

# Ideology or What? On ideal points, ideological cleavages, and legislative behavior in Brazil\*

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## 1 Introduction

Coalition governments in presidential settings have come to be accepted as an ordinary fact of political life in many Latin American countries. Nonetheless, we still lack an understanding of much of the inner workings of executive-legislative relations in multiparty presidential settings, and, in particular, what is the role ideology plays in shaping in legislative behavior.

The “left-to-right” ideological continuum has been used to analyze politics since the early days of parliamentary life. In recent years, this spatial analogy applied to politics has gained in precision and analytic power as the geometric properties of spatial models have become more well understood. The effort that has been put into identifying ideological positions in spatial terms is usually justified by the assumption that ideology is what drives the political process being studied. But is assumption warranted? Is it reasonable to assume ideology is important in all political processes?

In this paper I use evidence from Brazil in an attempt to answer these and other questions. I show that regardless of a consensus on the ideological structure of this country’s party system, it is a government vs. opposition cleavage, rather than an ideologically motivated one, that structures legislative behavior. I also propose a framework to explain the discrepancy between ideology and observed behavior, in which presidents’ handouts provide incentives that “scramble” the underlying ideological organization of parties. This mechanism posits that legislators’ observed behavior reflects both an *ex ante* “affinity” towards the president, as well as the effects of the distribution of resources by the executive. The claim that there is more to politicians

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behavior than simply ideology is not new. In fact, many studies have argued, and shown, that politicians pursue a varied set of goals, which include besides policies in line with their ideology, obtaining office and maximizing votes (Strøm & Müller 1999). In the specific case of executive-legislative relations in Brazil, the importance of side-payments made by the executive has also been well documented (Pereira 2002). This paper original contribution, nonetheless, is that it pins down in a systematic — and much more precisely way than previous studies — the extent to which ideology on the one hand, and the president’s spoils distribution strategies on the other, shapes legislative behavior. This is accomplished by developing and implementing a measure of affinity as ideology that relies on legislator survey data, and which can then be compared to actual legislative behavior, which can be relatively easily measured.<sup>1</sup>

The paper proceeds as follows. Section 2 explores roll call votes in the Brazilian legislature in an inductive path towards establishing the distinction between behavior and ideology. The broader analytical framework that informs both this paper as well as the rest of my dissertation is then spelled out in Section 2. In Section 4, I estimate ideology in the legislature using survey data and these estimates are used in Section 5 to statistically assess how it shapes legislative behavior.

## 2 Legislative Behavior

Most depictions of Brazilian party politics tend to stress the extremely low levels of party identification in the electorate, the fuzzyness of the policies defended by most parties, the wide variation of political methods and coalition patterns across states, and frequent and pervasive party switching by legislators. While there is much truth to these facts, Brazilian politics displays a much more nuanced combination of volatility and stability than these they would suggest.

The path-breaking work of Figueiredo & Limongi (1999), for instance, has shed light on the inner workings of the Brazilian legislative branch, and showed that parties behave much more coherently than the casual observer would think, at least within parliament. Of more direct relevance to the goals of this paper, it must also be noted that most specialists — domestic and foreign — agree on the basic ordering of parties on a standard left-right dimension, even though in such a “volatile” political environment ideology should be just an afterthought. Moreover, this ordering has been quite stable in time.

To mention just a few examples, Mainwaring & Pérez-Linan (1997), using data from Kinzo (1993), constructed a scale that captured the ideological positioning of parties during the Constitutional Assembly of 1988. A similar ordering emerges from Figueiredo & Limongi’s (1999) analysis of the functioning of the legislature during the 90’s. Rosas (2005), while rescaling answers to the surveys of the Latin American political Elites project (Alcántara 1994-2000) found the PMDB to the right of the PFL, but acknowledges that his results are a bit odd.

If parties behave in structured way within the legislature, and ideology can be identified

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<sup>1</sup>In this paper, this comparison is carried out empirically. However, in a companion piece (Zucco Jr. 2007a), I present a decision theoretic model of executive-legislative relations that addresses this very subject.

Table 1: **Approximate Ideological Ordering of Brazilian Parties**

Left of Center			Center	Right of Center		
PCdoB	PT	PDT	PSDB	PTB	PFL	PDS
PSTU	PCB	PSB	PMDB	PL		PRN
PSOL						

*Notes:* Classification scheme is informally based on studies cited in the text. List does not include all parties, and not all parties listed still exist. The PCB is currently called PPS. The PDS, through relabeling and merger with smaller parties, became PPR, PPB and finally PP.

quite clearly, does it follow that parties behave in way that is *structured along ideological lines*? In other words, what role does this mostly consensual ideological structure play in executive-legislative relations, and consequently in the functioning of the legislative branch? The most straightforward method to address this issue is to observe legislator's behavior and attempt to retrieve its underlying structure that generates it.

Ideal point estimation within legislatures has been a prolific literature in political science, as many theories require measures of legislators' preferences in order to be tested. The most popular approach to this problem has been W-NOMINATE and its variants, developed by Poole and Rosenthal (Poole & Rosenthal 1985, Poole & Rosenthal 1991, Lewis & Poole 2004, Poole 2005). Nonetheless, the Bayesian approach (Jackman 2000, Clinton, Jackman, & Rivers 2000, Jackman 2001), and its software implementation IDEAL (Jackman 2003), have been gaining popularity with recent computation advances.

Both of these approaches use roll calls as the data from which to retrieve underlying ideal points through the use of a quadratic-normal random utility model. While W-Nominate relies on maximum likelihood techniques, the bayesian approach is a direct implementation of item response models.<sup>2</sup> There is some debate on the pros and cons of each approach: while the Bayesian estimates do not require the arbitrary imposition of constraints on the estimates and allow for easier incorporations of covariates in the estimation, W-Nominate can be relatively easily implemented and still is the standard method.<sup>3</sup>

Figure 1 shows one-dimensional W-Nominate estimates, by party, for the last legislature in Brazil. This picture shows the PFL and the PSDB — the core of Cardoso's center-right coalition and today opposition to Lula's government — clustered at the right end of the scale, while the PT and other coalition partners are to the left of the scale. Note that in comparison to Table 1, the PSDB is placed much more to the right, while the PL and the PTB to the left of the PMDB.

W-Nominate estimates ideal points based on the similarity of voting patterns. Though the first dimension that emerges from this estimation is commonly interpreted as the traditional left-right ideological dimension, the actual meaning of this dimension is entirely subjective. Additionally, W-Nominate cannot distinguish between either side of the scale, so the polarity

<sup>2</sup>Krehbiel & Rivers (1988) and Londregan (2000) are examples of yet another approach to dealing with roll calls, where small data sets are compensated for by the inclusion of information on the nature of the proposal being voted on.

<sup>3</sup>The original WNOM9707.exe implementation of W-Nominate has recently received an R module written by Keith Poole, Jeff Lewis, James Lo and Royce Carroll, that greatly facilitates the analysis.

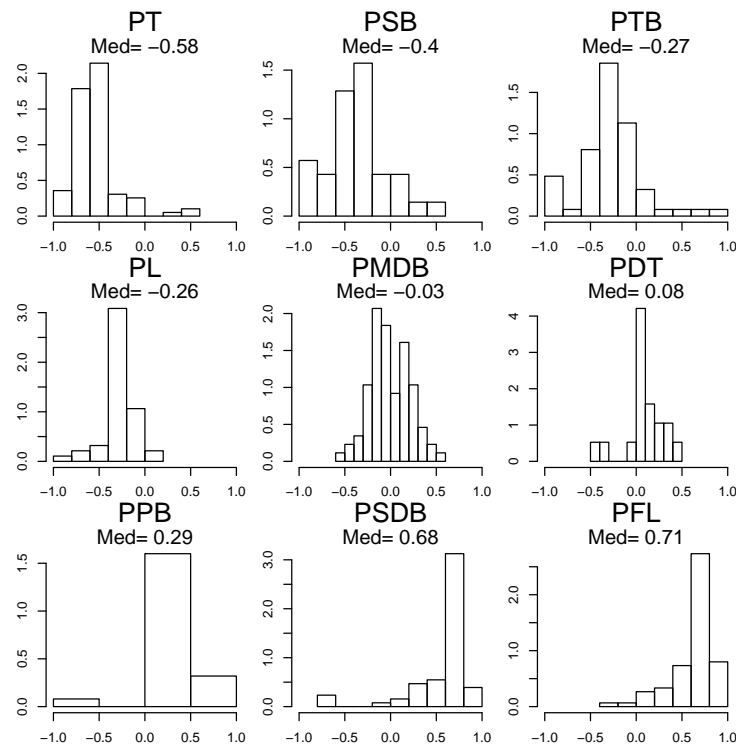


Figure 1: **Distribution of Legislator's Ideal Points by Party**

*Notes:* Ideal points in one dimension were estimated using W-Nominate for R on data collected and provided by Limongi & Figueredo and Fabiano Santos. Median estimate for each party is shown under the party label, and parties are ordered from left to right by this value.

of the votes is also an arbitrary decision. In the graphs shown above, I have called the side the PT is on as “left,” but this is not and entirely obvious decision, for reasons that I now turn to.

## 2.1 The ideology conundrum

Looking at actual policy proposals, instead of the graphical depiction of the similarity in roll call voting patterns, raises further doubt about the correspondence between W-Nominate’s first dimension and the ideological structure of the Brazilian party system.

Governments in Brazil seem to share the same stable position on core issues such as taxes, interest rates, inflation, and minimum wage, irrespective of the nominal ideological inclinations of the incumbent president. For instance, the Lula government has pushed for measures the PT had fought against during its opposition years and, conversely, the center-right opposition has often defended measures it had opposed when in government. Even the arguments used by either side seems have shifted and seem to be more an attribute of the role (either government or opposition), than of the actor that plays the role: governments point to the budget constraints, while the opposition highlights “need” of beneficiaries and the “fairness” of the measures.<sup>4</sup>

<sup>4</sup>Granted, this dynamic is mostly true regarding measures that create or modify expenditure and revenue, which include most relevant policies. Nonetheless, there are some policies in which the positions have not changed,

As an example of these “role contingent preferences”, I present a brief analysis of the legislative debates on minimum wage bills in 2000 — the second year of Cardoso’s second term — and 2004 — the second year of Lula’s first term in office. Some characteristics of a minimum wage bill make it an interesting case study. First, it is debated regularly,<sup>5</sup> thus allowing for comparisons across time. Second, much of the debate is about the nominal value of the wage, which facilitates the comparisons of the revealed preferences of politicians. Finally, there is a simple and relatively clear expectation that the “left” should prefer the minimum wage be set at higher values than the “right.”<sup>6</sup>

**The 2000 minimum wage:** Since 1996, the Cardoso government had always fixed the value of the minimum wage by *Medida Provisoria*<sup>7</sup> (MP) and managed to avoid an actual vote on the issue thanks to the strength of its center-right coalition. However, in 2000, the political context was unfavorable to the president, and a improbable alliance between the PT and the PFL was formed. Sensing that a harsher bill would be initiated by Congress, the executive preemptively sent its minimum wage proposal as an MP, more than one month before the usual discussion period.

