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**Can Delegation Promote Fiscal Discipline in  
a Federation?  
Evidence from Fiscal Performance in the  
Indian States**

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## **Can Delegation Promote Fiscal Discipline in a Federation?**

### *Evidence from fiscal performance in the Indian states*

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#### ***Abstract***

Theoretical and empirical analysis suggests that federations are prone to fiscal indiscipline, because of a classic “common-pool” problem of distributive politics—when decision-making over government spending is distributed across multiple agents but financed out of generalized taxation. An institutional solution typically adopted by many countries is the delegation of sub-national debt oversight to the national political executive. However, such delegation is likely to have limited success in promoting fiscal discipline if political incentives are such that the national political executive cannot enforce hard budget constraints on sub-nationals—the center is compelled to provide a bailout to states in financial trouble because not doing so would be politically costly, and knowing this states have incentives to over-borrow. That is, the center is subject to a credibility problem, being unable to commit *ex ante* to a no-bailout policy. This paper explores delegation of debt oversight to an independent fiscal agency as a solution to these credibility and common-pool problems, and provides evidence from India to support its arguments.

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The findings, interpretations, and conclusions expressed in this paper are entirely those of the author, and do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent.

## 1. Introduction

The risk of fiscal indiscipline in a federation was raised by Alesina and Perotti (1995) in a review article on the political economy of budget deficits. They suggested that fiscal decentralization or federal arrangements are prone to a classic “common pool” problem, when spending decisions taken at local levels are financed by transfers from the national government, which raises taxes. This insight for fiscal federalism was drawn from a model of legislative bargaining on how representatives from geographically based constituencies overestimate the benefits of public spending in their districts relative to its financing costs (Weingast, Shepsle, and Johnsen, 1981). Although these models typically address the *size* of budgets, they can be made dynamic so that they also address the *balance* of government budgets. Persson and Tabellini (2000) provide a simple dynamic extension of the common-pool problem and show that both spending and borrowing are higher than optimal, when different groups in the government are given decision power over parts of the budget, but nobody is given authority for the aggregate outcome. In a non-federal setting, Perotti and Kontopoulos (2002) create the following empirical proxies for the idea of fragmented spending authority across “different groups” –the number of cabinet members in a government, and the number of political parties in a government. Using panel data for 19 OECD countries from 1970-1995, they find that greater cabinet size is more strongly and robustly associated with larger spending and deficits, but that coalition size is also a significant determinant.

Consistent with these theoretical ideas and empirical findings, countries seem to have explored solutions to the common-pool problem in the delegation of decision power over aggregate budgets to central agencies. Although von Hagen (1991, 1992) has found evidence that budgetary procedures can make a difference for fiscal discipline, one of the most robust indicators being the centralization of decision-making in the hands of the prime minister or the finance minister, Perotti and Kontopoulos (2002) find relatively little evidence that procedural variables matter for fiscal outcomes, once the political variables are included in the analysis. These results might be reconciled by considering the interaction between political and budgetary institutions. Hallerberg and von Hagen (1999), for instance, show that countries with majoritarian electoral systems (where national legislatures are more likely to be dominated by a single political party) have chosen to delegate power to the finance minister in the budget

process, while countries with proportional electoral systems (where the national legislature is likely to be fragmented across political parties) have tried to adopt formal budget targets.

Federal systems (or in general, systems with significant fiscal decentralization to locally elected governments) are defined by significant autonomy for sub-national governments, and limits on the intervening authority of national governments, and thus likely to have exacerbated common-pool problems compared to unitary systems. However, Rodden and Wibbels (2002) and Rodden (2002) show that there is substantial variation amongst federal systems in fiscal institutions and outcomes—greater authority of sub-national governments over own-tax bases, and correspondingly lower dependence on national transfers for their spending programs, is associated with lower deficits; and greater regulation and oversight of sub-national borrowing by the national government is associated with lower deficits.

However, in addition to the common-pool problem, the fiscal federalism literature has also analyzed a credibility problem for the national government, which limits its ability to impose hard budgets on sub-national governments, even if it is invested with formal decision authority over aggregate fiscal variables. Inman (2001) illustrates this problem in a game-theoretic setting: if a national government cannot withhold a bailout from a sub-national government in financial trouble because of political costs, then knowing this, sub-national governments have incentives to over-spend in expectation of future bail-outs.<sup>1</sup> This paper argues that in view of the credibility problem, delegation to the national political executive is likely to be ineffective or insufficient to promote fiscal discipline in a federation, and explores a new institutional solution—delegation of debt oversight to an independent fiscal agency—providing evidence from India in support of this idea.

