternate horizontal model specification (Model 2), we see a broadly similar relationship emerge when employing the trichotomy of political regimes as our measure of horizontal centralization. The exception is our finding regarding very powerful presidencies, which the simple trichotomy does not allow us to replicate. To begin, the coefficient on the

[35]The one-sided *p*-values range from 0.000660 to 0.0352 when the presidential powers index ranges from 0 to 5; from 0.0314 to 0.00201 when the index ranges from 8 to 13; from 0.00251 to 0.0385 when the index ranges from 14 to 16; and from 0.0421 to 0.0102 when the index ranges from 20 to 24.

[36]Specifically, the estimated conditional effect of presidential powers is shown for elections in an advanced industrial country with a permissive (nonplurality) electoral system; an ethnolinguistic fractionalization index value of 0.173; and central government revenue equal to nineteen percent of GDP. The modal region is actually Latin America, but we prefer to continue to use the advanced industrial "region" as our baseline.

FIGURE 1 **Estimated marginal and conditional effects of horizontal centralization on the effective number of presidential candidates. Estimated marginal effects are on the left and estimated conditional effects on the right. Ninety-five percent one-sided confidence intervals (both upper and lower) are plotted around the marginal effects and 95% two-sided confidence intervals around the conditional effects.**



dummy variable for mixed regimes is both positive and statistically significant using a two-sided test. By way of contrast, while the coefficient on the dummy variable for presidential regimes is also positive, it is not statistically significant. The data accordingly predicts that we will see an increase in the effective number of presidential candidates when moving from a parliamentary to a mixed regime (the hypothesized greater contestation), as well as when moving from a parliamentary to a presidential regime, although the latter difference is not significant. The data also indirectly predicts that we will see fewer presidential candidates when moving from a mixed to a presidential regime (the hypothesized greater coordination).[37] For example, generally holding all other variables at their medians or modes (see footnote 36), the predicted effective number of presidential candidates is 2.34 for a parliamentary regime; 3.22 for a mixed regime; and 2.41 for a presidential regime—the hypothesized nonlinear progression. Hence, we again find support for our hypothesis.

Vertical Centralization

Second, what does the empirical evidence say about the hypothesized relationship between vertical centralization and the number of presidential candidates (H2)? In what follows, we discuss testable hypotheses for H2 that are analogous to those discussed above.

When we use central government revenue as a percentage of GDP to measure vertical centralization (Model 1), we do not find a statistically significant relationship between this variable and the number of presidential candidates: an F-test for the joint significance of the three central government revenue terms in equation (1) fails to reject the null hypothesis that their coefficients (β_7, β_8 and β_9) are all zero ($F = 0.232$; $p = 0.874$). However, we do find a statistically significant relationship using the second, alternate measure, central government revenue as a percentage of total government revenue (Model 3; $F = 2.73$; $p = 0.0486$). Similarly, using the first of these measures, there is little support for the hypothesized nonlinearity: the coefficients on the higher order central government revenue terms in equation (1) (β_8 and β_9) neither individually nor jointly come close to attaining conventional levels of significance ($F = 0.321$, $p = 0.726$). Conversely, the higher order terms individually attain conventional levels of significance using the second of these measures.

Finally, as with horizontal centralization, testing H2's claims about the nature of the nonlinear relationship requires us to look beyond the individual coefficients on the three central government revenue terms. We find that the estimated marginal effect of vertical centralization[38]

[37]If we instead use mixed regimes as our baseline category, both the dummy variable for parliamentary regimes and the dummy variable for presidential regimes are negatively signed and statistically significant.

[38]The equation for the marginal effect of central government revenue is as follows: $\beta_7 + 2\beta_8 GOVREV + 3\beta_9 GOVREV^2$.

for the most part has the predicted sign and magnitude for both measures, with the primary exception being at very high levels of central government revenue. This is illustrated by the left column of Figure 2, the top row of which graphs the estimated marginal effect of central government revenue as a percentage of GDP over its observed range, and the bottom row of which graphs the estimated marginal effect of central government revenue as a percentage of total government revenue.

From this figure, we see that for both measures, the marginal effect of further centralizing policymaking authority in the national level of government is estimated to be positive at low levels of central government revenue (e.g., in countries such as the United States) and negative at moderate to high levels (e.g., in countries such as Austria)—findings in accordance with H2. However, at very high levels of central government revenue (e.g., in countries such as Costa Rica), the estimated marginal effect turns sharply positive for both measures instead of approaching zero as hypothesized, a finding that mirrors that regarding horizontal centralization. By way of contrast, the two measures perform very differently with respect to statistical support. The one-sided confidence intervals banding the two sets of point estimates reveal that the marginal effect is never statistically significant when using the first measure but almost always statistically significant when using the second.

