

Electoral Systems, Legislative Fragmentation and Public Spending: A Comparative Analysis of Brazilian States

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Abstract:

A panel data analysis is performed using a pool of Brazilian states to evaluate how electoral systems, through their impact on legislative fragmentation, affect the size and composition of public spending. Framed within recent political economy models that examine the fiscal outcomes of electoral systems, results indicate that the more disproportional the electoral system and the smaller the fragmentation of state assemblies, more is allocated towards public goods and less is allocated towards transfers. Evidence in favor of the common-pool hypothesis at the state level was not compelling. Under some specifications, large and more fragmented state legislatures were found to be associated with smaller state governments.

Keywords: government spending, electoral systems, proportionality, legislative fragmentation

*Prepared for delivery at the 2003 meeting of the Latin American Studies Association,
Dallas, Texas, March 27-29, 2003.*

I. Introduction

Comparative political scientists have long attempted to evaluate the effects of electoral systems on features of the political process. Majoritarian systems have often been associated with greater accountability to geographic constituencies, lower representation of minority positions, small number of parties and one-party long-tenured governments. Proportional representation (PR) systems, on the

other hand, have been related to greater accountability to socioeconomic groups, larger representation of minority interests, larger number of parties, multi-party and short-tenured governments (Lijphart 1994).

Borrowing from such insights, political economists have started to construct hypotheses on how electoral rules may affect fiscal outcomes. Much of the initial literature looked at the effects of government fragmentation on the size and balance of public budgets stemming from multi-party coalitions usually observed under PR systems. (Roubini and Sachs 1989, Grilli et al 1991, Stein, Talvi and Grisanti 1999). Their predictions, however, were derived from political behavior based on electoral strategies usually associated with Majoritarian systems.

Having realized this, recent efforts have been directed towards designing structural models that incorporate electoral strategies more compatible with PR systems (Persson and Tabellini 1999a, 2000a, Milesi-Ferretti, Perotti and Rostagno 2002, Lizerri and Persico 2001a, b). Accounting for such strategies led to new testable results that relate the degree of proportionality in electoral systems to the size and composition of public spending.

Thus, the main purpose of this paper will be to empirically evaluate this new theoretical framework by contrasting it with a more established institutional explanation of fiscal budget outcomes, the *common-pool hypothesis*. In particular, I will attempt to answer the following question: can differences in the degree of *proportionality* in the electoral system among political units explain differences in the size and composition of their governments' spending?

It is also my intention to go beyond the estimation of simple reduced forms commonly pursued in this literature. Instead, I will utilize an econometric model based on the structure laid down in Milesi-Ferretti et al (2002) and I will attempt to evaluate whether the effects of electoral institutions on public spending are transmitted through their long recognized impact on legislative fragmentation.

The econometric model will be tested using a sample of Brazilian states. The validity of the sample for the purpose of this exercise can be justified on the basis of Brazil's long-standing and malapportioned PR system, the size and decentralized nature of its federal regime and the availability of reliable and uniform data. Brazil's long-standing PR system, presents considerable variation in electoral district magnitude among Brazilian states. In fact, the system is so malapportioned that differences in district magnitude cannot be reduced to simple differences in state population. It is a large federation comprised of twenty-six states and one federal district where state governments' autonomy and resources to implement public investment, social security and welfare programs have been recently amplified due to decentralization. Furthermore, the separation of powers at the subnational level has been accentuated in the last decade, thereby increasing the involvement of state legislatures in fiscal policy making.

This analysis will complement recent work on the fiscal effects of electoral systems conducted by Persson and Tabellini (1999a, 2001), Scartascini and Crain (2002) and Milesi-Ferretti et al (2002) for a cross-section of countries; Gilligan and Matsusaka (1995, 2001) for US states, and Baqir (2001) for US cities.

Previous econometric case studies of the institutional and political determinants of fiscal policy at the subnational level in Latin America include Jones, Sanguinetti and Tommasi's (2000) piece on Argentine provinces and Blanco's (2001) analysis of Brazilian states. My paper will complement theirs by looking not only at the size of primary spending, but also at its composition. It will also attempt to verify whether the effects of some of the political variables introduced in these studies are rooted in electoral rules.

Finally, by incorporating electoral institutions into the analysis, my study may offer new insights in two important areas on the research of Brazilian politics: how Brazilian electoral rules shape legislator's budgetary activities (Ames 1987, 1995) and how political institutions have affected the interaction between executive and legislative powers in the process of state fiscal policymaking (Abrucio 1998, Santos 2001).

The rest of this paper is organized as follows. The next section reviews the political economy literature on the fiscal effects of electoral institutions. Section III summarizes and contrasts the theoretical predictions presented in the previous section by translating them into testable econometric hypotheses. The appropriateness of using a sample of Brazilian states along with the description of the Brazilian electoral system is discussed in Section IV. Section V describes and summarizes the dataset. Section VI proceeds to evaluate the testable hypotheses presented in section IV by estimating the proposed econometric model. Finally, a summary of the main results and some suggested extensions are presented in section VII. All tables used in the analysis are included in the Appendix.

II. Literature Review

A large and growing literature in the disciplines of economics and political science has looked at the effects of institutions on the size and fiscal performance of governments.¹ Most of the literature has been motivated by Weingast et al's *common-pool hypothesis* (Weingast, Shepsle and Johnsen 1981). Based on Buchanan and Tullock's (1962) ideas on the role played by distributive politics in the determination of budget outcomes, their seminal model emphasized the potential role played by electoral rules, legislative

¹ A good survey of the literature can be found in Persson and Tabellini (1999b, 2000)

procedures and fiscal arrangements in the size and efficiency of governments. Their so-called *law of 1/n* stated that publicly provided goods are overprovided and that public expenditures should increase as the number of legislators increases.

Three institutional features were crucial to this result: (i) a fiscal arrangement where publicly provided goods are funded by a *common-pool of revenues* raised through distortionary taxes imposed uniformly on all jurisdictions, (ii) a majoritarian electoral system where legislators are elected in single member districts serving geographically based constituencies, (iii) a legislative norm of *reciprocity or universalism*, whereby all legislators would form a unique coalition; voting on each other's projects.²

The combination of the norm of universalism with the existence of a fiscal common-pool allows legislators to charge their voters only 1/nth of the real value of every additional dollar in public projects delivered to their districts, where n is the total size of the legislature. Therefore, by internalizing all benefits but only part of the costs of their pet projects, each legislator presents an incentive to increase their public demands relative to a situation where their citizens would have to pay for the entire cost of their local projects. As the size of the legislature expands, so will total government expenditures given the norm of universalism.

Several models have attempted to generalize the common-pool hypothesis, hereafter referred to as CPH, by relaxing some of their institutional and structural hypothesis. Inman and Fitts (1990) extended Weingast et al (1981) to incorporate the role of political parties in a two-party legislature. They developed the notion of "constrained universalism", whereby public spending increases not with the overall size of the legislature but with the number of legislators in the majority party coalition. The relationship, however, is non-linear as increases in the total tax bill shared by party members imposes cuts in the size of individual projects proposed by majority party members preventing the majority coalition from further growth. Party discipline plays a role in attenuating the overspending effects resulting from more fragmented coalitions.

Based on this insight, a second batch of models attempted to further generalize the common-pool hypothesis to environments where the budgets were drafted within legislative committees and even outside the legislature by cabinets in the executive branch (Chari, Jones and Marimon 1997, Hallerberg and Von Hagen 1999). In such models the size of the legislature played a minor role in the size of the budget. More relevant was the number of "players" involved in the budget draft as well as their relative powers. For instance, Hallerberg and Von Hagen (1999) introduced the figure of the President (or Finance minister), whose constituency was the whole country, as opposed to legislators (or members of the executive cabinet), whose constituencies are inherently local.³ Government spending should increase not with the size of legislature but with the number of cabinet members involved in the budget. The effect of cabinet size on government spending would also be conditional on how concentrated was the budget process in the hands of the President (Finance Minister). The stronger the prerogatives of these officials to overrule spending ministers proposals or legislators amendments to the budgets, the smaller should be the impact of legislature (or cabinet) size on the total spending.⁴

Thus all CPH models described above present two central predictions: (i) the more decentralized or fragmented budgetary procedures are, the larger is total spending, (ii) under completely decentralized and fragmented budgetary procedures, an increase in the legislature size, increases total spending.

A large number of empirical analyses have tested both CPH predictions for the institutional environment it best fits, US legislatures. The role played by centralized budget procedures in containing public spending has been supported by Holtz-Eakin (1988), Bohn and Inman (1996) and Poterba (1994). In addition, Gilligan and Matsusaka (1995, 2001) uncovered a positive and significant correlation between the size of upper legislative chambers and state government spending. Using a cross-section of state municipalities Baqir (2001) arrived at a robust positive association between city council seats and local government spending, a link that is broken for cities whose executives present veto powers.⁵

A less direct prediction stemming from the CPH approach has been that political institutions commonly associated with decentralized and fragmented fiscal policy-making procedures should also promote larger and more inefficient governments. The initial conjecture that proportional (Majoritarian) representation systems should be associated with larger (smaller) government spending and public deficits is an illustration of the second type of prediction. This conjecture has been drawn simply by combining the strong empirical regularity between the degree of proportionality in a given electoral system and the degree of legislative fragmentation, invoked in the

² The norm of universalism is originated by the uncertainty behind the formation of minimum winning coalitions (MWC). Legislators would prefer the certainty of a smaller share coming out of a public budget equally divided with the whole legislature than the lottery of obtaining a higher share only in the event he succeeds in being part of a MWC.

³ In proportional representation systems constituencies may correspond to different socioeconomic groups as it is going to be shown.

⁴ Alesina and Perotti (1996) define this institutional environment as *hierarchical* and contrast it with *collegial* institutional arrangements under which spending ministers and even legislators from minority parties to amend the proposed government budget.

⁵ Among the set of controls used in this literature are population or population density, income inequality, per capita income, educational attainment and racial heterogeneity.

comparative politics literature as Duverger's Law, with the positive relationship between legislative fragmentation and government spending/surplus predicted by CPH.⁶

While at first sight this proposition seems intuitively compelling, it was based in two strong assumptions : (i) legislative or government fragmentation would necessarily lead to decentralized and fragmented budget procedures, and (ii) electoral strategies and electoral accountability in PR systems would be identical to those observed in majoritarian systems.

The fragility of both assumptions was apparently revealed in the mixed support received by the positive association between PR systems and larger governments in cross-national samples. Roubini and Sachs (1989), Grilli, Masciandaro and Tabellini (1991), Stein, Talvi and Grisanti (1999) have found evidence of a positive correlation between proportional systems/minority governments and fiscal deficits. On the other hand, Edin and Ohlsson (1991) and Alesina and Perotti (1995) found more proportional systems to present smaller fiscal deficits.

In response to this problem, recent scholarship have attempted to incorporate in a more explicit way central features of proportional representation systems, evaluating their impact on the size and composition of government spending and contrasting their outcomes with majoritarian or less proportional systems (Persson and Tabellini 1999; Scartascini and Crain 2002, Lizzeri and Persico 2001 a and b; Milesi-Ferretti, Perotti and Rostagno 2002).

Persson and Tabellini (1999a) and Milesi-Ferretti, Perotti and Rostagno (2002), on the other hand, have explored in their models the role played by electoral systems in shaping candidates' electoral fiscal policy strategies and in influencing voting behavior thus relaxing assumption (ii).⁷ Using different models of electoral competition, they went further by allowing a richer variety of fiscal instruments whose *targetability* properties are exploited by political candidates in their electoral strategies and by individuals on their voting decisions. For instance, while welfare transfers and retirement pensions affects particular socioeconomic groups in the population (the poor and the old, respectively), public investment expenditures and intergovernmental transfers are more likely to affect all individuals living in one or more geographic constituencies, independently of their socioeconomic characteristics. Differences in the *targetability* nature of public spending also provide a rationale for the allocation of government expenditures among different budget categories leading to predictions with respect to the impact of electoral systems on the composition of public spending.