The paper tests the credibility hypothesis by defining political conditions whose variation across states are a good proxy for the variation in political costs of the national government of withholding a bailout when a state requires additional financing. Political representation of states in the national legislature and party affiliation between the national and state governments are leading candidates for such proxy variables. Using a panel dataset for 15 major states of India over the period 1972-95 we find that when a state government is controlled by the same party

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<sup>1</sup> To the best of my knowledge, there is no formal analysis describing any analogous credibility problem in the unitary setting of a national legislature.

that controls the national government, the state has higher than average fiscal deficit. This partisan effect is large, with deficits in politically affiliated states being 11 percent higher than deficits in non-affiliated states, calculated at the sample average. Amongst co-partisan states, those where the national ruling party controls a larger proportion of seats allotted to the state in the national legislature may be characterized as “core support” states, whereas those where the party controls a smaller proportion of seats may be characterized as “swing” states. We find that deficits are greater in the latter, that is, the “swing” states. Affiliated states where the ruling party controls close to zero of the state’s seats in the national legislature have deficits that are more than 25 percent higher than the sample average. Non-affiliated states have lower deficits compared to affiliated states, irrespective of their representation in the national legislature.

The evidence for the Indian states shows that partisan affiliation between the national and state governments stands out as the only significant political determinant of variation in deficits across and within states over time, to the exclusion of other plausible political and institutional determinants at the state level that have been tested in the received literature, such as election cycles (Alesina et al. 1997; Khemani, 2004), fragmented or divided legislatures (Poterba, 1994; Alt and Lowry, 1994; Roubini and Sachs, 1989; Perotti and Kontopoulos, 2002), and dependence on intergovernmental transfers (Rodden, 2002; Jones, Sanguinetti, and Tommasi, 2000). We find no evidence of impact on state deficits of the timing of state elections, the existence of a coalition government, nor the extent of dependence of a state on federal revenue transfers.

Based on this evidence the paper proposes delegation of federal oversight of sub-national debt to a non-partisan, independent fiscal agency, as a commitment device that is likely to promote fiscal discipline. An independent fiscal agency already exists in India—the Finance Commission—and is delegated power over the distribution of national revenue transfers. Recent evidence shows that it indeed functions to curb the partisan influence of the national executive (Khemani, 2003), and is therefore a promising candidate to which to delegate oversight of sub-national debt.

Section 2 below provides an analytical framework to identify those variables that would be a good proxy for variation across states in the political costs to the national government of withholding bailouts. Section 3 briefly describes fiscal and political institutions in India, and the data used for the empirical analysis. Section 4 reports the evidence on the impact of national-

state political relations on state fiscal deficit. Section 5 discusses delegation to an independent fiscal agency as a policy solution to the problem of state fiscal deficits, and concludes with some open questions.

## 2. Analytical Framework

We adapt the approach of Inman (2001) to sub-national fiscal deficits, as the outcome of a bargaining game between national and provincial governments having divergent political interests. Figure 1 depicts the bargaining between national and local governments as a sequential game over the determination of sub-national deficits. The “status-quo” of this game is the outcome of overall resource allocation across provincial governments that optimizes macroeconomic objectives (such as debt sustainability, and competitive financial markets) for which the center is responsible. The provincial government deficit is determined at this nationally optimal level ( $d$ ), which is fully funded by the central government ( $l$ ). However, the provincial government can undertake an action of over-spending and increasing its deficit ( $\Delta d$ ) beyond the optimal level. The central government may respond to this additional deficit by either financing it through additional loans ( $\Delta l$ ) or leaving the local government to fund its additional deficit through fiscal retrenchment, raising additional taxes or lowering spending.<sup>2</sup> The action of providing additional loans can essentially be interpreted as a “bail-out” as reflected in higher fiscal deficits. The payoffs to the central and provincial governments may be expressed as the difference between benefits and costs for each pair of actions undertaken.

Note that given the definition of the status quo as the centrally determined optimal solution, we have  $B_{\Delta}^c - C_{\Delta}^c < Q^c$ . However, the equilibrium of this game could be  $(\Delta d, \Delta l)$ , that is where the local government over-spends and central government provides additional loans to fund the additional deficit, if the following conditions are satisfied:

$$B_{\Delta}^c - C_{\Delta}^c > B_l^c - C_l^c \quad (1)$$

$$B_{\Delta}^p - C_{\Delta}^p > Q^p \quad (2)$$

$$B_l^p - C_l^p \leq Q^p \quad (3)$$

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<sup>2</sup> “Loans” should be interpreted broadly to denote various forms of deficit financing, including guarantees and approval of debt from private markets, or even future bailouts.

Condition (1) implies that voters directly punish the central government for not bailing out the provincial government, once it has undertaken additional deficits, even though it is the action of the provincial government that is fiscally irresponsible. That is, condition (1) holds when the center shares in the punishment for local fiscal mismanagement. Although  $(\Delta d, \Delta l)$  is an inefficient outcome from a macroeconomic perspective, it can be an equilibrium when the center cannot commit in advance to a “no-bailout” policy.