Hence, the support for our hypothesis about the relationship between the vertical centralization of policymaking authority in the national level of government and the number of presidential candidates varies with our measure. Both suggestive and statistical support is forthcoming from our theoretically preferred measure, central government revenue as a percentage of total government revenue (Model 3), but only suggestive support from the less theoretically compelling measure that we nevertheless preferred on practical grounds, central government revenue as a percentage of GDP (Model 1). This can also be seen from the right-hand column of Figure 2, which plots the predicted effective number of presidential candidates against each measure of vertical centralization when all other variables are held at either their medians or modes (see footnote 36). Such conditional effect plots clearly show the differing substantive impacts of the two measures on the effective number of presidential candidates.

Explaining the Breakdown at the Top

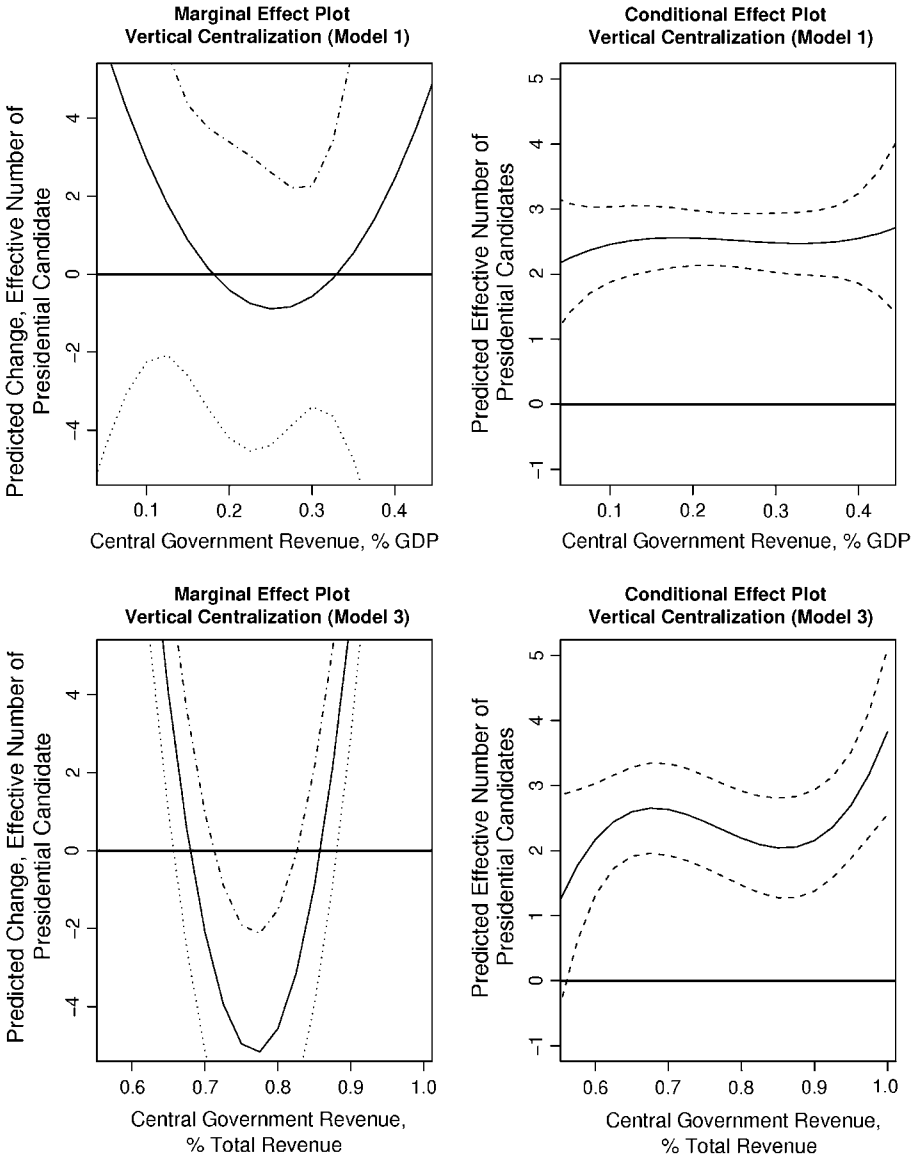
The above discussions raise the question of what might account for the counterintuitive decline in coordination that we find in very horizontally and/or vertically centralized polities. In other words, why are so many presidential candidates predicted when the size of the presidential prize is large, as in countries such as the Philippines? This finding is not sensitive to the particular cases included in the analysis and hence is difficult to explain away.[39]

