Distinguishing Between Influences on Brazilian Legislative Behavior

Ideal point estimators hold the promise of identifying multiple dimensions of political disagreement as they are manifested in legislative voting. However, standard ideal point estimates do not distinguish between ideological motivations and voting inducements from parties, coalitions, or the executive. In this article we describe a general approach for hierarchically identifying an ideological dimension using an auxiliary source of data. In the case we consider, we use an anonymous survey of Brazilian legislators to identify party positions on a left-right ideology dimension. We then use this data to distinguish ideological motivations from other determinants of roll-call behavior for eight presidential-legislative periods covering more than 20 years of Brazilian politics. We find that there exists an important nonideological government-opposition dimension, with the entrance and exit of political parties from the governing coalition appearing as distinct shifts in ideal point on this second dimension. We conjecture that the Brazilian president’s control over politically important resources is the source of this dimension of conflict, which has recently become far more important in explaining roll-call voting than the ideological dimension.

Introduction

The policy preferences of legislators are of central interest to scholars of legislative politics. Ideal point estimation is the primary tool for recovering estimates of these preferences, but the models of voting that motivate the estimators in use rely on the assumption that it is primarily policy preferences that drive voting behavior. Even though the estimates produced by roll-call analysis are often taken to reveal ideology or preferences over policy alternatives, this interpretation of ideal point estimates is undermined when other motivations to take particular votes are prevalent. Substantive interpretation of ideal point estimates can be considerably improved if we can distinguish the stable ideological component of political disagreement from other motivations for roll-call voting behavior.
The solution we propose for making this distinction is quite general, but its implementation requires substantive knowledge of the political processes that generate roll calls and additional sources of data about the ideology of legislators. For this reason, our article focuses on the case of Brazil. As in most Latin American presidential systems, the Brazilian executive controls much of the distribution of state resources. Because the president controls a disproportionate share of available political resources, legislative behavior can be as much a product of strategies to gain access to these resources as it is of ideological or policy concerns. Besides their ideological preferences, legislators derive utility from the consumption of political favors, such as access to pork and patronage. Parties fight over much coveted ministerial and infraministerial positions, and individual legislators lobby the executive to appropriate and spend budgeted resources that could benefit potential constituencies. While there is some dispute over the electoral efficacy of this activity, there is no denying that it takes up a significant portion of Brazilian legislators’ time and attention.

Executive influence over legislators has been noted in parliamentary systems (Spirling and McLean 2006) and in the United States (Chiou and Rothenberg 2003), but it can be expected to be particularly prevalent in Latin America, where presidents typically control a greater share of the state’s resources. Whereas the U.S. bureaucracy is accountable to Congress, which is responsible for budget elaboration and appropriation, Latin American presidents enjoy greater control over expenditures and almost exclusive control over the bureaucracy (aside from a few independent agencies, and, in some countries, the requirement of parliamentary approval for some nominations). Presidents appoint cabinet members, heads of major departments, semi-autonomous agencies, and public companies, and sometimes make political nominations extending deep into lower levels of the bureaucracy. Moreover, the executive formulates the details of policy implementation, and can—with only mild limitations—establish when, where, how, and whether to spend budgeted resources.

In this article, we separate ideology from government inducements using a Bayesian ideal point estimator which hierarchically identifies the component of legislative voting behavior that is attributable to ideology using a survey of legislators in which they locate themselves and each party on an ideological scale. We apply this model to the Brazilian lower house and show that the addition of information beyond roll-call votes substantially clarifies interpretation of multidimensional ideal point estimates. We are then able to examine the second dimension of disagreement and show that it closely tracks coalition dynamics. Brazil is an
excellent laboratory in which to isolate executive influence on roll-call behavior. Roll-call and survey data exist for a period of more than 20 years and an extreme multiparty system and shifting government coalitions provide empirical leverage to distinguish between different motivations of legislators. Moreover, there is already a considerable body of theoretical and empirical work on voting in the Brazilian lower house, which is unusual for most developing democracies.

We show that when coherent coalitions are formed and government provided inducements reinforce ideological differences, it is difficult to assess the relative importance of each dimension. This is similar to the problem of distinguishing partisan and ideological motivations for voting behavior in the U.S. Congress, where having only two parties ensures a high degree of collinearity. However, when incoherent coalitions are formed, these two dimensions are distinguishable. In these cases it is possible to show that the government-opposition dimension has become the dominant predictor of roll-call voting behavior in contemporary Brazil. We conjecture that the fact that the salient divisions in Brazilian legislative politics have changed over the last two decades might explain some divergent conclusions of previous scholars. Most of the work carried out before the late nineties found high levels of party cohesion and ideological coherence in the legislature (Figueiredo and Limongi 1999). Work incorporating more recent events tends to stress the importance of government dispensed pork and patronage (Ames 2001; Pereira and Muller 2004) or cabinet positions (Amorim Neto 2006). Our model allows us to assess the relative strength of these motivations over time and show that government vote-buying efforts is at least as relevant as ideology (and possibly more) in shaping roll-call behavior.

The article proceeds as follows. In the second section, we start by discussing the theoretical basis for a distinction between these two kinds of voting motivations and why governmental voting inducements can be treated as a spatial dimension. We then describe the roll-call and legislator survey data we used to identify the ideology dimension. In the fourth section, we specify a Bayesian estimator that combines roll-call and survey data to form two-dimensional ideal point estimates. In the next section, we compare estimates from our approach to conventional two-dimensional ideal point estimates and validate the substantive meaning of each dimension. We then show that our model accurately summarizes a wealth of detail of the past two decades of Brazilian politics, and we evaluate changes in the relative importance of each dimension over time. We conclude by summarizing the specific lessons learned about the case of Brazil and suggesting general approaches to incorporating nonroll-call data into ideal point estimation.
Distinguishing Motivations for Roll-Call Votes

Under the spatial model of voting, legislator $i$ decides how to vote on a roll-call vote $j$ based on the distance of the two alternatives to her most preferred policy $x_i$. However, legislators in the Brazilian lower house (as well as many other legislatures) also take into consideration career prospects which are likely to depend on the position of the president, party leaders, constituents, contributors, etc. This situation can be captured theoretically by assuming that legislators act to maximize a utility function that includes other elements besides policy (or ideological) preferences (e.g., Groseclose 2001). Another way to capture the same idea is to posit that the preferences of players over identical policy choices can be changed by the play of the political game (e.g., Canes-Wrone 2001), which amounts to the existence of an “induced” spatial preference ($x'_i \neq x_i$) that is different from the “true” or “original” preferences the players started with.

It is only when one assumes that all these other factors influencing a legislator’s vote cancel out that one can make the case that the retrieved positions map exactly onto latent ideological or policy preferences. If these other influences were independently and identically distributed across legislators on each vote, they could be safely ignored without distorting the ideal points. We argue that executive inducements do not meet this requirement, but will instead be targeted to particular parties and legislators on particular bills. As a result, ideal point estimates for legislator preferences will be contaminated by these other factors that enter into legislators’ utility functions.

