Legislative Bargaining and Distributive Politics in Brazil:
An Empirical Approach

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Draft Completed: August 4, 2004

Abstract: This paper tailors general theories of distributive politics to guide an empirical analysis of the distribution of intergovernmental grants among the Brazilian states. It shows that grants are distributed in accordance with the political interests of the president, who seeks to maintain a stable, low-cost legislative coalition. States with greater legislative representation per capita receive larger grants per capita, as do states whose legislators belong to the president's coalition. Moreover, the president appears to reward states that provided votes in recent presidential elections, and grants are correlated with the election cycle. These political factors help explain why discretionary resources are not targeted at poor regions. In conclusion, we explore implications for debates about Brazilian institutions and the broader comparative literature on the political economy of resource distribution.

Many political scientists and economists would agree with the famous assessment of Harold Lasswell (1936) that the study of politics often boils down to questions about distribution: Who gets what, when, and how? Thus it is discouraging to assess how little we know about the subject. When governments use their authority to tax, spend, and regulate, who are the primary beneficiaries? Theoretical studies are plentiful, but empirical analysis has lagged far behind. One good reason for this is the fact that redistribution is often very difficult to track with quantitative data—it can be subtle and hidden, and often defies counting. For instance, regulatory and trade policies might have the effect of redistributing wealth from the rich to the poor, labor to capital, or urban dwellers to farmers—cases in which it is very difficult to disentangle government policy from other determinates of income. For this reason, a promising avenue for empirical research into Lasswell's question is the realm of direct redistribution—through fiscal transfers—of funds that are raised through general taxation. More specifically, it is possible to examine a wide range of issues in political economy by using geographic subdivisions rather than individuals as units of analysis to determine the distributive impact of central government policy.

In perhaps no other country is Lasswell's question more relevant than Brazil, where the history of federalism is dominated by carefully crafted coalitions of regional elites held together by tenuous, highly controversial redistribution schemes. The dominant perception of Brazil among political scientists is that this still holds true in the most recent incarnation of Brazilian democracy. The common wisdom is that state-based power brokers demand costly side-payments to facilitate even the slightest policy change. In the wake of federal bailouts of state debts in the 1990s, a large portion of Brazil's debt

burden has become the source of constant political negotiation between the central government and the state governors, for whom the center has become the primary creditor. Now that the federal government has become so intimately involved in the finances of the states, Brazil's prospects for macroeconomic stability and further reform will be determined largely by the outcome of an ongoing game of spatial distributive politics.

The goal of this paper is to shed light on the political economy of fiscal redistribution among the Brazilian states by tailoring hypotheses drawn from recent theory literature to the Brazilian institutional context and testing them empirically. In doing so, it addresses current debates about Brazilian electoral and legislative politics, and provides a useful perspective on regional distributive aspects of Brazil's ongoing struggle for macroeconomic stability. Furthermore, it contributes to a nascent comparative empirical literature on legislative organization, party politics, and the distribution of intergovernmental grants.

The dominant theoretical literature in political science seeks to identify the districts where rational re-election maximizing party leaders would optimally allocate resources. According to the "majoritarian" perspective, risk-averse incumbents will invest in regions where they know that their support is already strong (Cox and McCubbins, 1986). An alternative, "pivotal" perspective suggests that incumbents target districts where there is a relatively large group of "pivotal" or "swing" voters who are sufficiently indifferent between the ideological alternatives that they can be swayed by pork (Dixit and Londregan, 1996, 1998; Lindbeck and Weibull, 1987, 1993). A growing

body of empirical work attempts to differentiate between these alternatives (Rao and Singh, 2000; Khemani 2003; Dahlberg and Johansen 2002; Ansolabehere et al. 2002).

A nagging limitation of this literature is its assumption that the government party has unitary authority over the political agenda. Potential contracting problems within coalition governments or between the executive and the legislative chambers in presidential systems are ignored. First of all, the budget process itself might constrain the discretion of the executive by giving veto and amendment power to committees, party leaders, and other actors. Second, rather than using its authority and discretion in the budget process to pay voters and influence future elections, the government party might have more immediate concerns—surviving no-confidence votes and passing legislation. In other words, when party discipline is relatively weak or the government relies on a coalition of parties for support, the need to buy votes in the legislature is likely to trump the desire to target supporters or swing voters in the electorate.

The president has a great deal of power in the Brazilian budget process, especially after a series of reforms introduced by the Cardoso administration in 1995. The possibility of strategic resource targeting to reward supporters or buy new ones seems plausible enough to evaluate—especially under Cardoso, who was the first Brazilian president able to run for reelection (in 1998). However, the Brazilian presidential election process does not use anything like an electoral college; thus presidential votes are equally valuable in all states (see Strömberg 2001). More importantly, Brazilian presidents face a famously difficult task—passing a legislative agenda in a legislature containing on average 18 parties, where the president's party usually controls less than 20 percent of the seats, and open-list proportional representation creates a strong personal

vote. Moreover, much of Cardoso's legislative agenda—including the constitutional amendment allowing him to run for reelection—required legislative super-majorities.

Thus legislative bargaining takes center stage in this paper. The idea that Brazilian presidents exchange targeted expenditures for legislative support is not new. However, this paper contrasts the typical view of a chaotic "spot market" for legislative votes with an emerging view of relatively stable, long-term contracts between the president and his partisan legislative coalition (Figueiredo and Limongi 2002; Pereira and Mueller 2002). Drawing on the work of Samuels (2002) and Abrucio (1998), it also examines the role of state governors as brokers in the game of legislative bargaining and distributive politics.

The first section reviews theoretical approaches to redistribution and explores empirical implications of existing models for the Brazilian context, paying special attention to legislative bargaining. The second section provides empirical analysis of the distribution from the federal government to the states of different types of intergovernmental transfers, demonstrating rather strong legislative bargaining effects. States with more legislative seats per capita receive larger transfers per capita. Second, states with stronger representation in the president's legislative coalition receive larger transfers per capita. In addition, Cardoso appears to have favored states that provided him with the largest number of votes in recent presidential elections. The third section discusses the results and the final section concludes.

THEORIES OF REDISTRIBUTION APPLIED TO BRAZIL

Theories of spatial fiscal distribution have slowly evolved from the tradition of welfare economics to positive political economy. Initially, the simplifying assumptions

of the fiscal federalism literature conceptualized the central government as a benevolent dictator that makes transfers to internalize inter-jurisdictional externalities (Musgrave, 1959; Oates, 1972). Some studies leave the central government out, and simply examine the incentives of regions to make voluntary transfers to achieve migration efficiency or optimal insurance against asymmetric macroeconomic shocks (Persson and Tabellini 1996). A large empirical literature attempts to measure the extent to which central government taxes and transfers smooth out asymmetric regional shocks.[1]

Another way to think about redistribution in democracies is to view the central government not as a benevolent unitary individual, but as an arena through which preferences are transformed into policies through majority rule. The classic example of this approach is Meltzer and Richard (1981), who assume that voters choose levels of redistribution based on their own income levels, and overall levels of redistribution are thus products of initial income distribution. In this model, the poor are able to extract transfers from the rich through the democratic process. Another approach to redistribution is to view it as a decision by altruistic wealthy individuals who derive utility from helping the poor (Becker, 1974; Coate, 1995). In either case, one would expect that a country like Brazil with a highly unequal distribution of income across states and localities would demonstrate significant distribution of fiscal transfers in favor of relatively poor regions.[2]

While these theories provide useful benchmarks from which to start, they are not likely to explain much of the variation in redistribution within or across countries. Above all, politics and institutions are almost completely absent. No observer of politics and fiscal policy in Brazil believes that the central government is properly understood as a

benevolent despot or an empty shell through which the median voter expresses preferences. Some policy-makers might indeed be motivated by the desire to internalize externalities or insure against risk, or even altruistic concern for the poor. Even so, they will be constrained by the political environment in which they must operate. In order to push for a political agenda, politicians must create or join winning legislative coalitions and protect and advance their political careers.