One possible explanation is that candidates might have an incentive to remain in the race, even when they have only a small chance of winning, when the presidency is very powerful. We might think of candidate behavior in these circumstances as following a modified game of chicken. That is, candidates and the groups that support them all prefer that the others "swerve" first by withdrawing from the race. However, arguably the players prefer the outcome of no one swerving (all staying in the race) to the outcomes of both everyone swerving (all withdrawing) and being "chicken," *contra* to the traditional set-up. This is because the more candidates there are in the race, the higher the probability that a candidate can win with only a small plurality of the presidential vote. The Nash equilibrium is then the outcome where all players stay in the race.[40] Mozaffar, Scarritt, and Galaich (2003) essentially make this argument with regard to African presidential elections. Because African presidents possess substantial patronage resources, even presidential candidates with little chance of winning remain in the race with the hope of demonstrating sufficient electoral support to bargain for entry into the post-electoral coalition, thereby securing state resources for their constituencies. Presumably, this incentive is strongest where the resources at the disposal of the president are the greatest. Why, however, wouldn't the strategic behavior of voters counterbalance the failure of trailing candidates to withdraw from the race? Indeed, it is

[39]For example, we dropped a variety of cases with high values on the index of presidential powers to see if they were responsible for pulling the curve upwards. This included Chile 1970; all Chilean elections; the 1995 and 1999 Argentinean elections; all Colombian elections; all Brazilian elections; and all Philippines elections. Our conclusions remained substantively unchanged each time. Further, the only cases that were influential in Models 1 and 3 were influential with respect to the fitted values, and dropping them did not alter our findings. Dropping semidirect (electoral college) elections resulted in a loss of significance of the marginal effect of horizontal centralization at very high initial levels, but the effect was still large and positive.

[40]Another way of thinking about the situation is from an expected value perspective: when the payoff is very large, the expected value of contesting the election can still be high even if the probability of winning is small, given a large field of candidates. Hence, a rational, trailing candidate might choose to contest instead of withdrawing.

FIGURE 2 **Estimated marginal and conditional effects of two measures of vertical centralization on the effective number of presidential candidates. Estimated marginal effects are in the left column and estimated conditional effects in the right column. Ninety-five percent one-sided confidence intervals (both upper and lower) are plotted around the marginal effects and 95% two-sided confidence intervals around the conditional effects.**



the threat of strategic voting—i.e., voters refusing to waste their votes on candidates with little chance of winning—that can induce trailing candidates to withdraw (Cox 1997). Recall, however, that for strategic voting to operate, certain conditions have to be met (Ibid.). Most germane to our discussion is the ability of voters to identify the frontrunners from the also-rans before casting their vote. This is easier to do when there are relatively few candidates in the race due to strategic entry. However, if candidates stay in the race, then it becomes more difficult for voters to identify the frontrunners. Strategic voting accordingly follows strategic entry in breaking down.

An alternative explanation is that the legislative party system is affecting the presidential system, in contravention of this paper's assumption that the causal arrow runs from presidential to legislative elections. For example, Shugart (1998) observes an inverse relationship between legislative party strength and executive strength in new democracies—arguing that the latter

may be an institutional response to the former.[41] Future research should certainly explore this possibility.[42]

Electoral System Restrictiveness

We next briefly discuss some findings with respect to the political institutional control variable of electoral system restrictiveness.