We need not necessarily be concerned that measured ideal points are a product of a variety of factors, and it is sensible to think of legislative preferences coming from a variety of sources including personal beliefs, constituency interests, and others. In the United States, for instance, when legislators switch parties, they usually also exhibit non-trivial shifts in their estimated ideal points, which implies that partisan affiliation is an important constituent component of measured ideal points (McCarty, Poole, and Rosenthal 2001). It is often reasonable to abstract away from the myriad constituent components of expressed preferences when they are all stable. In the United States, they usually are: legislators rarely switch parties. However, party switching by individual legislators also changes ideal points in Brazil and switching is much more common than in the United States (Desposato 2006, 2009). Moreover, there are frequent coalition shifts in Brazil, involving large numbers of legislators, whose voting behavior may immediately change as a block.
Our strategy to try to distinguish between the stable ideological factors that influence roll-call voting and the potentially transient influences of the executive and changing coalitions relies on the use of auxiliary data in addition to roll-call votes. While we often lack the information necessary to unravel the many factors that are embedded in a given legislator’s behavior, when such information is available, one can improve on generic ideal point estimation. Clinton and Meirowitz (2003) show that using the structure of the legislative agenda can both bring ideal point estimates closer to strategic theories of legislative voting and assist in solving identification problems intrinsic to ideal point estimation (see also, Clinton and Meirowitz 2004). Quinn, Park, and Martin (2006) employ a hierarchical model for the case parameters of a Supreme Court ideal point estimator using auxiliary information about which court of appeals each case originated from.

In our case, we use a series of surveys of Brazilian legislators to identify one dimension of variation in legislator behavior that is attributable to ideology and then examine the patterns we observe in the second dimension for evidence of executive influence on roll-call voting. For this strategy to work, it needs to be the case that the legislators’ responses to the survey items—which ask them to place the parties on a left-right scale—are informative about the ideology dimension of politics, rather than also reflecting executive induced behavior. That is, for these data to identify the component of roll-call voting that is attributable to ideology, legislators’ responses must depend on $x_1$ rather than $x_1'$.\footnote{5}

It also needs to be the case that the executive’s coalition is not purely ideological. Government efforts could merely reinforce the underlying ideological cleavages, in which case they would be difficult to identify. In such cases, even though we might suspect that both dimensions of conflict are always present, we cannot differentiate between their influence. Even though government vote buying efforts may be present and important under such circumstances, it will be difficult to identify its effects empirically. However, when the government attempts to buy support of an ideologically incoherent coalition, a considerable number of legislators will be faced with conflicting incentives and hence behave in a more pro- or antigovernment manner than their ideology would predict. In these cases, the two dimensions (ideology and government opposition) become less collinear, and we are able to evaluate which is the main dimension of conflict. As we detail later, in Brazil there have been periods in which each of these coalition structures have been present, a fact which will help us understand disagreement in the literature over which kinds of motivations most powerfully shape legislative behavior.
This approach assumes that the ideological component of Brazilian politics can be accurately described in a single dimension. All evidence indicates that this is a reasonable assumption. There are no religious, linguistic, or ethnic parties in Brazil, which are the prime suspects when it comes to the existence of a second ideological dimension. Though politics is regionalized at the state level, there is competition in every state and there are no regional-separatist parties competing in elections. Evidence from surveys of legislators in several Latin American countries analyzed by Rosas (2005) suggests that in most countries in the region—Brazil included—politics is one-dimensional.

Despite these good reasons to believe that the ideological content of Brazilian politics is one-dimensional, previous studies of roll calls taken in the Brazilian Congress have noted that something is amiss with one-dimensional ideal point estimates. One ideological dimension explained most voting patterns while governments had been from the center-right (Leoni 2002; Figueiredo and Limongi 1999), but once a center-left government backed by an ideologically incoherent coalition took office, the ideological content of the underlying dimension of conflict was blurred (Zucco Jr. 2009).

We argue that this blurring of ideology can be explained by the effects of government’s legislative vote-buying efforts. To test this proposition, we need to decompose legislative behavior into ideology and government influence. To do this, we use a two-dimensional ideal point estimator in which the first dimension is anchored to external data that identifies each legislator’s ideology. The second dimension is unconstrained, allowing the model to pick the second dimension that explains the most variation in roll-call voting patterns. We then analyze the recovered second dimension and find considerable support for the idea that it corresponds to a nonideological government-opposition dimension.

Finally, our approach does not assume away legislator electoral incentives. In Brazil, legislators are elected from large state constituencies. Some candidates’ votes are highly concentrated in a small area, while others receive votes in a much more dispersed pattern (Ames 2001), which suggests different types of legislators face different electoral incentives. Despite this heterogeneity, the fact that legislators have some type of electoral concern is part of what gives the government leverage over legislators. If voters cared strictly about policy, obtaining policy concessions would be all that mattered for legislators, and legislative behavior would follow a single policy or ideological dimension. It is precisely because side payments are possible, and because the Brazilian executive is in charge of budgetary appropriations that allow
these side payments to materialize, that legislators face conflicting incentives and the government-opposition dynamic becomes relevant.

Data

We measure voting behavior using all roll calls taken on the floor of the Câmara de Deputados between 1989 and the end of 2010, excluding votes where one side obtained less than 2.5% of the votes after excluding legislators who voted less than 15 times. The roll-call data cover the end of the 48th Legislature (1989–91), the 49th (1991–95), 50th (1995–99), 51st (1999–2003), 52nd (2003–07), and all but the last month of the 53rd (2007–10). These include the final 15 months under president Sarney (1989–90), the Collor (1990–92) and Franco (1992–94) presidencies, as well as the two Cardoso (1995–2002) and Lula (2003–10) presidencies, as described in Table 1. We report results for each of the seven presidencies.

Ideology is estimated from responses to survey questions that asked legislators to place themselves and all other main parties in the legislature on a left-right, 1–10 integer scale. These surveys were conducted by Timothy Power, once in each legislature of the first five legislatures in the period under consideration, and by Power and Zucco for the sixth legislature. These survey data capture both variation in the interpretation of the ideological scale and in the perceived ideology of parties. We design

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**TABLE 1**

The Data

<table>
<thead>
<tr>
<th>Presidency</th>
<th>Legislature(s)</th>
<th>Survey Date</th>
<th>Roll Call Dates</th>
<th># of Roll Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarney</td>
<td>48th</td>
<td>1990</td>
<td>1989-01-25–1990-03-14</td>
<td>52</td>
</tr>
<tr>
<td>Cardoso I</td>
<td>50th</td>
<td>1997</td>
<td>1995-02-16–1999-01-27</td>
<td>545</td>
</tr>
<tr>
<td>Lula I</td>
<td>52nd</td>
<td>2005</td>
<td>2003-03-12–2006-12-20</td>
<td>435</td>
</tr>
<tr>
<td>Lula II</td>
<td>53rd</td>
<td>2009</td>
<td>2007-02-06–2010-12-15</td>
<td>599</td>
</tr>
</tbody>
</table>

**Notes:**
- Votes taken in January of Cardoso and Lula’s second term were analyzed with the votes taken in their first terms, because the new legislature starts in February. Votes taken in January of Lula and Cardoso’s first term were discarded, as they were taken by members of the previous legislature. We used the 1993 survey for the Collor presidency because most votes in that presidency were cast in the 49th Legislature.
our model to extract the relevant information about the relative positions of the parties while taking into account the different ways that individual legislators use the survey scale (Aldrich and McKelvey 1977; Power and Zucco Jr. 2009).