Building from these observations, the positive political economy perspective adopts assumptions that politicians are motivated above all by the desire to win office, stay in office, gain control of the executive, and be members of winning legislative coalitions. According to this view, the manipulation of intergovernmental transfers might be an extremely valuable tool not only to achieve policy objectives, but also to reward past supporters, persuade new ones, and put together winning coalitions in the legislature. From the positive political economy perspective, two countries with identical income distributions might end up with very different fiscal redistribution patterns if the rules structuring the legislative and electoral games are even slightly different.

The positive political economy approach to spatial redistribution seems particularly promising in the Brazilian context. The prevailing view of politics in Brazil is that the rules of the game provide strong incentives for politicians to build legislative coalitions and seek reelection not by fighting for ideological programs or providing national public goods, but rather by providing private goods and "pork" to their constituents (Ames 1995). It is commonly asserted that discretionary intergovernmental transfers to state and municipal governments are the most important sources of such "pork."

The Budget Process

Before thinking theoretically about political incentives and redistribution, it is important to identify the key players and institutional constraints. The most important player in the Brazilian legislative game is the president. Compared with other presidential systems, the Brazilian Constitution of 1988 gives the president a great deal of authority—especially over the legislative agenda and the budget process in particular (Figueiredo and Limongi, 2001). The role of party leaders in the budget process is also more central than typically recognized in the literature. The budget process starts with the president's proposal to the legislature, which is then taken up by the Joint Committee for Planning, Public Budgets and Monitoring—CMPOF—with 63 members drawn from the Chamber of Deputies and 21 from the Senate.[3] Membership is proportionate to the number of seats held by each party in the two chambers. Party leaders play an important role in the budget amendment process, assigning valuable CMPOF subcommittee seats and *rappourteur* positions to their members. Even the subcommittees observe partisan proportionality. The most important position is the general *rapporteur*—always a key member of the president's legislative coalition—who plays a central role in negotiating amendments between the party leaders and the president.

Studies of "pork-barrel" politics in Brazil often focus on the budget amendment process. Amendments can be proposed by individuals, state blocs, regional blocs, and standing committees. The classic view of Brazilian legislative bargaining (Ames 1995; Mainwaring 1993) focuses on high profile amendments offered by individual legislators bringing projects to the municipality from which they draw their electoral support. Changes in rules have led to an increase in the share of amendments offered by collective

actors—especially state blocks—over individuals (Figueiredo and Limongi 2002),[4] and individuals must negotiate with party leaders and *rapporteurs* to gain committee approval.

The amendment process is only the beginning. Even after amendments are approved, the president has complete discretion over whether the amendments are actually executed, as well as over the timing of their execution. In fact, data collected by Figueiredo and Limongi (2002) show that only slightly over half of all amendments were executed during the first Cardoso administration. Moreover, if the president does not get legislative approval of the budget proposal, he may spend one half of the total budget each month in the interim. In short, the legislative process begins and ends with the president's discretion.

Buying Votes in Presidential Elections

This would appear to give the president the ability to target resources to his advantage. Broadly, the relevant theoretical literature examines two competing models of vote buying. First, Cox and McCubbins (1986) present a model in which a risk-averse incumbent government invests in regions where it received support in recent elections. In the majoritarian perspective, winners might "take the spoils" and spend them on their supporter, perhaps hoping to bolster turnout among their supporters in future elections (Strömberg, 2001; Ansolabehere et al. 2002). An alternative set of "pivotal" models (Dixit and Londregan, 1996, 1998; Lindbeck and Weibull, 1987, 1993) asserts that this strategy would waste valuable discretionary resources on districts that are already under control. A more cost-effective strategy would be to target districts where the outcome in the next election is most uncertain—where voters are relatively evenly split. More

precisely, Dixit and Londregan argue that central government politicians will target resources at districts where there is a relatively large group of "swing voters" who are sufficiently indifferent between the (ideological) alternatives that they will potentially be swayed by pork.

The most obvious problem with the assumptions of these theories in Brazil is the fact that Brazilian presidents were not allowed to run for reelection until 1998. Nevertheless, it is plausible that presidents in the past tried to pave the way for hand-picked successors or simply reward loyal supporters in their regional strongholds. Another reason for skepticism is that these theories draw rather heavily on implicit assumptions of "winner take all" districts. For example, geographic targeting makes sense when crucial swing districts can be identified, like Florida in the U. S. electoral college (Strömberg 2001), but in Brazilian presidential elections, votes from all states are equally valuable. Thus an incumbent's incentives would seem to favor broad national public goods over geographic targeting. Moreover, given the strength of state-based power brokers, presidents might find it difficult to claim credit for targeted expenditures.

In spite of these hesitations, the majoritarian and pivotal hypotheses will be evaluated in the empirical analysis to follow. An additional orthogonal hypothesis also deserves attention. Building on the American context of low and quite variable voter turnout, Strömberg (2001) and Ansolabehere et al. (2002) suggest that other things equal, incumbents face incentives to favor regions where turnout is high simply because there are more votes to influence. This may seem inappropriate for the Brazilian context with mandatory voting and high turnout, but there are interesting cross-state variations. For instance, in the 1998 presidential election, turnout ranged from 68.2 percent in Bahia to

86.4 percent in Amapá with a standard deviation of 5. Moreover, a striking number of ballots are often intentionally spoiled or blank, which means cross-state variations in valid votes cast (as a share of eligible voters) are much greater. In 1998, only 49 percent of the population in Bahia cast valid votes, while the figure in the Federal District was 76 percent, with a standard deviation of 7.5. It is plausible that presidents favor states with higher "effective" turnout.

Buying Votes in the Legislature

Brazilian presidents face a difficult task when attempting to build support coalitions in the two chambers of the legislature. Brazil's system of open-list proportional representation has produced a famously fragmented and fluid party system. Election coalitions are frequently different from legislative coalitions, and because their electoral fates are not mutually dependent, legislators—even those sharing the president's party label—face weak incentives to support the president's legislative agenda. All legislators face incentives to bring home expenditures to their state. As Ames (1995) has shown, some legislators deal with intra-party competition by seeking out more concentrated bases of support, and thus face incentives to bring home projects to their municipalities.