Persson and Tabellini (1999a) set up a probabilistic voting model where two candidates/parties compete in a nationwide election. Candidates make binding promises on the provision of broad demographically based transfers and narrow geographically based public goods. Differences in the distribution of ideological preferences among groups are the driving forces of the model. Parties adopt the strategy to direct most of the announced policy campaigns to the ideologically polarized group, identified in their model as the middle class, not wasting too much of them in groups who are either strongly biased against or towards their competitor. Electoral systems differ from each other by the way votes are aggregated to obtain a winner. Under a Majoritarian system, the winner is required to obtain a simple majority of votes in an absolute majority of districts. Under a PR, candidates will have to win by an absolute majority of votes in the unique district containing the whole nation. By changing the geographic locus of the electoral competition, electoral rules lead political candidates to adopt different strategies. In PR systems, this strategy consists of targeting the middle class in the population at large, which is better achieved through transfers programs. In Majoritarian systems this requires targeting the middle class only in districts where they are more numerous (swing districts), which is better achieved through the provision of local public goods. By focusing on voters in a limited number of districts, politicians under a Majoritarian system fail to internalize the overall distortions induced by taxation, thus leading to a larger government. Summing up, *Majoritarian (PR) systems will be associated with higher (smaller) spending on local public goods (transfers) and total spending.*

Milesi-Ferretti (2002) model is built on an extension of the logic of strategic delegation to legislatures developed in Besley and Coate (1999). Differences in electoral systems are modeled by changes in the nature of targeted constituencies. In proportional systems, the availability of more than one seat per district allows voters to select legislative candidates whose fiscal policy preferences are more in tune with the socioeconomic group to which she belongs. At the same time multiseat districts also allow political candidates to redefine their electoral strategies by proposing fiscal packages designed to conquer the vote of specific socioeconomic groups. In majoritarian systems, each district elects one candidate. Under this system constituencies are narrowed down to one determined geographic location leading them to focus on geographically targetable expenditures.

⁶ Duverger's Law has both a weak and a strong version. Its strong version simply states that plurality or majoritarian rules favors the two-party system. Its weak version, also known as Duverger's Hypothesis states that PR systems favor multi-partism. Duverger's Hypothesis has been systematically tested and identified as a positive correlation between the number of legislative representatives elected from each electoral district (district magnitude) and the degree of legislative fragmentation proxied by number of effective parties in any given legislature (Laakso and Taagepera 1979, Powell 1982, Ordeshook and Shvetsova 1984, Taagepera and Shugart 1989, Amorim Neto and Cox 1997).

⁷ Lizzeri and Persico (2001a, b) have also tackled the issue of how electoral formulas impact government spending. Unlike the authors referred above their results are not immediately translated into testable hypotheses.

Unlike Persson and Tabellini model, in Milesi-Ferretti et al (2002), voters select their candidates based on expected policy outcomes not on promises. Policy outcomes are determined by a minimum winning coalition of legislators, regardless of the electoral rule. Forward-looking voters will internalize the subsequent legislative game before voting. Rational candidates will take such deliberations into account when selecting their electoral strategy and subsequent behavior. There is no universal public good. Instead two types of targeted publicly provided goods exist: the first is targeted towards social groups (transfer) and the second is targeted toward geographical groups (local public good). In Majoritarian systems, the median voter will come from the same socioeconomic group and will choose legislators with identical preferences for transfers. Therefore, no bargaining over the preferred level of transfers occurs, instead there will be bargaining over the level of public goods. Foreseeing this, the median voter in each district will choose a legislator with a higher preference from the public good relative to transfers than hers. In PR systems, a representative for each group will be elected. As a result, there will be bargaining over the level of transfers. On the other hand, no bargaining over the level of local public goods occurs, as they are assumed to be uniformly provided across regions. Foreseeing this outcome, the median voter in each group will decide to elect somebody with a higher preference for transfer relative to public good than his. *Their final prediction is that spending with transfers (public goods) will be higher under PR (majoritarian) systems.* Switching from a majoritarian to a proportional system may increase or decrease total spending in a given political unit depending on the median voter preferences of transfers relative to public goods. *If the median voter prefer public goods over transfers regardless of the electoral system then, a switch from a majoritarian to a PR system will result in a decrease in total spending. Otherwise, total spending should increase.*

Persson and Tabellini (1999a) using cross-section of countries have found a marginally significant association between Majoritarian systems and larger governments. This result, however, has not proven robust to different samples. On a different empirical analysis the same authors (Persson and Tabellini 2001) obtained a statistically significant association between government size only for OECD countries. Persson and Tabellini (1999) have also found some evidence that expenditure on their “broad based public projects” – defined as expenditure on order and safety, health, transportation and education- as a fraction of GDP is higher in proportional systems. This is the opposite of what is expected in the Milesi-Ferretti et al (2002) model: expenditures on order and safety, health, transportation and education are essentially local or at least regional in general and is, therefore, targetable geographically; hence, it should be lower in a proportional system.

Milesi-Ferretti et al (2002) also performed an econometric analysis of their theoretical results. Using a sample of OECD and Latin American countries, they found evidence supporting their three theoretical predictions. Transfers were found to be positively associated with more proportional systems for the whole sample. Public good expenditures were found to be negatively associated with more proportional systems also for the whole sample. Lastly, more proportional systems are positively associated with higher total primary spending in OECD countries, where transfers have been historically a sizeable component in government budgets. On the other hand, more proportional systems have been associated with lower primary spending in Latin American countries, where public spending with transfers have been consistently smaller than public good spending.

III. Testable Hypotheses.

Two alternative hypotheses regarding the effect of electoral systems on public spending can be extracted from the theory reviewed above. On one side is the established CPH, recently updated for PR systems by Scartascini and Crain (2002). On the other side, is the new *targetability hypothesis*, hereafter referred to as TAH, developed under different modeling frameworks in Persson and Tabellini (1999a) and Milesi-Ferretti et al (2002). Despite their different modelling benchmarks, the analysis developed in Persson and Tabellini (1999a) and in Milesi-Ferretti et al (2002) have reached very similar conclusions with respect to the impact of electoral systems on the size and composition of public spending. Under some circumstances, their predict impacts do not support and even goes against CPH.

Another source of variation between both approaches has to do with the precise mechanism through which electoral rules impact fiscal outcomes. Under CPH, elections affect fiscal outcomes only indirectly through its impact on legislative or government fragmentation. In TAH models, on the other hand, electoral systems affect fiscal outcomes directly by shaping the fiscal platforms of the winning candidate or party. Both direct and indirect impacts are allowed in Milesi-Ferretti et al (2002).

H.1) Common-Pool Hypothesis (CPH)

An increase in the degree of proportionality of the electoral system, increases the degree of legislative fragmentation, which on its turn, increases total spending.

H.2) Targetability Hypothesis (TAH)

Electoral systems are assumed to affect fiscal outcomes (i) directly by shaping candidates' electoral policy promises and (ii) indirectly through their effects on the structure of party competition and their subsequent policy bargaining implications.

An increase in the degree of proportionality of the electoral system, increases legislative fragmentation, which in turn, increases spending on projects targeting individuals (transfers) and decreases spending on projects targeting geographical locations (public goods). The net effect of this change in total spending is ambiguous. It will decrease if public goods are preferred over transfers and decrease otherwise.

Let the primary budget (b), defined as total spending minus debt payments, be decomposed between expenditures targeting socioeconomic groups, hereafter defined as transfers (w), and expenditures targeting specific regions, hereafter defined as local public goods (g), or simply, public goods. Thus:

$$b = w + g \quad (1)$$

Both hypotheses will be formalized, contrasted and tested using a system of linear equations described below as:

$$f_{it} = \alpha_{it} + \beta X_{it} + \epsilon_{it} \quad (2)$$

$$c_{it} = \beta p_{it} + \gamma W_{it} + \epsilon_{it} \quad (3)$$

Where f is a scalar representing each of the alternative dependent fiscal variables: primary spending (b), transfers (w), and public goods (g), p and c are scalars representing different proxies for the degree of proportionality of states' electoral systems and fragmentation of state assemblies, respectively. X and W are vectors of socioeconomic and political controls for the size and composition of public spending and the degree of legislative fragmentation, respectively.

Fiscal variables and socioeconomic controls are assumed to vary across states indexed by i as well as in every fiscal year indexed by t. Proxies for the degree of proportionality of the electoral system and any remaining political controls also vary across states but only every four years after the inauguration of a new state legislature indexed by t.⁸ Omitted variables are represented by ϵ and ϵ . Estimation of (2) and (3) will depend on the stochastic structure of ϵ and ϵ , which will be discussed in more detail in Section VI.

Table 1 summarizes CPH and TAH under functional forms (2) and (3). While CPH and TAH are not necessarily mutually exclusive hypotheses, the effects of legislative fragmentation with respect to the size of government spending are expected to deliver opposite results in samples where government spending is biased towards public goods ($w < g$). This result is independent of the degree of the electoral systems' proportionality. In such samples negative values for β when $f = b$ may not only result in rejection of CPH but also provide some preliminary support for TAH. Moreover, additional evidence against CPH may arise from negative values for β when $f = g$ (public goods) regardless of the relative levels of w and g.

Plugging (3) into (2) leads to the following reduced form:

$$f_{it} = \alpha_{it} + \beta X_{it} + \epsilon_{it} \quad (4)$$

Where f, p and X are defined as above. Omitted variables are represented by ϵ whose stochastic specification will be discussed in Section VI.

Therefore, if the structure laid down in equations (2) and (3) is correct, the effects of proportionality on public spending (β) should be qualitatively identical to those relating legislative fragmentation to fiscal outcomes (β). Table 2 summarizes this point by contrasting CPH and TAH.

Equations (2), (3), and (4) will be estimated in Section VI for a sample of Brazilian states. The appropriateness of using this sample and a complete description of the dataset is presented in the next two sections.

IV. The case for a Brazilian study case.

Empirical political economists interested in testing the impact of institutions on policy outcomes have often relied on cross-country samples. While policy outcomes and institutions may vary widely across such samples, so do a variety of other factors that are very difficult to be measured and are usually left out of reduced form equations. Thus the consistency of regressions estimates is compromised when these omitted variables turn out to be correlated with the proxies used to measure institutional changes.

⁸ Let t^1 be every year where a new state legislature is being inaugurated. A relationship between t and t^1 can be defined as follows: $t = t^1$ if $t = t^1$, $t = t^1 - k$ if $t = t^1 + k$ for $k = 1, \dots, 4$

However, Brazil's democratic and decentralized regime coupled with its long-standing federal and electoral systems can potentially tackle the requirement of sample variance.⁹ The process of political and fiscal decentralization, which culminated in 1988 with the promulgation of a new federal constitution, increased the access of state governments to tax revenues and instruments previously assigned to the central government. The unclear assignment of mandates among different government levels that emerged from the new Constitution was another factor that enhanced state governments' discretion to allocate their budgets. Political and fiscal autonomy at the subnational level was further augmented by allowing state governments to design legislation in areas such as the administration and provision of social insurance and pensions to public employees, which were previously regulated by federal legislation. This autonomy is reflected in wide differences in the size and composition of state budgets, which the next section will demonstrate.

The nature of the Brazilian electoral system is another factor in favor of variance as it combines a long-standing and nationally uniform voting formula with regional and temporal variations in district magnitude. Brazil's open list PR dates back to 1945. Federal and state deputies along with city council members are selected through a combination of a Hare quota, which determines the initial allocation of seats among parties, with a d'Hondt voting formula used to assign remaining seats. This procedure dates back to 1950 (Jobim and Porto 1996). The geographical delimitation of electoral districts in Brazil for the purpose of electing state legislators coincides with states' jurisdictional boundaries. Consequently, district magnitude in elections for state assemblies varies across states equal to the number of seats in the state legislature.

Endogeneity of electoral rules does not seem to be a fundamental issue in the Brazilian case. Rules regarding district magnitude are written in the federal constitution and provisioned to be periodically modified by federal legislation. The size of state legislatures is defined as a function of the size of its state legislative delegation in the national assembly, which in turn, is set to be a function of the state population. Both functions, however, are specific enough to prevent any proportional relationship between seats and state populations.¹⁰ The fact that state differences in district magnitudes are set by federal law is a point in favor of their exogeneity for the purpose of this analysis. Choosing the district magnitude of any given state is beyond the jurisdiction of their state legislators and, for that matter, unlikely to be influenced by yearly decisions regarding state budgets. Moreover, the fact that the federal constitution sets the regulation makes it harder for state representatives in congress to change it in favor of their respective states as a response to budget or fiscal matters.

Another point in favor of district magnitude exogeneity has to do with the disproportionality between state populations and the size of their legislative delegations. This characteristic, also referred to by political scientists as *malapportionment* has long been a feature of the Brazilian proportional representation system. (Nicolau 1991). Malapportionment has persisted even after 1994, when legislation altering district magnitudes for state and national assemblies was most recently updated.

A final argument for a Brazilian study case could also be made on the accumulation of good quality and uniform public finance and electoral data at the state level, which given its dimension (twenty-six states and one federal district) and the succession of elections over the last fifteen years represents a good opportunity to perform a longitudinal statistical analysis.