Model

Our starting point for modeling the roll-call vote is a standard two-dimensional item response model (Clinton, Jackman, and Rivers 2004). The data consist of a matrix $Y_{IJ}$ composed of zeros and ones, indicating nay and yea votes, respectively. It is assumed that each legislator $i \in (1, 2, 3, \ldots, I)$ has an ideal point defined as the vector of coordinates in a two-dimensional Euclidean space $x_i = (x_{i1}, x_{i2})$. In each vote $j \in (1, 2, 3, \ldots, J)$, legislators choose between two alternatives $\Psi_j = (\psi_{j1}, \psi_{j2})$ and $\Theta_j = (\theta_{j1}, \theta_{j2})$, defined in the same space. Legislator’s utility associated with each option is defined by a deterministic quadratic loss function over both dimensions, and a random normal stochastic component. Hence,

$$U_{ij} = -\left(x_i - \Psi_j \right)^2 + \epsilon_{ij}^W,$$

and $U_i = -\left(x_i - \Theta_j \right)^2 + \epsilon_{ij}^\Theta$, where normally distributed disturbances have mean zero and standard deviation $\sigma$. Legislators choose to vote for $\Psi_j$, producing a yea vote ($Y_{ij} = 1$), whenever $U_i(\Psi_j) \geq U_i(\Theta_j)$. By straightforward manipulation, the probability of observing such an outcome is

$$Pr\left(Y_{ij} = 1\right) = \Phi\left(\beta_{j1} x_{i1} - \beta_{j2} x_{i2} - \beta_{j0}\right),$$

where $\Phi$ is the cumulative normal distribution.

In a typical ideal point estimator, every legislator is treated as coming from a single population of ideal points characterized by a common prior distribution. In our estimator, we treat each legislator as a draw from a distribution characteristic of their party $k \in 1, 2, 3, \ldots, Q$. Thus, the ideal point estimates $x_{i1}$ and $x_{i2}$ for each legislator form party specific distributions, centered on the party estimated positions $\pi_{k1}$ and $\pi_{k2}$.

$$x_{i1} \sim \mathcal{N}(\pi_{k1}, \sigma_1)$$

$$x_{i2} \sim \mathcal{N}(\pi_{k2}, \sigma_2)$$

(2)

(3)
The prior distributions for the party means are defined differently in each dimension. In the government influence dimension, we treat each party mean $\pi_{k2}$ as coming from a $N(0, 1)$ prior. In the ideology dimension, the party means $\pi_{k1}$ are informed by the legislator survey data. These data take the form of a matrix of survey responses $P_{[M \times K]}$, whose elements assume values $p \in (1, 2, 3, \ldots, 10)$ according to how each legislator $m \in 1, 2, 3, \ldots, M$ placed the $k \in 1, 2, 3, \ldots, Q$ parties in a left-right scale. We assume that there exists a “true” perceived position for each party $\pi_k$, but that part of the variation in the observed placements $P_{mk}$ is due to respondent effects, that can be summarized in individual stretch ($\mu_{m0}$) and shift ($\mu_{m1}$) factors, such that

$$P_{mk} = \mu_{m0} + \mu_{m1} \pi_{k1} + \epsilon_{mk}$$

(4)

where $\epsilon_{mk}$ is assumed normally distributed with mean zero.

We purposefully introduce an asymmetry in the model by using nonroll-call data to identify the ideological dimension but allowing the second-dimension estimates to be freely set by the data. It would be reasonable to use data pertaining to the government status of each party to identify the second dimension. However, we do not pursue this strategy for two main reasons. First of all, there is no uncontroversial metric by which to measure “government” status. More importantly, however, we would be assuming that which we want to demonstrate: that a government-opposition dimension is a powerful predictor of legislative voting in Brazil. By leaving the second dimension free, our model allows us to ask what is the most powerful predictor of legislative behavior once we have accounted for ideology. In the second half of the paper we show that the answer is “government influence,” and that it sometimes matters even more than ideology.

In general, two-dimensional ideal point estimators require an identification restriction that determines the orientation of the space with respect to rotation, stretch, and shear transformations. However, in our hierarchical setup, the scale and polarity of one of the dimensions is identified by the survey data, so we effectively have the much simpler one-dimensional identification problem for the remaining dimension. We rescale each dimension in postprocessing so that the ideal points of legislators in each dimension have a mean equal to zero and variance equal to one (bill cutlines and party positions were rescaled accordingly). This scaling facilitates fair comparisons of the relative importance of the two dimensions over the population of roll-call votes in the same way that standardizing independent variables in a regression makes coefficient sizes comparable. We estimated the model through MCMC
Hierarchical Identification of Ideal Point Estimates

The inclusion of survey data in the model helps us solve the identification problem faced by standard ideal point estimators. There are a variety of existing ways to identify multidimensional ideal point estimators, including fixing particular legislators at particular positions, fixing legislators’ positions relative to one another, and restricting which dimensions particular roll-call votes can depend on. One way to understand our model is as another way to provide identification. We are able to identify the ideology dimension by exploiting data about relative party positions on that dimension, data which we could not use with a standard estimator. Our model guarantees—as we show in this section—that the first dimension reflects the ideological left-right dimension. In the case of Brazil it also produces—as we discuss in the next section—a substantively meaningful second dimension.

Figure 1 shows a comparison between 2D ideal point estimates obtained from the hierarchical model, those obtained from an unidentified Bayesian estimator, and those from WNominate. The unidentified estimator yields an arbitrary rotation of the space: we can see from the figures that the hierarchically identified model rotates these estimates so that the horizontal axis matches what is widely recognized as the left-right ideological ordering of Brazilian parties. The fact that the rotation largely preserves the relative positions of most parties suggests that the hierarchical identification is putting meaningful labels on structure already in the roll-call data. What our model does is to choose the rotation that increases the substantive interpretation of the results, and by forcing the first dimension to reflect ideology, it helps us interpret the second dimension. A comparison to WNominate estimates makes the advantage of our approach more explicit. WNominate uses an identification strategy that involves making the first dimension the one with the greatest predictive power (Poole 2005; Poole et al. 2007). As a consequence—and in anticipation of results presented later in the article—what Figure 1(c) reports as the first WNominate dimension turns out not to be the ideological dimension, but rather the government-opposition cleavage that our model puts in the second dimension.
FIGURE 1
Ideal Point Estimates for Lula II
Produced by Three Different Methods

Notes: In the background, in light gray, figures show the cloud of legislators individual positions in both dimensions. Parties’ positions in panels b and c are simply the mean position of all party members in both dimensions. In panel a, parties’ positions are the estimated party placements ($\pi_1$, $\pi_2$). The dashed line simply unites the PT and the PSDB to facilitate visual rotation of this figure relative to the one produced by our hierarchical model.

The Ideology Dimension Under Lula

In Figure 2 we report the position of parties on the ideological dimension. While these results are for Lula II, the relative position of
parties is largely stable over the period studied. This figure reflects what
country specialists would recognize as the ideological ordering of Bra-
zilian parties and is provided as a rough guide for readers less familiar
with Brazilian politics.\textsuperscript{19}

Our more detailed, first dimension legislator estimates for Lula’s
two terms are reported in Figure 3, and a few high profile legislators
are shown. For Lula’s first term, members of the left wing of the PT
that later split to create the PSOL (Babá and Alencar) are at the far left
of the spectrum along with Rebelo, a well-known member of the
PC do B. The PT’s mainstream (Chinaglia and Cunha) appear slightly
more moderate, followed by the Executive’s position.\textsuperscript{20} Fruet, a mod-
erate PSDB politician, and Temer, the quintessential PMDBista and
several times speaker of the house, appear closer to the center as would
be expected. Towards the right we get Jefferson, an important PTB
politician, Delfim Netto, former economic minister for the military
government, and Madeira, from the more conservative wing of the
PSDB. On the far right we have A. C. M. Neto (DEM), grandchild and
heir to his conservative caudillo namesake, and Caiado, then informal
leader of the ruralist group, as well as Northeastern politicians such as
Cavalcanti and Aleluia.