The challenge is made more difficult by the political fragmentation induced by Brazil's system of federalism. State governors are clearly important players in building election coalitions. Unlike American governors who often ride the coattails of presidential candidates sharing their party affiliation, empirical research in Brazil suggests that federal-level politicians appear to ride the coattails of powerful gubernatorial candidates who play a key role in drawing up state party lists (Samuels,

2000). Thus governors may have mechanisms of control over legislators—especially in the upper chamber—that undermine the president's attempts to build legislative coalitions (Mainwaring, 1997; Abrucio, 1998).

These impediments to coalition building by presidents in the legislature are blamed for maladies ranging from fiscal mismanagement, deficits, and inflation (Dillenger and Webb, 1999) to inflexibility and stagnation (Lopes, 1996). Yet on some occasions, presidents find ways to overcome these hurdles and build successful legislative coalitions. It seems that these coalitions come with a price. Ames (2001) documents a variety of strategies used by Brazilian presidents from Sarney to Cardoso, emphasizing that above all, presidents trade cabinet appointments (along with the associated powers and perks) and a variety of fiscal transfers in exchange for legislative support.

Presidents maintain a great deal of discretion over a wide range of transfer programs, and face strong incentives to trade federal expenditures for legislative votes. Ames (2001) describes inexperienced presidents—Fernando Collor de Melo and Itamar Franco—who simply used transfers to reward friends and allies, only learning over time to use grants more strategically to build legislative coalitions. Jose Sarney, on the other hand, is described as using a fine-grained political strategy to build a legislative coalition consisting of the PMDB and PFL and distributing grants to their deputies, governors, and mayors—especially those who were able to claim credit for pork barrel spending more clearly. However, at times—as in the 1988 constitutional battle, he appears to have been willing to trade money for votes with anyone who would pledge support to his endeavor to extend his own presidential term.

Spot Markets

These descriptions can be linked with abstract theoretical treatments of vote buying. Consider a president who wishes to use a limited pool of resources to buy votes on a variety of legislative issues throughout his term, and representatives who wish to gain reelection by providing spending projects to their districts. First of all, it might be rational for a president to build different coalitions on each issue, in which case the market for votes would resemble a spot market. Faced with the task of allocating limited pork barrel resources, the president might assess the preferences and threat points of each legislator for each issue and target his vote-purchasing at those legislators who can credibly claim indifference and offer their votes for sale. If preferences and threat points change from one issue to another, the president makes best use of his resources by putting together different coalitions on each issue, seeking out the most inexpensive coalition on each issue.

In order to build the most inexpensive coalition on a case-by-case basis, the president would build minimum winning coalitions (Baron and Ferejohn, 1989). Extra coalition members would only drain precious resources that must be conserved for future battles. If one assumes that all minimum winning coalitions are equally likely to form, and that each district contains an equal number of voters, one might expect that in the long run, pork would be distributed rather equally across districts.

Of course one of the distinguishing characteristics of federalism is that districts are asymmetrically sized. Constitutional bargains struck between asymmetrically sized states often lead to legislatures in which small states are over-represented. Among the world's federations, Brazil has one of the most malapportioned in the world (Samuels and

Snyder, 2001). If the president wishes to conserve limited discretionary funds, he would seek out legislators whose votes can be purchased at the lowest price. Gibson and Calvo (2000) refer to this as a "low maintenance" coalition. Thus the representatives of small states might be particularly attractive as coalition partners since their votes are less expensive. If this is true, over the course of the term one might expect that small, over-represented states find themselves in a larger share of the winning coalitions, and end up with larger per-capita distributions of discretionary expenditures.[5]

Long-term contracts

Weingast and Marshall (1988) draw from industrial organization theory to point out that some of the assumptions of the "spot market" view of vote buying are inadequate. Above all, the costs of gathering information and organizing separate sales on each vote might be prohibitive. Furthermore, a non-simultaneity problem might make spot market transactions difficult to sustain. Funds cannot be released at the moment a vote is taken, so both the buyer and the seller, if forced to be the first to honor her commitment, fear that the other will renege when the time comes to fulfil hers.[6]

According to Weingast and Marshall, these problems engender incentives for participants to create governance structures that go beyond spot markets and reduce transaction costs for exchanges between buyers and sellers. The solution in the United States Congress, they argue, is a committee system that allocates property rights over different kinds of pork. A more recent literature emphasizes party leaders in this role as well (e.g. Cox and McCubbins, 1993). In the Brazilian game between the president and legislators, the governance structure of interest is the legislative coalition. Rather than attempting to buy votes in a spot market, the president can attempt to broker a long-term

contract at the beginning of his term by offering up spots in a minimum winning coalition. He can offer a steady flow of resources to coalition members in exchange for a steady flow of votes.

However, such a coalition might introduce contracting problems of its own. First, in a large legislature, it may be difficult for the president to directly oversee a large number of spending programs. Additionally, the non-simultaneity problem does not go away merely because a coalition agreement has been reached. In order to resolve the information problem and enhance the credibility of his commitments to provide future pork in exchange for present votes, the president can delegate authority to cabinet ministers, allowing them some discretion in distributing pork. The ministers then behave as "middle men" in the exchange of votes for transfers (Ames, 2001). The president gives the ministers property rights over transfers, expecting that they will use a share of these transfers to work with party leaders and legislators to insure a steady supply of votes. Such a system might be preferable not only for the vote buyer, but for the sellers as well. They are, after all, using the proceeds from their vote sales to buy their own votes in their districts. The ability to enter into a long-term contract that offers a steady flow of pork might be viewed as an improvement over an unpredictable spot market in which their fortunes fluctuate.

Alternatively, or perhaps in addition to ministers and party leaders, presidents might use the governors as brokers. Since governors are important players in the electoral fates and career futures of legislators in both chambers, they possess tools that allow them to influence voting behavior, which makes them useful to the president (Samuels 2000). The president might provide grants to governors in his coalition, who in turn

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distribute a share of the resources to the bailiwicks of legislators whose votes are needed. Recent literature on Brazil portrays a conflict between Figueiredo and Limongi's "party-centered" view of legislative voting and Samuels' gubernatorial dominance hypothesis. However, Carey and Reinhardt (2003) point out that the two are not mutually exclusive, and indeed governors are likely to compete with party leaders as brokers, and compete for influence over legislators.

Empirical Predictions

In sum, a variety of economic theories predict that intergovernmental transfers will smooth out short-term income shocks and be targeted in the long term toward relatively poor states. A positive political economy perspective suggests that presidents might use discretionary transfers to buy support directly from voters to win elections, or from legislators to build legislative coalitions. Vote buying in presidential elections might be targeted at regions where support is already strongest, those with the largest number of swing voters, or those with the highest effective turnout.

Legislative votes might be purchased in a spot market or through long-term coalition contracts. In the spot market approach to vote buying, all coalitions are assumed equally likely to form. Party discipline, ideology, and regional ties do not stand in the way of efficient deals. If this is correct, parties and coalitions will have no effect on distribution, but small states with larger numbers of votes per capita will receive higher per capita transfers. In the long-term contracting view, one should expect larger per capita transfers to flow to jurisdictions controlled by legislative parties or governors that are in the president's coalition. In this view, the goal is not to purchase the most

inexpensive winning coalition on each legislative item, but rather to hold together an existing coalition.