This time, it was impossible to avoid putting the matter to a vote. Cardoso’s proposal, issued on February 4<sup>th</sup>, set the minimum wage at R\$ 151 effective May 1st. Upon entering the legislature the MP followed the regular legislative process: it became a “conversion bill,” a joint Senate and House committee was formed to analyze it, and legislators presented amendments. The committee’s report, which rejected all but one amendment, was brought to the floor where a vote was scheduled for April 26<sup>th</sup>.<sup>8</sup>

A couple of days before the vote, however, Antônio Carlos Magalhaes (PFL/BA), president of the Senate and a strong ally of Cardoso, threatened publicly to have his party vote in favor of the opposition’s proposal of R\$ 177. Unsure about the result, the government legislative contingent, in last minute maneuver, aborted the vote by “denying quorum” to the session.<sup>9</sup> The MP was reissued once again, additional amendments were presented, and the bill was brought to the floor a second time on May 10<sup>th</sup>. After a long session preceded by weeks of horse-trading between the executive and its legislative base (Pereira & Muller 2004), the government’s proposal was

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such as affirmative action and privatization. Further research will have to pin down exactly the extent of these “role contingent preferences” of political parties.

<sup>5</sup>Since its creation by Vargas in the 1930’s, the value of minimum wage is usually adjusted in May of every year.

<sup>6</sup>This point might be somewhat controversial because in Brazil there is a complicating factor: a large portion of the benefits paid by Social Security is indexed by the minimum wage, so any increase in its value has great impact on government accounts. This might change, at least a little, the regular terms of the debate. In future versions of this paper I will look into other policies as well, where I believe the same general pattern holds.

<sup>7</sup>These “provisional measures” are decrees with effects of law. Its statutes has varied somewhat since its creation by the 1988 constitution. Though the MP’s expired after 30 days, they could be re-issued upon expiration an any number of times. Amendment 32 to the constitution, passed in 2001, limited this possibility.

<sup>8</sup>At that point in time, the legislative procedure was still for conversion bills to be appreciated by a joint meeting of Congress. After the Constitutional Amendment 32, passed in 2001, the new internal rules of Congress stipulate that conversion bills are to be voted in each chamber, separately.

<sup>9</sup>Intent on postponing the vote, the government leader submitted a procedural request that a vote on a bill that established a regional minimum wage to be set by the states be taken first. The opposition voted against the request, but the government walked out this procedural vote. This revealed there was no quorum, and the session was cancelled.

Table 2: **Final votes on the minimum wage bill (2000 and 2004)**

DV = Vote with Gvt	2000	2004
Intercept	-0.18	-0.12
(P-value)	(0.049)	(0.140)
Nominate	3.11	-3.21
P-value	<0.01	<0.01

*Notes:* Probit estimates. Dependent variable was coded 1 if legislator voted with the president. Independent variable is the legislators W-Nominate ideal point for the respective legislature. The two roll calls used are identified as 2000108 and 2004055 in the Limongi & Figueredo database.

passed in the early hours the following day, backed by 306 out of 490 votes in the lower house, and 48 out of 69 in the Senate.

**The 2004 minimum wage:** Four years later, in late April 2004, the Lula government announced a bill that raised the value of the minimum wage by R\$ 20 reais, bringing it to R\$ 260, or just about US\$ 83. The president’s initiative, issued as an MP, slowly made its way through the legislature. After much debate, the lower house rejected on June 2<sup>nd</sup> the opposition’s last standing proposal — an attempt to set the minimum wage at R\$ 275.

Nonetheless, on June 17<sup>th</sup> the Senate voted a larger rise, triggering a crisis for the government. The president and his economic team claimed the federal budget could not afford such a raise, with the argument that it would cost Brazil more than \$650 million dollars a year, and force the government to further cut social spending. The bill returned to the house on June 21<sup>st</sup>, for a final decision on the value of the wage. On June 23<sup>rd</sup> the government rallied its legislators and by the sizeable margin of 272 to 172 rejected the changes made by the Senate.

**Analysis** In 2000, higher W-Nominate ideal points were associated with greater probability of voting *with* the government, while in 2004 this relationship was reversed (Table 2). Up to this point, the results are compatible with an ideologically driven story: in 2000, those to the right of the scale (higher W-nominate positions) voted with the center-right government, and in 2004 those to the left of the scale (lower W-nominate positions) voted with the center-left government.

However, if one looks at the *content* of each side’s positions, it is clear that there is a mismatch. While in 2000, the center-right government’s proposal was lower than the opposition’s, as ideology would predict, in 2004 the center-left government’s proposal was also lower than the opposition’s. In other words, after coming to power, the “same” PT which had fought to raise the minimum wage in the past, has had to fight attempts by the center-right opposition to raise the minimum wage beyond its government’s proposals.

One can argue that when the matter reaches the final vote, legislators can be coerced or induced by the government and party leadership to vote a certain way, even if its contrary to their own beliefs. During the earlier stages of the legislative process, however, there is a lot of space for cheap talk and position taking that while innocuous to the final result of the

Table 3: **Correlation between amendments proposals on the minimum and W-Nominate estimates (2000 and 2004)**

	2000	2004
Corr	-0.56	0.134
P-value	0.019	0.156
N	19	48

*Notes:* N is the number of legislators (deputies only) subscribing to amendments that proposed a value for the minimum wage. Data on amendments was provided by the Senate Archives (SARQ/SEATEN).

bill can help legislators save face with their constituencies. For this reason, examination of the amendments presented to the minimum wage bills in each year can reveal some more information on the preferences of legislators.

A total of 55 amendments were presented to the government's proposal in 2000, and 79 in 2004. Not all of these amendments proposed an actual value to the minimum wage, some were subscribed by more than one legislator, some legislators made more than one proposal, and most were dismissed at early stages of the legislative process.<sup>10</sup> With all these caveats in mind, the analysis of these amendments shows that while in 2000 legislators with lower ideal points proposed higher wages, the opposite holds for 2004.

This does not imply that the PT is comfortable with its new task: by 2004 its left most faction had already split from the party to form the PSOL, eight of the party's remaining legislators subscribed to amendments that proposed values great than R\$ 260,00, and at least nine voted against the government on May 10<sup>th</sup>. But, bluntly put, if one accepts that the position on the value of the minimum wage is an indicator of ideology preferences, and believes that the W-Nominate estimates reveal the ideological the left-right dimension, it would follow that the W-Nominate picture for 2004 shown in Figure 1 is inverted. But, the point I want to drive home is *not* that the PT is a rightist party. Rather, I simply claim, that ideology is not the main force driving the vote.

## 2.2 The government vs. Opposition dimension

Granted, legislators need not be voting sincerely. The opposition, knowing it will be defeated, might simply be taking the more popular position, while the government, ultimately responsible for economic outcomes, can prefer a higher wage but know it is unfeasible. These concerns might very well be what determines how legislators and government interact, but in any case this is *not* ideology at all.

These two alternative interpretations of the underlying dimension of conflict in Brazilian politics were for a great time observationally equivalent. While presidents were consistently

<sup>10</sup>If a legislator presented or subscribed to more than one amendment, I took his proposal to be the average across all amendments subscribed to. I dropped amendments that did not set a value to the minimum wage, and the few amendments presented by Senators. Since some proposals called for staggered raises, I used the present value of all proposals on May 1st.

from the center-right, the pragmatic strategic behavior of parties matched conventional wisdom on the left-right ideological scale. Only with the the election of a nominally left of center president in 2002 have we been able to distinguish disentangle the two dynamics and notice the existence of the role-specific policy preferences.

Further evidence of this dynamic can be seen by analyzing the positions of specific parties. Take the the case of the PDT, for instance, and its position relative to the PT. Despite differences of style, both parties historically displayed similar parliamentary behavior, had similar ideological orientation, and had entered in electoral alliances in the past.<sup>11</sup> In the 2002 elections, the PDT endorsed Ciro Gomes (then PPS) in the first round, but supported Lula in the second round and was an early ally of the newly elected government. The PDT was also one of the first parties to break with the government at the end of 2003. Though figure 1 suggests the PDT moved to the *right* of Lula's PT, most observers would agree that since leaving the government coalition, the PDT has occupied the space of opposition to the government from the *left*.

Even clearer is the situation of the PSOL. Commanded by Senator Heloisa Helena, the PSOL was formed by the legislators that split or were expelled from the PT for voting against the government's pension reform. There is absolutely no doubt that the PSOL is the extreme left of the ideological spectrum in Brazil. Though not shown in Figure 1, the median legislator in the PSOL has a W-Nominate estimate of 0.24.<sup>12</sup> This would place the party well to the right of the PT, much closer to Cardoso's PSDB, even though the *only* thing the PSOL and the PSDB have in common is the fact that they oppose to the Lula government.

This reinforces the idea that W-Nominate is retrieving a government vs. opposition dimension, which is the most relevant political cleavage in the Brazilian political system.<sup>13</sup> My argument here has nothing to do with roll call analysis in itself. Rather, I claim that it is not (simply) ideology that drives the behavior of parties in the legislature, so the underlying dimension of conflict retrieved by W-Nominate estimates cannot be an ideological one. Therefore, one needs to look elsewhere to find ideology.

### 3 The Mechanics

There are two reasons for which which W-Nominate estimates do not reveal the ideological structure of the Brazilian party system. First, there is the issue of "role-specific" preferences, as discussed in Section 2.1. More important, perhaps, is that legislator's behavior — of which roll call voting provide information about — reflects both their *ex-ante* inclinations towards any given issue *and* the *a posteriori* side payments and/or threats provided by the executive and/or party leadership.