In Lula’s second term, the Executive is again placed on the center-
left, the extreme left is occupied by the likes of Alencar and L. Genro
(PSOL), while the rightmost politicians include Caiado, A. C. M. Neto,
and Mabel (PR). In the center-right we see Guerra (PSDB), and in the
center H. Alves (PMDB), Temer, and Fruet. This ordering is more plau-
sible than the one produced by W-Nominate—reported in the web
appendix—which confuses opposition to the government with ideology,
placing extreme-left members together with the most right-wing ones
in one end of the distribution, and the executive’s whip on the other.
The conflation in W-Nominate suggests that a majority of votes in this
period reflect government-opposition divisions that are unrelated to the
ideology of legislators.
Once the horizontal dimension is matched to the ideological ordering of parties and legislators, the resulting vertical dimension reflects the government-opposition divide. This government-opposition dimension is not just a residual category capturing whatever other motivations legislators may have. In Brazil at least, it is instead part of the basic political dynamic whereby the executive provides inducements that shape the behavior of legislators, sometimes against their ideological propensities.
The shading of the party dots in the preceding figures represents the frequency with which each party held a cabinet position in the period under study. The lighter the party’s dot, the longer it held a cabinet post. Cabinet membership is an imperfect measure of commitment to government and does not cover all the ways in which parties might be induced to support the executive’s legislative agenda. It also lumps together parties that held several important ministries and parties that held a single and small cabinet seat. However, the correspondence between cabinet membership and position on this dimension is striking, and the stories behind some of the deviating cases—detailed in the next section—reinforce our characterization of the second dimension as government versus opposition. Parties in the cabinet have higher second dimensional estimates than parties out of cabinet, and parties partially in the cabinet typically occupy an intermediate position.

The individual legislator estimates for the second dimension reinforce this interpretation (Figure 3). They capture, for instance, the fact that Baba and Alencar are in opposition to the government despite being ideologically close to it. The estimates also capture the support given to the government by its right-wing supporters such as Jefferson, Costa Neto, and to a lesser extent Cavalcanti, all of which appear closer to the government pole than their ideology alone would predict. For both periods, the executive whip anchors the second dimension, and members of the center-right and right-wing parties PSDB and DEM are in the other extreme, along with members of the far left that oppose the government led by the center-left PT.

Stability of Estimates Over Time

Under any of its many definitions, ideology should not be something that changes dramatically over time. Presumably, then, if first-dimension estimates reflect ideology, they should be relatively stable from year to year. Conversely, if second-dimension estimates capture governments’ effort to buy votes, they should exhibit more variation, and variation itself should be different depending on whether the ruling coalition—and the consequent identity of those being bought—changes.

In Table 2 we report linear correlation coefficients between ideal point estimates obtained by our hierarchical model in chronologically adjacent presidencies. Our first-dimension estimates are very stable over time while our second-dimension estimates also behave according to expectations described above. There is a high correlation in the second dimension for Lula’s two terms, reflecting the continuity and stability of the governing coalition. Second-dimension ideal points are also highly
TABLE 2
Correlations Between Ideal Point Estimates in Adjacent Presidencies

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1st</th>
<th>2nd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarney–Collor</td>
<td>0.89</td>
<td>0.31</td>
</tr>
<tr>
<td>Collor–Franco</td>
<td>0.90</td>
<td>0.46</td>
</tr>
<tr>
<td>Franco–Cardoso I</td>
<td>0.86</td>
<td>0.81</td>
</tr>
<tr>
<td>Cardoso I–Cardoso II</td>
<td>0.89</td>
<td>0.68</td>
</tr>
<tr>
<td>Cardoso II–Lula I</td>
<td>0.81</td>
<td>0.60</td>
</tr>
<tr>
<td>Lula I–Lula II</td>
<td>0.92</td>
<td>0.89</td>
</tr>
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</table>

TABLE 3
Average Second Dimension Estimate by Cabinet Status of Party

<table>
<thead>
<tr>
<th>In Cabinet</th>
<th>Switched Status</th>
<th>Out of Cabinet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarney</td>
<td>0.30</td>
<td>−0.65</td>
</tr>
<tr>
<td>Collor</td>
<td>0.16</td>
<td>−0.16</td>
</tr>
<tr>
<td>Franco</td>
<td>0.21</td>
<td>−0.03</td>
</tr>
<tr>
<td>Cardoso I</td>
<td>0.24</td>
<td>−0.00</td>
</tr>
<tr>
<td>Cardoso II</td>
<td>0.18</td>
<td>0.30</td>
</tr>
<tr>
<td>Lula I</td>
<td>0.30</td>
<td>0.00</td>
</tr>
<tr>
<td>Lula II</td>
<td>0.28</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Notes: Table reports the average position of parties on the second dimension according to cabinet status, for each period analyzed. Parties that switched status are those that held cabinet positions for only part of the period under consideration. The president’s party, by construction, has a positive value on the second dimension.

correlated between Franco and Cardoso’s governments, which is not surprising given that Cardoso was Franco’s chosen successor. Correlation in the second dimension is lower between Cardoso’s two administrations than in these other periods of stability, but still somewhat higher than across the Cardoso-Lula transition and considerably higher than across the Sarney-Collor and Collor-Franco transitions.

Entering and Exiting the Cabinet

In Table 3 we present the average second-dimension position of parties by their government-opposition status. Our estimates for the parties that switch cabinet status from government to opposition (or vice
versa) during each period represent a weighted average of the parties’ positions when in government and when in opposition. We address many of the specific instances of such changes in the next section, but the parties that change cabinet status during the period allow for a more refined test of the argument that the second dimension reflects a non-ideological government-opposition dynamic. We can estimate each party’s position separately when it holds a cabinet seat and when it does not. Holding the first-dimension position fixed, we estimate two second-dimensional party placements and two legislator second-dimension positions for each of its members, one before and one after the switch. Parties that did not switch membership are treated as before.23

We report in Table 4 the differences between in-cabinet and out-of-cabinet second dimension positions for all 14 parties that switched cabinet status during a presidency. Of these, seven display shifts that are in the expected direction (higher second-dimension estimates when in government), six display shifts that are indistinguishable from zero, and

<table>
<thead>
<tr>
<th>Presidency</th>
<th>Party</th>
<th>Change in 2nd dimension</th>
<th># of Roll Calls</th>
<th># of Roll Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>In Cabinet</td>
<td>Out of Cabinet</td>
</tr>
<tr>
<td>Negative Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collor</td>
<td>PDS</td>
<td>-0.71**</td>
<td>124</td>
<td>30</td>
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<tr>
<td>Collor</td>
<td>PTB</td>
<td>-0.30*</td>
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<td>128</td>
</tr>
<tr>
<td>Cardoso I</td>
<td>PPB</td>
<td>-0.11**</td>
<td>351</td>
<td>145</td>
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<tr>
<td>No Change</td>
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<tr>
<td>Collor</td>
<td>PL</td>
<td>-0.33</td>
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</tr>
<tr>
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<tr>
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<td>PP</td>
<td>-0.02</td>
<td>76</td>
<td>217</td>
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<tr>
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<td>PV</td>
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<tr>
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<td>114</td>
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<td>PSB</td>
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<td>35</td>
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<td>0.14**</td>
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Notes: Positive numbers indicate higher position on the government-opposition dimension when in the cabinet. * and ** indicate difference is statistically significant at the 0.10 and 0.05 level, respectively.
three display shifts that are in the opposite direction from what was expected. These are mixed results, but two of the three deviant cases are in the Collor presidency. As we discuss later, Collor constructed his cabinet differently from all the other Presidents that we consider. In the next section we consider these, the other deviant case, as well as the special case of the PMDB under Lula.