First, the hypothesized statistical interaction between electoral system restrictiveness and social heterogeneity does not receive empirical support: the coefficient on the interaction term fails to approach conventional levels of significance. This finding contradicts that of Golder (2006). Second, while the marginal effect of electoral system restrictiveness is always estimated to be negative in accordance with the literature's hypotheses, indicating that switching to a restrictive (plurality) electoral system is predicted to decrease the number of presidential candidates, it is only statistically significant at conventional levels using a one-sided test when the ethno-linguistic fractionalization index is low.[43] This is a counterintuitive finding: we expect restrictive electoral systems to have a statistically significant reductive effect only if the social heterogeneity is *high*, when the natural number of candidates is likely to exceed the upper bound imposed by the electoral system. Moreover, the marginal effect is increasing in social heterogeneity. This is another counterintuitive finding because the greater the heterogeneity, the greater the reductive effect we expect. We do not know if similar findings emerge from studies such as Golder's because confidence intervals for the marginal effects of electoral system restrictiveness (permissiveness in Golder's study) are not reported. Overall, our reaching different conclusions from Golder is perhaps best in part attributed to our use of a different set of cases, and in part to our inclusion of variables besides social heterogeneity and electoral system restrictiveness in our models.[44]

Substantive Significance

We finally turn to a brief discussion of the substantive significance of the three political institutional variables explored by this paper. Which has the larger effect on the number of presidential candidates, given the data that we have observed?

One way of defining a reasonable change in a quantitative variable is a movement across its interquartile range, i.e., from its first to its third quartile. For horizontal centralization operationalized as the index of presidential powers, the interquartile range is a change of 7 points. For vertical centralization operationalized as central government revenue as a percentage of total government revenue (the measure that we found to have the most statistically significant relationship with the effective number of presidential candidates), it is a change of 20 percentage points. Calculating the predicted effect of a change in either of these variables is not straightforward, however, because the effective number of presidential candidates depends nonlinearly on them. Accordingly, we obtain predictions using the Taylor series of equation (1) as a function of each variable.[45] For horizontal centralization, this procedure yields the following predicted effects: for four plausible initial values of presidential powers, specifically for the observed minimum (0), first quartile (8), median (13), and

[41]We are grateful to an anonymous referee for suggesting this possibility.

[42]A third alternative explanation is that there are benefits that accrue to presidential candidates apart from winning. For example, remaining in the race might produce positive externalities for a candidate's legislative party, or it might help the candidate keep certain issues on the election agenda, or it might be part of a strategy to extract concessions from one of the frontrunners in exchange for stepping down. In order to account for the pattern we observe, one would need to show that the value of these externalities is greatest where presidents are very powerful.

[43]See the supplemental paper for the estimated marginal effects of the control variables, as well as for confidence intervals for these effects.

[44]For example, Golder (2006) does not appear to eliminate elections held under fused electoral systems and eliminates presidential elections that either are held under STV or use an electoral college. As discussed in an earlier section, we conversely eliminate fused elections and contrast restrictive plurality systems with more permissive nonplurality systems, which we take to include both the STV, electoral college, and various dual ballot formulae. We obtain more (but still not completely) consistent results with Golder's when we include fused electoral systems in the analysis. Further, more (but still not completely) consistent results are also obtained from dropping horizontal centralization, vertical centralization, and the regional control variables from Model 1 while continuing to use our original set of cases. For example, with these variables dropped, the interaction term changes sign. We note that our findings resemble those of Jones (2004), despite his use of a similar set of cases to Golder.

[45]With the use of Taylor series, we see that the change in the effective number of presidential candidates from a $\triangle$ point change in horizontal centralization (the presidential powers index) is given by $\triangle(\beta_4 + 2\beta_5\text{PRESPOWER} + 3\beta_6\text{PRESPOWER}^2) + \triangle^2(\beta_5 + 3\beta_6\text{PRESPOWER}) + \triangle^3(\beta_6)$, preserving the notation from Equation (1). Similarly, the change in the effective number of presidential candidates from a $\triangle$ percentage point change in vertical centralization (central government revenue as a percentage of total government revenue) is given by $\triangle(\beta_7 + 2\beta_8\text{GOVREV} + 3\beta_9\text{GOVREV}^2) + \triangle^2(\beta_8 + 3\beta_9\text{GOVREV}) + \triangle^3(\beta_9)$.

third quartile (15), the predicted changes in the effective number of presidential candidates resulting from a 7-point increase in presidential powers are 1.02, −0.657, −0.144, and 0.397, respectively. For vertical centralization, at the plausible initial values of the observed minimum (0.569) and the first quartile (0.730), the predicted changes in the effective number of presidential candidates resulting from a 20 percentage point increase in central government revenue as a percentage of total government revenue are 0.676 and −0.0678, respectively.[46]

By way of contrast, with electoral system restrictiveness operationalized as a dummy variable, the only reasonable change to contemplate is a country switching from a permissive to a restrictive electoral system (or vice versa). The effect of such a change on the effective number of presidential candidates is simply the marginal effect of electoral system restrictiveness, which depends upon the country's social heterogeneity, operationalized as ELF. For four plausible values of ELF, specifically for the observed minimum (0.00412), first quartile (0.0706), median (0.173), and third quartile (0.357), the predicted changes in the effective number of presidential candidates resulting from switching to a restrictive electoral system are −0.456, −0.423, −0.373, and −0.281, respectively.