V. Data

A. Description

All data required in the analysis was collected from a sample of all twenty-six Brazilian states plus Brazil's Federal District.

Fiscal data used to compute the size and composition of Brazilian state governments' budgets (f) were obtained from the Central Government Census Bureau (IBGE) in a publication titled *Regionalização das Transações do Setor Público (RTSP)* spanning the years 1991 to 1997.

The size of Brazilian state governments is measured by its primary spending (total spending minus public debt payments) as a share of state government gross state product (GSP). The composition of state spending was obtained by decomposing state government primary spending into two categories matching TAH: Transfers (w) and Public Goods (g). Transfers are defined as the sum of social security and welfare payments and other household transfers. Public Goods includes all primary budget items targeting regions defined by the sum of current and capital spending on goods and services plus current and capital transfers to municipalities. As is the case with Milesi-Ferreti's empirical analysis, some items of the budget such as subsidies to firms and financial transactions cannot be

⁹ The qualifiers "democratic" and "decentralized" are used to emphasize the fact that federative regimes are not always characterized by democratic and decentralized governance structures.

¹⁰ The size of the state legislatures is set to be three times the size of the state delegation in the national assembly if such delegation is smaller or equal than twelve. For state delegations larger than twelve, the size of state legislatures would be thirty-six plus the difference between the state congressional delegation and twelve. In this case each additional federal deputy will entitle the legislative assembly an additional state deputy. The size of state congressional delegation, on the other hand, is set in the Constitution to be proportional to the population and provisioned to change by federal law before each election. The size of state congressional delegations is constitutionally constrained to be larger than eight and smaller than seventy.

classified either as transfers or public goods. Such items were included in a third category defined as Residual. Public goods were measured as a share of GSP and as share of primary spending (b). Transfers were measured as a share of GSP, primary spending and public goods.

Data used to compute different measures of proportionality of state electoral systems (p) and the fragmentation of state legislative assemblies (c) along with other data used to control for Brazilian states' political structure was collected from Nicolau (1998) and from the Laboratory of Experimental Studies at the University Research Institute of the state of Rio de Janeiro (LEEX-IUPERJ). Both sources contain raw data on election results for the state executive and for the state legislative assembly with a four-year interval corresponding to the duration of state elective mandates. They also contain data on the number of seats in each state legislative assembly used as a measure of state district magnitude. Data from both sources was collected for the 1990 and 1994 elections.

Five different proxies for the degree of proportionality of each Brazilian state are used in this analysis: absolute district magnitude, Rae's and Gallagher's indexes of disproportionality (Rae 1967, Gallagher 1991), deviations from the perfect proportionality profile (Devprop), and empirical threshold (Thr).

State legislative assemblies are unicameral and their representatives are elected at large in one district corresponding to the whole state jurisdiction. Under this condition, absolute district magnitude is reduced to the number of legislative assemblies in each state (seats), which has been directly collected from the data sources described above. The remaining four proxies are calculated by contrasting the percentage of votes received by a party with the percentage of seats in the legislative assembly it conquered.¹¹

Let states be indexed by i , parties by j and election years by t . Let s be the percentage of seats and v the percentage of votes. Rae's (Rae) and Gallagher's (Lsq) indexes of disproportionality are direct functions of the differences between s and v for each state in any given election. Their formulas are presented below.

$$Rae(i, t) = \frac{1}{n} \sum_j |s_j(i, t) - v_j(i, t)| \quad (5)$$

$$Lsq(i, t) = \frac{1}{2} \sum_j (s_j(i, t) - v_j(i, t))^{1/2} \quad (6)$$

Devprop and Thr were obtained after regressing seat on vote shares for all parties competing in each state i and in any given election t .¹² The non-stochastic part of the regression of s on v is then given by:

$$s_j(i, t) = \alpha_{it} + \beta_{it} v_j(i, t) \quad (7)$$

A perfect proportionality profile can be defined as one in which the percentage of seats allocated to a given party in the legislative assembly equals the percentage of votes received by the same party ($s=v$). Under these circumstances $\alpha=0$ and $\beta=1$ and deviations from perfect proportionality may occur as α deviates from zero and β from 1. Devprop can be defined in (12) as the absolute value of $\beta'-1$. Where β' is the regression estimate of β from (11) when α equals zero.

$$Devprop(i, t) = |\beta'(i, t) - 1| \quad (8)$$

Deviations from perfect proportionality may also occur due to the existence of electoral thresholds and by the minimum percentage of votes required to obtain minimum representation in the legislative assembly. In Brazil, state differences in electoral thresholds are not the product of differences in states' legislation, but rather an outcome of the imposition of the Hare quota as a requirement for parties to participate in the distribution of seat remainders. Brazil's Hare quota is computed by dividing the number of valid votes casted to any given party in a given state by the number of seats in the state legislative assembly (district magnitude). The role of the electoral quota as a typical threshold is limited by another peculiarity of the Brazilian electoral legislation, which allows votes to be transferred not only among parties but also among party coalitions for the purpose of reaching the quota. This mechanism is particularly helpful for small parties. They can free ride on votes cast to larger parties with whom they decide to coalesce in order to overcome an electoral quota that would have been insurmountable had the coalition mechanism not been allowed.¹³ For that reason, instead of computing electoral quotas, I decided to estimate an empirical electoral quota or threshold based on the regression estimates in (7).

¹¹ See Taagepera and Shugart (1989) for a description of their properties

¹² Brazil's fragmented party system allows access to at least eight observations in each electoral year and in each state.

¹³ Coalitions are very important for proportional representation elections in Brazil. In 1962 nearly 50 percent of federal deputies were elected through coalitions. With the surge of new parties created after 1985, coalitions again appeared in the 1986, 1990, and 1994 elections. These coalitions accounted for nearly 90 percent of those elected.

This empirical electoral threshold corresponds to $-\beta/p$, the point where s equals zero in (11). Thr corresponds to $-\beta'/p'$ where β' and p' are the regression estimates of β and p from (11) when β is different to zero.

$$\text{Thr}(i, t) = -\left[\frac{r'(i, t)}{p'(i, t)}\right] \quad (9)$$

Apart from seats, increases in all the proportionality proxies result in a loss of the degree of proportionality of the electoral system in a given state. In order to make increases in p to be interpreted unambiguously as increases in the proportionality of electoral systems and thus easy to interpret, for the purpose of the regression analysis, Rae, Lsq, Devprop and Thr have all been multiplied by -1 .

Government fragmentation has been proxied by two measures of legislative fragmentation: the effective number of assembly (Enps) and elective parties (Enpv)- (Laakso and Taagapera 1979)- and Rae's measure of legislative fractionalization (Raefrac)- (Rae 1971).

$$\text{Enps}(i, t) = \frac{1}{\sum_j s_j^2(i, t)} \quad (10)$$

$$\text{Enpv}(i, t) = \frac{1}{\sum_j v_j^2(i, t)} \quad (11)$$

$$\text{Raefrac}(i, t) = 1 - \sum_j s_j^2(i, t) \quad (12)$$

The set of controls used in the estimation of equations (2) and (4)- vector X includes an identical set of regressors commonly used in the public finance literature accounting for: economies of scale in the provision of public goods and services (population density), Wagner's law (state per capita product), social and ethnic heterogeneity (gini and racial fractionalization indexes), the existence of a common-pool of resources at the federal level (intergovernmental transfers/state tax revenue), and the ideological preferences of state governor (ideology).^{14,15} Three additional variables were used in order to control for state need towards individually targeted expenditures : dependency, unemployment and poverty ratios.¹⁶ Racial fractionalization, the Gini index and the urbanization rate in each Brazilian state, computed as the share of state population living in urban centers, were also used as controls in (3)- W . Time effects will be assumed fixed and included in both X and W in the form of dummies for 1992 to 1997.

With the exception of ideology computed from Nicolau (1998) and the proxy for the federal common-pool calculated from IBGE/RTSP, the set of state socioeconomic controls was computed from two primary sources: the IBGE regional accounts dataset and its national household survey (PNAD).

Population density, racial fractionalization and dependency rates were computed from demographic data extracted from *Sintese dos Indicadores Sociais* (SIS/IBGE), an IBGE cd-rom with several demographic and social indicators aggregated at the state level from PNAD micro data. Unemployment, poverty and income inequality measures (Gini) were also aggregated at the state level from PNAD micro data by a project on the labor market effects of macroeconomic instability developed by IPEA, a think tank in applied economics subordinated to the Ministry of Planning. State gross output was collected from IPEA, which calculated it, based on IBGE regional accounts.

There were no PNADs in 1991 and 1994. Values for all PNAD based socioeconomic controls are missing in those years. Thus, my estimates for the PNAD in 1991 and 1994 were set equal to the simple average between the previous and following year (1990 and 1992 for 1991 and 1993 and 1995 for 1994) in order to work with a balanced panel.

¹⁴ Mueller (1989, 1997) surveys this literature.

¹⁵ Ideology of state governor was coded as -1 if state governor's party was from the left, 0 from the center and 1 from the right. Left-wing parties: PDT, PSB, PT. Center parties: PSC, PTB, PMDB, PSDB. Right-wing parties: PDS, PFL, PTR, PRN, PPR, PRT.

¹⁶ State dependency ratio is defined here as the proportion of the old population (those aged sixty-five and above relative to the size of the labor force measured by the population between 14 and 64). A comparable measure of labor force participation was not available for all Brazilian states, which prevented me from using the traditional dependency ratio ($1 - \text{labor force participation/population}$). Nonetheless, the fact the majority of government transfers is allocated to the payment of old-age pensions should validate the proposed proxy.

B. Preliminary Analysis

Table 3 presents a synthesis of the size and composition of the Brazilian public sector in each Brazilian state by government level. In particular it contrasts state governments to federal and municipal governments combined.

In Brazil, as in any Latin American country, most public spending by all three tiers of governments has been allocated towards the provision of public goods. This pattern has been observed in every single Brazilian state independently of its socioeconomic status.

Government transfers to households have been traditionally, but not exclusively, a federal government function, which explains the largest proportion of this item in expenditures not administered by state governments. Expenditures with transfers corresponded on average to almost 40 percent of total primary spending by federal and municipal governments and to slightly more than 10 percent of state government budgets. However, a large cross-sectional variability exists. For example, state governments in Rio Grande do Sul have been consistently allocating almost a quarter of primary spending to transfers while in the states of Roraima and Sergipe, state government spending in transfers was virtually zero.

On average, the size of Brazilian state governments in any given state looks respectable as it matches the size of all the municipal governments within that state and the total spending allocated by the federal government to that state combined. This result, however, hides a strong longitudinal variability. State government primary spending can range from as low as 7 percent and as high 70 percent of GSP.

On average more than 90 percent of state government primary budgets are allocated to Transfers or Public Goods. This seems to indicate that, at least at the state level, primary budget items that were not captured in the classification (residual expenditures) could be neglected without major problems.

Differences between the periods before and after 1994 accounted for most of the observed changes in fiscal variables observed within each state. This is not surprising given that 1994 was also the year when the *Real* Plan was implemented causing an abrupt disinflationary process and increasing pressure on public finances through the elimination of seignorage. Interestingly enough, disinflation seemed to present less of an effect on size than on the composition of government spending. The amount spent on transfers by all government levels seemed to increase at a faster rate than government expenditures with the provision and administration of public goods. This can be easily seen at the bottom of Table 3. The amount state governments spent on transfers increased to more than 17 percent of spending on public goods after 1994 from a previous level of less than 13 percent. The amount spent on transfers relative to public goods in each state by the federal government and their respective municipal governments also increased from 65 to 76 percent.

The point to be made here is that state government spending presented enough sample variability and, most importantly, cross-sectional variability (between standard errors are consistently higher than within standard errors) to justify a longitudinal analysis of the factors behind its determination.

Longitudinal variability is also observed in all measures of proportionality and legislative fragmentation that were computed, as well as in the remaining set of controls proposed above. Table 4 illustrates this variability with some basic summary statistics.

Apart from the number of seats in state legislatures, most of the sample variation comes from differences among states. In fact, all remaining proxies for proportionality in the electoral system presented considerable cross-sectional and time-series variation over the sample.¹⁷ The same is true for the measures of legislative fragmentation used in the analysis. The number of effective parties in the legislative assembly (Enps) bottoms out at 2.9 for the state of Paraíba during its 1994 legislature and peaks at 9.1 for the Federal District also for its 1994 legislature.