Of course, the claim that ideology is not all that motivates politicians is trivial. Many studies have argued, and shown, that politicians pursue a varied set of goals, which include

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<sup>11</sup>W-Nominate estimates for previous legislatures positioned the PT and the PDT very close together on the "left" of the scale.

<sup>12</sup>Estimates for PSOL members rely on a much smaller set of votes than other parties, since the PSOL was formed well into the period considered.

<sup>13</sup>Leoni (2002), perhaps the first paper that employed Nominate in the analysis of data from Brazil, had already hinted towards this finding.



besides policies in line with their ideology, obtaining office and maximizing votes (Strøm & Müller 1999). In the specific case of executive-legislative relations in Brazil, the existence of side-payments made by the executive has also been well documented (Pereira 2002, Alston & Mueller 2005), though its importance has been questioned (Figueiredo & Limongi 2002).

The problem, thus, is to pin down the respective roles of ideology and of these side payments. Alston & Mueller (2005), for instance, present a model that is structured in terms of “policy positions,” but their empirics use W-Nominate scores to test predictions about who would be recipients of government handouts. Well aware of the intricacies of the issues, Pereira & Muller (2004) cleverly used simultaneous-equation models in which ideology and appropriations determine how legislators vote and how legislators vote affect how much of their amendments is appropriated. However, their treatment was purely empirical.

In general terms, the picture we see by looking at legislators behavior is what emerges *after* all these things are considered. Granted, the “giving-and-receiving” is a continuous process, but conceptually the W-Nominate estimated positions are the *result*, and not the motivation of the president’s distribution of resources.

Figure 2 is a schematic depiction of this mechanics of legislative politics in multiparty presidential settings. The upper portion of the Figure represents the *ex ante* positions of four hypothetical heterogeneous parties relative to the president. The president then transfers politically invaluable resources to parties, inducing recipients to take on a more pro-president stance, displayed in the lower portion of the Figure.

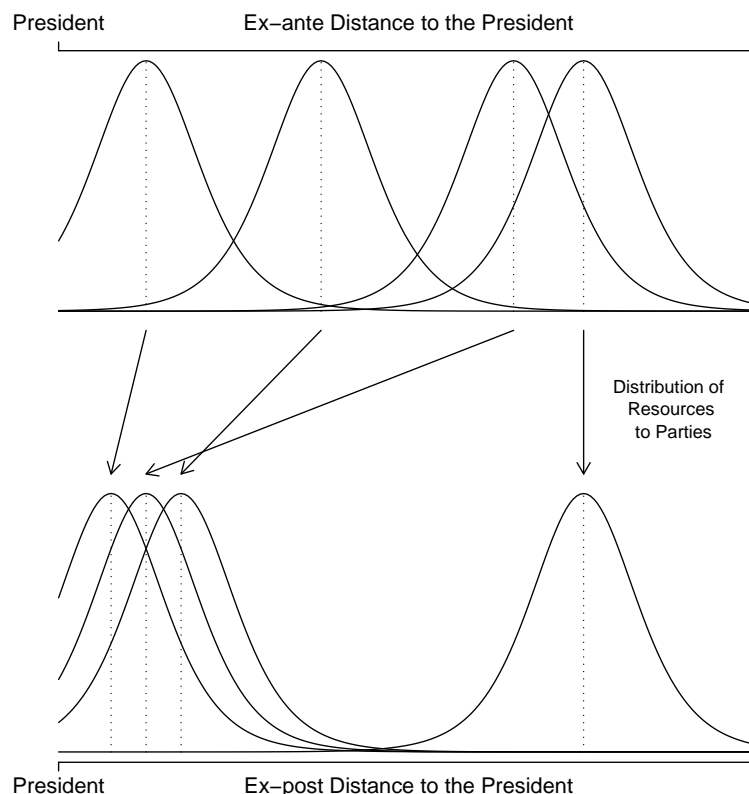


Figure 2: Mechanics

When one observes W-Nominate scores, (s)he is observing this lower picture. To understand both the role ideology plays in voting behavior and how the distribution process works, it is necessary to have some form of assessing the upper picture. This is precisely the research design of the upcoming chapters.

In the rest of this paper I discuss what characterizes the *ex ante* upper portion of the figure, which I refer to as “affinity.” The idea is that this concept characterizes the propensity of a legislator to vote with the president, prior to receiving any handout of any sort. Affinity, as previously discussed, it is not directly observable, but the reader might already be hinting towards the fact that ideology and affinity are related. Ultimately, my ideal measure of affinity will include more than just ideology, but for now I concentrate on its ideological component.

In Zucco Jr. (2007a), I present a model of executive-legislative relations seeks to explain the second part of this process, namely how the distribution of resources by the president moves legislators away from the original predispositions. Presidents do not distribute only pork and do not bargain only with individual legislators. Party leaders, jobs, cabinet positions and eventually bribes also enter the equation. The model is overtly a “cost minimization” approach to the problem of obtaining legislative support in a presidential multiparty setting, and rests on the assumption that a large part of what presidents do is to seek ways to spend less on coalition formation, given the characteristics of their party systems.

Alternative affinity

## 4 A Measure of Ideology

In Section 2, I showed that the analysis of roll call voting patterns retrieve not the ideological organization of Brazilian parties, but the non ideological cleavage that non ideological one that divides government from opposition. Fortunately, ideological preferences can be systematically estimated from data other than roll calls. Ratings of legislators made by think-tanks and watch-dogs are an option (Groseclose, Levitt, & Snyder Jr 1999), and so are surveys. Surveys are usually expensive to run, and usually only provide information about an isolated period in time. Fortunately, in the case of Brazil, Timothy Powers conducted essentially the same survey in 1990, 1993, 1997, 2001 and 2005, which places us in a privileged position to analyze ideology patterns, both statically and as they shift (or not) in time.

The raw data I use in this Section comes from the questions in these surveys that asked legislators to place *themselves and all other main parties* in the legislature in a left to right continuum.<sup>14</sup> The obvious drawback of relying on such “perceptual” data is that same scale might be used differently by each person. Placement questions such as the ones I use, capture both actual perceptual differences between respondents, but also pick up undesired variation in the response to the scale itself. To deal with this problem, I first use the legislators’ placement of all parties to estimate individual scale distortion effects. Then I use these estimates to transform each legislator’s reported self placement. This produces a new ideological placement that accounts for idiosyncratic uses of the original ten-point scale. Note this is *not* a procedure to estimate legislator’s positions directly from the data. Rather, here I estimate the legislator

<sup>14</sup>The complete questionnaires of the surveys can be found in Power (2000).

*scaling effects* and apply them to their self reported placement.

#### 4.1 The spatial model

Let  $P_{ij}$  be the placement of party  $j$  ( $j = 1, \dots, M$ ) by legislator  $i$  ( $i = 1, \dots, N$ ) in a  $[1, 10]$  continuum. The spatial model I use is simply

$$P_{ij} = \alpha_i + \beta_i P_j + \epsilon_{ij} \quad (1)$$

where  $P_j$  is the “true” position of each party,  $\alpha_i$  and  $\beta_i$  are legislator specific “shift” and “stretch” rescaling factors, and  $\epsilon_{ij}$  is a disturbance term.

I assume that each legislator uses the same individual scale to place himself and his party. Hence, a legislator’s rescaled placement ( $M_i^*$ ), net of individual scale effects, is defined as a simple linear transformation of the raw answer to the self-placement question ( $M_i$ ), as follows:

$$M_i^* = \frac{M_i - \alpha_i}{\beta_i} \quad (2)$$

But how to can one go about estimating this equation? Note that  $P_j$  is not observed, and has also to be estimated from the data. This problem, then, is akin to a regression without an independent variable, and the equation cannot be estimated directly by OLS.

$$\begin{bmatrix} p_{11} & \cdots & p_{1M} \\ \vdots & \ddots & \vdots \\ p_{N1} & \cdots & p_{NM} \end{bmatrix} = \begin{bmatrix} \alpha_1 & \beta_1 \\ \vdots & \vdots \\ \alpha_N & \beta_N \end{bmatrix} \times \begin{bmatrix} 1 & \cdots & 1 \\ P_M & \cdots & P_M \end{bmatrix}$$

The political science literature on the subject has addressed the issue in two different, but closely related ways. Aldrich & McKelvey (1977) used a singular value decomposition procedure, similar to what was later adapted by Poole to other types of survey questions (Poole 1996) and to roll call analysis (Poole 2005, p.68), combined with simple OLS estimation.<sup>15</sup> Groseclose, Levitt, & Snyder Jr (1999), on the other hand, dealt with the issue of re-scaling yearly interest group ratings of American congressmen exclusively through a maximum likelihood type framework. Both alternatives yield the same estimates (up to a linear transformation), but for ease of presentation I concentrate in the maximum likelihood approach.

##### 4.1.1 Missing Data Issues

The answers to the ideological placement questions in the Power surveys exhibit two different “types” of missing responses: either the actual legislator self placement or one or more placements of parties were missing. Though none was too pervasive, I opted to deal with both issues instead of simply dropping the observations.

In the few cases of the first type, I assumed legislators would have placed themselves where they placed their parties. Only if that information was missing too — because the legislator

<sup>15</sup>The alternative to maximum likelihood is to perform decomposition of the data matrix to obtain  $P_{ij}$  and then estimate Eq. 1 by OLS.

either did not state or place his/her party or — was the legislator dropped from the sample.

Missingness in the party placements, on the other hand, was dealt with by use of a simple imputation algorithm. I first estimated the  $\alpha_i$ ,  $\beta_i$ , and  $P_j$  for the set of legislators with complete responses and computed average predicted values to use as seeds. I then re-estimated the parameters and replaced the seeds with predicted values until the estimates converged. Estimates always converged fairly quickly, and the estimates for the legislators without missing data were unchanged.