The literature on intergovernmental fiscal relations identifies several political factors, variation in which would determine whether condition (1) holds or not, that is, whether the national government has a credibility problem or not. One, party affiliation between the central and state governments is likely to matter. Jones, Sanguinetti, and Tomassi (2000) hypothesize that if the center has some leverage in affiliated states through internal party disciplinary mechanisms, then it might be able to preempt state fiscal profligacy, leading to lower deficits for affiliated states. Sub-national governments that are politically affiliated with the center are more likely to internalize the effect of spending an additional unit of national resources due to internal party discipline to protect the party’s national reputation, and should therefore have lower spending and deficits. Consistent with this hypothesis they find empirical evidence that provinces in Argentina whose governors belong to the same political party as that of the national President have lower spending than provinces that are not affiliated with the President’s party. Dillinger and Webb (1999) similarly argue for the Latin American region that partisan relations between national and sub-national governments may serve to reduce the problem of sub-national fiscal profligacy.

However, co-partisanship could have the opposite effect if the center bears political costs for not bailing out a state only in those states where it’s own party controls the government. In politically affiliated states the center might bear relatively greater costs of no-bailout due to the damage done to the reputation of the political party from the poor performance of the state government. In unaffiliated states, the direct costs to the center might be mitigated by costs to the rival political party controlling the state, if voters punish the rival political party ruling the state for subsequent ill-effects of fiscal mismanagement. That is, the central political party actually stands to gain from its rival party’s discomfiture due to fiscal retrenchment, while it loses by supporting additional spending on local public goods whose political benefits would accrue to

the rival party. Under this line of reasoning, condition (1) is more likely to hold in affiliated than in unaffiliated states.

The other leading candidate to capture bargaining power of states is their representation in the national legislature. States that have greater representation in the national legislature, in terms of the absolute number of representatives elected from a state to the national legislature, might be harder for the national government to ignore (*a la* Weingast et al, 1981). In addition to, or instead of absolute representation, partisan affiliation of the legislators elected from the state's constituencies might matter—states whose constituencies return a larger proportion of legislators from the national ruling party might receive more resources. Or conversely, if the national ruling party can discipline its own legislators, then states sending a higher proportion of legislators from rival political parties might be the ones with the bargaining power for greater resources to their state (Riker, 1964).

A prolific and ongoing discussion in the literature centers around the conditions under which voters that are “core supporters” of a ruling political party receive more or less public resources than voters that are “swing”, with empirical evidence on both sides of the issue (Schady, 2000; Case, 2001; Johansson, 2003; Miguel and Zaidi, 2003). Thus, the extent to which a state has “swing” voters or “core supporters” of the national political party might matter for whether condition (1) holds.

Transfer dependence is also likely to matter. In states where the governments are more dependent on central transfers for their spending programs, voters might find it harder to distinguish whether fiscal problems and economic hardships are due to unsustainable actions taken by their state government or inaction by the central government during times of negative economic shocks, and therefore more likely to punish the center for withholding bailouts to the state. Condition (1) is therefore more likely to hold in states where a larger proportion of their spending is financed by central transfers.

### **3. Political and Fiscal Institutions in India**

Government in India has been a Westminster-style parliamentary democracy since the adoption of a constitution in 1950, with direct elections based on universal adult suffrage to the Lok Sabha, or the House of the People, the lower house at the national level, and to the Vidhan Sabhas, the individual legislative assemblies at the state level. The country is divided into 4061

single-member districts for state assembly elections, which are grouped together, separately within each state, to form 543 single-member districts for the national assembly. The party which wins a majority of districts distributed in any manner across the states,<sup>3</sup> is invited to form the government, headed by a Prime Minister and a cabinet of ministers.<sup>4</sup> Analogous to the national executive, the party or coalition of parties with a majority of seats in an individual state's legislative assembly forms the state-level executive government headed by a Chief Minister and a state cabinet of ministers.

Although the early years of electoral competition in India was dominated by a single party, the Indian National Congress, perhaps the historical legacy of being the leader of the independence movement against British colonial rule, by the 1970s the party faced stiff challenges from regional political parties with their power bases at the state-level. These political parties posed a credible opposition to the Congress party in state assembly elections, frequently replacing it as the governing parties at the state-level, and forging alliances amongst themselves to form coalition governments in national parliamentary elections. This dynamic of regional political competition derives from the nature of electoral competition in India along the lines of caste, religion, and linguistic identities that vary systematically between states (Weiner and Field, 1974).

The Indian states are constitutionally assigned broad fiscal powers, the nature of which is typical of federal nations, with the central government responsible for macroeconomic and any other policies involving extensive spillovers across state boundaries. Expenditure responsibilities for most local public goods are assigned to the states. Between 1960 and the present state governments have been undertaking around 50-60 percent of total government expenditures in India (Rao and Singh, 2000).