As expected all proportionality and legislative fragmentation measures are correlated among themselves. State absolute district magnitude, the only variable that increases as the electoral system becomes more proportional, presents a negative correlation with all the remaining proportionality variables. Very high pairwise correlations are only observed between Rae and Lsq and between Devprop and Thrs. The existence of low pairwise correlation among other possible pairs will allow for alternation between such variables in

¹⁷ All temporal variance in the size of state legislature was due to changes in three states: Amapa, Roraima and Sao Paulo in 1994, the two least and the highest populated states, respectively. The number of seats in the state legislature decreased from 24 to 17 in the first two and increased from 84 to 94 in the third. This change occurred as a result of modifications in the electoral law decreasing the minimum number of seats in state legislatures to 17 and increasing the maximum to 94.

order to check the robustness of the results. On the other hand, since the proxies of legislative fragmentation are highly correlated the robustness of the effects of electoral variables on legislative fragmentation could also be checked. Table 5 summarizes the results.

VI. Econometric Analysis

The existence of cross-sectional and temporal variance in all variables detected in the previous section led me to rely on panel data econometric models in order to contrast the common-pool and the targetability hypotheses (CPH and TAH). Such models will also allow for better accounting of any potential omitted variables whose effects are not captured by any of the socioeconomic and political explanatory variables described above.

The reduced form specification (4) is investigated in subsection A. Subsection B goes beyond the reduced forms and attempts to verify the relevancy of legislative fragmentation as a channel through which electoral rules are transmitted to fiscal policy in both hypothesis by the estimation of equations (2) and (3).

A. Reduced Form Estimation

Support for the targetability hypothesis (TAH) as detailed in section III should come in the form of a positive (negative) γ in regressions of transfers (public goods) on each of the proportionality measures. As presented in the previous section, government spending in the form of transfers has always been smaller than public good spending for all government levels in all Brazilian states, regardless of their district magnitude. If this last fact is interpreted as an indication that Brazilian citizens have an underlying preference for public goods over transfers, then a statistically significant and negative γ represents not only the rejection of CPH but also the acceptance, or more precisely, failure of rejecting TAH.

The appropriate estimation method for γ will depend on the particular stochastic structure imposed on γ_{it} . Since theory is mute in this regard, I was led to start by adopting a one-way error component regression model described below.¹⁸ This structure allows for the presence of state effects (α_i) along with the usual white-noise random component (μ_{it}).

$$\gamma_{it} = \alpha_i + \mu_{it} \quad (13)$$

Each of the fiscal variables were regressed by OLS, LSDV and GLS on different specifications including one of the four measures of proportionality of the electoral system (p) described in the previous section: absolute district magnitude (seats), the empirical threshold (Thr), the magnitude of deviations from the perfect proportionality coefficient (Devprop) and Rae's index of disproportionality (Rae). In order to avoid spurious scale effects due to the presence of outliers, while at the same time allowing for the possibility of non-linear effects, *seats* is presented in logs.

The inclusion of state dummies could not be rejected as revealed in significant F statistics obtained irrespectively of the proportionality measure used. This initial support for the LSDV model was not compelling as highly significant Bruesch and Pagan LM statistics rejected the null of inexistent random effects in all different specifications. Additional evidence in favor of the GLS random effect model was obtained with the implementation of Hausman specification tests. Very small statistics for these tests could not reject the equality between LSDV and GLS estimates when model specification has been alternated over different proportionality proxies.¹⁹

Table 6 summarizes the results. Reduced form GLS estimates seem to reject CPH and at the same time to support, or at least fail to reject, TAH. The strength of the support for TAH regarding the composition of public spending varies depending on the budget item, on whether budget items are measured as a share of GSP or as a share of total primary spending and, finally, on the proxy for proportionality of the electoral system used. Support for the theory comes especially from specifications where transfers is the dependent fiscal variable and increases as fiscal composition is measured as a share of primary spending. All proportionality variables with the exception of the size of state legislatures presented the expected positive effect on transfers statistically significant at least at a 10 percent level (columns (5) to (8)). All proportionality variables including the size of state legislatures seem to affect transfers under an even smaller 5 percent significance level when the latter is measured as a share of primary spending (columns (13)-(16) in Table 6 cont.). The effects of electoral system proportionality on the composition of government expenditure is also strongly

¹⁸ Following Hsiao (1986) equation (4) should be estimated by: (i) ordinary least squares (OLS) if state effects are inexistent ($E(\alpha_i) = 0, V(\alpha_i) = 0, V(\gamma_{it}) = \mu_{it}$), (ii) least-square dummy variables (LSDV) if state effects exist and assumed to be deterministic ($E(\alpha_i) \neq 0, V(\alpha_i) = 0, V(\gamma_{it}) = \mu_{it}$), (iii) generalized least squares (GLS) if state effects are included and assumed to be random ($E(\alpha_i) \geq 0, V(\alpha_i) > 0, V(d_0) > 0$ and $V(\gamma_{it}) = V(\alpha_i) + V(\mu_{it})$). $E(.)$ stands for expected value, while $V(.)$ stands for variance. Note that GLS assumes a constant variance across panels.

¹⁹ The only exception was Transfers as a share of GSP where the Hausman test rejected the GLS model even though estimated coefficients were very similar to GLS ones.

corroborated by regression estimates in the model where the ratio of transfers to public good expenditures is the dependent fiscal variable (columns (21)-(24) in Table 6 -cont).

Although, the impact of proportionality on the amount of funds allocated by Brazilian state governments in the form of public goods is not consistently negative as predicted by TAH, it is certainly not positive as argued in CPH. A negative, although not statistically significant, β was observed in almost all specifications and regardless whether public goods were measured as a share of GSP or as a percentage of primary spending. In tune with TAH, public goods as a share of primary spending seems to decrease when the degree of proportionality of the electoral system, measured according to Rae's index increases (column (20)). This estimate is significant at a 5 percent significance level.

The effect of proportionality on the size of state government budget is less clear. It shows up in column (1) in the form of a negative and statistically significant coefficient for changes in the size of state legislature. Even though the statistical significance occurs at a 10 percent level, the economic significance of the estimated coefficient is considerable. This result cannot be taken at face value, since it is not corroborated by the remaining proportionality proxies.

Rae's index of disproportionality was the most supportive among the election variables. It presented the expected signal under a satisfactory confidence interval for specifications with the exception of the ones having primary spending and public goods as a share of state GSP. A 10 percent increase in this index increases the participation of transfers in state GSP and primary spending by 3 percent and 13 percent, respectively.

The set X of socioeconomic controls generated some interesting associations. Contrary to expectations from Wagner's law, both state governments' primary budget and the amount spent in public goods were predicted to decline as the state development level proxied by its per capita income increases. Population density presented no effects on size, and exhibited a positive association with transfers and a negative association with public goods. This result may be capturing the existence of economies of scale in the provision of public goods and its inexistence in the concession of transfers to individual.

Heterogeneity seemed to matter. Race fractionalization affects in a positive and statistically significant way the size of state government budgets as well as the provision of public goods. This result is in line with Alesina, Baqir and Easterly (1999) who show a positive relationship between racial heterogeneity and the provision of public goods. The expected positive effect of income inequality, proxied by a Gini coefficient, on the size of government is just weakly vindicated in the results through a marginally positive association with the size of primary spending and its share allocated towards the provision of public goods (columns (1) and (9)).

Political ideology plays no role in determining the size of state governments. On the other hand transfers appear to increase the more left wing oriented the state governor's party. This result may be the outcome of stronger political support of state employee's unions, where the bulk of state government transfers are directed, towards left-wing parties.

The size and composition of state government budgets do not seem to respond positively to different indicators of welfare need. Differences in the unemployment rate do not present any significant effect on the size or composition of state government spending. States with high dependency and poverty rates are also those in which the size of state governments measured by its participation in state GSP is smaller. No clear pattern could be detected with respect to the effects of poverty rate on the composition of public spending, as the regression estimates are not significant under most specifications. On the other hand, increases in the dependency ratio proxy seems to decrease the size of state government budgets along with the amount allocated to the provision of public goods while incapable of triggering the expected increase in transfers.

Finally, strong evidence in favor of the common-pool hypothesis (CPH) exists at the federal level. A 10 percent increase in federal transfers relative to tax revenues raised locally, increases primary spending by nearly a quarter for all specifications. Transfers and public goods also increase with a bias towards the former revealed in column (24) by a positive and statistically significant regression estimate for intergovernmental transfers.

In order to test the robustness of the GLS estimates, reduced form (4) have been reestimated by OLS with with panel data corrected standard errors (PCSE) as formulated in Beck and Katz (1995). In order to account for autocorrelation within panels, OLS estimates have been obtained after dependent variables are corrected for first-order serially correlated residuals (AR (1)) using Prais-Winsten transformed regression estimator. Overall, OLS-PCSE estimates seem to corroborate the GLS results. The number of seats in state legislature continues to be the only election variable presenting a statistically significant association with the size of state government budgets. The OLS regression coefficient value is fairly close to what was obtained before. OLS-PCSE estimates seem to reveal a more robust association as the significance of this variable coefficient has increased to 5 percent. TAH predictions with respect to the composition of government spending continue to be dependent on the model specification. Support comes specifically from two

electoral variables under tighter significance levels: deviations from the perfect proportionality profile (Devprop) and Rae's index of disproportionality (Rae_{prop}).²⁰

In short, results seem to reject CPH while giving support to TAH regardless of the estimation adopted. A summary of the regression estimates is presented in Table 7.

B. Structural Form.

If legislative fragmentation works as a transmission channel of the effects of electoral systems on fiscal outcomes as predicted in the CPH as well as in the MFPR approaches, one should expect its qualitative impact on the size and composition of public spending to be similar to the qualitative impact of the degree of proportionality on the same fiscal outcomes. A necessary condition, however, would be for legislative fragmentation to respond to changes in the degree of proportionality of the electoral system. In terms of the econometric model laid down in Section 3 this will imply that γ , the parameter capturing the impact of legislative fragmentation on fiscal outcomes in (2), should present the same signal and similar statistical significance of those obtained for β above. At the same time β , the parameter capturing the impact of electoral proportionality on legislative fragmentation in (3) should present a positive and statistically significant value.

By the same reasons presented for the reduced form analysis, let the stochastic structure whereby fiscal outcomes and legislative fragmentation are jointly determined follows a one-way error component structure. Thus,

$$\gamma_{it} = \alpha_i + e_{it} \quad (14)$$

$$\gamma_{it} = \gamma_i + \gamma_{it} \quad (15)$$

where e and γ are built as random white noises.

Equations (14) and (15) when added to equations (2) and (3) will define a system whose matrix of structural parameters is triangular. Under this structure, β can be consistently estimated by least squares with efficiency achieved through the same steps followed to estimate γ . Proxies of the number of social cleavages such as race fractionalization, income inequality and the degree of urbanization, reckoned in the comparative politics literature as important non-institutional determinant of legislative fragmentation in multiparty systems (Powell 1982, Ordeshook and Shvetsova 1994), were used as controls in the regression of legislative fragmentation on the proportionality of the electoral system. Each of these variables was included in an additive way to (3).²¹

As in the previous section, a random state effect model with time-dummies was estimated by GLS after Hausman specification tests failed to reject it.²² A F-test rejected the joint significance of the time-dummies. Hausman and F- statistics are reported in the last two rows of the first half of Table 8.

Increases in legislative fragmentation were found to be consistently associated with increases in the degree of proportionality of the electoral system in different Brazilian states and over different periods. This result was robust to different proxies of legislative fragmentation such as the effective number of assembly parties (enps) and Rae's legislative fractionalization index (Rae_{frac}) and, with the exception of Rae's disproportionality index, was summarized in a statistically significant β for all proportionality variables. The stochastic structure of the omitted variables played no role in the results. Random state effects and Prais-Winsten regression results were very similar both from a qualitative and from a quantitative perspective.

While inferences on β were relatively straightforward, the appropriate estimation procedure for γ , on the other hand, will depend on the correctness of the system specification along with the design of the variance-covariance matrix between omitted variables in each structural equation (S_{fg}).

Granted that the structural specification is correct, if state effects behind the determination of Brazilian states' budgets are uncorrelated with state effects responsible for the degree of fragmentation of Brazilian state legislative assemblies, i.e. $C(c_{it}, \gamma_{it}) = C(\alpha_i, \gamma_i) = 0$, then S_{fg} is diagonal. In this case, the joint determination of the endogenous variables f and c becomes fully recursive and γ can also be consistently and efficiently estimated by least squares. If S_{fg} is not diagonal, least squares estimates cease to be consistent

²⁰ Qualitative effects of the socioeconomic controls followed the same pattern as in the GLS model. A complete report of their regression estimates is omitted for space considerations but available upon request. Estimates for transfers (measured as a share of GSP, primary spending or public goods) continue to match the theory. The latter's OLS regression estimate values were very similar to previous GLS estimates.