EMPIRICAL ANALYSIS

This section attempts to estimate the influence of electoral and legislative politics on the distribution of intergovernmental transfers. To our knowledge, it is the first comprehensive attempt to do so. Ames (2001) provides an analysis of the number of budget amendments signed, though often less than half of these are executed. Figueiredo and Limongi (2001) and Pereira and Mueller (2002) examine executed line items from the investment budget under Cardoso and show that the legislators from the president's coalition are more likely to have their amendments approved and executed. These studies are well suited to address the particulars of the amendment process, but these disbursements account for a small part of the total budget. Examining intergovernmental transfers is a better way to assess the implications of politics for overall spatial distribution. Transfers to the states make up over 11 percent of the central government's expenditures.

The political effects of interest are most likely to be discernable with discretionary rather than formulaic transfers like the Brazilian co-participation system, but it is important to note that even the formulae used to govern the distribution of automatic transfers are themselves political bargains struck among legislators. It is useful to conduct separate analysis of total (including constitutional) transfers and discretionary transfers alone and contrast the coefficients. The Federal Ministry of Finance publishes yearly state budgetary data, which distinguish between constitutional and "other" transfers in the current receipts, and also a line item for capital transfers. It is possible to

separately evaluate constitutional transfers, total (current and capital) discretionary transfers, and total transfers (constitutional + current discretionary + capital discretionary). These measures are available from 1990 to 2000, and all are expressed in real 1995 currency per capita. Since the transfer data are right skewed, we use natural logs.[7]

Several variables have been created in order to evaluate the possibility of strategic presidential resource allocation. First, in order to test the simple majoritarian or "winner takes the spoils" hypothesis, we calculate the total number of votes received by the president in each state in the most recent election.[8] Second, in order to examine the "pivotal politics" hypothesis, we calculate the distance between the vote shares of the top two presidential candidates in each state in the most recent election, expecting to find a negative coefficient.[9] Third, in order to test the turnout hypothesis, we calculate the effective turnout in the most recent presidential election as described above—unspoiled ballots cast as a share of voting age population.

In order to measure the bargaining strength of small, over-represented states, we calculate the number of seats per million inhabitants for each state in the Chamber of Deputies and the Senate. Since these are highly correlated, we use the two-chamber average rather than enter the two into regressions individually. The two-chamber average ranges from around 1 for São Paulo to over 35 for Roraima.

Next, to capture the strength of each state's representation in the president's legislative coalition, we calculate the number of the state's deputies that belong to the president's legislative coalition as a share of total legislative seats. Additionally, we calculate the number of senators belonging to the president's coalition as a share of total

Senate seats. Again, given the relatively even strength of the two chambers in the Brazilian legislative process, we take the two-chamber average.[10] This varies from around .001 for Goiás in the early 1990s to around .05 for Minas Gerais in the first Cardoso administration.

It is possible that the effects of over-representation and coalition membership are interactive rather than additive. After all, small states might be attractive partners when the president forms his legislative coalition. The value of having extra legislative seats per capita might be enhanced when those seats are part of the president's coalition. Thus a multiplicative interaction term is included. Finally, to test the "governors as brokers" hypothesis, we also create a dummy variable for state-years in which the governor belonged to the president's legislative coalition, and a separate variable for governors sharing the president's partisan affiliation.

The most important control variable is the log of real state domestic product per capita.[11] The coefficient should be negative if the central government is using grants to stabilize regional income shocks or redistribute income to residents of poor regions. A variety of other indicators for poverty, literacy, and urbanization, as well as a composite index of human development are available at the state level but unfortunately do not vary over time, and thus are left out of the cross-section time-series models.[12] Finally, we include the state's population and a dummy variable for presidential election years.

The data set includes observations for each of 26 states and the federal district from 1991 to 2000 for a total of 270 observations. Hausman specification tests suggest that the random effects estimator is inappropriate. In any case we are concerned that there are important unmeasured factors that vary across states; thus all regressions

reported below include state fixed effects. Moreover, we are concerned about year-to-year fluctuations and possible trends, and since a matrix of year dummies is jointly significant in every model we include them as well. Panel-corrected standard errors are calculated in order to deal with groupwise heteroskedasticity. In order to deal with serial correlation, dynamic models including one lag of the dependent variable are reported below. The inclusion of a lagged dependent variable, especially in the presence of fixed unit effects, might introduce bias. Thus alternative static specifications have also been explored using the Prais-Winsten transformation, and these yielded similar results. Additionally, we test for unit roots and find that transfers in most states are stationary. However, since some states demonstrate upward trends, dynamic first-difference models have also been estimated (using levels for the political representation variables). We have also explored weighted-least squares, weighing by state population, and we have used a data set composed of four-year averages for each presidential term rather than yearly data. All of these models yielded very similar results to the simpler models below.

[TABLE 1 HERE]

Table 1 presents the basic results. In models 1 and 2, the dependent variable is total (including constitutional) transfers per capita, and in models 3 and 4 it is total discretionary transfers only. Models 1 and 3 do not include the interaction term, while models 2 and 4 include it. Although the overall fit of the 'total transfer' models is better than the models that only include 'discretionary transfers,' not surprisingly the political variables perform much better in the latter regressions.

Electoral vote buying

The first group of independent variables addresses competing theories of vote buying in presidential elections. These coefficients are not significantly different from zero in the first two models, but the results of models 3 and 4 are quite surprising. The *margin* separating the top two vote recipients in the state in the last presidential election has a negative effect on discretionary transfers. If all variables are held at their means, a one standard deviation decrease in the margin of victory is associated with R$ 7 per capita of increased voluntary transfers.

The next coefficient suggests that other things equal, states that provided more *votes for the president* in the most recent election received larger per capita transfers. A one standard deviation increase in votes for the president is associated with a R$17 jump in voluntary transfers.

Likewise, states with higher *effective turnout rates* (where a larger share of the population submitted a valid ballot) received larger transfers per capita. However, a residual plot reveals that the result is rather strongly influenced by a couple of outliers, above all Tocantins. When this state is dropped, the coefficient is no longer statistically significant ($p=.11$). The more traditional measure of turnout (voters in the election as a share of total eligible voters) failed to achieve statistical significance. We have also interacted the turnout variables with the election year variable, and found no evidence that the impact of turnout changes in election years.