**Brazilian Politics in Two Dimensions**

The two dimensional figures of Brazilian lower-house voting behavior summarize a great deal of historical detail and convey this information in an intuitive and clear way. In this section we assess the fit between results and political events of the last 20 years, in reverse chronological order from the Lula to the Sarney presidencies. In this analysis we pay special attention to the parties whose cabinet status do not seem to match their second-dimension position and to parties that shifted in an unexpected direction when entering or exiting the cabinet.

*The Lula Presidencies.* The striking feature about Lula’s two presidencies is that both the opposition and the government span much of the ideological dimension, making the separation between the effects of government incentives and ideology especially clear. In both of Lula’s terms—Figure 4(a) and 4(b) the DEM/PFL and the PSDB—the core of the opposition—are clearly separated from the president’s party (PT), its “natural” allies on the left (PC do B and PSB) and its right-leaning allies (PTB and the PL). In Lula’s second term only one party (PV) occupied the middle-ground between government and opposition. In Lula I, the PMDB, PP, PPS, and PDT occupied this ambiguous position. Why do these parties appear at these intermediate positions?

During Lula’s second term the partisan composition of the cabinet hardly changed—only the PDT changed status, early in the term—and consequently government and opposition are neatly separated from each other. The only party in a more intermediate position is the PV, which, in fact, reflects its true situation. Singer Gilberto Gil—a PV member—was minister of Culture during most of this period and his successor was also nominally in the party. Although small, the PV was divided throughout this period, allying itself with the PSDB in several local elections and sponsoring Marina Silva’s (former PT senator and Lula’s Minister for the Environment) presidential bid in 2010.

Lula’s first term deserves more attention. All of the four parties in the middle of the graph switched cabinet status. Two of these parties—PPS
and PDT—were early allies that left the government at different points in time, and their behavior changed accordingly (see Table 4). Their positions in Figure 4(b) can be interpreted as a weighted average of positions when in government and when in opposition. The PMDB and the PP also switched cabinet status, having joined the government in early 2004 and mid 2005, respectively. While this could explain why these parties’ average position is midway between government and opposition.

Notes: In the background, in light gray, figures show the cloud of legislators’ individual positions in both dimensions. Parties’ positions are the estimated party placements ($\pi_1$, $\pi_2$). Roll call cutlines are also shown.
it turns out that their behavior did not change substantially with their status, as it would have been expected. It is important to understand why.

Consider first the case of the PP. In February 2005, backbencher S. Cavalcanti (PP) took advantage of infighting within the government’s ranks and obtained an upset victory as speaker of the house. He then attempted to bully the government into awarding his party a ministry in exchange for the continuation of the support it was already lending the
government, and with the promise to keep congress “under control” (Tortato 2005). To show resolve, the government closed talks of ministerial reform, forcing Cavalcanti to back down. Soon after, a high-profile bribe-for-support scandal—known as the *mensalão*—broke out. In the midst of the crisis, Cavalcanti was implicated in a “subscandal” dubbed the *mensalinho*, which eventually forced him to resign from Congress on September 21, shortly after the government had effectively brought the PP on board of the cabinet as part of its damage control strategy. The party did not change its position after formally joining the cabinet because it was already half-supporting the government before this, though also engaged in a political tug-of-war with Lula. Additionally, several PP members were implicated in the *mensalão* scandal, which also helps explain why part of the party was considerably progovernment even before obtaining a ministry.

The PMDB, the largest party in the legislature, is a clearer example of a similar process. The party has historically harbored government and opposition factions regardless of who is in power. Lula, as others before him, courted the PMDB as an important ally, but for much of his term only succeeded in securing support of half of the party. Lula painstakingly managed to secure partial support from the PMDB during much of his first year in office, despite the party not being formally in the coalition. The PMDB, for example, lent support to Lula’s fiscal and social security reforms, instances in which the government could not count on the full support of many legislators from leftist parties (Cariello and Albuquerque 2004). Having decided that it was important to clinch the PMDB’s long-term support at the same time when the PDT was leaving the government, Lula eventually offered the party two ministries and several other directorships in state owned enterprises (Folha de São Paulo 2003).

Luring the PMDB was particularly hard because the party is strangely divided between lower house and upper house factions and further subdivided into different state branches that are sometimes allied and other times opposed to the PT at the regional level. Lula devoted a greater effort to capture the party’s Senate branch by pampering important figures such as J. Sarney, R. Calheiros, and H. Costa (Grabois and Cotta 2004). In the lower chamber, however, PMDB members from at least eight states tended to be, for local reasons, more opposed to the government than the rest of the party. Figure 6 shows that these factions within the PMDB voted distinctively during this period.

As the government sought to attract the PMDB to the cabinet, as a reward to the loyalist faction of the party, legislators from São Paulo and Rio de Janeiro, initially relatively supportive of the government, actually drifted away. Sao Paulo’s PMDB leader, O. Quércia, became personally
dissatisfied with the PT’s efforts to obtain PMDB support for its future gubernatorial candidate in the state, M. Suplicy. Similarly A. Garotinho, then an important figure in Rio de Janeiro’s PMDB and a presidential hopeful himself, quickly realized that it was not in his electoral interests to have the party support the current president. Subsequently in 2005, as the progovernment PMDBistas gained an upper hand and Lula became increasingly popular, the PMDB increased its commitment to the government considerably, gained more portfolios, backed Lula’s reelection in 2006, and became a full fledged partner in Lula’s second term with the size of the opposition faction considerably reduced.

**The Cardoso Presidencies.** Fernando Henrique Cardoso was the first president to serve two consecutive terms, from 1995 to 2002. In both terms he governed with support of a broad center-right coalition, which proved to be a formidable legislative “steam roller” during much of his time in office. Coexistence among coalition partners, however, was rarely smooth, even though partisan composition of the government was relatively stable.

In Cardoso’s second term (Figure 4(c)), government and opposition appear quite separated. There are some members of the PMDB, PPS,
and PL in the middle ground, but one easily can distinguish the govern-
ment supporters from the rest. Interestingly, though, there is not much
vertical separation in between the two blocks, except for the PT. The
PDT, in particular, occupies a higher second dimension position than we
would expect. This feature of the results is related to the ideological
coherence of the coalition that makes it hard to distinguish between the
two dimensions during the Cardoso era—a point which we discuss in
greater detail in the next section.

As before, some allied parties did not hold cabinet positions and
some of the parties that switched status deserve some attention. During
Cardoso’s second term, the PL was formally part of a mini-block with
four other tiny parties, for a total of 17 legislators. Its reduced size
prevented any claims to ministerial positions, but the party did provide
eventual ad hoc support for the government.