²¹ Recent work has revealed the statistical significance of interaction effects between electoral and sociological variables (Amorim Neto 1997, Benoit 2002).

²² The size of state legislature could only be rejected for confidence levels smaller than 5percent. A LSDV with state effects has delivered the same positive association between state legislature seats and its fragmentation, reinforced with higher estimates (4 for the effective number of assembly parties proxying for fragmentation and 0.08 when Rae's fractionalization index is the proxy).

as $C(c_{it}, \gamma_{it}) \neq 0$. Otherwise, instrumental variable techniques should be used to estimate the system in a consistent and efficient manner in this case.

Starting from the assumption that S_{fg} was diagonal, fiscal variables were regressed by OLS, LSDV and GLS on either of the three alternative measures of legislative fragmentation described above: effective number of assembly parties (enps), Rae's legislative fractionalization index (Raefrac) and the effective number of elective parties (enpv) using the same set of exogenous controls X included in the reduced form. Hausman and Breusch-Pagan specification tests were performed for all different specifications in order to contrast the GLS and LSDV estimation methods. Results were mixed. On the one hand, Breusch-Pagan tests have rejected the non-randomness of state effects for all different specifications (i.e. $V(a_i)=0$) thus supporting the random-effect estimator. Yet, on the other hand, the Hausman specification tests have rejected the null that random state effects are uncorrelated with the remaining regressors for some specifications. In conjunction, both tests seem to indicate the existence of random-effects coupled with the inappropriateness of the GLS estimator in dealing with it. Hausman tests also seem to point out the potential for endogeneity stemming from the regressors. The existence of endogeneity should not be fully inferred from Hausman results. As opposed to the Breusch-Pagan results, they did not apply to all specifications. Moreover, one has to keep in mind that the Hausman test is built under the assumption that the correct set of regressors is included in the model.

In light of the results and with the objective of obtaining consistent and efficient estimates for γ , two different paths were taken. The first was to accept exogeneity and to rely on OLS consistency, while trying to improve efficiency using Beck and Katz's panel corrected standard errors. The second path was to embrace the existence of endogeneity and to assume (backed by the structural model) that they are caused by the correlation of state effects in the determination of the degree of fragmentation in state legislative assemblies and the size and composition of state budgets (i.e. $C(a_i, a'_i) \neq 0$). Under this last assumption, consistency bias due to the endogeneity of legislative fragmentation will be corrected using proxies of electoral proportionality as instruments in order to filter out the assumed correlation between state effects influencing legislative fragmentation and state effects influencing fiscal policy at the state level. Efficiency will be pursued using Baltagi's error corrected two-stage least-squares (EC2SLS) to estimate γ (Baltagi 1995).

OLS estimates of γ followed by their respected panel corrected t-statistics are presented on the top half of Table 9. All legislative fragmentation proxies presented a negative and statistically significant effect on the size of state governments under panel corrected OLS estimates.²³ This result once again provides evidence against CPH giving additional support for TAH. It also seems to corroborate the relevancy of legislative fragmentation as an important transmission channel. Additional support for TAH comes also from the impact of enps on the composition of primary spending. Statistically significant and positive (negative) γ estimates were obtained when transfers (public goods) were measured as a share of total primary spending.

EC2SLS estimates of γ and respective t-statistics are presented in the bottom half of Table 9.²⁴ While CPH is again rejected, support for TAH is now restricted to specifications involving the size of primary spending and the amount allocated to public goods.

Together OLS and EC2SLS estimates seem to bring support to legislative fragmentation as a relevant channel through which electoral systems affect fiscal outcomes. Moreover, the negative association between legislative fragmentation and government size seems to provide additional evidence in favor of the targetability approach advocated in TAH. Each additional effective party in a Brazilian state legislature is supposed to decrease state government spending as share of state output by 1 percent.

VII. Conclusions

Recent scholarship on the role played by electoral systems in the determination of fiscal outcomes has moved beyond the *common-pool hypothesis* by studying how fiscal policy is determined under PR systems where the connection between voters and politicians ceases to be strictly geographic. In such studies, an increase in the proportionality of the electoral system facilitates the election of candidates whose policy platform consists of the provision of goods and services targeted to specific demographic groups. At the same time, more proportional electoral systems will decrease the incentives for the provision of geographically targeted goods. If constituencies' preferences have been historically biased towards the provision of geographically based public goods, any increase in electoral proportionality will come at the cost of a proportionally higher decrease in public goods resulting in smaller overall spending. In short, legislative fragmentation continues to be an important channel in the transmission of electoral rules to fiscal outcomes.

This paper has attempted to test such predictions using a pool of Brazilian states. The validity of the sample for this exercise can be justified on the basis of Brazil's long-standing and malapportioned PR system, the size and decentralized nature of its federative regime, and the availability of good quality and uniform data.

²³ Rae's legislative fractionalization index was not reported as the qualitative results were similar to those obtained using the effective number of parties under OLS.

²⁴ Each proportionality proxy was used separately as an instrument for the effective number of assembly parties (enps). Those reported were the only instruments for which statistically significant results were obtained.

Public spending in the form of transfers has always been smaller than public good spending for all government levels in all different Brazilian states, regardless of their district magnitude. If this last point is taken as an indication that Brazilian citizens have an underlying preference for pork over transfers, then Brazilian states with more proportional representation systems are expected to present smaller governments.

Preliminary support for this result is obtained when panel data regression estimates reveal that, contrary to the expectations of the common-pool hypothesis, large and more fragmented state legislatures were found to be associated with smaller state governments. Evidence that transfer (public good) spending increases (decreases) with the degree of proportionality of the Brazilian system was also uncovered. Support for the common-pool hypothesis persists, however, in the allocation of the federal budget. Total primary spending along with public good spending tends to increase, the larger the share of state revenues coming from federal taxes used to finance them. Specifically, this result goes against previous findings by Jones et al (2000) where the common-pool hypothesis, at least in the case of the Argentine federation, is expected to play a role not only in the allocation of the federal but also of state budgets.

The qualitative effect of legislative fragmentation proxies on the size and composition of state spending is virtually identical to those obtained for proportionality proxies. This final result offers an initial indication that fragmentation represented a potential channel through which changes in the Brazilian electoral system are translated into changes in fiscal outcomes. This result is particularly interesting for the Brazilian case where subnational fiscal policy making has always been thought to be the monopoly of state governors irrespective of the position of their parties in the state assembly (Abrucio 1998). My results provide some initial evidence that state legislative assemblies do matter thereby corroborating recent qualitative studies in which executive dominance was found to be limited to a small number of cases and separation of powers between state government and legislative assemblies over the budget process was the norm (Santos 2001).

Recent contributions to the fiscal federalist literature that take explicit account of the political environment in the process of subnational fiscal policy-making (Besley and Coate 1999, Bardhan and Mookerjee 2000a and b, Besley and Burgess 2002) have been reevaluating some of the trade-offs posed by the early fiscal federalist literature (Musgrave 1959, Oates 1972). A general message from this literature is that welfare gains from decentralization of spending assignments will depend to a great extent on the relative accountability of local and central governments to individual interests. Thus, future work should contrast the effects of electoral rules on the composition of state government spending with those on the composition of the federal government in each state. Lack of clear spending mandates for federal and state governments should allow this. This type of analysis can potentially reveal how electoral strategies may affect different government levels in their expenditure allocation thereby shedding some light in the current design of the Brazilian fiscal federalist system.

Appendix:

Table 1: Testable Hypothesis – Structural Specification

| CPH | TAH |
|--------------------|--|
| $\beta > 0$ | $\beta > 0$ |
| $? > 0$ if $f = g$ | $? < 0$ if $f = g$ |
| $? > 0$ if $f = w$ | $? > 0$ if $f = w$ |
| $? > 0$ if $f = b$ | $? > 0$ if $f = b$ and $w > g \forall i, t$ $? < 0$ if $f = b$ and $w < g \forall i, t$ |

Table 2: Testable Hypothesis – Reduced Specification

| CPH | TAH |
|--------------------|--|
| $? > 0$ if $f = g$ | $? < 0$ if $f = g$ |
| $? > 0$ if $f = w$ | $? > 0$ if $f = w$ |
| $? > 0$ if $f = b$ | $? > 0$ if $f = b$ and $w > g \forall i, t$ $? < 0$ if $f = b$ and $w < g \forall i, t$ |

Table 3: Size and Composition of Brazilian Public Sector – Summary statistics

| Variable | | State Government | | | | | | Federal and Municipal Government | | | | | |
|--------------------|---------|------------------|-----------|-------|-------|------------|------------|----------------------------------|-----------|-------|--------|------------|------------|
| | | Mean | Std. Dev. | Min | Max | Mean 91-93 | Mean 94-97 | Mean | Std. Dev. | Min | Max | Mean 91-93 | Mean 94-97 |
| 1)%GSP | | | | | | | | | | | | | |
| Prim Spending | overall | 20.43 | 13.16 | 6.98 | 71.91 | 20.02 | 20.74 | 23.46 | 10.73 | 9.04 | 66.48 | 24.54 | 22.64 |
| | between | | 13.00 | | | | | | 8.90 | 11.58 | 39.69 | | |
| | within | | 3.07 | | | | | | 6.21 | 2.46 | 53.75 | | |
| Transfers | overall | 1.94 | 1.08 | 0.02 | 5.94 | 1.63 | 2.17 | 8.16 | 4.63 | 0.08 | 19.55 | 7.01 | 9.03 |
| | between | | 0.93 | | | | | | 4.38 | 0.87 | 17.02 | | |
| | within | | 0.58 | | | | | | 1.69 | 0.57 | 11.89 | | |
| Public Goods | overall | 16.91 | 12.43 | 5.27 | 68.30 | 17.08 | 16.78 | 12.22 | 4.52 | 5.65 | 27.59 | 11.45 | 12.80 |
| | between | | 12.32 | | | | | | 4.16 | 6.79 | 21.32 | | |
| | within | | 2.75 | | | | | | 1.91 | 1.90 | 18.49 | | |
| 2)% Prim. Spending | | | | | | | | | | | | | |
| Transfer (A) | overall | 11.65 | 5.95 | 0.03 | 26.20 | 10.29 | 12.68 | 36.76 | 16.20 | 0.34 | 62.74 | 30.99 | 41.08 |
| | between | | 5.58 | | | | | | 14.61 | 5.22 | 57.62 | | |
| | within | | 2.30 | | | | | | 7.48 | 14.19 | 53.33 | | |
| Public Goods (B) | overall | 80.00 | 8.62 | 49.01 | 95.57 | 82.31 | 78.26 | 55.77 | 14.34 | 24.95 | 98.50 | 51.75 | 58.79 |
| | between | | 7.17 | | | | | | 10.07 | 41.21 | 77.84 | | |
| | within | | 4.94 | | | | | | 10.38 | 18.38 | 77.89 | | |
| (A)/(B) | overall | 15.33 | 8.84 | 0.04 | 40.70 | 12.98 | 17.09 | 71.20 | 35.39 | 0.63 | 150.46 | 65.56 | 75.42 |
| (%) | between | | 8.20 | | | | | | 33.67 | 7.36 | 122.38 | | |
| | within | | 3.62 | | | | | | 12.51 | 21.75 | 109.55 | | |
| (A)+(B) | overall | 91.65 | 6.01 | 63.66 | 99.48 | 92.60 | 90.94 | 92.53 | 18.76 | 36.30 | 126.47 | 82.74 | 99.87 |
| | between | | 4.10 | | | | | | 10.86 | 66.50 | 113.54 | | |
| | within | | 4.46 | | | | | | 15.42 | 44.64 | 126.86 | | |

Note: Federal and municipal spending omits the Federal District due to the fact that it serves as the recipient of all non-regionalized federal spending.