Given some of the arguments above, the significant coefficients for the *electoral margin* and *president's vote* are surprising. First, we checked for the influence of outliers and examined the stability of the coefficients over time, and discover that both coefficients are driven by the Cardoso period; they are insignificant prior to 1995. This

would seem to indicate that reelection motives (only plausible under Cardoso) were driving strategic redistribution. However, it is quite puzzling that the results seem to favor both the majoritarian and pivotal politics perspectives. Inserting an interaction term (*margin* x *votes for president*) in model 4 helps solve the puzzle. The interaction and its components are jointly significant and tell an interesting story. The positive conditional coefficient for *president's vote* is significant and increases slowly with the margin of victory. However, the coefficient for *margin* is only negative for states where the president failed to garner more than one million votes, and even in those it is not statistically significant over much of the sample range. When the president receives over 1 million votes, the conditional coefficient for *margin* actually becomes positive, and it is significant when the number surpasses 2 million.[13] Thus for the large states, the effect of *margin* is positive, and the president won these states in 90 percent of the cases (the large margin of victory was his own). The results are consistent only with a majoritarian or "winner takes the spoils" perspective. Cardoso appears to have rewarded the states that successfully delivered votes in the most recent election.

Legislative vote buying

Moving on to the legislature variables, overall state representation per capita in the two legislative chambers has a profound effect on redistribution. In model 1, the effect of a one standard deviation increase in representation per capita (going from São Paulo to Tocantins) increases total transfers by around R$ 265 per capita. These results are not driven exclusively by the smallest states—the coefficient is quite similar even if Roraima, Amapa, and Acre are dropped. Note that the coefficient is three times larger for voluntary transfers (model 3). Thus the over-representation effect is not merely an

artifact of the constitutional revenue-sharing formula. Rather, it seems to arise in part from either the bargaining strength of small states within the legislature or between the president and the legislature.

The next coefficient suggests, moreover, that bargains are not only struck in spot markets. The states with stronger legislative representation in the president's coalition receive significantly larger transfers per capita. A one standard deviation increase in coalition representation (for example Rio Grande do Norte going from 7 to 8 Camera seats and from 2 to 3 Senate seats in the coalition after the 1994 election) is associated with an increase of R\$ 10 per capita in total transfers. If the president trades transfers for legislative votes, he appears to do so most frequently with the legislators and senators in his coalition.[14]

The interaction specification does not add greatly to the explanatory power of the models, but the interaction terms and their components are jointly significant, and their estimated effects are worth elaborating. Figure 1 plots the conditional coefficients for *coalition membership* throughout the range of per capita legislative representation. It points out that most of the states fall between 0 and 5 million inhabitants per seat, and some of the smaller states are indicated on the right. The effect of coalition membership on discretionary transfers per capita increases with over-representation throughout the sample range, though with decreasing precision for the larger states. In other words, the benefit of gaining seats in the president's legislative coalition is larger for the smaller, more over-represented states.

[FIGURE 1 HERE]

Next, the coefficient for *governor's membership in the president's coalition* is not significant in any estimation. We have also experimented with a variable for membership in the president's party, but this also failed to attain significance. By no means do we disprove the common wisdom that governors act as brokers in the legislature and play a central role in federal politics, but other things equal, the states controlled by the governor's co-partisans and those of his coalition members do not receive larger transfers per capita than those controlled by the opposition.[15]

We now turn to the control variables. While election years have no significant effect on total transfers in Models 1 and 2, Models 3 and 4 do show that discretionary transfers are much higher during election years.[16] The point prediction from model 4 is that in the average state, discretionary transfers shoot up by over $R 100 per capita in election years. It is difficult to negotiate between the many competing explanations for election year effects on transfers. Presidents might be using transfers to affect state elections of interest, or may simply give in to higher demands by legislators for pork-barrel spending during election campaigns. Perhaps the president's coalition begins to fray at the end of the legislative term as he becomes a lame duck, and the cost of a vote in the legislature increases. These and other possibilities are worthy of further analysis.

Income and Redistribution

Given the strong theoretical reasons to expect income redistribution in Brazil, real GDP per capita is the most important control variable. It is taken as a matter of faith among public economists that central governments design transfer systems to smooth out regional income shocks. Moreover, given Brazil's massive inter-regional inequalities, both median voter and altruism-based models predict significant regional redistribution.

The expressed goal of the coparticipation system is, of course, income redistribution, but because it originated as a federal bargain between asymmetrically sized units, it ended up with a formula that benefits small states, not all of whom are the neediest. Note that GDP per capita does not even approach significance in any of the models presented in Table 1. It is quite striking to see that total transfers do not favor the poorest states, and the coefficient for discretionary transfers is actually positive.

In order to differentiate between short-term insurance against asymmetric shocks and long-term redistribution, it is useful to examine a few stripped-down models using the error correction estimation, displayed in Table 2. The left-hand variable is a first difference of logged per capita transfers, and the dependent variables include the lagged level of the dependent variable, and the first difference and lag of logged GDP per capita. In this set-up ΔGDP represents the effect of a short-term fluctuation in income, while the lagged level of GDP captures a long-term redistributive effect. As before, the models include a matrix of state and year dummies.

[TABLE 2 HERE]

The results are striking. There is no evidence that transfers in Brazil provide insurance against regional downturns. In fact, a short-term slide in state domestic product is associated with lower per capita transfers. In other words, transfers are weakly procyclical. In the longer term, increasing wealth is associated with increasing transfers. A one percent increase in GDP per capita is associated with a .65 percent increase in *total transfers* per capita (model 5) and over a two percent increase in *voluntary transfers* per capita (model 7). However, the long-term coefficient for *constitutional transfers* is negative (model 6). In sum, constitutional transfers do flow disproportionately to poor

regions. However, this redistributive effect is overwhelmed by the regressive impact of voluntary transfers.

To see this more clearly, it is helpful to examine some simple cross-sectional snapshots with scatter plots. Figure 2 plots transfers per capita against measures of economic development in the year 1996 (plots for other years look very similar).

[FIGURE 2 HERE]

Figure 2a and 2b plot GDP per capita and an index of human development respectively on the horizontal axes and total transfers per capita on the vertical axes. Both figures demonstrate the effects of overrepresentation. Four of the most over-represented states are in a class by themselves at the top, and they exhibit a positive relationship among them between development and transfers per capita. If we ignore these states, among the others one can discern perhaps a very tenuous negative relationship between development and transfers per capita. But turning to Figures 2c and 2d, which display discretionary transfers on the vertical axes, the relationship between development and transfers appears to be positive. These scatter plots helps underscore the empirical results discussed above. The biggest winners in the game of redistribution were (1) extraordinarily over-represented but not particularly poor, (2) important players in the president's legislative coalition, and (3) large states that delivered votes in the last election.

How robust are the results?

Since we are not blessed with a large number of states or a long time series, the results must be approached with caution. As mentioned above, the significance of the turnout result is somewhat sensitive. The same is true for the average coalition representation variable, for which Roraima is an influential observation of concern.

However, when the Senate coalition representation variable is entered alone rather than two-chamber average, the result is quite stable. Moreover, the effects of over-representation and past support for the president are quite robust in all of the models.