#### 4.1.2 Estimation

In a Maximum Likelihood framework, and assuming the disturbance term is standard normally distributed, the probability of any observation is

$$Pr(P_{ij}) = \phi\left(\frac{P_{ij} - \alpha_i - \beta_j}{\sigma}\right) \frac{1}{\sigma} \quad (3)$$

where  $\phi$  is the standard normal density. The log-likelihood function to be maximized is

$$\mathcal{L}(\alpha, \beta, \sigma) = \sum^i \sum^j \log \left[ \phi\left(\frac{P_{ij} - \alpha_i - \beta_j}{\sigma}\right) \right] - \log(\sigma) \quad (4)$$

which after transformations to improve computational speed becomes:

$$\mathcal{L} = \sum^i \sum^j -\log(\sigma) - \frac{1}{2\sigma^2} (P_{ij} - \alpha_i - \beta_j)^2 \quad (5)$$

In this basic model, a few legislators rescaled positions take on extreme values (See Figure 3(a) for an example from 1993), generally caused by unusual patterns of party placement. Such extreme positions are unrealistic, so I dealt with them by the imposition of priors on  $\alpha_i$ 's and  $\beta_i$ .

This is done by establishing a *prior distribution* from which the parameters are drawn. I adopted the common prior that all legislators do not distort the scale, which amounts to assuming all elements in  $\alpha_i$  are drawn from a prior distribution with mean zero ( $\alpha_i \sim N(\mu_\alpha = 0, \sigma_\alpha = 1)$ ) and all elements in  $\beta_i$  are drawn from a prior distribution with mean 1 ( $\beta_i \sim N(\mu_\beta = 1, \sigma_\beta = 1)$ ).

Priors have a simple interpretation in the maximum likelihood framework. If we interpret the probability of observing any given data as the posterior conditional distribution, we know that this is proportional to the product of likelihood and the prior:

$$Pr(\alpha, \beta | P_{ij}) \approx Pr(P_{ij} | \alpha, \beta) \times Pr(\alpha, \beta) \quad (6)$$

Comparing Eqs. 3 and 6, its easy to note that priors represent simply an extra set of parameters that are added to the likelihood function.<sup>16</sup> Priors work as a *penalty* on the log likelihood

<sup>16</sup>Analogously, the incorporation of priors in a classic regression analysis would not be much more complicated than pooling two data sets for analysis (Theil & Goldberger 1961, Western & Jackman 1994).

function that prevents the estimates from deviating too much from the prior mean. As a consequence, the posterior mean will always lie between the prior and the data mean, where each distribution is weighted by its precision (Gelman, Carlin, Stern, & Rubin 1995, p.44). Hence, with the inclusion of these priors, the new maximum likelihood estimator for  $\alpha$  and  $\beta$  becomes simply:

$$\begin{aligned} \mathcal{L}^* = & \sum_i \sum_j -\log(\sigma) - \frac{1}{2\sigma^2} (P_{ij} - \alpha_i - \beta_j P_j)^2 \\ & - \sum_i \log(\sigma_\alpha) - \frac{1}{2\sigma_\alpha^2} (\alpha - \mu_\alpha)^2 \\ & - \sum_i \log(\sigma_\beta) - \frac{1}{2\sigma_\beta^2} (\beta - \mu_\beta)^2 \end{aligned} \quad (7)$$

Only two outlying cases remained after the estimation with the use of priors both of which are worth considering in a little more detail.

- In the 1993 survey (Figure 3(b)), a legislator from the PPR/TO placed all parties very close together, and himself together with the rightmost party. Consequently, his rescaled position, even after imposing priors, was considerably higher than the next legislator.
- In the 1997 survey, a legislator from the PMDB/SC not placed all parties in a small section of the scale in a rather “unorthodox” ordering. Since he placed himself on the edge of the section he used, as far as possible from the PCdoB (Communist Party of Brazil) his rescaled placement shot away to the right.

In both these cases the procedure apparently captured the side of the scale the legislators should be in, but their answers forced them too far away, even after using the priors. Thus, as a last step in the rescaling procedure I truncated the scale at the last non-outlying legislators, and converted it to the original metric for comparison purposes. The results after each of these steps (simple estimation, estimation with priors, and with truncation of outliers) are shown for the 1993 survey in Figure 3.

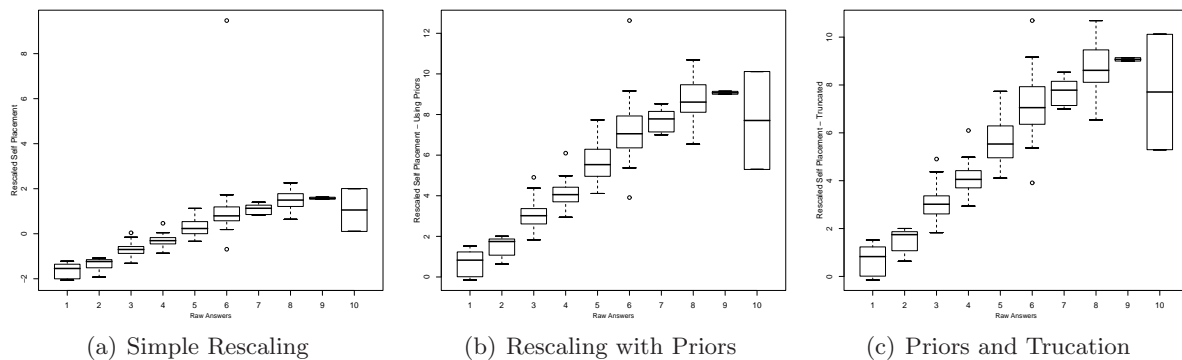


Figure 3: The Three Steps in the Rescaling Procedure — 1993 Survey

### 4.1.3 Estimates of Ideology

This procedure was conducted for each of the five surveys *individually*, and the comparison between the raw answers to the self placement question in the survey and the rescaled placements are shown in Figure 4. The most conspicuous pattern is that the raw answers suggest most legislators are center-left, while the rescaled placements reveal a much more symmetric chamber. This finding is pretty much in line with the fact that in Brazil very few would openly label themselves as “conservative” or “right-wing”. The raw answers also overstate the “centrism” of the chamber. In other words, legislators tend to place themselves at the center of the scale, even though their placement of other parties reveals that the legislature is really a bit more dispersed along the ideological continuum.

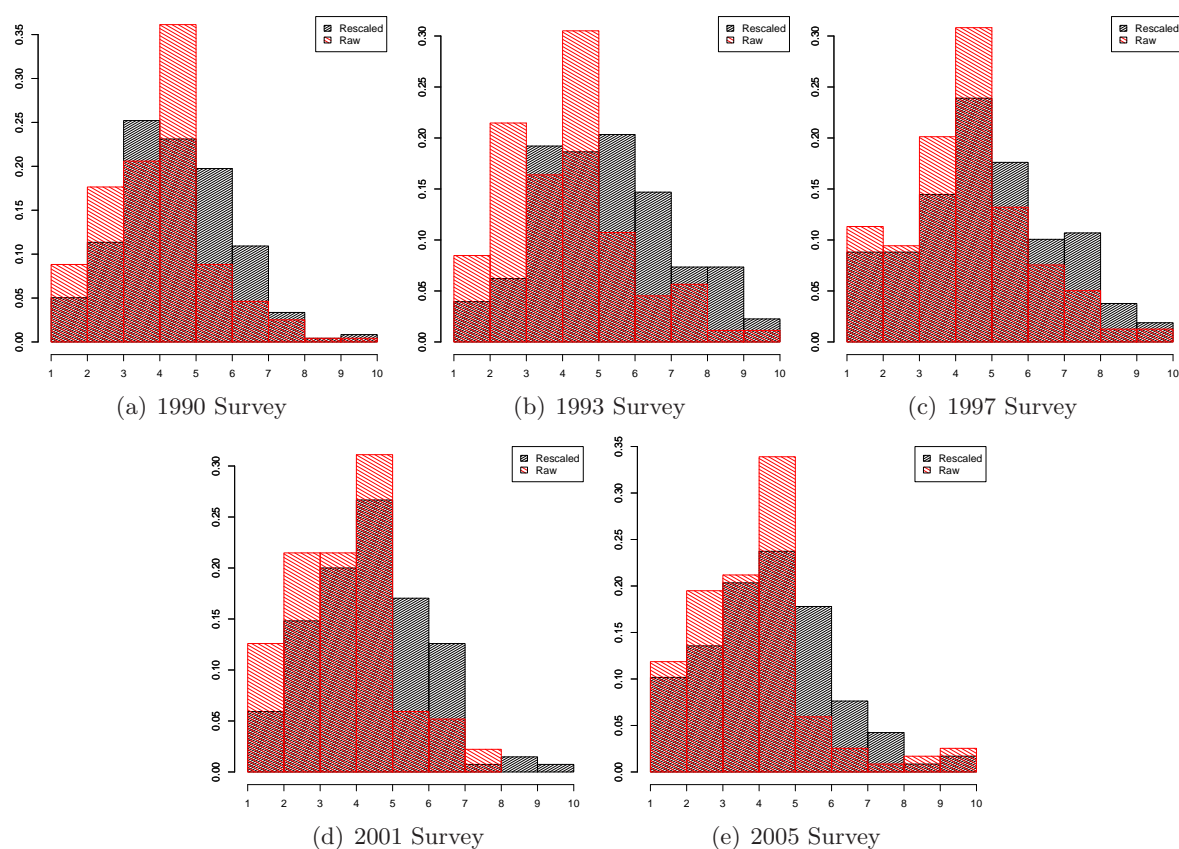


Figure 4: **Raw and Rescaled Self Placements — All Surveys**

Though the comparability of legislators and party rescaled placement *across* surveys requires further analysis (Section 4.2), it is already possible to compare the relative placement of parties within each survey. For this exercise I relied not on the standard errors of the estimated party positions, but instead tested the significance of the difference between the estimates for adjacent parties.<sup>17</sup> As Table 4 shows, in most cases one can be confident that adjacent parties are, in

<sup>17</sup>Covariance in the estimates might actually imply that regular confidence intervals understate our capacity to differentiate parties locations. If the estimates of two parties co-vary positively, one can more easily distinguish the difference between two party’s estimates than standard errors would suggest.