Table 4: Proportionality Measures and Socioeconomic Controls: Summary Statistics

| Variable | | Mean | Std. Dev. | Min | Max |
|--|---------|-------|-----------|--------|--------|
| State Legislature Seats (seats) | overall | 38.68 | 18.48 | 17 | 94 |
| | between | | 18.73 | | |
| | within | | 1.34 | | |
| Empirical Threshold (Thr) | overall | 0.10 | 0.056 | 0.004 | 0.237 |
| | between | | 0.039 | | |
| | within | | 0.041 | | |
| Prop. Slope -1 (Dprop) | overall | 0.33 | 0.186 | -0.095 | 0.826 |
| | between | | 0.126 | | |
| | within | | 0.138 | | |
| Rae's Disproportionality . Index | overall | 26.74 | 9.80 | 9.90 | 55.10 |
| | between | | 8.59 | | |
| | within | | 4.96 | | |
| Rae's Fractionalization Index | overall | 0.81 | 0.06 | 0.66 | 0.89 |
| | between | | 0.05 | | |
| | within | | 0.03 | | |
| Effective Number Parties (enps) | overall | 5.73 | 1.53 | 2.90 | 9.10 |
| | between | | 1.34 | | |
| | within | | 0.78 | | |
| State per capita product (R\$/individual) | overall | 4,635 | 2,906 | 1,245 | 16,779 |
| | between | | 2,943 | | |
| | within | | 240 | | |
| Population Density (Individual/SqKm) | overall | 52.61 | 77.06 | 0.97 | 321.58 |
| | between | | 78.24 | | |
| | within | | 3.45 | | |
| Race Fractionalization Index | overall | 0.45 | 0.10 | 0.14 | 0.58 |
| | between | | 0.10 | | |
| | within | | 0.03 | | |
| Pop65+/Pop14-64 (%) | overall | 0.08 | 0.024 | 0.024 | 0.148 |
| | between | | 0.023 | | |
| | within | | 0.007 | | |
| Unemployment Rate (%) | overall | 7.02 | 2.432 | 2.705 | 16.033 |
| | between | | 1.931 | | |
| | within | | 1.519 | | |
| Gini Coefficient | overall | 0.58 | 0.044 | 0.295 | 0.655 |
| | between | | 0.032 | | |
| | within | | 0.030 | | |
| % of Pop. below poverty line | overall | 43.22 | 17.004 | 13.381 | 77.500 |
| | between | | 16.556 | | |
| | within | | 4.88 | | |
| Ideology of Governor's Party | overall | 0.22 | 0.72 | -1 | 1 |
| | between | | 0.54 | | |
| | within | | 0.49 | | |
| Intgv Transfers/Tax Revenues | overall | 1.72 | 2.58 | 0.06 | 14.71 |
| | between | | 2.50 | | |
| | within | | 0.80 | | |

Table 5: Correlation between Political Variables

| | Seats | Rae | Log | Devprop | Thrs | Empv | RaeRae | |
|---------|-------|------|-------|---------|-------|------|--------|------|
| Seats | 1.00 | | | | | | | |
| Rae | -0.58 | 1.00 | | | | | | |
| Log | -0.61 | 0.89 | 1.00 | | | | | |
| Devprop | -0.27 | 0.54 | 0.67 | 1.00 | | | | |
| Thrs | -0.29 | 0.49 | 0.57 | 0.93 | 1.00 | | | |
| Empv | 0.35 | 0.07 | -0.22 | -0.25 | -0.31 | 1.00 | | |
| RaeRae | 0.18 | 0.27 | 0.10 | 0.09 | 0.09 | 0.93 | 1.00 | |
| RaeRae | 0.34 | 0.02 | -0.37 | -0.34 | -0.32 | 0.95 | 0.86 | 1.00 |

Notes: t-statistics in parenthesis. * significant at 10 %, ** significant at 5%.

Table 6: Effects of Proportionality on Government Spending–GLS model

| | Primary Spending as share of GSP | | | | Transfers as share of GSP | | | | Pub. Goods as share of GSP | | | |
|-------------------------------|--------------------------------------|----------------------|----------------------|----------------------|--------------------------------------|---------------------|--------------------|---------------------|----------------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Log (State Legislature Seats) | -4.69 (-1.75*) | | | | -0.15 (-0.47) | | | | -2.75 (-1.11) | | | |
| Empirical Threshold (-Thrs) | | -0.35 (-0.23) | | | | 0.46 (1.65*) | | | | -1.25 (-0.93) | | |
| Prop. Slope -1(-Dprop) | | | 0.14 (0.03) | | | | 1.68 (1.87*) | | | | -2.97 (-0.69) | |
| Rae's Prop. Index (-Rae) | | | | 0.07 (1.6) | | | | 0.03 (4.8**) | | | | 0.04 (1.16) |
| Log (State Per Capita Income) | -10.14 (-3.81*) | -10.52 (-3.93**) | -10.58 (-3.96**) | -9.88 (-3.68**) | -0.39 (-1.03) | -0.45 (-1.2) | -0.44 (-1.17) | -0.17 (-0.47) | -8.00 (-3.28**) | -8.10 (-3.33**) | -8.17 (-3.37**) | -7.78 (-3.17**) |
| Log (Population Density) | 0.05 (0.06) | -0.50 (-0.56) | -0.51 (-0.57) | -0.73 (-0.81) | 0.49 (4.52**) | 0.47 (4.52**) | 0.46 (4.44**) | 0.42 (4.08**) | -0.62 (-0.7) | -0.93 (-1.11) | -0.92 (-1.11) | -1.11 (-1.32) |
| Ideology of Governor's Party | 0.16 (0.35) | 0.16 (0.33) | 0.14 (0.29) | 0.13 (0.28) | -0.17 (-1.91*) | -0.18 (-2.13**) | -0.18 (-2.13**) | -0.17 (-2.11**) | -0.42 (-1.02) | -0.38 (-0.92) | -0.40 (-0.96) | -0.44 (-1.06) |
| Pop65+/Pop14-64 | -124.25 (-3.9**) | -129.38 (-4.04**) | -129.68 (-4.05**) | -125.92 (-3.96**) | -12.13 (-2.22**) | -13.45 (-2.57**) | -13.00 (-2.5**) | -13.49 (-2.71**) | -128.35 (-4.55**) | -129.91 (-4.61**) | -131.18 (-4.65**) | -128.06 (-4.54**) |
| Unemployment Rate | -0.06 (-0.4) | -0.01 (-0.07) | -0.02 (-0.1) | -0.02 (-0.14) | -0.02 (-0.55) | -0.02 (-0.65) | -0.02 (-0.61) | -0.02 (-0.62) | -0.26 (-1.82*) | -0.22 (-1.54) | -0.22 (-1.59) | -0.24 (-1.68*) |
| % of pop. below poverty line | -0.18 (-2.62**) | -0.18 (-2.45**) | -0.18 (-2.5**) | -0.18 (-2.5**) | 0.00 (0.28) | 0.00 (0.25) | 0.00 (0.26) | 0.01 (0.77) | -0.10 (-1.57) | -0.09 (-1.36) | -0.09 (-1.42) | -0.09 (-1.52) |
| Gini Coefficient | 15.08 (1.65*) | 12.62 (1.37) | 13.01 (1.41) | 13.08 (1.44) | 1.84 (1.12) | 2.10 (1.28) | 2.08 (1.27) | 1.51 (0.99) | 13.36 (1.66*) | 10.91 (1.35) | 11.36 (1.41) | 12.25 (1.53) |
| Race Fractionalization Index | 21.48 (2.87**) | 22.33 (2.96**) | 22.43 (2.98**) | 24.41 (3.22**) | 0.24 (0.22) | 0.46 (0.43) | 0.46 (0.43) | 1.30 (1.26) | 16.19 (2.4**) | 16.28 (2.41**) | 16.41 (2.43**) | 17.94 (2.63**) |
| Intgv Transfers/Tax Revenues | 2.48 (10.02**) | 2.42 (9.72**) | 2.41 (9.67**) | 2.38 (9.75**) | 0.24 (6.1**) | 0.23 (5.99**) | 0.23 (5.92**) | 0.24 (6.45**) | 2.31 (10.41**) | 2.29 (10.41**) | 2.29 (10.37**) | 2.25 (10.32**) |
| No of Observations | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 |
| Overall R-squared | 0.75 | 0.75 | 0.75 | 0.73 | 0.42 | 0.42 | 0.42 | 0.45 | 0.74 | 0.74 | 0.74 | 0.73 |
| cont. | Transfers as share of Prim. Spending | | | | Pub. Good as share of Prim. Spending | | | | Transfer/Pub. Good | | | |
| | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) |
| Log (State Legislature Seats) | 3.72 (2.13**) | | | | -2.88 (-1.1) | | | | 5.67 (2.21**) | | | |
| Empirical Threshold (Thrs) | | 2.26 (2.15**) | | | | -4.56 (-1.81*) | | | | 4.72 (2.96**) | | |
| Prop. Slope -1 (Dprop) | | | 7.38 (2.19**) | | | | -13.10 (-1.6*) | | | | 13.59 (2.64**) | |
| Rae's Prop. Index (Rae) | | | | 0.13 (4.59**) | | | | -0.17 (-2.57**) | | | | 0.23 (5.38**) |
| Log (State Per Capita Income) | 0.55 (0.31) | 0.60 (0.34) | 0.66 (0.37) | 2.05 (1.19) | 1.00 (0.32) | 1.28 (0.4) | 1.04 (0.32) | -0.22 (-0.07) | -0.15 (-0.06) | -0.26 (-0.1) | -0.07 (-0.03) | 2.28 (0.89) |
| Log (Population Density) | 2.10 (3.43**) | 2.48 (4.27**) | 2.45 (4.22**) | 2.18 (3.8**) | -2.03 (-2.35**) | -2.22 (-2.57**) | -2.16 (-2.5**) | -2.02 (-2.33**) | 3.16 (3.55**) | 3.70 (4.39**) | 3.66 (4.33**) | 3.22 (3.87**) |
| Ideology of Governor's Party | -0.98 (-3.02**) | -1.05 (-3.21**) | -1.04 (-3.18**) | -0.97 (-3.15**) | -1.22 (-1.57) | -1.15 (-1.48) | -1.18 (-1.51) | -1.31 (-1.71) | -0.76 (-1.52) | -0.91 (-1.84*) | -0.86 (-1.73*) | -0.73 (-1.58) |
| Pop65+/Pop14-64 | -4.30 (-0.2) | -0.75 (-0.03) | 1.62 (0.07) | 6.10 (0.29) | -75.19 (-1.58) | -81.59 (-1.79*) | -87.17 (-1.92*) | -80.73 (-1.78*) | -7.17 (-0.22) | -1.76 (-0.05) | 3.27 (0.1) | 9.25 (0.3) |
| Unemployment Rate | -0.01 (-0.08) | -0.07 (-0.67) | -0.07 (-0.6) | -0.06 (-0.57) | -0.13 (-0.5) | -0.05 (-0.19) | -0.07 (-0.26) | -0.07 (-0.3) | -0.11 (-0.68) | -0.23 (-1.38) | -0.21 (-1.24) | -0.19 (-1.25) |
| % of pop. below poverty line | 0.05 (1.01) | 0.03 (-0.60) | 0.03 (-0.62) | 0.05 (-1.02) | 0.18 (1.83*) | 0.21 (2.06**) | 0.20 (2.03**) | 0.17 (1.75*) | 0.00 (-0.03) | -0.04 (-0.54) | -0.03 (-0.46) | 0.00 (-0.04) |
| Gini Coefficient | -1.798 (-0.29) | 1.914 (0.3) | 1.671 (0.27) | -0.154 (-0.03) | -11.123 (-0.75) | -15.027 (-1.02) | -14.337 (-0.97) | -11.303 (-0.78) | 0.600 (0.06) | 7.294 (0.77) | 6.384 (0.67) | 2.987 (0.34) |
| Race Fractionalization Index | -2.24 (-0.44) | -2.25 (-0.45) | -2.36 (-0.47) | 0.84 (0.17) | 2.62 (0.3) | 1.82 (0.21) | 2.27 (0.26) | -1.17 (-0.13) | -3.89 (-0.52) | -3.51 (-0.47) | -3.94 (-0.52) | 1.66 (0.23) |
| Intgv Transfers/Tax Revenues | 0.47 (2.8**) | 0.47 (2.81**) | 0.46 (2.77**) | 0.49 (3.09**) | 0.25 (0.75) | 0.33 (1.02) | 0.34 (1.03) | 0.27 (0.81) | 0.63 (2.49**) | 0.60 (2.38**) | 0.60 (2.36**) | 0.66 (2.77**) |
| No of Observations | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 |
| Overall R-squared | 0.51 | 0.49 | 0.49 | 0.48 | 0.46 | 0.45 | 0.51 | 0.51 | 0.52 | 0.51 | 0.50 | 0.54 |