We have also pursued other ways of measuring the distributive impact of central government policies. First, we have also obtained data from a separate source on so-called "voluntary" transfers that are not explicitly obligated by the constitution or other legislation.[17] This is a smaller subset of transfers than those deemed "discretionary" in the analysis above. Unfortunately this variable is only available for the years 1997 through 2000. Nevertheless, similar results were obtained for over-representation, past electoral support for the president, and membership in the president's legislative coalition, while turnout had no significant effect. Furthermore, we have also examined the per capita distribution of so-called "urban development loans" over which the president's administration has a great deal of discretion.[18] This variable was only available from 1995 to 1998, but our analysis showed that the distribution favored states with strong representation in the president's legislative coalition and states with high effective turnout.[19]

The results pertaining to representation in the president's legislative coalition are broadly consistent with other recent studies. Pereira and Mueller (2002) find that faithful members of the president's legislative coalition are more likely to have their budget amendments appropriated by the executive. Cheibub, Figueiredo, and Limongi (2002) find that states with stronger representation in the president's legislative coalition receive larger per capita shares of the investment budget.

Conclusions

"For to he who has shall more be given, and he will have abundance; but from him who has not, even what he has will be taken away." (Matthew 25:29).

With one of the most unequal income distributions in the world, a democratic decision-making process, and a legislative system that systematically under-represents the wealthiest regions, the conditions in Brazil would appear to create incentives for very pronounced redistribution from wealthy to poor regions. Yet taken as a whole, the intergovernmental transfer system is not highly redistributive, and the most discretionary transfers are actually regressive. To solve this puzzle, it is important to move beyond theories of redistribution based on benevolent altruists and median voters.

A better way to understand redistribution in democracies is by examining the electoral incentives of officials. This paper has examines such incentives in a federation with a strong presidency, an extremely malapportioned legislature, and legislators who face relatively strong incentives to provide geographically targeted goods to their constituents. The Brazilian president can wield considerable discretion in executing the budget. But he must use these resources carefully to overcome the challenge of putting together and maintaining a legislative coalition. When building legislative coalitions, presidents have strong incentives to favor small, less expensive coalition partners. Moreover, the president funnels resources to the states of his coalition members in an apparent attempt to build a stable long-term coalition.

Redistribution to poor regions emerges by accident if at all. While federalism might lead to demands for regional redistribution, it also creates institutions—namely malapportioned legislatures and often vertically disintegrated political parties—that make

income-based redistribution unlikely.[20] These factors help explain why the records of large federations attempting to reduce inter-personal and inter-regional inequality with regional subsidies are so poor (Shankar and Shah, 2001).

The difficulty of creating cross-region coalitions in Brazil is well known. Indeed, there is a leitmotiv in the American political science literature that Brazil is essentially "ungovernable." However, a new discordant theme stresses the institutional powers of the presidency, the role of party leaders in the budget process, and the usefulness of stable legislative coalitions, especially under Cardoso (Figueiredo and Limongi 2001, 2002). The results presented in this paper do not suggest a resolution to this debate. However, the rather extreme notion that the president must negotiate a new winning coalition for each issue is suspect. Consistent with other recent work, our findings suggest that the president uses his resources to hold together a clearly identifiable legislative coalition. Moreover, we are unable to find consistent evidence that presidents favor governors who share their party affiliation.

Finally, it is not possible to resolve debates about majoritarian versus pivotal theories of redistribution with a single case study. In fact, both theories might capture politicians' incentives in different contexts. For instance, Dahlberg and Johansen (2002) find evidence of redistribution in favor of pivotal districts in their study of environmental grants in Sweden. But Ansolabehere et al (2002) find no evidence supporting the pivotal hypothesis, and rather strong evidence in favor of the majoritarian hypothesis in a study of grants from U.S. states to counties. Rao and Singh (2000) and Khemani (2003) also find majoritarian effects in India. The Brazilian context is not well suited to the pivotal hypothesis, above all because votes in presidential elections are equally valuable in all

states. That is, no state can hope to be Florida. Our results are most consistent with a very simple notion in which regional pockets of supporters are rewarded. Holding over-representation and population constant, it appears that more resources flow to states that provided the most votes to the standing president in the most recent election. Thus it seems that having presidential elections with one large district is a way of counteracting the small-state bias in the legislature. Unlike the U.S. with its electoral college, a rational Brazilian presidential candidate can focus his attention on large, populous areas. This might help explain why states like São Paulo and Rio are not more disfavored in the distribution of discretionary transfers. Brazil is a good comparison for Americans who would, in the wake of the Florida fiasco, prefer to abolish the electoral college.

In conclusion, this paper has shown that legislative bargaining and electoral politics drive spatial distribution of expenditures in Brazil. In fact, Gibson and Calvo (2000) make a similar conclusion about Argentina, as do Rao and Singh (2000) about India. Targeting government policy to reduce inter-regional and inter-personal inequalities and combat poverty can be quite difficult in a federal context. Moreover, the distribution of transfers is only the tip of the iceberg. Future studies must go beyond transfers, which are relatively easy to count, and examine the effects of tax, regulatory and trade policies. By continuing in this vein and examining the intricacies of electoral politics and legislative bargaining in a wide variety of country contexts, analysts can hope to make simple models of income redistribution more realistic, and come up with more precise knowledge about the political conditions under which government spending targets poor regions and individuals.

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Table 1: Determinates of real transfers per capita, Brazilian states 1991-2000

	Log total transfers per capita				Log total discretionary transfers per capita			
	Model 1		Model 2		Model 3		Model 4	
Lag dep. Var.	0.08	(0.13)	0.06	0.12	0.17	(0.12)	0.17267	(0.12)
Margin in last pres. elect.	-0.17	(0.12)	-0.19	(0.12)	-1.13	(0.44) ***	-1.17325	(0.44) ***
Votes for pres. in last elect.	0.02	(0.03)	0.01	(0.03)	0.18	(0.06) ***	0.17326	(0.06) ***
Effective participation rate	0.77	(0.54)	0.57	(0.54)	6.09	(2.41) **	5.68666	(2.55) **
Seats per million pop. (two-chamber average)	0.18	(0.03) ***	0.16	(0.04) ***	0.64	(0.16) ***	0.56881	(0.18) ***
Seats in coalition as share of total leg. seats (two-chamber ave.)	5.15	(1.82) ***	-0.71	(2.65)	17.22	(9.77) **	4.06051	(9.50)
Interaction			2.31	(1.09) **			5.07727	(3.93)
Gov. in president's leg. Coalition	-0.05	(0.04)	-0.03	(0.03)	-0.19	(0.16)	-0.14407	(0.16)
Log real GDP per capita	-0.08	(0.16)	-0.07	(0.17)	0.92	(0.84)	0.93563	(0.86)
Population (millions)	0.02	(0.07)	0.05	(0.06)	-0.37	(0.16) **	-0.30228	(0.16) *
Presidential election year	0.05	(0.04)	0.05	(0.04)	2.08	(0.46) ***	1.98451	(0.49) ***
Constant	2.53	(1.10) **	2.60	(1.11) **	-22.26	(6.57)	-22.14	6.66 ***
r²	0.95		0.96		0.73		0.74	
Number of states	27		27		27		27	
Number of years	10		10		10		10	

Note: Coefficients for fixed unit and year effects not reported.