Relative to their expenditure responsibilities, the revenue generation powers of state governments are more limited, with high yielding taxes such as personal income tax, corporation taxes, and customs duty assigned to the center. State governments collect tax revenues from agricultural income, from property and capital transactions, and from the production and sale of

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<sup>3</sup> That is, a party does not have to win a critical number of votes in each state in order to win the districts allotted to a state in the national legislature. Districts are won on an individual basis.

<sup>4</sup> In the event of a single party not winning more than 50 percent of Lok Sabha seats, a ruling coalition is formed amongst different parties on the basis of a vote of confidence in parliament.

commodities. Between 1960 and the present state governments collected around 30 percent of total revenues (Rao and Singh, 2000).

The constitutional assignment of expenditure responsibilities and revenue authority between the central and the state governments in India is intentionally imbalanced to give the central government a role in regional redistribution.<sup>5</sup> A large part of state expenditures is financed by general-purpose revenue transfers, including both grants and share in centrally collected taxes. Federal transfers to state governments constitute about 30-40 percent of state revenues, and 5 percent of the national GDP (Rao and Singh, 2000).

The distribution of states' share of centrally collected taxes, and some grants, are determined by an independent constitutional agency, the Finance Commission, while other transfers are determined by central government agencies controlled by the national political executive. In the sample of 15 major states studied here, from 1972-1995, tax devolution and grants by the independent agency makes up about 24 percent of state revenues, while grants from central government agencies constitute about 14 percent.

Fiscal deficits of state governments are largely financed by loans from the central government, constituting more than 65 percent of total borrowing by the 15 major states in the sample studied here. Borrowing autonomy of state governments from other market sources is limited and subject to approval by the center. Although there is widespread belief that these regulations can be easily circumvented, largely by off-budget borrowing through state-owned public enterprises, the burden ultimately falls on the state (Anand, Bagchi, and Sen 2001 and McCarten 2001). The center therefore has a dominant role to play in determining deficit financing for states, both directly through a large volume of loans, but also indirectly through bail-outs of state owned enterprises and approval of market loans.

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<sup>5</sup> Detailed analysis of the history of fiscal federalism and inter-government transfers in India, with exhaustive references, can be found in Rao and Chelliah (1991) and Rao and Singh (2000). The main reason behind the imbalanced assignment of revenue authority and expenditure responsibility was to provide the central authorities with a fiscal instrument to promote unity amongst the disparate nationalities residing within one country. Overall fiscal control at the center was expected to reign-in regional secessionist tendencies and promote regional equality.

## 4. Data, Empirical Specification, and Results

### *Data*

The data set for this study is compiled from diverse sources for 15 major states of India over the period 1972-95. The political data is compiled from Butler, Lahiri, and Roy (1995). The public finance data on deficits, revenues, expenditures, and intergovernmental transfers, is available since 1972 from relevant volumes of the *Reserve Bank of India Bulletin*, a quarterly publication of the central bank of India with annual issues on details of finances of state governments. State demographic and economic characteristics, and a state-level price index to convert all variables into real terms are available from an Indian data set put together at the World Bank. A detailed description of these variables is available in Ozler, Datt, and Ravallion (1996). Table 1 provides summary statistics for each of the variables included in the analysis.<sup>6</sup>

### *Specification*

We begin with a simple model to estimate the effect of absolute representation of the state in the national legislature, and the political affiliation of its government. The basic model is:

$$DEFICIT_{it} = \beta AFFILIATION_{it} + \alpha REPRESENTATION_{it} + \eta Z_{it} + \delta_t + \varepsilon_{it} \quad (4)$$

where  $DEFICIT_{it}$  is real per capita fiscal deficit in state  $i$  in year  $t$ ;  $AFFILIATION_{it}$  is an indicator of political affiliation that equals 1 when the governing party in state  $i$  at time  $t$  belongs to the same party as that governing at the center at time  $t$ , and 0 otherwise;  $REPRESENTATION_{it}$  is the number of districts allotted to a state in the national legislature. There is large variation across states in absolute representation in the national legislature, with the sample average number of seats allotted to a state being 34, and the sample standard deviation being 19. The largest state, Uttar Pradesh, contributed over 80 seats to the national legislature over the period under study, while the smallest state, Haryana, contributed only 9-10 seats. Since there is little or

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<sup>6</sup> These 15 states of India account for 95 percent of the total population. India consists of 28 states at present of which 3 were newly created in 2000, 2 were recently converted to statehood from Union Territories, and 8 are designated “special” states, largely because of separatist tensions, and provided extraordinary central transfers. Of the 15 states under study, 11 have existed since the organization of the federation in 1956. An additional two, were created for linguistic reasons out of a single large state—Maharashtra and Gujarat—in 1960; and two in 1966—Punjab and Haryana—also for ethnic and linguistic reasons. Hence, in order to avoid issues of endogenous state boundaries, and of special transfers to some smaller states, we focus only on the 15 major states that have existed from the early days of the federation. These 15 states are: Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.

no variation over time within a state in the number of seats allotted to it in the national legislature, we estimate the impact of state representation in the national legislature without state fixed-effects. Time variant economic and demographic characteristics of states (real per capita state domestic product and total population) are included in the vector  $Z_{it}$ , and a time effect for each year, and  $\delta_t$ , is included to control for various shocks to the state economy in any given year.