Table 7: Effects of Proportionality on Government Spending - Summary

| Transfers/ GSP | GLS | | | | OLS- PCSE | | | |
|--------------------------------|-------------------|-------------------|-------------------|--------------------|--------------------|------------------|------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Log (State Legislature Seats) | -0.15 (-0.47) | | | | -0.47 (-1.58) | | | |
| Empirical Threshold (-Thr) | | 0.46 (1.65*) | | | | -0.01 (-0.04) | | |
| Prop. Slope -1(-Dprop) | | | 1.68 (1.87*) | | | | 2.09 (2.24**) | |
| Rae's Prop. Index (-Rae) | | | | 0.03 (4.8**) | | | | 0.03 (4.12**) |
| Transfers/ Primary Spending | GLS | | | | OLS- PCSE | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Log (State Legislature Seats) | 3.72 (2.13**) | | | | 1.52 (1.17) | | | |
| Empirical Threshold (-Thr) | | 2.26 (2.15**) | | | | 2.23 (1.87*) | | |
| Prop. Slope -1(-Dprop) | | | 7.38 (2.19**) | | | | 13.4 (3.09**) | |
| Rae's Prop. Index (-Rae) | | | | 0.13 (4.59**) | | | | 0.16 (4.66**) |
| Transfers/ Public Goods | GLS | | | | OLS- PCSE | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Log (State Legislature Seats) | 5.67 (2.21**) | | | | 1.88 (1.0) | | | |
| Empirical Threshold (-Thr) | | 4.72 (2.96**) | | | | 3.14 (1.6*) | | |
| Prop. Slope -1(-Dprop) | | | 13.59 (2.64**) | | | | 19.5 (2.78**) | |
| Rae's Prop. Index (-Rae) | | | | 0.23 (5.38**) | | | | 0.1 (4.44**) |
| Public Goods/ GSP | GLS | | | | OLS- PCSE | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Log (State Legislature Seats) | -2.75 (-1.11) | | | | -3.41 (-2.17**) | | | |
| Empirical Threshold (-Thr) | | -1.25 (-0.93) | | | | -1.82 (1.13) | | |
| Prop. Slope -1(-Dprop) | | | -2.97 (-0.69) | | | | -5.46 (-1.24) | |
| Rae's Prop. Index (-Rae) | | | | -0.04 (-1.16) | | | | -0.1 (-1.23) |
| Public Goods/ Primary Spending | GLS | | | | OLS- PCSE | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Log (State Legislature Seats) | -2.88 (-1.1) | | | | -1.26 (-0.93) | | | |
| Empirical Threshold (-Thr) | | -4.56 (-1.81*) | | | | -1.18 (-0.32) | | |
| Prop. Slope -1(-Dprop) | | | -13.10 (-1.6*) | | | | -13.2 (-1.29) | |
| Rae's Prop. Index (-Rae) | | | | -0.17 (-2.57**) | | | | -0.10 (-1.6*) |
| Primary Spending/ GSP | GLS | | | | OLS- PCSE | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Log (State Legislature Seats) | -4.69 (-1.75*) | | | | -5.13 (-2.81**) | | | |
| Empirical Threshold (-Thr) | | -0.35 (-0.23) | | | | -2.84 (-1.2) | | |
| Prop. Slope -1(-Dprop) | | | 0.14 (0.03) | | | | -4.75 (-0.88) | |
| Rae's Prop. Index (-Rae) | | | | 0.07 (1.6*) | | | | -0.09 (-1.58*) |

Notes: t-statistics are reported below coefficient estimates. *denotes significance at 10 % level, ** at 5 %

Table 8: Effects of Proportionality on Legislative Fragmentation

| GLS | | | | | | | | | | |
|------------------------------|-----------------------------|------------------|------------------|-------------------|------------------|-------------------------------|-------------------|-------------------|-------------------|-------------------|
| | Effective Number of Parties | | | | | Rae's Fractionalization Index | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Log (State Legislature Size) | 1.01 (2.15**) | | | | | 0.04 (1.97**) | | | | |
| Empirical Threshold (-Thr) | | 1.30 (2.9**) | | | | | 0.07 (4.48**) | | | |
| Prop. Slope -1(-Dprop) | | | 5.18 (3.63**) | | | | | 0.25 (5.34**) | | |
| Rae's Prop. Index (-Rae) | | | | -0.003 (-0.27) | | | | | 0.00 (0.69) | |
| Galagher's Prop Index (-Lsq) | | | | | 0.15 (3.08**) | | | | | 0.01 (4.76**) |
| Gini Coefficient | -0.17 (-0.08) | 1.04 (0.48) | 1.24 (0.58) | 0.56 (-0.27) | 0.43 (0.2) | 0.03 (0.37) | 0.07 (0.99) | 0.08 (1.15) | 0.06 (0.75) | 0.04 (0.6) |
| Urbanization Rate | 5.51 (3.41**) | 5.38 (2.95**) | 5.31 (2.87**) | 6.22 (3.63**) | 5.48 (2.96**) | 0.15 (2.13**) | 0.15 (2.25**) | 0.15 (2.15**) | 0.18 (2.4**) | 0.16 (2.3**) |
| Race Fractionalization Index | 0.86 (-0.48) | 0.68 (0.36) | 0.58 (0.31) | -0.10 (-0.05) | 0.87 (0.46) | -0.02 (-0.24) | -0.01 (-0.21) | -0.02 (-0.32) | -0.04 (-0.51) | -0.01 (-0.08) |
| constant | -2.11 (-0.99) | 1.35 (0.81) | 0.20 (0.9) | 0.88 (-0.55) | 2.21 (1.3) | 0.57 (6.89) | 0.69 (11.6) | 0.69 (11.73) | 0.68 (10.74) | 0.73 (11.93) |
| No of Observations | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 |
| Overall R-squared | 0.23 | 0.20 | 0.20 | 0.16 | 0.20 | 0.16 | 0.17 | 0.17 | 0.09 | 0.15 |
| F time dummies=0(Prob>chi2) | 0.90 | 0.71 | 0.97 | 0.93 | 1.00 | 0.99 | 0.81 | 0.49 | 0.70 | 0.79 |
| Hausman (Prob>chi2) | 0.05 | 0.16 | 0.28 | 0.47 | 0.17 | 0.04 | 0.15 | 1.00 | 1.00 | 0.48 |
| Prais-Winsten with PCSE | | | | | | | | | | |
| | Effective Number of Parties | | | | | Rae's Fractionalization Index | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Log (State Legislature Size) | 1.01 (3.42**) | | | | | 0.04 (9.68**) | | | | |
| Empirical Threshold (-Thr) | | 0.99 (3.45**) | | | | | 0.06 (5.38**) | | | |
| Prop. Slope -1(-Dprop) | | | 5.40 (4.79**) | | | | | 0.26 (5.5**) | | |
| Rae's Prop. Index (-Rae) | | | | 0.00 (0.02) | | | | | 0.00 (0.92) | |
| Galagher's Prop Index (-Lsq) | | | | | 0.16 (3.34**) | | | | | 0.01 (3.99**) |
| Gini Coefficient | -0.75 (-0.59) | -0.24 (-0.19) | -0.09 (-0.08) | -0.19 (-0.15) | -0.21 (-0.18) | -0.02 (-0.54) | -0.01 (-0.21) | -0.01 (-0.13) | -0.01 (-0.27) | -0.01 (-0.24) |
| Urbanization Rate | 4.29 (2.22**) | 4.91 (2.48**) | 4.47 (2.42**) | 5.12 (2.59**) | 4.19 (2**) | 0.13 (3.63**) | 0.15 (3.24**) | 0.13 (3.76**) | 0.15 (3.84**) | 0.12 (2.56**) |
| Race Fractionalization Index | 1.84 (-1.34) | 1.46 (1.16) | 1.56 (1.36) | 1.13 (-0.85) | 1.80 (1.5) | 0.04 (0.92) | 0.04 (0.97) | 0.05 (1.36) | 0.04 (0.85) | 0.05 (1.31) |
| constant | -1.34 (-1.79*) | 2.01 (1.37) | 2.43 (1.79*) | 1.66 (2.09**) | 3.05 (1.9**) | 0.59 (18.26**) | 0.71 (17.66**) | 0.73 (22.35**) | 0.70 (18.57**) | 0.75 (17.65**) |
| No of Observations | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 |
| R-squared | 0.58 | 0.57 | 0.59 | 0.54 | 0.59 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Rho (AR1) | 0.85 | 0.86 | 0.87 | 0.88 | 0.85 | 0.88 | 0.88 | 0.87 | 0.87 | 0.85 |

Notes: t-statistics in parenthesis. * significant at 10 %, ** significant at 5%. Omitted variables are assumed to present panel heteroskedasticity, to be contemporaneously correlated and to present first order autocorrelation (AR1).

Table 9: Effects of Legislative Fragmentation on Government Spending

| | Prais-Winsten with PCSE | | | | | |
|--|----------------------------------|---------------------------|------------------------------|--------------------------------------|--|----------------------|
| | Primary Spending share of GSP | Transfers share of GSP | Public Goods share of GSP | Transfers share of Prim. Spending | Public Good share of Prim. Spending | |
| Effective Number of Assembly Parties (Enps) | -0.99 (-2.35**) | 0.00 (0.09) | -0.87 (-2.37**) | 0.53 (3.01**) | -0.89 (-2.44**) | |
| Effective Number of Elective Parties (Enpv) | -0.73 (-2.09**) | -0.06 (-1.59) | -0.59 (-1.89*) | 0.07 (0.51) | -0.35 (-0.84) | |
| Log (State Per Capita Income) | -11.96 (-3.87**) | -11.90 (-3.8**) | -0.67 (-1.66*) | -0.58 (-1.43) | -9.29 (-3.19**) | -9.57 (-3.25**) |
| Log (Population Density) | 0.32 (0.45) | 0.29 (0.41) | 0.36 (3.65**) | 0.37 (3.92**) | -0.21 (-0.34) | -0.19 (-0.3) |
| Ideology of Governor's Party | 0.57 (0.72) | 0.54 (0.71) | -0.28 (-2.95**) | -0.26 (-2.9**) | 0.18 (0.24) | 0.20 (0.27) |
| Pop65+/Pop14-64 | -135.43 (-3.22**) | -141.19 (-3.37**) | -1.75 (-0.34) | -2.59 (-0.49) | -143.13 (-3.45**) | -147.69 (-3.58**) |
| Unemployment Rate | -0.09 (-0.34) | -0.10 (-0.37) | 0.02 (0.5) | 0.02 (0.49) | -0.22 (-1.07) | -0.22 (-1.07) |
| % of pop. below poverty line | -0.29 (-3.97**) | -0.28 (-3.84**) | -0.02 (-1.25) | -0.02 (-1.24) | -0.19 (-2.67**) | -0.18 (-2.65**) |
| Gini Coefficient | 2.27 (0.13) | 2.02 (0.12) | 1.13 (0.52) | 1.21 (0.56) | 0.68 (0.05) | 0.46 (0.03) |
| Race Fractionalization Index | 24.03 (3.98**) | 24.35 (3.95**) | 0.89 (0.96) | 1.15 (1.24) | 21.99 (3.76**) | 21.50 (3.72**) |
| Intgy Transfers/Tax Revenues | 2.73 (6.21**) | 2.73 (6.24**) | 0.16 (2.43**) | 0.17 (2.52**) | 2.53 (7.85**) | 2.57 (8.1**) |
| Intercept | 131.14 (4.34**) | 129.93 (4.29**) | 5.87 (1.77*) | 5.39 (1.61*) | 105.53 (3.65**) | 107.34 (3.7**) |
| No of Observations | 189 | 189 | 189 | 189 | 189 | 189 |
| Adj R-squared | 0.70 | 0.70 | 0.20 | 0.21 | 0.72 | 0.72 |
| Rho (AR(1)) | 0.63 | 0.63 | 0.69 | 0.68 | 0.70 | 0.68 |
| | Baltagi's EC2SLS | | | | | |
| | Primary Spending share of GSP | Transfers share of GSP | Public Goods share of GSP | Transfers share of Prim. Spending | Public Good share of Prim. Spending | |
| Effective Number of Assembly Parties Instrumented with lseats | -1.18 (-1.63*) | -0.44 (-4.11**) | -0.76 (-1.09) | -0.32 (-0.66) | -1.60 (-2.1**) | |
| Effective Number of Assembly Parties Instrumented with Thr | -1.21 (-1.36) | -0.25 (-1.96*) | -1.31 (-1.60*) | 0.09 (0.15) | -1.31 (-1.62**) | |
| Log (State Per Capita Income) | -14.54 (-6.23**) | -8.75 (-2.85**) | 0.37 (1.06) | -0.05 (-0.12) | -13.53 (-6.03**) | -8.19 (-3.37**) |
| Log (Population Density) | 1.59 (3.26**) | -0.22 (-0.23) | 0.42 (5.71**) | 0.53 (4.7**) | 1.05 (2.24**) | -0.93 (-1.14) |
| Ideology of Governor's Party | 1.55 (2.13**) | 0.60 (1.01) | -0.10 (-0.94) | -0.08 (-0.78) | 1.26 (1.79*) | -0.40 (-0.93) |
| Pop65+/Pop14-64 | -173.11 (-5.68**) | -141.89 (-4.13**) | -11.99 (-2.64**) | -14.70 (-2.62**) | -162.65 (-5.54**) | -131.88 (-4.64**) |
| Unemployment Rate | -0.01 (-0.06) | -0.08 (-0.49) | -0.05 (-1.39) | -0.03 (-0.91) | -0.14 (-0.62) | -0.23 (-1.65**) |
| % of pop. below poverty line | -0.34 (-5**) | -0.19 (-2.58**) | -0.01 (-0.58) | 0.00 (0.1) | -0.29 (-4.43**) | -0.10 (-1.57**) |
| Gini Coefficient | -9.21 (-0.58) | 17.07 (1.72*) | 7.93 (3.36**) | 2.36 (1.34) | -15.36 (-1.01) | 12.48 (1.54) |
| Race Fractionalization Index | 18.36 (3.09**) | 20.52 (2.58**) | 1.16 (1.32) | 0.58 (0.53) | 15.81 (2.76**) | 16.45 (2.44**) |
| Intgy Transfers/Tax Revenues | 3.28 (15.95**) | 2.57 (9.11**) | 0.23 (7.5**) | 0.26 (6.14**) | 2.95 (14.91**) | 2.28 (10.35**) |
| Intercept | 161.25 (8.64**) | 95.53 (3.97**) | -4.17 (-1.5) | 1.01 (0.29) | 152.18 (8.46**) | 84.77 (4.22**) |
| No of Observations | 189 | 189 | 189 | 189 | 189 | 189 |
| Overall R-squared | 0.81 | 0.77 | 0.41 | 0.44 | 0.80 | 0.74 |