The PTB’s situation was somewhat more complicated. At the begin-
nning of his second term, the Asian and Russian financial crises hit, creating
a dramatic fiscal situation, forcing a massive devaluation of the currency,
and threatening the economic stability that was the government’s greatest
accomplishment. The crisis turned the usually sleepy month of January
into a struggle to pass a fiscal adjustment package and opened a free-for-all
as the government tried to rally its coalition to approve unpopular mea-
sures. The PTB was particularly aggressive, requesting infraministerial
positions (Folha de São Paulo 1999c, 1999b, 1999g), but in the end, the
acute economic crisis allowed the president to convince its partners to
postpone jobs negotiations until after the installation of the new legisla-
ture, in February.

After succeeding in passing emergency fiscal measures, PTB’s
minister P. Paiva’s move to the Inter-American Development Bank trig-
gered a cabinet reshuffle. The PTB demanded to keep the post, or at
least some compensation in case it lost the ministry (Folha de São
Paulo 1999f) but Cardoso reshuffled the economic cabinet with mostly
personal appointees, and the PTB lost its seat in the cabinet. The PTB’s
new leadership responded by calling for a programmatic “rebranding”
of the party, vowed publicly to not request any jobs, and promised to
still support the government (Cantanhêde 1999; Folha de São Paulo
1999d). While this formally describes the PTB’s position during this
period, it was a rather precarious one, and in several cases the party
sought to extract greater concessions from the government.

In August 1999, for instance, the PTB threatened to formalize a
block with the PL to attract dissatisfied governistas (Folha de São Paulo
1999a). This threat was ridiculed by the government and the media with
the presumptive block of 40 legislators being dubbed “Ali Baba Block” in
reference to the tale of the forty thieves. Such views were corroborated when the block was eventually aborted after the government offered some lower level positions to please the party (Folha de São Paulo 1999e; Rodrigues 1999). Other such attempts to extract resources from the government followed, but the PTB ultimately stuck with the government for most of Cardoso’s term until it jumped on Lula’s bandwagon on the eve of his election. After all is said and done, the party does appear to be correctly placed in Figure 4(c), and it moved in the expected direction as it left the government.

The last change in Cardoso’s cabinet came in the last year of his second term, when the PFL left the government over a dispute involving a Federal Police raid of the offices of PFL’s presidential hopeful Roseana Sarney’s husband. The PFL ministers resigned in protest in early March 2002, and most party nominees in other important positions left the government within a few days (Rodrigues and Ulhoa 2002). The absence of the PFL from the government coalition brought Congress to a halt and caused the postponement of important measures such as renewal of the temporary tax on financial transactions (CPMF) and a number of medidas provisórias. Some matters were eventually passed with support of the PT, which was due to win the upcoming presidential election and had no interest in wreaking havoc in the government’s accounts (Folha de São Paulo 2002b, 2002a). The fact that there were very few votes in this period prevents us from seeing significant change in the PFL’s position in Table 4, but it clearly did affect the functioning of government.

Figure 4(d) depicts Cardoso’s first term that started in 1995 with a broad alliance of his party, the PSDB, with the PFL, PMDB, PTB, PL as well as with the PP and PPR—which later merged to form the PPB. The fact that two mostly cabinet-less allies (PTB and PPB) are very close to the core of the support coalition shows that even though cabinet positions are the ultimate prize, there are valuable second- and third-level posts that can be used to maintain coalitions.26 The PP, for instance, held several infra-ministerial positions and frequently demanded to exchange the “20 bicycles” the party already controlled—such as one directorship of public company Itaipu (Folha de São Paulo 1995a)—for “a Mercedez Benz.” The PL, then a very small party, started out Cardoso’s term with a few lower ranking but important jobs, such as a directorship of São Paulo’s Telecom and another one in the Brazilian Mail Company (ECT; Folha de São Paulo 1995b). The PPR, likewise, held another directorship in the ECT (Folha de São Paulo 1996d).

These smaller parties constantly demanded more. In June 1999, for instance, the government’s telecommunications reform provided the opportunity for the junior members of the coalition to stage a revolt,
which was controlled with promises of future jobs. Soon thereafter, in September, the PPR and the PP merged to form the PPB. The merger was aimed at strengthening the position of the group of progovernment legislators who believed they were underrepresented in the division of spoils, but was also carried out under the auspices of Cardoso himself who was interested in reducing his reliance on the PFL (Folha de São Paulo 1995c, 1996d). The new party was formed with the understanding that at some point it would receive a ministry. At the same time, the PL was threatening to move into opposition if it did not receive better treatment from the government (Folha de São Paulo 1995b).

After social security reform failed a first vote in late 1995, the government carried out an emergency operation to rally its base and secured passage of the bill in March 1996. This “near miss” in such an important piece of legislation, however, prompted the government to carry out the first major reshuffling of the cabinet in April. The main goal was the inclusion of the PPB (Folha de São Paulo 1996b), seen as essential to strengthen the government’s bid to pass a constitutional amendment authorizing the reelection of the president. Though allies had floated the idea of creating a new ministry for the PPB (Folha de São Paulo 1996a), the president decided to award the party the Ministry of Industry and Commerce and to compensate the previous holder of the seat—the PTB—with the Ministry of Agriculture (Folha de São Paulo 1996c). The fact that the PPB and its predecessors (PP and PPR) were already clearly supporting the government even before receiving a ministry suggests that the model should probably not find a significant change in the party’s position as it formally changed cabinet status. The negative effect reported in Table 4 is still puzzling but is mitigated by the fact that the party remained one of the most progovernment parties throughout the whole period. Additionally, the fusion that originated the PPB might have something to do with this atypical result, but we do not have ideology estimates for the predecessor parties for this period.

Cardoso’s modified coalition proved to be very effective. Very few of the several hundred votes taken in the period, cut through the government’s coalition. While parties bickered about a whole array of issues and sought many opportunities to extract more resources from the government, the passage of the reelection amendment first provided a reason for the government to use all possible means to hold its base together, and later the incentive for other parties to remain attached to Cardoso, whose presumptive reelection loomed on the horizon. This corroborates Amorim Neto, Cox, and McCubbins’s (2003) results, who find low “roll rates” for parties in the coalition during this period, which are even lower for the PSDB and the PFL.
The Franco Presidency. For Franco's government, visual inspection of Figure 5(a) shows several non-cabinet parties high on the government-opposition dimension. This reflects both the circumstances by which Franco became president and the fact that some parties that supported Franco were not always in the cabinet. Chosen as Collor's running mate for the 1989 elections, Franco distanced himself from the president before corruption allegations surfaced. After Collor's impeachment in October 1992, Franco presided over what resembled, at least at first, a "national unity" government, with only the PDT and the PT explicitly refusing support (Figueiredo 2008), and which later evolved into a broad center-right coalition government that laid the basis for the Cardoso government. Franco himself spent all of his term without formal party affiliation and only joined the PMDB soon after leaving office. The PMDB and the PFL, which appear in the top of the figure, are the only two parties that held cabinet seats and supported the government for the whole term. Cardoso (PSDB) occupied first the Foreign Ministry and then as Franco's Finance Minister led the economic stabilization process and the introduction of the currency. While the PSDB did not formally hold positions in the government during the electoral period, Cardoso ran for president as the incumbent party candidate, with Franco's support. Similarly, the PTB formally gave up its cabinet position in late 1993. At first, its former minister, J. E. Andrade Vieira attempted to become Franco's presidential candidate, but once Cardoso succeeded in stabilizing the country the PTB threw its support behind the president-to-be and remained a government ally throughout the end of Franco's government and into Cardoso's.