In order to account for the partisan identity of individual legislators from a state in the national assembly we include the number of legislators in the national parliament belonging to the state ruling party and the national ruling party, as a proportion of the total seats allotted to the state, distinguishing between their impact in affiliated and unaffiliated states. This yields the following specification where  $StatePartySEATS_{it}$  is the proportion of seats (allotted to the state in the national legislature) controlled by the state ruling party and  $NationalPartySEATS_{it}$  is the proportion of seats controlled by the national ruling party—

$$\begin{aligned}
 DEFICIT_{it} = & \\
 & \beta AFFILIATION_{it} + \phi AFFIL * State/NationalPartySEATS_{it} + \gamma (1-AFFIL) * StatePartySEATS_{it} \\
 & + \lambda (1-AFFIL) * NationalPartySEATS_{it} \\
 & + \eta Z_{it} + \alpha_i + \delta_t + \varepsilon_{it}
 \end{aligned} \tag{5}$$

Of course, in affiliated states since the party of the state government and the national government is identical, the two variables are observationally equivalent. Specification (5) includes state fixed effects,  $\alpha_i$ , so that  $\beta$ , the coefficient on political affiliation, is identified from variation within a state from its own average deficit when it is affiliated and not affiliated with the center.

This specification also allows us to measure the impact of “swing” states. Measuring the extent to which a state is “swing”, defined in much of the theoretical literature (Dixit and Londregan, 1996; Cox and McCubbins, 1997) as the extent to which more voters in a state are more likely to be influenced by public spending policies, and less likely to be ideologically driven, when making their choices between rival political candidates, is difficult, because of the level of aggregation involved at the state level. Johansson (2003) has most closely followed the theoretical literature in her study of distribution of grants across Swedish municipalities, by using

Swedish voter surveys to directly measure the density of voters in a municipality that exhibit characteristics of “swing” voters. But the rest of the literature has used tightness of political races (margin of victory in single-member-first-past-the-post constituencies, or distance from 50 percent mark for two-candidate constituencies) as the basis for characterizing a constituency as “swing” or not (Case, 2001; Schady 2000).

However, in the Indian system, national political parties do not have to win a certain threshold of votes from a state in order to “win” a state—they can win a majority of seats in the national legislature distributed in any manner across the states in order to form the government. It is therefore difficult to identify a particular criteria for measuring “tightness” of a political race at the level of aggregation of the state. We argue that the proportion of seats allotted to a state that a party wins can be used to control for “swing” characteristics, especially when interacted with the party affiliation of the state government. If a party sweeps a state, that is, wins all or almost all the seats allotted to the state in the national legislature, and is also in power at the state government it would imply the political race in that state is not tight, from the perspective of the party. If a party sweeps a state in national elections, even when a rival party is in power at the state level, then the state is likely to be “swing” from the party’s perspective, in that it is “up-for-grabs” in the next state election. If a party controls a very small proportion of seats from a state in the national legislature, but is in power at the state level, the state is likely to be “swing”, in that there is room for political gains using the fiscal instruments of the state at the party’s disposal. If a party controls a small proportion of seats from a state, and is not in power in the state, the state is least likely to be “swing” from the party’s perspective.<sup>7</sup> Thus, amongst affiliated states, those where the party controls a smaller proportion of seats in the national legislature is likely to be swing, whereas conversely, amongst unaffiliated states, those where the party controls a larger proportion of seats is likely to be “swing”.

If overall representation of a state matters, we would have  $\alpha > 0$  (from equation 4); if bargaining power of rival state leadership matters, we would have  $\gamma > 0$  (equation 5); if “swing” states matter, we would have  $\phi < 0$  and  $\lambda > 0$  (equation 5); if “core-support” states matter, as

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<sup>7</sup> Affiliation with the state government is a non-linear way of measuring representation of the party in the *state* legislature. We did estimate the more general model of including a party’s representation in both the state and national legislatures, and found that once the affiliation indicator was included, other measures of state legislature representation had no separate effect.

measured by a higher proportion of legislators from the state belonging to the national political party, we would have  $\phi > 0$  and  $\lambda > 0$  (equation 5). If only co-partisanship matters, then we would have  $\beta > 0$ , and coefficients  $\gamma$  and  $\lambda$  statistically indistinguishable from 0. Amongst affiliated states, if “swing” states are more important than “core-support” states, we would have  $\phi < 0$ .