Table 4: **Rank Ordering of Parties**

1990	PCdoB	PT	PCB	PSB	PDT	PSDB	PMDB	PTB	PL	PDC PRN	PFL	PDS
1993	PCdoB	PT PSTU	PSB	PPS	PDT	PSDB	PMDB	PP	PTB	PL PFL	PPR	PRN
1997	PCdoB	PT	PSB	PPS	PDT	PMDB	PSDB	PTB	PL	PFL	PPB	
2001	PCdoB	PT	PSB	PDT	PPS	PMDB PSDB	PL PTB	PFL	PPB			
2005	PCdoB	PSB PT	PPS	PDT	PMDB	PSDB	PTB PL	PFL PP				

Stacked parties, in any given year, indicate that the differences between their respective estimated positions are *not* significant at the 0.05 level. The significance test of the differences between all other adjacent parties has a p-value of  $< 0.05$ .

fact, different.

## 4.2 Recovering year effects: An extension of the spatial model

While it is tempting to compare the results of the rescaling of each survey, these values are not directly comparable. Recall that the rescaled placements are relative measures (within that year's respondents), and there is no *no intrinsic* metric to this scale. Therefore, one could only compare estimates across surveys if there were fixed points in which to anchor them.

In this respect, only legislators who answered more than one survey convey any information on how each year's scales relate to each other. However, the surveys were all anonymous so even though many legislators must have answered more than one survey, their names are not provided. I dealt with this problem by using additional information in the survey to identify respondents. An automated algorithm based on responses on previous party affiliations, political careers, terms in office and age permitted a preliminary identification and matching of legislators across surveys, and a very labor-intensive case by case analysis completed the job. Ultimately about 40% of respondents were identified in each survey, 85 of which answered more than one survey making for a total of 182 observations in the final data-set.

### 4.2.1 Estimation

Once this data set was obtained, I followed Groseclose, Levitt, & Snyder Jr (1999), and estimated a "mean preference parameter" across all years ( $x_i$ ), which is shifted ( $\gamma_t$ ) and stretched ( $\delta_t$ ) each year to produce the observed positions  $y_{it}$ . This implies that all legislator's scores<sup>18</sup> suffer the same yearly shocks, and can be stated as:

$$y_{it} = \gamma_t + \delta_t x_i + \varepsilon_{it} \quad (8)$$

<sup>18</sup>Note that instead of using the raw self placement of legislators I actually use the rescaled legislators positions discussed in the preceding section as the observed positions.

This equation, as Eq. 1 in the previous Section, resembles a regression without independent variables, and analogously, can be estimated by maximizing the following log-likelihood function:

$$\mathcal{L}^* = \sum_i \sum_t -\log(\sigma) - 0.5 \sigma^{-2} (Y_{it} - \gamma_t - \delta_t x_i)^2 \quad (9)$$

Note that after setting the base year  $\gamma_1 = 0$  and  $\delta_1 = 1$ , this model still requires the estimation of  $t - 1$   $\gamma$ 's,  $t - 1$   $\delta$ 's,  $\sigma$ , and  $N$   $x_i$ 's, which in the present case means estimating 94 parameters using 182 observations. In order to protect against potential instability of results, the model was estimated through two different numeric techniques, which I refer to as “direct” maximization and “rocking” maximization. The former consisted simply of direct maximization of the likelihood function in Eq. 9 while in the latter I iteratively estimated  $\gamma$ ,  $\delta$ , and  $\sigma$  on the one hand, and  $x_i$  on the other, until the likelihood of both steps converged. Furthermore, in both techniques local maxima issues were dealt with by repeating the maximization procedure a large number of times with randomly generated start values, and then choosing as the final set of estimates the one that the highest likelihood values.

Table 5: **Year Effects Estimates**

	Rocking Regression		Direct Regression	
	$\gamma$	$\delta$	$\gamma$	$\delta$
1993	-0.20 (0.33)	1.43 (0.09)	-1.40 (0.92)	1.69 (0.23)
1997	-0.23 (0.25)	1.24 (0.06)	-1.45 (0.82)	1.50 (0.19)
2001	1.37 (0.21)	0.83 (0.05)	0.46 (0.61)	1.02 (0.14)
2005	0.60 (0.22)	1.08 (0.06)	-0.64 (0.82)	1.34 (0.19)

*Notes:* 1990 was set as the base year, with  $\gamma = 0$  and  $\delta = 1$ . Standard Errors of the estimates are shown in parenthesis.

The year effects estimates are shown in Table 5. Estimates for  $\delta_t$  are always statistically significant across all years and estimation methods. As for the  $\gamma_t$  estimates, the picture is a bit murkier, as most of the occurrences of significant results are in the Constrained Model, regarding which I am have not yet fully worked out the correct standard errors<sup>19</sup> The overall picture is that there is evidence that the scale does in fact vary across years, at least in the sense that it is “stretched” by respondents.

At a first glance, the estimates of  $\gamma_t$  and  $\delta_t$  obtained with each of the three estimation methods seem to be different, but they are in fact proportional. Consequently, the actual legislator transformed positions are all but identical, and the median legislator according to both methods falls on the dotted line in Figure 5. The results show a slight (non-monotonic) shift to the left over the course of the past 15 years, which makes sense when one considers that

<sup>19</sup>Thanks to Tim Groseclose for pointing out potential problems with the standard errors of these estimates.



the share of seats controlled by “leftist” parties has increased considerably over this period.

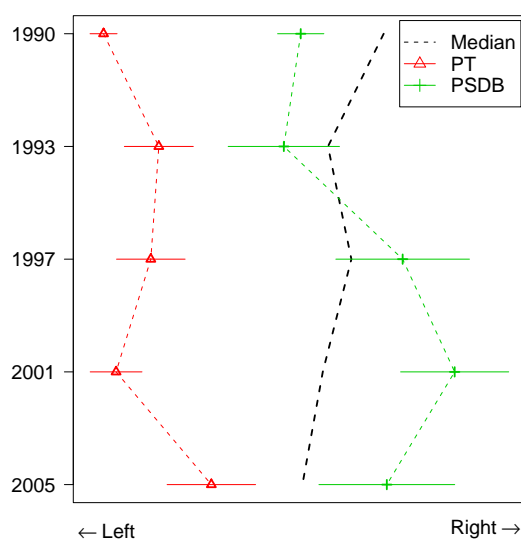


Figure 5: **Time Trends: Median legislator and Selected Party's Position**

*Notes:* Figure shows the median legislator for each year and the party estimates ( $P_j$ ) for the PT and the PSDB, using the “direct” estimation method.

More interesting, though, is to observe the estimates for the positions of the PT and the PSDB, the two main parties in the period analyzed. In the first survey, which comprises the first post-authoritarian legislature (1987-1990), while considerably apart, both the PSDB and the PT were clearly left of center, a situation which continued during the Collor/Franco years (1990-1994). The figure indicates that in 1993 these two parties were as close as ever in this ideology scale. The Franco period was, in fact, the period in which an alliance between the PSDB and the PT came closest to ever happening. Franco brought the PSDB to the center of Brazilian politics by appointing Cardoso his finance minister but he *also* invited the PT to join the cabinet. Years later, Jose Dirceu, leader of the PT, reflected that the party's refusal to join Franco's government had been its worst mistake in its first 25 years of existence, and had cost the party at least 8 more years in the opposition.

Find reference

Between 1993 and 2001 the PSDB took a sharp turn to the right. This coincides with the period in which the party won the presidency, secured the country's economic stabilization, and then became the promoter and defender of neoliberal reform. At the same time the PT established itself as the main opposition party. With Lula's victory in the 2002 elections, the PT began to exhibit a much more centrist character. The conventional wisdom regarding the PT is that the party gradually moved to the center over the years. Figure 5, however, suggests that this movement was not continuous, and that while in opposition to Cardoso the PT was perceived and perceived itself as, at a minimum, standing its leftist ground. This leads to the fact that the general trend is that both parties moved markedly to the right while in government, and tended to move to the left while in opposition. Today, while the PSDB and PT have become closer in ideological terms, they have also established themselves as the main forces in either

side of political “center.”

Figure 6 suggests that after an increase in polarization between 1990 and 2001, politics in Brazil has become more moderate, as both parties in the right and in the left have moved towards the center between 2001 and 2005. Additionally, besides a few pairwise swaps in positions, the ideological structure of the Brazilian party system seems to have remained very much constant: the PT and PSB switched positions in 2005, the PMDB and the PSDB switched positions in 2005, and the PTB and the PL switched positions in 2001 and again in 2005. Though this last pair of parties are probably ideologically undistinguishable to most analysts, the PT’s move towards the center and the PSDB’s move to the right match most analysts intuitive interpretation of recent events in Brazilian politics.

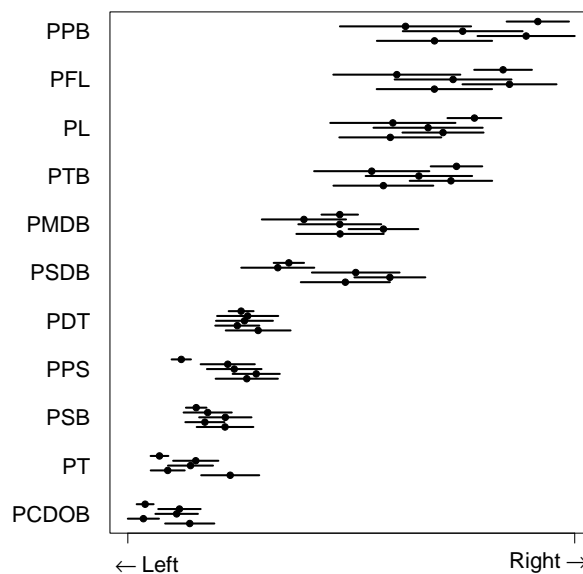


Figure 6: **Comparable party position estimates, for all years**

The five estimates for each party are chronologically ordered from top to bottom. As noted in Section 4.1.3, these confidence intervals overstate the uncertainty regarding the ordering of parties and our capacity to discriminate between adjacent ones.

## 5 Affinity

A simple comparison of the estimates of ideology with those obtained by W-Nominate is shown in Figure 7. The main adversaries of the current PT government (PFL and PSDB) are clearly separated from the rest. There’s a middle ground formed by PT’s strange bedfellows (PL, PTB, PP), the amorphous PMDB, and leftist parties that opposed Lula’s first government (PDT and PPS), and a cluster formed by the PT and its “natural” allies (PSB and PC do B).