Notes: t-statistics in parenthesis. * significant at 10 %, ** significant at 5%. Omitted variables are assumed to present panel heteroskedasticity, to be contemporaneously correlated and to present first order autocorrelation (AR1).

References

- Abrucio, F. (1998).** “Os Barões da Federação : Os Governadores e a Redemocratização Brasileira.”, São Paulo : Editora Hucitec - Departamento de Ciência Política, USP.
- Alesina, A. and Perotti, R. (1995).** “Fiscal Expansions and Adjustments in OECD countries.”, *Economic Policy* 21, 207-48.
- _____. (1996). “Budget Deficits and Budget Institutions.”, NBER Working Paper No.5556.
- Alesina, A., Baqir, R. and Easterly, W. (1999).** “Public Goods and Ethnic Divisions.”, *Quarterly Journal of Economics*, CXIV, November, 1243-84.
- Ames, B. (1987).** *Political Survival: Politicians and Public Policy in Latin America*. Berkeley: University of California Press.
- _____. (1995). “Electoral Strategy under Open-List Proportional Representation.”, *American Journal of Political Science*, 39(2), May, 406-33.
- Amorim Neto, O. and Cox, G.(1997).** “ Electoral Institutions, Cleavage Structures and the Number of Parties, *American Journal of Political Science* 41(1), 149-174.
- Baqir, R.(2001).** “Districting and Government Overspending.”, IMF Working Paper n1/96 (*Journal of Political Economy* Forthcoming).
- Bardhan, P. and Mookerjee, D. (2000a).** “Corruption and Decentralization of Anti-Poverty Program Delivery in Developing Countries.”, Working Paper C98-104.1., Center for International and Development Economics Research, U.C. Berkeley.
- Bardhan, P. and Mookerjee, D. (2000b).** “Corruption and Decentralization of Infrastructure Delivery in Developing Countries,” Working Paper C98-104.2, Center for International and Development Economics Research, U.C. Berkeley.
- Beck, N. and Katz, J. (1995).** “What to do (and not to do) with Time Series Cross-Section Data.”, *American Political Science Review* 89(3), 634-647.
- Benoit, K. (2002)** “The Endogeneity Problem in Electoral Studies: a Critical Re-examination of Duverger's Mechanical Effect.”, *Electoral Studies* 21 (1) , 35-46.
- Besley, T. and Burgess, R. (2002).** “The Political Economy of Government Responsiveness: Theory and Evidence from India.”, *Quarterly Journal of Economics*, CXVII, Issue 4, November.
- Besley, T. and Coate, S. (1999).** “Centralized Versus Decentralized Provision of Local Public Goods: A Political Economy Analysis.”, NBER Working Paper # 7084.
- Blanco, F. (2001).** “ O Comportamento Fiscal dos Estados Brasileiros e seus Determinantes Politicos.”
Revista da ANPEC, n.1, janeiro/junho.
- Bohn, H. and Inman, R. (1995).** “Constitutional Limitations and Public Deficits: Evidence from the US states.”, *Carnegie-Rochester Conference Series on Public Policy* 45, 13-76.
- Buchanan, J. and Tullock, G. (1962).** *The Calculus of Consent*, Ann Arbor: Michigan University Press.
- Chari,V.V and Cole, H. (1995).** “ A Contribution to the Theory of Pork-Barrel Spending.”, FRB of Minneapolis Discussion Paper 156.
- Chari,V.V, Jones, L. and Marimon, R. (1997).** “On the Economics of Split-Ticket Voting in Representative Democracies”, *American Economic Review* 87, December, 957-76
- Edin, P. and Ohlsson, H. (1991).** “Political Determinants of Budget Deficits: Coalition Effects versus Minority Effects.”, *European Economic Review* 35, 1597-1603.
- Gallagher, M. (1991).** “ Proportionality, Disproportionality and Electoral Systems”, *Electoral Studies* 10, 33,51
- Gilligan,T. and Matsusaka, J. (1995).** “Deviations from Constituent Interest: The Role of Legislative Structure and Political Parties in the States, *Economic Inquiry* 33, July, 383-401.
- _____. (2001). “Fiscal Policy, Legislature Size, and Political Parties: Evidence from State and Local Governments in the First Half of the 20th Century, manuscript, University of Southern California.
- Grilli,V., Masciandaro,D. and Tabellini (1991).** “Political and Monetary Institutions and Public Financial Policies in the Industrial Countries “, *Economic Policy* 13:341-92.
- Hallerberg, M. and Von Hagen, J. (1999).** “Electoral Institutions, Cabinet Negotiations and Budget Deficits within the European Union.” in Poterba,J. and von Hagen, J.(eds), *Fiscal Institutions and Fiscal Performance*, Chicago: University of Chicago Press.

- Holtz-Eakin, D. (1988).** “The Line Item Veto and Public Sector Budget.”, *Journal of Public Economics* 37, 263-92.
- IBGE(2000).** Sintese dos Indicadores Sociais, CD-Rom
- Inman, R. and Fitts, M.(1990).** “Political Institutions and Fiscal Policy: Evidence from the U.S. Historical Record.”, *Journal of Law, Economics and Organization* 6, Special Issue, 79-132.
- IMF (2001).** Government Finance Statistics Manual.
- Jobim, N. and Porto, W. (1996).** Legislação eleitoral no Brasil : do século XVI a nossos dias. Brasília: Senado Federal, Senado Federal, Secretaria de Documentação e Informação.
- Jones, M., Sanguinetti, P. and Tommasi, M. (2000).** “Politics, Institutions, and Fiscal Performance in a Federal System: An Analysis of the Argentine Provinces.”, *Journal of Development Economics* 61, 305-333.
- Kontopoulos, Y. and Perotti, R. (1999).** “Government Fragmentation and Fiscal Policy Outcomes: Evidence from OECD countries,” in Poterba, J. and von Hagen, J.(eds). *Fiscal Institutions and Fiscal Performance*, University of Chicago Press.
- Laakso, M. and Teegapera, R (1979)** "Effective Number of Parties: A Measure with Applications to West Europe", *Comparative Political Studies*, 12:1
- Lijphart, A. (1994).** “Electoral Systems and Party Systems”, Oxford, UK: Oxford University Press.
- Lizzeri, A. and Persico, N. (2001a).** “The Provision of Public Goods under Alternative Electoral Incentives.” *American Economic Review*, March ,91 (1), 225-39.
- _____ (2001b). “The Drawbacks of Electoral Competition.”, Unpublished Manuscript.
- Mueller, D.(1989)** . *Public Choice II. A Revised Edition of Public Choice*. New York: Cambridge University Press.
- _____ (1997). *Perspectives on Public Choice: A Handbook*. New York: Cambridge University Press.
- Milesi-Ferretti, G M. , Perotti, R. and Rostagno (2002).** “Electoral Systems and Public Spending.”, *Quarterly Journal of Economics*, CXVII, Issue 2 ,May .
- Nicolau, J. (1991).** “O Sistema Eleitoral Brasileiro: A Questao da Proporcionalidade da Representacao Politica e seus Determinantes.” in Lima, O. Jr(ed). *Sistema Eleitoral Brasileiro: Teoria e Pratica*. Rio de Janeiro : Rio Fundo Editora, IUPERJ.
- Nicolau, J. (1998)** . *Dados eleitorais do Brasil, 1982-1996*. Rio de Janeiro, RJ: Editora Revan, IUPERJ, Universidade Candido Mendes
- Musgrave, R. (1959),** *The Theory of Public Finance*, New York: McGraw-Hill
- Myerson, R. (1993).** “Incentives to Cultivate Favored Minorities under Alternative Electoral Systems.”, *American Political Science Review* 87(4), 856-69.
- Oates W. (1972)** *Fiscal Federalism*, **Harcourt Brace: New York**
- Ordeshook, P. and Shvetsova, O. (1994).** “Ethnic Heterogeneity, District Magnitude, and the Number of Parties.”, *American Journal of Political Science* 38(1), 100-123.
- Persson,T. and Tabellini,G. (1999a).** “The Size and Scope of Government: Comparative Politics with Rational Politicians.”, *European Economic Review*, Alfred Marshall Lecture, 43, 699-735.
- _____ (1999b). “Political Economics and Public Finance.”, NBER Working Paper 7097
- Persson,T. and Tabellini,G. (2000).** *Political Economics: Explaining Economic Policy*, MIT Press
- _____ _ (2001). “Political Institutions and Policy Outcomes: What are the Stylized Facts?” *IGIER Working Paper*, February.
- Poterba, J. (1994).** “State Responses to Fiscal Crisis: ‘Natural Experiments’ for Studying the Effects of Budgetary Institutions.”, *Journal of Political Economy* 102, 799-821.
- Poterba, J. and Von Hagen, J. (1999).(eds).** *Fiscal Institutions and Fiscal Performance*, Chicago,IL: University of Chicago Press.
- Powell, G.(1982).** *Contemporary Democracies: Participation, Stability and Violence*. Cambridge: Harvard University Press.
- Rae,D. (1971).** *The Political Consequences of Electoral Laws*, New Haven: Yale University Press (2nd edition).

Roubini, N. and Sachs, J. (1989) . “Political and Economic Determinants of Budget Deficits in the Industrial Democracies”, *European Economic Review* 33, 903-38.

Santos, F. org. (2001). *O Poder Legislativo nos Estados: Diversidade e Convergencia*, Rio de Janeiro: FGV editora.

Scartascini, C. and Crain, M. (2002) . “The Size and Composition of Government Spending in Multi-Party Systems, mimeo, George Mason University.

Stein, E. Talvi, E. and Grisanti, A. (1999). “Institutional Arrangements and Fiscal Performance: The Latin American Experience. In Poterba, J. and von Hagen, J. (eds), *Fiscal Institutions and Fiscal Performance*, Chicago: University of Chicago Press

Taagepera, R. and Shugart, M. (1989) . *Seats and Votes*, New Haven, CT: Yale University Press.

Velasco, A. (1998). “The Common Property Approach to the Political Economy of Fiscal Policy. In *The Political Economy of Economic Reforms*, ed. Federico Sturzenegger and Mariano Tomasi. MIT Press: Cambridge, Mass.

Weingast, B, Shepsle, K. and, Johnsen, C. (1981) . “The Political Economy of Benefits and Costs: A Neoclassical Approach to Distributive Politics. *Journal of Political Economy* 89(4), 942-664.