The small PPS is an example of a progovernment party that lacked a cabinet position. R. Freire, party leader, served as the government whip in the lower house for much of Franco's term. Other parties supportive of the government such as the PL and the PRN were simply too small to hold cabinet positions.

Two parties, the PSB and the PDT occupy an intermediate position between government and opposition. The PSB held ministerial positions at the start of Franco's government, but parted with the government when it took a right-wing turn midterm. The PDT, on the other hand, had explicitly withheld support from Franco's government, but had one of its members coopted into the cabinet, and ultimately serving on a personal basis and breaking with party leader L. Brizola (Figueiredo 2008). Systematic opposition during the whole period came from the PT and its close ally, the PC do B. Overall, Figure 5(a) reflects this reasonably well.

Collor: Figure 5(b) depicts Collor's short-lived presidency, which due to nonconcurrent calendars spanned two legislatures. This figure
reveals much of the disarray of the period, which explains why the model does not manage to capture the government-opposition dynamic on its second dimension. After attempting to govern above parties—note the small number of parties in his cabinet—Collor relied on ad hoc attempts to bring the PMDB on board and on an uneasy rapprochement with L. Brizola, governor of Rio and main figure in the PDT.

By all accounts, the logic behind Collor’s cabinet appointments was different than in other presidencies, and did not end well for him. He was elected as an outsider, reduced the number of ministries, appointed a cabinet of nonpartisans and attempted to govern by decree without forming a legislative coalition (Amorim Neto 2006; Figueiredo 2008). Though Collor had some limited success in confronting Congress, his position weakened considerably once corruption allegations surfaced. Collor then tried to lure traditional parties into his coalition, but even then his legislative support dwindled as pre-impeachment proceedings progressed. The second dimension in Collor’s period does not seem to make much sense, but it is also almost irrelevant to roll-call voting behavior as there are hardly any votes that cut horizontally. In sum, our model simply does not apply to this period, and given the government’s lack of a coherent coalition strategy, a one-dimensional model is probably superior.

**Sarney.** Figure 5(c) shows the last year and a half of the Sarney administration. At this point in his term, the PMDB’s overwhelming majority had been eroded by many defections but the party was still the largest in the legislature and the government also relied on an alliance with the PFL—commanded by the powerful communications Minister A. C. Magalhes. The figure for this period shows these two parties higher than all others in the government dimension. Opposition came both from the left and from the right, but the bulk of the legislators supported the government to the end.

**The Structure of Political Conflict**

The model does a good job in fitting ideology to the horizontal dimension, and the second dimension generally matches our expectations in terms of what a government-opposition dimension would look like, except, perhaps, in the tumultuous Collor presidency. The WNominate estimates reported earlier for period Lula II (Figure 1(c)) constituted prima facie evidence that government opposition was in fact the primary dimension of conflict during that period. Examination of the Figures reported above shows that several of the other periods also have as many or more horizontal cutlines than vertical cutlines.
In Figure 7 we provide a systematic assessment of the relevance of each dimension by classifying all votes as cutting across the first dimension, cutting across the second dimension, or mixed—diagonal cutlines that cut across both dimensions. In this respect, the share of second-dimensional cutlines—those that pit government against opposition rather than left against right—shows what looks like an upward trend broken only by Cardoso’s second term. In all other presidencies since Franco, there have been more second-dimensional than first-dimensional votes and in the Lula years, close to 70% of all conflictive votes cut clearly across the government opposition. This figure also suggests that the mysterious second dimension in the Collor presidency is almost irrelevant, as ideology can explain the splits in almost all votes.

Overall, the idea that ideology was a much more powerful predictor of voting in the early years of the return to democracy seems quite plausible. Many members of the legislature had direct links with the military regime, the opposition had been long excluded from power, and a large part of its ranks were of political outsiders struggling to gain a
foothold in mainstream politics. Today, in contrast, almost all parties have shared power, one way or another, which has probably contributed to the decreasing influence of ideology.

We can be relatively sure of this interpretation of the trend from Sarney to Franco to Lula. In these presidencies, the model does a good job of separating between the two dimensions, and we can comparatively assess the relative importance of each dimension. However, our analysis had more difficulty capturing the dynamics of the Cardoso years, especially his second term. If one returns to Figure 4, it is clear that the bulk of the cutlines divide government from opposition but they also divide left from right. During this period, the existence of an ideologically coherent government coalition makes the two dimensions collapse into one. In these cases we cannot say much about how relevant each of these dimensions of conflict is, as small variations in the position of parties could lead to potentially very different cutlines. In fact, the structure of conflict in the two Cardoso administrations is probably less different than the figures suggest. It is probable that both ideology and government influence were relevant in this period, but observational equivalence prevents us from identifying the contribution of each.

Although this particular problem cannot be solved, it is crucial to note that our model performs at least as well as the standard models: for the Cardoso years, the association between the the first dimension position under our model and under WNominate is very strong. So while the political context was such that it prevents us from a meaningful assessment of the relevant importance of each dimension, we still have confidence in the results of the estimation and there is no loss from adding additional information to the estimation process.

**Discussion and Conclusion**

Wherever possible, scholars should employ contextual information in ideal point estimation. While it might appear easier to apply off-the-shelf methods of ideal point estimation, doing so tends to shift rather than eliminate the challenges of multidimensional analysis of roll-call data. Auxiliary information especially facilitates the otherwise difficult process of substantive interpretation. At a minimum, including such information can identify the substantive meaning of recovered relationships in the data (that is, provide identification with respect to the space). However, as is also illustrated in the article, the inclusion of auxiliary information can lead to conclusions that are different from those obtained by models that fail to incorporate information about the structure of political conflict.
What type of data scholars should incorporate varies from case to case. Whenever ideological placements of legislators are deemed relevant, and trustworthy survey evidence is available, our particular model could be straightforwardly applied. However, surveys of legislators are rare and present their own problems. Depending on what kind of auxiliary information is available, variations on our model are required. Still, such changes today are within reach of many scholars, thanks to the flexibility of Bayesian modeling and tools like WinBUGS and JAGS.

For the case of Brazil, our results clarify the existence, interpretation, and increasing importance of the second dimension of political conflict. We concur with most scholars that there exists a single ideological dimension in Brazilian politics, but the analysis of legislative behavior suggests that the government-opposition dynamic constitutes an important nonideological aspect of political conflict. At times, especially in the midnineties, the two dimensions become collinear and so it is difficult to assess the relative importance of one versus the other. This overlap of the two dimensions makes ideology an excellent predictor of behavior during that period, a characteristic that is probably at least in part responsible for emphasis on the ideological structure of congress in the first wave of more rigorous empirical studies of Brazilian Congress. The contrast with the emphasis on government influence on legislative behavior in subsequent studies can be understood in light of the fact that the two dimensions have recently separated and that there is considerable evidence that government opposition rather than ideology is now the dominant dimension of conflict. An explanation for why this shift has occurred is a vital question for future research on Brazilian politics. In broader and more comparative terms, this article has developed tools that will be useful in determining when ideology has become more or less important in new democracies besides Brazil.