While these two sets of estimates are far from being unrelated, ideology is clearly not all that is going on. There is something about legislative politics that “scrambles” (up to a point) the party’s ideological ordering and accentuates the polarization between government and opposition, which becomes then the structuring cleavage in the legislature. To understand how

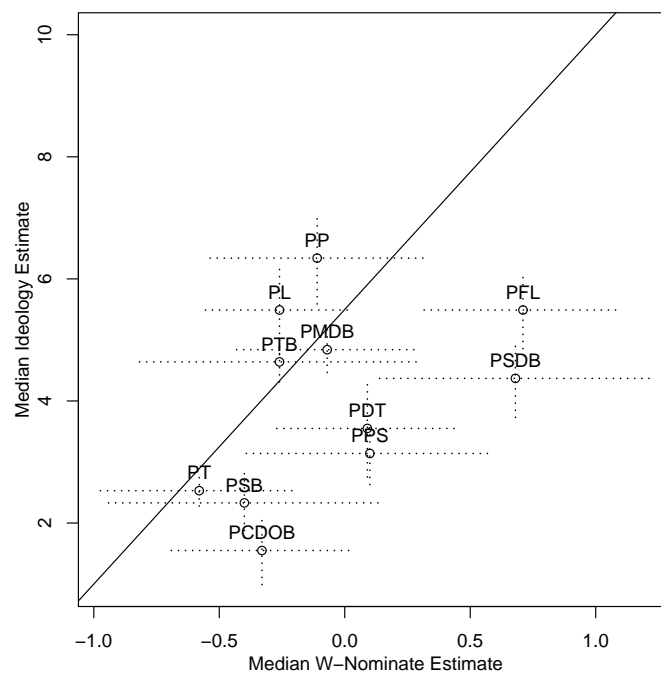


Figure 7: **Comparing Ideology and W-Nominate Estimates By Party**

*Notes:* Estimates of ideology are based on the 2005 Power survey, while W-Nominate estimates are for the 52<sup>nd</sup> legislature. Diagonal line shows perfect correspondence, after taking into account the scale differences. Dotted lines about the point estimates show the range within which 90% of the party legislators lie.

these facts can fit together, in the next to subsection I work with a concept of “affinity” that equates it to ideology and in the subsequent one I discuss an alternative conceptualization, to be pursued in future work.

### 5.1 Affinity as Ideology

A first hypothesis, that is compatible with this story and the evidence presented thus far, is that these *ex ante* predispositions and ideology are the same thing. If this is correct, legislators simply trade-off ideology preferences for side payments provided by the executive. This trade-off is weighted by some measure of “greed,” or how salient ideology is relative to the attractiveness of what the executive has to offer.<sup>20</sup>

Under this hypothesis, the ideology alignment of parties is scrambled by the executive’s distribution of resources, and for this reason does not show up in the W-Nominate estimates. It would then follow that it is *solely* the behavior of the executive that generates the government vs. opposition dynamic that is visible to us through roll call analysis. Also implied, is that the relative ideological distance between the president and the parties and how greedy the parties are determine how much the president has to pay to buy off the opposition.

<sup>20</sup>This scenario could be depicted by a two dimensional spatial model, with ideology being the first dimension and a second dimension would capture how much resources the president offers to each party. This second dimension would be truncated at zero, and would function as a “valence” dimension, in which all parties prefer higher values.

An initial look at the data, made under the assumption that ideology is the *ex-ante* force at work, suggests that idea that president's behavior "scrambles" the ideological makeup of the house is indeed plausible. The goal here is to analyze the association between legislator's roll call voting patterns, and ideology, as well as legislator's success in executing individual amendments to the budget, and party's membership in the cabinet. The data cover the period from 1996 through 2005<sup>21</sup>, disaggregated into legislator/year observations, and a detailed description of the data set can be found in the Appendix.

Very tentative  
analysis

In the models shown in Tables 6(a) and 6(b), I operationalized the dependent variable (RELWNOM) as the distance between the legislator's ideal points in one dimension, estimated using W-Nominate on yearly roll call data, and that of the president's "whip" (*leader to governo na Câmara*). Since the idea of these models is to analysis the determinants of legislative behavior, I also operationalized the dependent variable as the frequency in which an individual legislator votes with the president whip (WITHEXEC). Obviously both measures are closely associated, and as shown in Appendix B, the choice of operationalization does not alter the main results. As a first exercise the models were ran separately on each year's data in order to explore the variation in the results across years.<sup>22</sup>

The model in Table 6(a) regresses the the dependent variable (RELWNOM) on the legislator's success in executing his individual amendments to the budget (SUCCESS), distance between his/her party average ideological position and the president's whip (IDEO), and the extent to which his/her party is represented in the cabinet (CABINET). The model shown in Table 6(b) is the same except for the inclusion of an interaction term between ideology and a dummy indicating whether or not the party was in the cabinet (IDEO×IN).

In broad terms, the three components (ideology, party participation in the cabinet, and budget execution success) play relevant roles. However, some interesting caveats apply. In the following paragraphs I explore three stories that are compatible with these results, the first of which is the most relevant to this paper, and also the one that clearer support in the data.

**The Decline of Ideology:** In general, greater ideological distance leads to greater distance in observed behavior, which is unsurprising and maybe even a bit uninteresting. However, this association between ideology and legislative behavior decreases markedly in time, a result present in all model specifications I explored and that can also be seen using WITHEXEC as the dependent variable as shown in Appendix B. Moreover, in Table 6(b), because of the interaction term, IDEO captures only the effect of ideology for parties *not* in the cabinet. Inside the cabinet, the effect of ideology is, in fact, the sum of the coefficients on IDEO and IDEO×IN. This implies that for parties in the cabinet, the effects of ideology are always smaller that for those parties outside the cabinet, and that 1999 this effect has become very close to zero. This suggests that ideology matters *less* — or almost nothing — for how a legislator votes when

<sup>21</sup>Problems with the data from 2002 forced its exclusion from this version of the paper. Data for 2006 is already available, but has not been analyzed. The current analysis is still very tentative, and as the reader will note, there will probably be the need for proper endogeneity and improved panel data treatments of the data.

<sup>22</sup>This could be done by including interaction terms between the year and all the other variables, but interpretation would be much murkier.

his/her party is in the cabinet.

**Cardoso's weakening** The negative coefficients in CABINET and SUCCESS suggest that presence and the cabinet and greater success in budget execution are associated with more proximity with the president in terms of legislative behavior. Nonetheless, the effect of presence in the cabinet showed downward trend during Cardoso's two terms (1995-2002), even though this decline was not continuous, but it does support the idea that. At the time, the effect of budget execution success in determining legislative behavior increased in time. Together, and along with the decline in the role of ideology mentioned above, these trends are compatible with a story in which dealing with parties became increasingly hard for Cardoso, and in which he increased his efforts to hold legislators accountable to the government by using budget execution politically.

Unfortunately, data for 2002 are not available to help pin down whether the increasingly lame-duck character of Cardoso presidency towards the end of his second term was responsible for this shift. At this point I can only speculate that the electoral dynamic for Cardoso's succession was already at play. During that year, the PFL, Cardoso's main ally, was attempting a solo flight with Roseana Sarney as potential presidential candidate. Only after her pre-candidacy was shot down in March 2002 by a controversial operation of the Federal Police that found half a million dollars in the office of one of her family's companies, known as the "Lunus Case," did the PFL and the PSDB agree to a common candidate.

**Lula's learning** In terms of what is usually referred to in Brazil as "political articulation," Lula's first term was disastrous. By many accounts, he began his government giving out too much power to the PT, failed to accommodate the interests of key allies, and in crucial moments, such as the election of Severino Cavalcanti as speaker of the house, did not act well nor in a timely manner. The coefficients on CABINET and SUCCESS for the Lula years (2003 onwards) match this story rather well. The new president began his term not being able to extract much support from cabinet positions or execution of the budget, but seems to have learned the task towards the end of his first term.

This, however, is still a very tentative interpretation. For instance, there are many reasons for 2003 to be a problem year. It was Lula's first year in office, and the period in which the infamous *mensalão*, an alleged scheme to bribe legislators which I discuss in more detail elsewhere (Zucco Jr. 2007b), was set up. This year was also the first year of the 52<sup>nd</sup> legislature, when the renewal rate in the house was around 50%, which is reflected in the smaller number of cases for that year included in the analysis. Therefore, even if the government did operate on the same logic as the previous one, the results should, in fact, be weaker.

It is important to highlight that these first models use the average ideological position for each party, estimated as explained in the last section. However, for a small subset of the legislators it is possible to use their *individual* ideology estimates. After merging the budgetary data with my ideological estimates, I obtained a data set with between 14 and 34 legislators per data year. These numbers are barely enough to run yearly regressions, but pooling the data

Table 6: **Determinants of Legislative Behavior: Yearly data**

(a) OLS for W-Nominate (distance to the president)									
	1996	1997	1998	1999	2000	2001	2003	2004	2005
IDEO	0.67	0.46	0.33	0.26	0.32	0.21	0.10	-0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.93
CABINET	-0.97	-0.86	-0.29	-0.40	-0.64	-0.12	-0.20	-0.23	-0.99
	0.00	0.00	0.00	0.00	0.00	0.14	0.01	0.00	0.00
SUCCESS	-0.20	-0.29	-0.28	-0.16	-0.61	-0.56	0.02	-0.16	-0.64
	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.00	0.00
Const.	-0.33	0.07	0.07	0.30	0.62	0.52	0.24	0.52	1.38
	0.00	0.14	0.13	0.00	0.00	0.00	0.00	0.00	0.00
N	387	393	432	278	431	371	191	409	366
R2	0.73	0.69	0.37	0.37	0.51	0.43	0.22	0.08	0.44

(b) OLS for W-Nominate (distance to the president)									
	1996	1997	1998	1999	2000	2001	2003	2004	2005
IDEO	0.67	0.50	0.38	0.30	0.45	0.33	0.17	0.01	-0.03
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.07
CABINET	-0.73	-0.63	-0.01	-0.15	-0.28	0.11	-0.14	-0.05	-1.21
	0.00	0.00	0.75	0.00	0.00	0.01	0.00	0.06	0.00
SUCCESS	-0.05	-0.06	-0.06	-0.04	-0.15	-0.14	0.02	-0.09	-0.36
	0.07	0.04	0.00	0.01	0.00	0.00	0.51	0.00	0.00
IDEO×IN	-0.10	-0.14	-0.15	-0.32	-0.45	-0.32	-0.13	-0.09	-0.20
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Const.	-0.38	-0.08	-0.04	0.41	0.39	0.27	0.21	0.48	1.45
	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
N	407	427	436	299	445	412	217	447	420
R2	0.83	0.86	0.80	0.90	0.79	0.77	0.67	0.44	0.63

*Notes:* Dependent variable is RELWNOM, a measure of legislative behavior in which lower values mean greater proximity to the president's position. P-values shown below estimates.

across years can allow us to extract information more efficiently.