### ***Endogeneity concerns***

Estimating the potential effect of election outcomes on public expenditures (and hence deficits) is rather obviously subject to an endogeneity problem. If we believe that politicians use election outcomes to determine allocation of public resources, then we must also believe that public expenditure policies have an effect on elections, that is, election outcomes are influenced by expenditures in past periods. Schady (2000) explains that the coefficients on election outcomes,  $\beta$ ,  $\phi$ , and  $\gamma$  in equation (5) in this paper, are biased and inconsistent when two conditions are simultaneously met—there is serial correlation in the error term and expenditures affect election outcomes.

In the absence of any valid instruments for political affiliation and seat share of ruling parties, the paper addresses this problem by controlling for serial correlation in the regression specifications and including lagged values of the dependent variable. In particular, since political affiliation and seat share can only change in value in election years, we are likely to correctly identify the effect of political variables once we control for lagged deficit. That is, if an election occurs in year  $t$ , the electoral outcomes of year  $t$  can be treated as pre-determined with respect to the fiscal deficit in years  $t + 1$ ,  $t + 2$ , etcetera, until the next elections, once deficit of year  $t$ , which is likely to influence election outcomes in year  $t$ , has been included in the specification. Since state elections in India have usually taken place exactly at the end of the fiscal year, in an election year  $t$ , equations (1) and (2) actually regress  $DEFICIT_{it}$  during the course of year  $t$ , on outcomes of the previous election, that is, on values of  $AFFILIATION_{it-1}$  and  $SEATS_{it-1}$ , that were obtained from the previous year.

It might also be argued that unobserved voter tastes and other shocks that affect both the political variables as well as state spending are driving the correlation. For example, if we suppose that a national government is left-wing, and a regional surge in unemployment causes voters to elect the left-wing government in their state and results in larger deficits, then the

external shock of unemployment would drive the correlation between affiliation and deficits. We argue that this effect of unobserved voter tastes and other shocks are attenuated by the inclusion of state and year fixed effects. The literature on electoral competition in India has emphasized that differences between Indian political parties are not linked to differences in voter taste for fiscal policy, but rather voter taste for party identity along social and ethnic lines which are region-specific and largely invariant over time. Electoral competition between these parties has been characterized as revolving around access to the instruments of government and appropriation of public resources by different groups (Chhibber 1995).

### ***Results***

Table 2 reports the results of estimating specifications (4) and (5) using a variety of estimation strategies that have been commonly used in this literature—the first column reports ordinary least squares (OLS) estimates of the simple specification (4) without state fixed effects, with panel corrected standard errors that account for heteroskedasticity, autocorrelation, and contemporaneous correlation across panels; the second column reports OLS estimates of specification (5), with state fixed effects; the third column reports OLS estimates including the lag of the dependent variable; and the fourth column reports results from a Generalized Method of Moments (GMM) estimator derived by Arellano and Bond (1991) for consistent parameter estimates in a fixed effects model with a lagged dependent variable.

All estimates show that state governments that belong to the same political party as the central government have significantly higher fiscal deficits. Amongst affiliated states, those that control a small proportion of seats to the national legislature tend to have significantly higher deficits than those that control a higher proportion of seats. In fact, if an affiliated state government controls all the state's seats to the national legislature (that is, the proportion=1), then its net benefit from affiliation can be negative, since the coefficient on the interaction term is greater than the coefficient on the affiliation indicator in many specifications. Hence, it is really those affiliated states where the center receives greater political gains at the margin that seem to be particularly favored in terms of being allowed to run higher deficits.

The effect of political affiliation is substantial—the smallest estimated effect shows that deficits in affiliated states (where the proportion of seats controlled by the ruling party is at the sample average, which is about half) is greater than in other states by 11 percent of the average

per capita fiscal deficit in the sample. If an affiliated state controls close to zero of the seats in the national parliament, then its deficit is greater by more than 25 percent of the average per capita fiscal deficit in the sample. Non-affiliated states even when the rival party controls a larger proportion of state seats in the national legislature do not appear to bargain for higher deficits.<sup>8</sup> The result that amongst affiliated states those where the national ruling party controls a smaller number of seats have higher deficits is interesting in its own right, and suggestive of the importance of “swing” states as contrasted with “core-support” states.