Panel-corrected standard errors in parens.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 2: Determinates of change in real transfers per capita, Brazilian states 1990-2000

|	Model 5			Model 6			Model 7		
	Δ Log total transfers per capita			Δ Log constitutional transfers per capita			Δ Log voluntary transfers per capita		
Lag dep. Var.	-0.65	(0.09)	***	-0.58	(0.72)	***	-0.59	(0.08)	*
Δ Log GDP per capita	0.22	(0.14)	*	-0.05	(0.40)		1.18	(0.67)	*
Lag. Log GDP per capita	0.65	(0.13)	***	-0.26	(0.13)	**	2.03	(0.58)	***
Constant	-1.52	(0.75)	**	3.91	(1.15)	**	-16.13	(5.15)	***
r^2	0.45			0.53			0.4		
Number of states	27			27			27		
Number of years	10			10			10		

Note: Coefficients for fixed unit and year effects not reported.
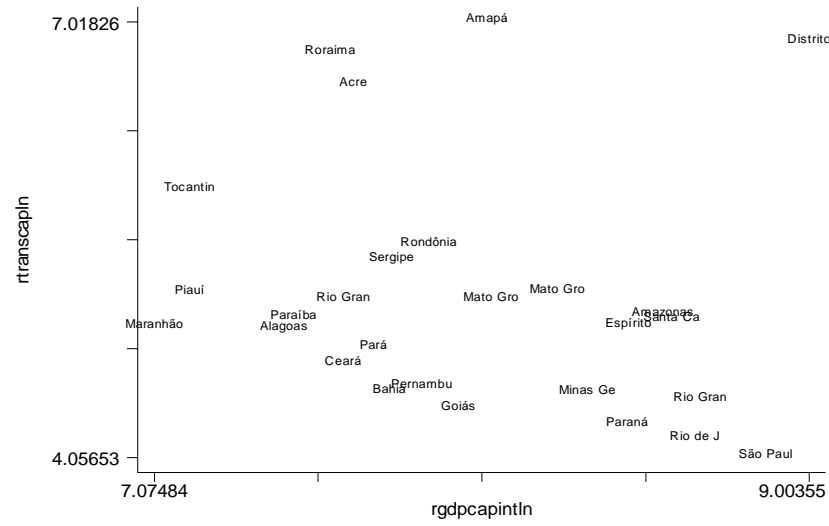
Panel-corrected standard errors in parens.

* significant at 10%; ** significant at 5%; *** significant at 1%

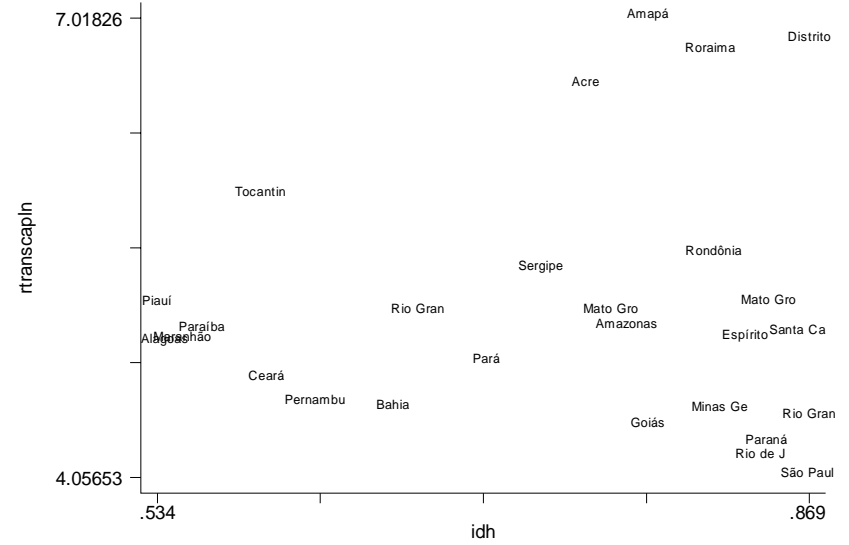**Figure 1: Conditional effect of coalition membership on logged discretionary transfers per capita**
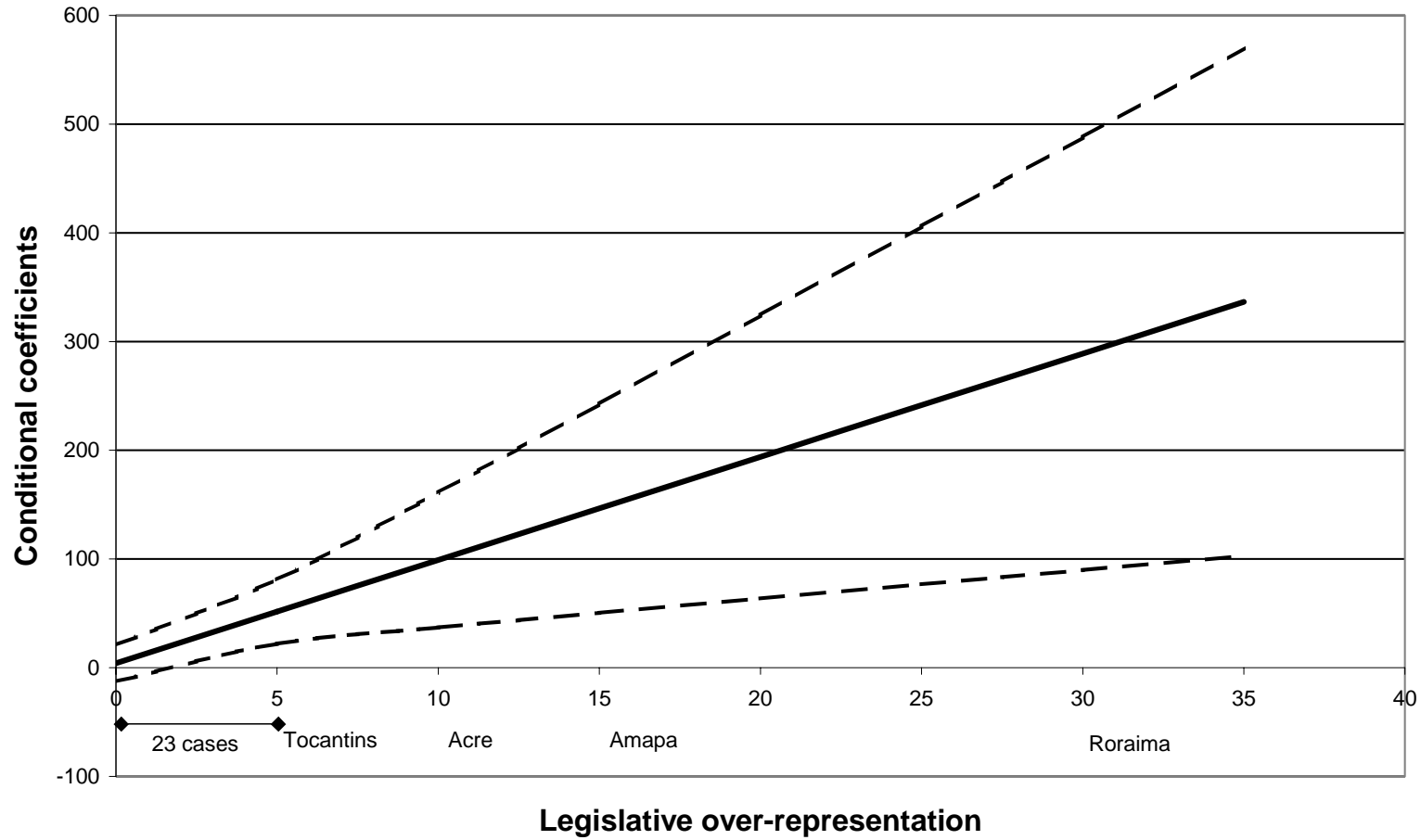
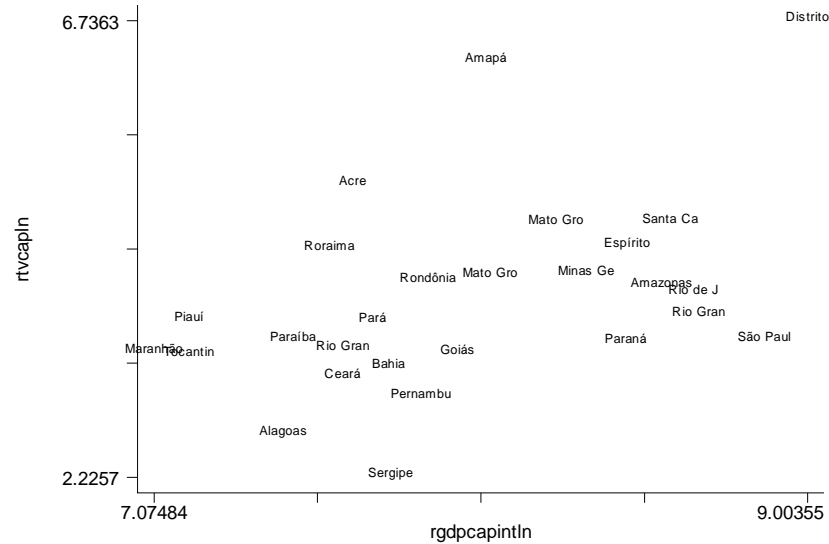# Figure 2: Economic Development and Transfers