Consequently, we see that of the three political institutional variables studied, horizontal centralization generally has the largest substantive effect on the number of presidential candidates.

Conclusion

The purpose of this paper was to explore the effects of political institutions on the presidential party system, a topic that is relatively understudied but important to both constitutional engineers and scholars interested in the origins and effects of political institutions.

We first investigated the ways in which the horizontal centralization of policymaking authority in the presidency relative to the legislature, i.e., presidential power, affects candidate, party, and voter incentives in presidential elections. In an empirical analysis of all minimally democratic, postwar presidential elections, we found that the relationship between horizontal centralization and the number of presidential candidates is significant, but nonlinear. Specifically, for moderately powerful presidents such as the United States', increasing presidential powers promotes coordination and hence leads to a decrease in the number of presidential candidates. However, where presidents are either extremely weak as in Ireland or extremely powerful as in the Philippines, a very different (and in the latter case, surprising) relationship obtains: increasing presidential powers instead produces a larger number of candidates. Relaxing the assumption that a one-way street runs from presidential to legislative elections might help to explain the puzzling breakdown in coordination that we find in elections for very powerful presidencies. This is an issue to which future research should return.

The second potential determinant of the number of presidential candidates that we investigated was the vertical centralization of policymaking authority in the national level of government vis-à-vis the subnational level. We found that the relationship between vertical centralization and the number of presidential candidates mirrors that found for horizontal centralization, largely in accordance with our hypothesis. However, statistical support was obtained from one measure of vertical centralization, central government revenue as a percentage of total government revenue, but not from the other, central government revenue as a percentage of GDP. Our findings regarding vertical centralization were also somewhat sensitive to other modeling choices such as the cases included in the analysis, contrary to our findings regarding horizontal centralization. Hence, the empirical support for the relationship between vertical centralization and the presidential party system is weaker than that for horizontal centralization.

Also surprising in the political institutional realm were our findings with respect to the electoral system, the third and final political institutional determinant that we explored. Hypotheses about this variable that scholars had developed and primarily tested in the context of legislative elections did not carry over smoothly to the presidential realm. Our results highlight the need for more theoretical work about how the relatively unique features of presidential electoral systems such as electoral colleges affect coordination in presidential elections. Further, we found that the substantive effect on the number of candidates of a change in presidential powers is generally of greater magnitude than the substantive effect of a change in the electoral system. This suggests that changing electoral systems may not be the most effective way to shape political competition for the presidency. Finally, we recognize the possibility that more complicated models may actually be called for: the effects

[46]The alternative measure of vertical centralization, central government revenue as a percentage of GDP, not surprisingly has a smaller predicted effect.

of horizontal and vertical centralization may be conditional upon electoral system restrictiveness, and also upon each other; these are all avenues for future research to explore.

Last but not least, we note that this paper has made a conscious choice to neglect noninstitutional factors. We realize, however, that *de jure* presidential powers are only half of the story. Future research might fruitfully seek to develop cross-national measures of the informal factors that shape presidential authority vis-à-vis legislatures and other institutional actors. The relationship between these factors and the presidential party system could then be explored. In addition, a variable only explored here in a preliminary way that nevertheless almost certainly affects the presidential party system is party system institutionalization. Electoral systems and other political institutional variables such as the horizontal and vertical centralization of policymaking authority in the national-level presidency may not have the same effects on the party system in unconsolidated and consolidated democracies (see Shugart 1998). While we have taken preliminary steps towards incorporating this variable in our quantitative analyses (see also Jones 1999), future research might grapple more fully with these dynamic aspects of electoral coordination.