Dependence on federal grants is another variable that is likely to contribute to perverse incentives for fiscal profligacy (according to the argument in Rodden, 2002). In fact, the results on partisanship might be driven by this alternate hypothesis of dependence on federal transfers, if affiliated states receive greater transfers, and transfers exacerbate the credibility problem. Table 4a reports results when we include vertical fiscal imbalance, that is, the proportion of intergovernmental grants in total state revenues (total intergovernmental grants/total revenues) as a measure of transfer dependence. Since vertical fiscal imbalance is largely stable within a state over time, most of the variation in transfer dependence measured this way comes from variation across states. Hence, results are reported both with and without state fixed effects, in columns (1) and (2) respectively. The GMM estimates in columns (3) and (4) respectively include vertical fiscal imbalance in first difference and in levels. The coefficient on vertical fiscal imbalance is not statistically significant; the sign, in fact, is negative, suggesting that contrary to conventional wisdom greater transfer dependence might be correlated with *lower* deficits. The effect of partisanship is unchanged even after controlling for transfer dependence.<sup>9</sup>

Table 4b simultaneously estimates the effect of the *level* of transfers (in per capita real terms) on state fiscal deficit and the determinants of transfer distribution across states, using three-stage least squares. There is an inherent simultaneity problem in identifying the effect of transfers on deficits, because both are presumably determined in equilibrium under general

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<sup>8</sup> None of the main results are affected by including or excluding the control variables, expressing deficit as a percentage of state domestic product, or dropping individual states one at a time. The Arellano-Bond one-step model performs well. We are able to reject the presence of second order autocorrelation.

The sign of the coefficient on the affiliation and seats interaction is identical when the absolute number of national legislators belonging to the state ruling party is used instead of as a proportion of the total seats allotted to a state.

<sup>9</sup> There is no effect of transfer dependence on fiscal deficits even when we distinguish between dependence on those transfers that are determined at the discretion of the central political executive and on those determined by the independent agency. These results are not reported here in the interests of brevity.

economic conditions. Unfortunately, the paper is not able to address this endogeneity in a satisfactory manner given lack of good instruments that only affect transfers and not state fiscal behavior directly. However, it attempts to do so by using lagged values of transfers as instruments. To the best of our knowledge, this is the first time a rigorous test has been undertaken of the conventional wisdom that the design of intergovernmental transfers in India creates perverse incentives for state governments to run higher deficits (Rao, 1998; Rao and Singh, 2000).

We distinguish between the specifications for the distribution of the two types of transfers—those determined by the independent agency and those determined under political discretion—based upon the results reported in Khemani (2003) of contrasting political effects across these two types. Lagged transfers are used in each specification for the determination of transfers, and omitted from the deficit equation, to identify the impact of transfers on deficits. Political effects on the distribution of transfers across states are identical to that reported in Khemani (2003)—while discretionary transfers are targeted to those affiliated states where the ruling party controls a smaller proportion of seats in the national legislature (to maximize the party's representation in the legislature), transfers determined by the independent agency is consistent with promoting equity across states by curbing political influence.

The level of transfers received by state governments has a negative effect on fiscal deficit—a one percent increase in either category of per capita transfers is associated with a fall in deficit of 0.4 percent, calculated at the sample average. Hence, although the effect is not elastic, it runs counter to the received wisdom that greater transfer dependence is associated with higher deficits. Greater transfer receipts in this case appears to be indicative of greater resources available to state governments, which lowers their need for deficit financing. There is no apparent evidence of perverse political incentives for fiscal profligacy as a result of greater transfer dependence. This is an interesting result that deserves further scrutiny.

We test for other plausible political and institutional determinants of deficits at the state level that have been tested in the received literature, such as election cycles (Alesina et al. 1997; Khemani, 2004), and fragmented or divided legislatures (Poterba, 1994; Alt and Lowry, 1994; Roubini and Sachs, 1989; Perotti and Kontopoulos, 2002). Table 3 includes an additional indicator variable  $COALITION_{it}$ , which equals 1 when there is no clear majority in the state

legislature, and the executive is formed of a coalition of various political parties, and an indicator for the state election cycle.<sup>10</sup> Coalition politics at the state level and the state election cycle are not significantly correlated with state deficits, and including them in the regression does not affect the coefficients of interest. If anything, the estimated effects of partisanship become even larger once controls are included for these other political effects.

These results of the non-effect of other political variables are interesting in their own right because they seem to indicate that state-level political variables have no statistically discernable effect on deficits, although they might on the composition of spending and revenues (as reported by Khemani 2004). Instead, it is the state's political relation with the center that accounts for significant variation in its deficit.

### **5. Policy implication—delegation to an independent fiscal agency**

We have argued that the above evidence of impact of federal politics on state fiscal deficits should be interpreted as evidence of credibility problems for the national political executive. Delegation to an independent agency of sub-national debt regulation can therefore serve as a commitment device for the national government. Eichengreen, Hausmann, and Von Hagen (1999) have already initiated this idea by outlining a blueprint for delegation of decisions over debt ceilings to an independent agency in the Latin American region.

There already exists an independent fiscal agency in India that was created for the explicit purpose of curbing partisan influence, but whose power was restricted to decision-making over only one type of fiscal instrument—sharing of national revenues between the national and state governments. The Finance Commission of India was established under Article 280 of the Indian Constitution of 1950, which mandates the appointment of new members to the Commission every five years, with the primary purpose of determining the sharing of centrally collected tax proceeds between the central and state governments, and the distribution of grants-in-aid of revenues across states.