The problem that then emerges is that the resulting cross-sectional-time-series is severely unbalanced. The reduced pooled data set has between 1 and 9 observations for 79 different legislators, which makes it much hard to run panel corrected standard errors routines (Beck & Katz 1995), and to identify and deal with autocorrelation both through the inclusion of a lagged dependent variable or by running AR-1 models. As a robustness check of the estimates obtained with this reduced data set I ran these same models and the "full" pooled sample. The full sample includes 935 legislators, but as in the yearly regression, the use of the average ideological position for the party instead of the individual measure of ideology, and was equally severely unbalanced and requires. In order to be able to estimate panel corrected standard errors, I created a , a third "partial" data-set, including only the 282 legislators that were present in at least 5 yearly panels.

Table 7 three model specifications that are fit using an AR-1 MLE model with year effects and OLS with panel corrected standard errors. Each model was also fit through other methods, and the results available from the author, are very consistent. With respect to the estimates

Deal with Auto  
Correlation in  
these data

that are shown in the Table, the results from the reduced sample mirror the results obtained in full sample very closely and corroborate the general picture found in the year by year analysis. It is also noteworthy that results for the partial sample with PCSE retain high levels of statistical significance, *suggesting* that the same would hold for the other models.

Table 7: **Determinants of Legislative Behavior: Pooled Data**

	Reduced Sample			Full Sample			Partial Sample	
	Model 1	Model 3	Model 4	Model 1	Model 3	Model 4	Model 3	Model 4
IDEO	0.25	0.31	0.19	0.47	0.72	0.17	0.50	0.18
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IDEO $\times$ YR	-0.02	-0.03		-0.05	-0.05		-0.05	
	0.00	0.00		0.00	0.00		0.00	
IDEO $\times$ TOELEC		-0.04			-0.12			
		0.12			0.00			
IDEO $\times$ IN			-0.19			-0.13		-0.16
			0.00			0.00		0.00
CABINET	-0.41	-0.43	-0.21	-0.47	-0.49	-0.23	-0.52	-0.18
	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.07
SUCCESS	-0.40	-0.40	-0.24	-0.20	-0.22	-0.23	-0.26	-0.34
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YR	0.06	0.06		0.09	0.10		0.10	
	0.00	0.00		0.00	0.00		0.00	
TOELEC		0.02			0.17			
		0.64			0.00			
Const.	0.34	0.30	0.48	-0.14	-0.48	0.37	-0.18	0.40
Const.	0.01	0.02	0.00	0.00	0.00	0.00	0.26	0.00
N	216	216	216	3227	3227	3227	1784	1784
R2	0.59	0.59	0.53	0.56	0.55	0.54		

*Notes:* Dependent variable is RELWNOM, a measure of legislative behavior in which lower values mean greater proximity to the president's position. P-values shown below estimates. Year effects omitted for clarity. In the reduced sample, variable IDEO was the legislator's *individual* estimated ideological distance to the president, while in the full sample the legislator's the distance from the legislator party average ideological position to president was used instead.

The most interesting feature of these pooled models is that they allow to further explore the declining role of ideology. More specifically, I included interaction variables that further specify how ideology has waned, and these results are graphically depicted in Figure 8. In Model 1, the interaction between ideology and an ordinal variable that captures time (IDEO $\times$ YR) is negative and significant, suggesting that as time goes by the effect of ideology becomes smaller. In Model 2, not shown for reasons of space, I used an alternative specification to this setup, interacting IDEO with a dummy variable for year. In this case, the year effects revealed a decreasing trend (though not monotonically decreasing) in time. Finally, Model 3 includes both the interaction with time, and another one with time to the next election (IDEO $\times$ TOELEC). Here, the negative sign means that as the election approaches, ideology becomes more relevant. Nonetheless, even after accounting for this "seasonal trend," the coefficient on IDEO $\times$ YR is still significant.

Together, these effects produce the picture shown in Figure 8, which show in more detail

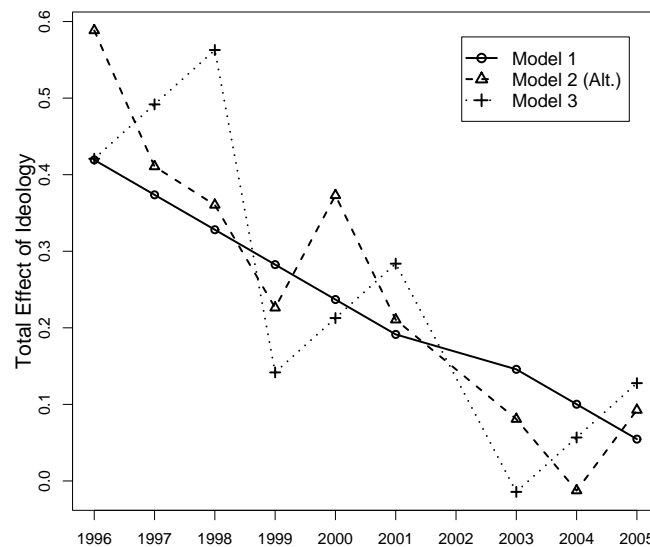


Figure 8: **Effect of Ideology on Legislative Behavior: 1996:2005**

how the effect of ideology has declined in time. In substantive terms, this figure means that while in 1996 a variation equivalent to 1/10 of the scale in which ideology is measured produced a shift on the dependent variable equivalent to 3/10 of the scale in which it was measured. In 2005, in contrast, the same 1/10 shift in ideology generates a 0.5/10 shift in legislative behavior. In plain English, ideology, today, seems to have no impact on legislative behavior.

As (Pereira & Muller 2004) have already noted, the exchange between support and handouts occurs simultaneously. Legislators support the president because they have received handouts, but they also receive more handouts because they have supported the president. In this case, the data should be treated for this endogenous relationship, but this is a task I will leave for future versions of this paper. Still, a quick examination of the results shown in Table 8 shows that under all models legislative behavior has a statistically significant effect on a legislator's success in executing his budget amendments. Both operationalizations of the concept — REALWNOM and WITHEXEC — are significant and indicate that the closer a legislator's voting pattern is to the president's whip, more success he enjoys in executing his budget amendments. In contrast, in the reduced sample models ideology has no discernable impact, while in the analysis carried out using the full and partial samples IDEO has a significant but positive effect on SUCCESS, which means that legislators further from the president have greater legislative success. The overall picture here is that success is more dependent on behavior than on prior ideological beliefs.

Overall, the results are supportive of the idea laid out earlier that the executive distribution of resources creates a "partial" scrambling of the underlying ideological organization of the legislature. The results also indicate that ideology, resources distributed to parties, and those



Table 8: **Determinants of Execution Success: Pooled Data**

	Reduced Sample			Full Sample			Partial Sample	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	pcse.x	pcse.y
	AR-1	AR-1	AR-1	AR-1	AR-1	AR-1	PCSE	PCSE
IDEO		-0.002	-0.011		0.033	0.027	0.033	0.025
		0.903	0.521		<0.001	<0.001	0.004	0.075
IN		0.062	0.131		0.09	0.122	0.082	0.117
		0.181	0.005		<0.001	<0.001	<0.001	<0.001
RELWNOM	-0.31	-0.264		-0.202	-0.202		-0.223	
	<0.001	<0.001		<0.001	<0.001		<0.001	
WITHEXEC			0.286			0.281		0.311
			0.006			<0.001		<0.001
Const.	0.653	0.603	0.295	0.377	0.377	0.124	0.433	0.152
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
N	216	216	216	3227	3227	3227	1784	1784
R2	0.48	0.48	0.49	0.50	0.50	0.50	.30	.29

*Notes:* Dependent variable is SUCCESS, a measure of legislator's success in executing their amendments to the budget. P-values shown below estimates. Year effects — not significant for any given year — are omitted for clarity. In the reduced sample, variable IDEO was the legislator's *individual* estimated ideological distance to the president, while in the full sample the legislator's the distance from the legislator party average ideological position to president was used instead.

distributed to legislator matter to determine legislator behavior, but that their relative weights vary from year to year, probably reflecting changes in strategy and political capacity of the executive.

Moreover, though ideology is not unimportant, it has lost importance in the recent years. The story told by Figure 2, however, suggest that affinity should always be important. One *possible* way to reconcile facts with theory is that affinity might include more than just ideology. I now briefly sketch an alternative and more comprehensive conceptualization of affinity that will be pursued in future work.

## 5.2 Affinity as Attachment to the President

Consider for a moment the issue of the rivalry between the PT and PSDB. Despite Brazil's highly fragmented political system, these two parties have all but completely dominated the dispute for the presidency since the return to democracy. The ordering of parties shown in Table 6 suggests that on purely ideological grounds, an alliance between these two parties would be quite reasonable, even though they show up very far apart in the W-Nominate estimates. Furthermore, if one acknowledges that the PT government has, to a large extent, continued the same economic policies enacted by the PSDB, and that together these two parties would be virtually unbeatable, such an alliance would make even more sense. In fact, such a coalition would be much more reasonable than coalitions between the PT on one side and the PP or PTB on the other, as has have been recently observed.

The point is that there are reasons to suspect that affinity, or the *ex ante* inclinations of legislators, are *not* (or *not just*) ideology. Once again, the PSDB vs. PT example can shed

further light on this issue: Besides some ideological proximity, PT and PSDB, share a common origin in São Paulo, Brazil's largest and most developed state. There, in their home turf, these parties have developed a very intense rivalry between them. Since their respective São Paulo branches exert considerable control over both parties, national level alliances are pretty much out of the question, even if it would make ideological sense.