Acknowledgments

An earlier version of this paper was presented as part of a larger paper at the 2006 National Conference of the Midwest Political Science Association and as a stand-alone paper at the 2006 Annual Meeting of the American Political Science Association, Philadelphia, PA. Much earlier versions can be found in a paper presented by Hicken at the 2005 Annual Meeting of the American Political Science Association, Washington, DC, and in papers presented by Stoll at the 2005 National Conference of the Midwest Political Science Association and at the 2005 Annual Meeting of the American Political Science Association, Washington, DC. Thanks to Garrett Glasgow; Lorelei Moosbrugger; Mark Jones; Orit Kedar; conference participants, particularly Eric Magar and Scott Mainwaring; participants in the University of California, Santa Barbara's Works in Progress Seminar Series; and several anonymous referees for helpful comments and/or assistance. We gratefully acknowledge the superb research assistance of DeAundria Bryant, Kim Dorazio, and Dan Magleby in coding constitutions, as well as of Andrea Haupt and Molly Cohn in gathering government revenues and expenditures data. All remaining errors of course remain the responsibility of the authors. The supplemental paper is available from Stoll's website, http://www.polsci.ucsb.edu/faculty/hstoll.

Manuscript submitted 26 March 2007
Manuscript accepted for publication 23 December 2007

References

Alvarez, Mike, Jose Antonio Cheibub, Fernando Limongi, and Adam Przeworski. 1996. "Classifying Political Regimes." *Studies in Comparative International Development* 31 (2): 3–36.

Alvarez, Mike, Jose Antonio Cheibub, Fernando Limongi, and Adam Przeworski. 1999. "ACLP Political and Economic Database" www.ssc.upenn.edu/%7Echeibub/data/Default.htm (March 2005).

Amorim-Neto, Octavio, and Gary C. Cox. 1997. "Electoral Institutions, Cleavage Structures, and the Number of Parties." *American Journal of Political Science* 41 (1): 149–74.

Beck, Nathaniel, and Jonathan Katz. 1995. "What To Do (and Not To Do) with Time-Series Cross-Section Data." *American Political Science Review* 89 (3): 634–47.

Beck, Nathaniel, and Jonathan Katz. 1996. "Nuisance vs. Substance: Specifying and Estimating Time Series Cross-Section Models." *Political Analysis* 6 (1): 1–36.

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 14 (1): 63–82.

Cameron, David R. 1978. "The Expansion of the Public Economy: A Comparative Analysis." *American Political Science Review* 72 (4): 1243–61.

Campbell, Donald T., and H. Laurence Ross. 1968. "The Connecticut Crackdown on Speeding: Time-Series Data in Quasi-Experimental Analysis." *Law and Society Review* 3 (1): 33–54.

Chhibber, Pradeep K., and Ken Kollman. 1998. "Party Aggregation and the Number of Parties in India and the United States." *The American Political Science Review* 92 (2): 329–42.

Chhibber, Pradeep K., and Ken Kollman. 2004. *The Formation of National Party Systems: Federalism and Party Competition in Canada, Great Britain, India, and the United States*. Princeton, NJ: Princeton University Press.

Clark, Terry D., and Jill N. Wittrock. 2005. "Presidentialism and the Effects of Electoral Law in Post Communist Systems." *Comparative Political Studies* 30 (2): 171–188.

Cox, Gary. 1997. *Making Votes Count: Strategic Coordination in the World's Electoral Systems*. New York: Cambridge University Press.

Fearon, James D. 2003. "Ethnic Structure and Cultural Diversity by Country." *Journal of Economic Growth* 8 (2): 195–222.

Fearon, James D., and David D. Laitin. 2003. "Additional Tables for "Ethnicity, Insurgency, and Civil War" and Replication Data."*The American Political Science Review* 97 (1): 75–90. Data available from http://www.stanford.edu/group/ethnic. Accessed March 2005.

Frye, Tim, Joel Hellman, and Joshua Tucker. 2000. "Data Base on Political Institutions in the Post-Communist World." Unpublished data set. The Ohio State University.

Golder, Matt. 2005."Democratic Electoral Systems around the World, 1946–2000" *Electoral Studies* 24 (1): 103—21.

Golder, Matt. 2006."Presidential Coattails and Legislative Fragmentation." *American Journal of Political Science* 50 (1): 34–48.

Golder, Matt, and *William Roberts Clark*. 2006. "Rehibilitating Duverger's Theory: Testing the Mechanical and Strategic Modifying Effect of Electoral Laws." *Comparative Political Studies* 39 (6): 679–708.

Gurr, Ted R. 1990. "Polity II: Political Structures and Regime Change, 1800—1986" [database]. Boulder, CO: Center for Comparative Politics [producer]; Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]. (March 2005.)