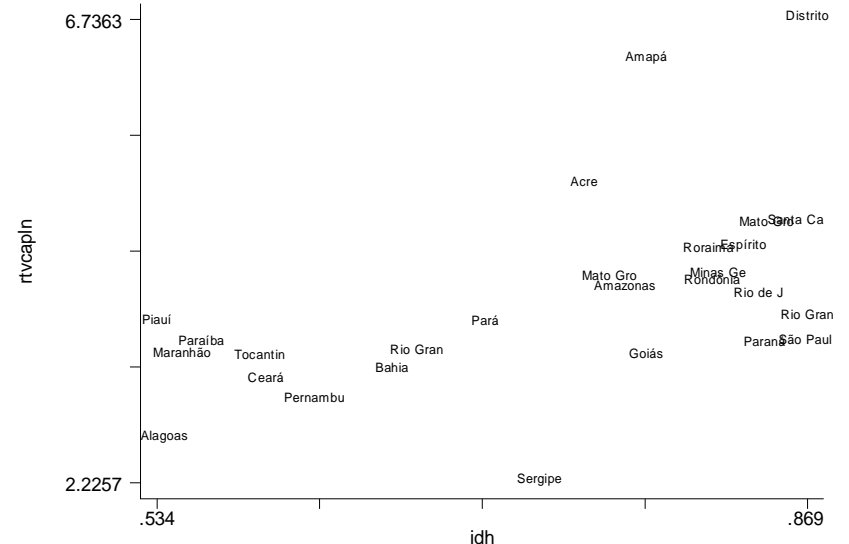**Figure 2a: Log real GDP per capita and log real transfers per capita**

Figure 2b: Index of human development and log real trans. per capita

Figure 2c: Log real state GDP per capita and log real discretionary transfers per capita

Figure 2d: Index of human development and log real discretionary transfers per capita

Endnotes

[1] These studies focus on wealthy OECD countries and generally find evidence that the center plays a substantial role in smoothing asymmetric regional income fluctuations, though there is considerable disagreement about the size of the coefficients. For a review, see Von Hagen (1998).

[2] The mean state domestic product from 1989 to 2000 (expressed in inflation adjusted 1995 currency) was R$ 3408, while the median was R$ 2798. The average state domestic product of São Paulo was R$ 7366 and R$1064 for the poorest state, Maranhão.

[3] In 1988 there were 60 seats; the number has steadily increased over time (Pereira and Mueller, 2002).

[4] In 1995, Resolution 2/95-CN reduced the number of allowable individual amendments to 20 and set a ceiling (now R$ 2 million) on individual amendments. As for collective amendments, 5 are allowed per standing committee, 5 per regional bloc, and 10 per state bloc. According to Pereira and Mueller (2002), some of these collective amendments may still be thinly veiled attempts by individuals to get more resources for their supporters

[5] For formal derivation of this argument based on Baron and Ferejohn (1989), see Persson and Tabellini (2002), chapter 7.

[6] Unlike many other contexts, however, the president's high degree of discretion over whether and when to execute legislators' amendments might allow him to sometimes make simultaneous deals.

[7] The data are taken from Ministry of Finance publications of yearly state budget outcomes. Results of regressions using other data sources are described below.

[8] Since votes in all states are equally valuable, the president should favor states that deliver the most raw votes rather than the states where his vote share is highest. Source of data all data on seats, votes, and turnout: *Dados Eleitorais do Brasil* at http://www.iuperj.br/deb/Indice.htm.

[9] This is a rather poor proxy for the concepts developed in the theories cited above. It would be preferable to use survey data to measure ideological dispositions and calculate "cut-point" densities (See Dahlberg and Johansson, 2002), but the appropriate data are unavailable.

[10] Estimations that examine Senate and Chamber of Deputies representation separately are also discussed below.

[11] Source: IBGE, Diretoria de Pesquisas, Departamento de Contas Nacionais, Contas Regionais do Brasil, microdados.

[12] These variables are all highly correlation with GDP per capita.

[13] A similar relationship can be established by simply interacting *margin* with state *population* size.

[14] Models have also been estimated that include Chamber of Deputies and Senate representation separately. In some estimations both are positive and significant; in others only the Senate variable obtains significance.

[15] In some stripped down models, especially during the Cardoso period, these variables obtain significance, but they are always quite sensitive to specification and the inclusion or exclusion of specific cases. We have also interacted the gubernatorial partisan variables with the election year variable, but do not find any evidence that gubernatorial partisanship is more or less important during election years.

[16] There is a significant effect in Models 1 and 2 as well if the year dummies are dropped.

[17] Source: SIAFI Gerencial

[18] Source: CEF

[19] The loans were also significantly larger in election years. Unlike the grants discussed above, these loans favored large, under-represented states, perhaps because they targeted urban areas.

[20] Moreover, this paper has not addressed the regressive distributive implications of recent bailouts of state debts during campaigns for the 1994 and 1998 elections, the latter of which disproportionately favored large, wealthy states that had been able to borrow excessively from their own banks.