This forces the PT to look elsewhere in the ideological scale, and as a result, party politics is now polarized between two parties not too dissimilar in ideological terms. A few natural allies gravitate around each pole, but the great majority of the parties are located in an amorphous and un-ideological middle-ground, selling their support in exchange for pork, jobs, and electoral support at the local level.

The alternative hypothesis to affinity as ideology is, then, that the *a priori* ordering of parties is not an ideological one. Affinity, in this sense, reflects each legislator's level of attachment to the president, understood as a measure of how closely a legislator's future career is tied to that of the chief executive. If this is correct, what determines the "price" of attracting a party to the government's side, and consequently which coalitions will form or not, is not simply ideology (and greed) as before, but rather a combination of ideology and many other factors.

For instance, a legislator whose career path has been linked to the president's, or who has become the "president's man" in some district would have a high level of attachment to the president. Conversely, a politician that is a long term rival of the president, even if not too distant in terms of policy preferences, would have lower attachment. At least in the case of Brazil, this is not revealed by party membership, as one could imagine. Internal party rivalries are very strong, legislators switch parties frequently, and many parties display both a *governist* and an *oppositionist* faction.

One good example of this is the recent case of Geddel Vieira Lima (PMDB/BA). Previously a strong supporter of Cardoso, and then an important member of the opposition wing of the PMDB during Lula's first term, he sensed the opportunity to jump onto Lula's bandwagon on the run up to the 2006 elections. After conducting several polls and focus groups, he realized his image among voters was much more strongly associated with that of an anti-Antonio Carlos Magalhães — Bahia's longstanding political boss — than with an opponent to Lula. He then quickly pledged support to Lula's gubernatorial candidate, appointed a close ally as vice-governor candidate on the PT's slate, and completely reinvented himself as one of "Lula's men" in Bahia.

The bet paid off handsomely. He was seen as one of the most important figures in the PT's surprise victory in the state, became the PMDB's national vote champion with almost three hundred thousand votes, and was awarded a Ministry in Lula's second term. Even though he is a relative newcomer to Lula's coalition, if there were a way to systematically measure attachment to the president, Geddel Vieira Lima would, today, rank high in this scale.

Other factors at work definitely include timing and the president's popularity. All things equal, many legislators would like to be on the side of a popular president, especially in the run up to elections. However, it is definitely not obvious how operationalize the notion of "attachment to the president". The main problem is to avoid resorting to an endogenous measure that reflects

the president's distribution of resources. One alternative would be to assemble data from past alliances at the regional level to try to identify legislators that are more committed to the president. Still, this would miss the fact that sometimes new converts have even a higher stake in the success of the government than old allies and fact that factors that vary in time — such as the electoral cycle and popularity of the president — also affect legislator's attachment to the president.

Unfortunately, with more than five hundred legislators in the lower house, such a thorough analysis is not feasible, at least at this time. I have also explored some indirect measures, but still to limited success. Therefore I forego a operationalization of this version of “affinity” to future work.

## 6 Concluding Remarks

The main goal of the paper was to conceptualize and operationalize “affinity,” and in order to accomplish such task, it is essential to clarify the role ideology plays in executive-legislative relations. The paper is an important step in this direction, for it provided a framework in which to analyze legislative behavior, highlighted problems with using observed behavior as a proxy to ideology, and developed on exogenous way to measure ideology.

The estimates of ideology presented here reveal considerable stability on the ideological structure of Brazilian parties, however the statistical analysis shows that the role of ideology in determining legislative behavior has has wanned considerably over the past decade. One possible explanation for this is that it is not ideology, but rather a more complex mix of factors that serves as “affinity” and determines the costs and patterns of coalition making. Nonetheless, work is still needed to operationalize this more comprehensive measure of “affinity”.

Two issues originally conceived simply as intermediary steps in the general argument of my work have the potential to become, in themselves, important contributions to our understanding of Brazilian politics. First of all, the novel estimates of ideology provide an accurate and detailed depiction of the ideological structure of Brazilian politics. Both the legislator specific estimates and the party estimates will be of utility to the political science community, and have to potential to help on the testing of many arguments that make predictions about or depend on the ideological positions.

Beyond the public service of providing these new estimates, the paper also makes a a more substantive contribution, since it documented the relative stability of the ideological alignment of parties, corroborated this with the already mentioned estimates of ideology, and showed that this alignment cannot explain the cleavage patterns that emerge from the analysis of legislative behavior. While this is not an entirely new argument it is, to the best of my knowledge, made in a different way and supported by different data than previous versions of it.

## Appendix

## A Variable Definition and Sources

**RELWNOM** Dependent Variable used in Table 6(a), 6(b), and 7 as an operationalization of “legislative behavior.” It was also used as a independent variable in Table 8. This variable was computed using the absolute distance between the 1-dimensional W-Nominate estimates of each legislator and the president’s whip.

**WITHEXEC** Dependent Variable used in Table 9(a) and 9(b) as the alternative operationalization of “Legislative Behavior.” This variable was computed using only the roll calls in which the executive’s whip declared a *yea* or *nay* vote, and consisted of the fraction of time each legislators’s vote coincided with the presidents. Abstentions and absences were considered non votes, since the president usually seeks to pass rather than avoid legislation. Better treatment of absences is possible, but left for future versions of this paper.

**SUCCESS** Dependent variable in Table 8 and independent variable used in all other models. Computed as the share of a legislator’s individual *pure* amendments to the budget that were *executed* in a given year. The data were obtained in yearly databases from the *Consultoria de Orçamento e Fiscalização Financeira* (COFF), of the Brazilian lower chamber. The following remarks apply:

- *Pure* Amendments are a subset of all legislators amendments that create a new expenditure code (*funcional*). The reason to exclude the non-pure amendments is that of one or more of legislators’ amendments add resources to a pre-existing project it is impossible to distinguish between execution of the amendment of of the original amount budgeted. For 2003 on, the COFF had already implemented queries to the data-base that separate between pure and non-pure amendments. For the other years I filtered the amendments to extract the *pure* ones.
- *Execution* of the budget is a process with many steps, and the structure of the data bases varies a little in time. For the computation of the success rate I used the ration between values *liquidados* to *autorizados*. With very few exceptions, values *liquidados* and *empenhados* were the same, but substantially larger than values actually paid (*pagos*). The best characterization would be to use values paid and those authorized to be paid, but left for the following year *restos a pagar*. However, since not all yearly data bases had information on *restos a pagar*, I opted for a more consistent definition.

**IDEOLOGY** Independent Variable used in Table 6(a) and 6(b). This is a party specific variable, taken from the values estimated in Section 4. The survey that corresponded to the legislature of each year was used. When the full sample of legislators was used, this variable was the average estimated position of the legislator’s party. In the reduced set models, the variable used was individual.

**CABINET** Independent Variable used in Table 6(a) and 6(b). Indicates the share of the governments investment and general expenditure budget, excluding the military ministries, that corresponds to the set of ministries held by each party. These two categories that correspond to expenditure identifiers GND=3 and GND=4 are the most politically invaluable types of expenditures. Other expenditures in the budget include Personnel (Gnd=1), Interest Payments (2), Financial Operations (5), Debt Payment (6) and Contingency Reserves (9).

**IN** Independent Variable used in Table 6(a) and 6(b). A dummy = 1 if CABINET > 0.

**YR** Continuous variable measuring time (in years) since 1995.

## B Results using WITHEXEC as dependent variable

Table 9: Explaining Legislative Behavior

(a) Beta-Regression for Frequency of Votes with the President									
	1996	1997	1998	1999	2000	2001	2003	2004	2005
IDEOLOGY	-0.90	-0.82	-0.67	-0.29	-0.39	-0.10	-0.23	-0.23	-0.04
p-value	0.00	0.00	0.00	0.01	0.00	0.27	0.00	0.00	0.32
SUCCESS	0.61	0.76	1.61	1.20	0.65	0.69	0.15	0.54	0.28
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.04
CABINET	1.61	1.67	1.17	0.57	0.45	0.38	0.68	0.73	0.47
p-value	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
Const.	1.06	0.90	0.07	-0.40	0.48	0.01	0.57	0.04	0.17
p-value	0.00	0.00	0.70	0.06	0.01	0.98	0.01	0.77	0.23
N	405	425	434	296	445	408	207	440	338

(b) Beta-Regression for Frequency of Votes with the President									
	1996	1997	1998	1999	2000	2001	2003	2004	2005
IDEOLOGY	-0.78	-0.78	-0.64	-0.42	-0.51	-0.21	-0.26	-0.26	-0.04
p-value	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.35
IDEO×IN	0.30	0.25	0.24	0.49	0.56	0.27	0.16	0.17	0.04
p-value	0.00	0.02	0.02	0.00	0.00	0.00	0.01	0.00	0.28
SUCCESS	0.59	0.70	1.55	1.07	0.24	0.43	0.14	0.48	0.26
p-value	0.00	0.00	0.00	0.00	0.18	0.01	0.46	0.00	0.07
CABINET	0.94	1.06	0.62	0.17	-0.02	0.20	0.61	0.40	0.50
p-value	0.00	0.00	0.05	0.43	0.89	0.29	0.01	0.03	0.00
Intercept	0.78	0.78	-0.04	-0.48	0.61	0.15	0.56	0.05	0.14
p-value	0.00	0.00	0.83	0.02	0.00	0.46	0.01	0.72	0.33
N	405	425	434	296	445	408	207	440	338

(c) OLS for Difference between individual votes with president and average of party members									
	1996	1997	1998	1999	2000	2001	2003	2004	2005
Intercept	-0.04	-0.08	-0.11	-0.14	-0.02	-0.03	-0.01	-0.05	-0.02
p-value	0.01	0.00	0.00	0.00	0.36	0.23	0.50	0.04	0.33
SUCCESS	0.09	0.12	0.22	0.21	0.03	0.04	0.03	0.07	0.03
p-values	0.00	0.00	0.00	0.00	0.33	0.21	0.41	0.03	0.30
N	418	434	485	307	481	438	247	466	360

*Notes:* Models are equivalent to those shown in Tables 6(a), 6(b) and ??, except that the Dependent Variable here is operationalized as the Frequency of Votes with the President, and not as the 1-dimensional W-Nominate distance to the president. Since the DV in Tables 9(a) and 9(b) is a proportion, a Beta-Regression was fit instead of a standard OLS (Ferrari & Cribari-Neto 2004, Smithson & Verkulien 2006).

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