Hazan, Reuven Y. 1996. "Presidential Parliamentarism: Direct Popular Election of the Prime Minister, Israel's New Electoral and Political System." *Electoral Studies* 15 (1): 21–37.

Hicken, Allen. Forthcoming. *Building Party Systems in Developing Democracies*. New York: Cambridge University Press.

Hicken, Allen, and Heather Stoll. 2006. "Presidential Powers and Presidential Candidates: How Political Institutions Shape Electoral Coordination in Presidential Elections." Presented at the Annual Meeting of the American Political Science Association, Philadelphia, PA.

Hicken, Allen, and Heather Stoll. 2007. "Presidents, Powers, and Parties: The Sources of Legislative Electoral Coordination in Presidential Regimes." Presented at the Annual Meeting of the American Political Science Association.

Honaker, James, and Gary King. "What To Do about Missing Values in Time Series Cross-Section Data." http://gking.harvard.edu (September 2006.)

Honaker, James, Gary King, and Matthew Blackwell. "AMELIA II: A Program for Missing Data (Windows Version 1.1–6)." http://gking.harvard.edu (September 2006).

Jones, Mark. 1994. "Presidential Election Laws and Multipartism in Latin America." *Political Research Quarterly* 47 (1): 41–57.

Jones, Mark. 1999. "Electoral Laws and the Effective Number of Candidates in Presidential Elections." *Journal of Politics* 61 (1): 171–84.

Jones, Mark. 2004. "Electoral Institutions, Social Cleavages, and Candidate Competition in Presidential Elections." *Electoral Studies* 23 (1): 73–106.

King, Gary, James Honaker, Anne Joseph, and Kenneth Scheve. 2001. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation." *The American Political Science Review* 95 (1): 49–69.

Kitschelt, Herbert. 1999. "Constitutional Design and Postcommunist Economic Reform." Working paper. http://www.yale.edu/leitner/pdf/kitschelt.pdf (September 10, 2007).

Laakso, Markku, and Rein Taagepera. 1979. "Effective Number of Parties: A Measure with Application to Western Europe." *Comparative Political Studies* 12 (1): 3–27.

Lijphart, Arend. 1999. *Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries*. New Haven, CT: Yale University Press.

MacKinnon, J.G., and Halbert White. 1985. "Some Heteroskedasticity-Consistent Covariance Matrix Estimators with Improved Finite Sample Properties." *Journal of Econometrics* 29 (3): 305–25.

Metcalf, Lee Kendall. 2000. "Measuring Presidential Power." *Comparative Political Studies* 33 (5): 660–85.

Mozaffar, Shaheen, James R. Scarritt, and Glen Galaich. 2003. "Electoral Institutions, Ethnopolitical Cleavages and Party Systems in Africa's Emerging Democracies." *American Political Science Review* 97 (3): 379–90.

Nielson, Daniel. 2003. "Supplying Trade Reform: Political Institutions and Liberalization in Middle-Income Presidential Democracies." *American Journal of Political Science* 47 (3): 470–91.

Newey, Whitney K., and Kenneth D. West. 1987. "A Simple, Positive-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix." *Econometrica* 55 (3): 703–708.

Nijzink, Lia, Shaheen Mozaffar, and Elisabete Azevedo. 2006. "Parliaments and the Enhancement of Democracy on the African Continent: An Analysis of Institutional Capacity and Public Perceptions." *The Journal of Legislative Studies* 12 (3&4): 311–15.

Pennings, Paul. 2003. "Beyond Dichotomous Explanations: Explaining Constitutional Control of the Executive with Fuzzy-sets." *European Journal of Political Research* 42 (4): 541–67.

Powell, G. Bingham. 2000. *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. New Haven, CT: Yale University Press.

Protsyk, Oleh. 2005. "Prime Ministers' Identity in Semi-presidential Regimes: Constitutional Norms and Cabinet Formation Outcomes." *European Journal of Political Research* 44 (5): 721–48.

Reed, Steven R. 1990. "Structure and Behavior: Extending Duverger's Law to the Japanese Case." *British Journal of Political Science* 20 (3): 335–56.

Shugart, Matthew Soberg. 1995. "The Electoral Cycle and Institutional Sources of Divided Presidential Government." *American Political Science Review* 89 (2): 327–43.

Shugart, Matthew Soberg. 1998. "The Inverse Relationship Between Party Strength and Executive Strength: A Theory of Politicians' Constitutional Choices," *British Journal of Political Science* 28 (1): 1–29.