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**NOTES**

A previous version of this article was presented at the 2009 Annual Meeting of the American Political Science Association, Toronto, September 2009. Thanks to Michael
Peress, Simon Hix, Fernando Limongi, Argelina Figueiredo, as well as to anonymous reviewers for comments and suggestions, and to Timothy Power for sharing his legislative survey data.

1. At least part of these resources are transferred through the party leadership (Lyne 2008). Still, leaders are primarily intermediaries and they lack means of enticing legislators. They exert hardly any control over access to the ballot, and with few exceptions, committee appointments are not too relevant.

2. In a recent survey of Legislators conducted by Power and Zucco, activities related to approving and appropriating individual amendments to the budget were considered very important by 60% of respondents, the second highest figure among 10 activities inquired about.

3. At the other extreme are countries like the United Kingdom with such high party cohesion that it is difficult to identify ideological variation across legislators from the voting behavior of individual legislators because it has negligible behavioral effect.

4. Clinton, Jackman, and Rivers (2004) briefly make the related point that their model requires conditional independence across legislators. Krehbiel (2006) explicitly models these influences on legislators’ votes as random noise, such that their underlying predispositions amount to a probability of voting a certain way.

5. In this context, the hierarchical model functions like an instrument for ideology. We identify the component of variation in voting behavior that is collinear with the left-right party locations, which are themselves estimated from the survey data.

6. As is always the case in ideal point estimation, the use of roll-call votes poses a potential selection problem. Few propositions make it to the floor, fewer are voted on, and roll-call votes can be strategically invoked. However, since our goal is to analyze legislative behavior per se, and not directly a broader theory of lawmaking, all types of voting convey information that is relevant to the task at hand. See Clinton (2007) for a discussion of possible reasons for using subsets of roll-call votes.

7. Collor’s presidency spanned two legislatures, but analyzing these separately would leave us with too few votes in the first one. Presidential and legislative elections became concurrent in 1994, but terms are not perfectly concurrent as the president takes office on January 1st, and the new legislature begins on February 1st. For this reason, the few votes taken in January of Cardoso and Lula’s first terms, as well as those taken in January of Dilma Rousseff’s term, were dropped.

8. The number of parties classified in each survey ranges from nine to thirteen. Since party positions are only estimated for these parties, legislators belonging to other parties were excluded from the roll-call analysis. For all legislatures we use at least 95% of all possible legislator/roll-call observations.

9. The complete questionnaires for the first waves can be found in Power (2000).

10. Throughout the text, vectors are presented in bold (e.g., \( \mathbf{x} \)), dimensions are subscripted (1, 2), ideal points are represented in lower case arabic characters, other parameters to be estimated are represented in Greek letters, and data is represented in upper case arabic characters.

11. The translation of the parameters is 
\[
\beta = \left[ \psi_1 - \theta_1, \psi_2 - \theta_2 \right] \sigma^{-1}, \quad \beta_1 = 2 (\Psi_1 - \theta_1) \sigma^{-1}, \quad \beta_2 = 2 (\Psi_2 - \theta_2) \sigma^{-1}, \quad \text{and similarly, the implied disturbance term is} \]
\[
\epsilon = (\epsilon_{ij}^x - \epsilon_{ij}^y) \sigma^{-1}.
\]
12. Note that we use a single variance parameter for each dimension $\sigma_1$ and $\sigma_2$. Party-specific variance parameters—allowing parties to vary in their cohesion—are attractive as an elaboration to the model, but make it difficult for the hierarchical model to enforce identification of the two dimensions. The prior distributions for $\sigma_1$ and $\sigma_2$ are uniform.

13. Legislators in the ideology data set are indexed differently than in the roll-call data set, reflecting the fact that legislators are not matched directly from roll calls to survey responses because the surveys were anonymous.

14. For the purpose of this article, $\mu_{m0}$ and $\mu_{m1}$ are simply ignored.

15. We have estimated a variant on our model that imposes hierarchical priors on the second dimension based on cabinet membership data. The results from this model are extremely similar to those reported from the model with an unconstrained second dimension.

16. The priors on the bill parameters combined with the priors on ideal points provide identification with respect to shear transformations by penalizing the larger $\beta$ parameters that would be associated with shearing both dimensions while holding the variance of ideal points along each one constant.

17. Please refer to the web appendix for a detailed description of this post-processing.

18. The results reported in the article were obtained using one MCMC chain with 20,000 iterations, but results are stable and basically unaltered with 10,000 iterations or less. The variance parameters in the model received priors that follow a gamma distribution $G(0.01, 0.01)$. The remaining parameters all received normal priors: the bill parameters received a prior of $N(0, 25)$, the party ideal points $N(0, 1)$, and the survey rescaling parameters $N(1, 20)$ for the stretch factor and $N(5.5, 20)$ for the shift factor. The complete BUGS code is reported in the web-appendix, and the data are available from the authors upon request. Code, data, and more detailed results will be permanently published on the DataVerse project upon publication of the article.

19. We opted to not overwhelm the readers with yet another set of estimates for each period. Please see Power and Zucco Jr. (2009) for a more detailed discussion of how ideology has evolved over time in Brazil.

20. In Brazil, the government’s whip announces the executive’s position on most bills, allowing for the estimation of the government’s position.

21. This is measured as the share of all roll calls, and not as a share of time.

22. We present correlations only between adjacent years for simplicity. Complete correlation matrices for all years reinforce the same conclusions. Correlation coefficients were computed based on legislator/party observations present in both years.

23. A party was considered to be in the cabinet when somebody affiliated with it held a ministry position. Though this might seem rather obvious, there were two types of exceptions to this general rule. The first involved politicians who were affiliated with political parties, but were not considered to be partisan representatives: B. Cabral (PMDB), C. Lafer and H. Jaguaribe (PSDB) under Collor; L. Erundina (PT) and M. Correa (PDT) under Franco; and R. Jungman (PPS) under Cardoso. The other exception was for parties that formally did not have any member in the cabinet, but which appointed and supported a nonpartisan. This applies to the PSDB during the run up to the
presidential election under Franco (R. Ricúpero), and to the PSB at the tail end of Lula’s first term (S. Rezende). Finally, the PL (later called PR) did not hold a ministerial position during much of Lula’s term, but was the party of the vice president. These instances are either described in Figueiredo’s (2008) careful data-collection effort or were personally discussed with and approved by that author.


25. The government was accused of making regular payments to legislators of allied parties in exchange for support. Though Lula himself was ultimately not implicated, the scandal led to the resignation of key government officials and to sanctioning of several legislators.

26. Unfortunately it is very hard to obtain systematic information on a complete set of important jobs and political appointees. Coveted jobs included directorships in public telecommunications companies such as Embratel, electrical sector companies such as EletroNorte, Furnas, and Itaipu, public banks, as well as other entities such as Vale do Rio Doce, DNOCS, Sudene, Incra, ECT (Mail), and INSS. Many of these have since been privatized. Pereira (2002) has investigated the relative importance of some of these jobs.

27. Cutlines with a slope greater than 60 ° were considered primarily ideological votes, those with a slope less than 30 ° primarily government-opposition votes, and the remaining fell into the “mixed” category.

28. Conflictive votes were defined as those where at least 20% of legislators voted with the minority.

29. If measured relative to all votes, the patterns are similar except that the share of mixed votes increases. The same applies if we use multiple draws from the posterior and only consider votes for which we have high confidence in their classification.

REFERENCES