Shugart, Matthew, and John Carey. 1992. *Presidents and Assemblies: Constitutional Design and Electoral Dynamics*. New York: Cambridge University Press.

Stoll, Heather. 2005. "Electoral Coordination and Political Institutions: From Electoral Systems to the Power of the Prize." Presented at the Annual Meeting of the American Political Science Association.

Stoll, Heather. 2008. "Social Cleavages and the Number of Parties: How the Measures You Choose Affect the Answers You Get." *Comparative Political Studies* 41 (11): Forthcoming.

Tsebelis, George. 1995. "Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism, and Multipartyism." *British Journal of Political Science* 25 (3): 289–325.

Tsebelis, George, and Eduardo Aleman. 2005. "Presidential Conditional Agenda Setting in Latin America." *World Politics* 57 (April): 396–420.

Tsebelis, George, and Tatiana P. Rizova. 2007. "Presidential Conditional Agenda Setting in the Former Communist Countries." *Comparative Political Studies* 40 (10): 1155–82.

Treisman, Daniel. 2002. "Defining and Measuring Decentralization: A Global Perspective." Unpublished manuscript. http://www.sscnet.ucla.edu/polisci/faculty/treisman/defin.pdf.

White, Halbert. 1980. "A Heteroskedasticity-Consistent Covariance Matrix and a Direct Test for Heteroskedasticity." *Econometrica* 48 (4): 817–38.

Whitefield, Stephen. 2006. "Mind the Representation Gap: Explaining Differences in Public Views of Representation in

Postcommunist Democracies.'' *Comparative Political Studies* 39 (6): 733–58.

Woolley, John. 2005. ''Drawing Lines or Defining Variables? Studying Big Changes in the American Presidency.'' Presented at the annual meeting of the American Political Science Association.

World Bank Group, The. 2007. ''World Bank Development Indicators Online.'' http://devdata.worldbank.org/dataonline (March 2007).

World Bank Group, The. N.d. ''Fiscal Decentralization Indicators.'' http://www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm (February 2007).

Allen Hicken is associate professor of political science, University of Michigan, Ann Arbor, MI 48109. Heather Stoll is assistant professor of political science, University of California, Santa Barbara, Santa Barbara, CA 93106.

APPENDIX The number of elections per country in the data set used to estimate the three models (Models 1-3), before and after the list-wise deletion (LWD) of cases with missing data.

COUNTRY	Number of Elections	Number of LWD Elections, Models 1 & 2	Number OF LWD Elections, Model 3	Country	Number of Elections	Number of LWD Elections, Models 1 & 2	Number of LWD Elections, Model 3
Argentina	10	10	4	Lithuania	2	2	2
Armenia	3	0	0	Macedonia	2	0	0
Austria	10	10	6	Madagascar	1	1	0
Benin	2	0	0	Malawi	2	0	0
Brazil	6	6	3	Mali	2	0	0
Bulgaria	2	2	2	Mexico	1	1	0
Cape Verde	2	0	0	Moldova	1	1	1
Central African Republic	2	0	0	Mongolia	2	2	2
Chile	7	7	2	Namibia	2	2	0
Colombia	12	12	4	Nicaragua	3	3	2
Comoros	1	0	0	Niger	1	0	0
Congo (Brazzaville)	2	1	0	Nigeria	3	2	0
Costa Rica	13	12	8	Palau	2	0	0
Croatia	3	3	3	Panama	8	8	2
Cuba	1	1	0	Peru	6	6	1
Cyprus, Republic of	5	5	0	Philippines	9	9	2
Dominican Republic	6	6	5	Poland	3	3	3
Ecuador	10	9	1	Portugal	6	6	5
El Salvador	4	2	0	Romania	3	3	2
Finland	9	9	5	Russia	3	2	2
France	6	6	4	Sao Tome & Principe	2	0	0
Ghana	1	1	0	Sierra Leone	1	1	0
Guatemala	3	3	2	Slovakia	1	1	1
Guyana	2	0	0	Slovenia	2	2	2
Haiti	2	2	0	Sri Lanka	2	2	0
Honduras	1	0	0	Taiwan	2	0	0
Iceland	15	10	8	Ukraine	3	1	0
Ireland	9	9	6	United States	14	14	8
Israel	2	2	1	Venezuela	10	9	2
Korea, South	3	3	0	Zambia	2	2	0
Kyrgyzstan	3	2	1	**Total**	**258**	**216**	**102**