The rules of membership are detailed in the Finance Commission Act of 1951—it is to consist of a Chairman and four other members who are either qualified to be Justices in High

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<sup>10</sup> There is an emerging literature on political budget cycles which finds evidence of expansionary fiscal policies in election years in developing countries. However, Khemani (2004) finds no effect of such cycles in overall spending and deficits in the Indian states—only the composition of spending and revenues changes, possibly to target special interest groups for campaign support.

Courts, or have technical expertise in public financial matters. The appointments are formally made for a fixed term by the constitutional head of India, the President, upon the recommendation of the Prime Minister's office, in consultation with Parliament. Once appointed, the members of the Commission cannot be replaced at the discretion of the political executive. The Commission has general powers of summoning and requisitioning, and its recommendations with regard to tax devolution and grants-in-aid are legally binding, and cannot be overridden by the central cabinet of ministers or the legislature.

The Terms of Reference (TOR) of successive Commissions can be expanded by order of Parliament, but must include the determination of tax devolution and grants-in aid. The overarching objectives of Finance Commission transfers are described in every TOR in terms of promoting economic efficiency and regional equity. Thus, the powers of the agency over tax sharing and grants are based on constitutional authority and cannot easily be reversed by an act of parliament.

Interestingly, and perhaps revealingly, soon after the provision of this independent agency, the national government established another agency with very similar powers of resource distribution across states, but with far fewer constraints on partisan manipulation. The Planning Commission was set up by a Resolution of the Government of India in 1950, as a government agency within the central executive, with the Prime Minister as chairman. Its purpose is to supplement the annual budget process with a medium and long-term planning process to determine the allocation of national resources across competing needs. Its technical members are appointed directly by the Prime Minister and serve as advisors to the government, working under the general guidance of the National Development Council, which is chaired by the Prime Minister and includes all central cabinet ministers and state Chief Ministers. In particular, the formula for distribution of Planning Commission transfers across states is determined by the National Development Council and its political representatives.

Hence, while transfers made by the Planning Commission are amenable to the discretion of explicitly political agents, transfers made by the Finance Commission are at least designed to be protected from political discretion through constitutional rules. Whether these constitutional rules indeed make a difference is, however, an empirical question, because the members of the Finance Commission are ultimately appointed upon the recommendation of the Prime Minister,

and are therefore open to some degree of central political control. In fact, upon scrutiny of the membership of individual Finance Commissions from 1951 to the present we found that although every one of them included some member of the judiciary (which is known for its political independence), and one technical expert with no political experience, the remaining members tended to have had a political career either in the national or state legislatures, or to have held senior positions in central or state administrations. In addition, there have been a few instances in which an individual member has resigned in the middle of the tenure of the Commission to accept a post in a state or central government. These instances might lead us to suspect the actual independence of the Commission from the political process, although there does not appear to be a systematic bias towards either the central or individual state governments from the identity of the members.

Khemani (2003) tests whether delegation to an independent agency indeed makes a difference by contrasting the impact of partisan politics on the fiscal transfers determined by the two agencies. The pattern of evidence shows that while the distribution of transfers by the Planning Commission are consistent with the political concerns of the national political executive, the distribution of transfers by the Finance Commission counteracts the partisan influence of the national government. This evidence shows that delegation to an independent agency can be effective in controlling partisan influence.

Equally interestingly, Khemani (2003) finds an identical pattern of political impact on Planning Commission transfers as on state fiscal deficits reported here—that is, these transfers are significantly greater to those states whose governments belong to the same political party as that of the national government. Furthermore, amongst partisan states, these discretionary transfers are greater to those states where the party controls a smaller proportion of districts/seats allotted to the state in the national legislature. Politically affiliated states where the ruling party controls less than half to a quarter of the seats assigned to the state in the national legislature receive transfers that are greater by 8 to 17 percent of the sample average.

Thus, the partisan effect on state deficits is identical to the partisan effect on federal fiscal transfers that are distributed across states at the discretion of the national political executive, suggesting that similar political objectives drives the distribution of deficits across states just as they do for intergovernmental transfers. Deficit financing appears to serve as an additional

instrument of resource transfer available to the national government to target particular constituencies. In this view, perhaps the impact of partisanship on state deficits is not a reflection of credibility problems but rather the original common-pool problem within the party controlling the national government. Ultimately, we cannot empirically distinguish between the credibility and common-pool stories, but both (or either) suggest a role for delegation to an independent agency that is able to check the national executive's partisan influence. The Finance Commission in India has a track record of success in this regard, and is therefore a promising candidate for delegation of at least sub-national debt oversight, if not for consolidated government debt as well, given the possibility of an overall common-pool problem within national political parties.

However, such a policy recommendation is difficult to generalize to other countries because there is no systematic research on the political conditions under which such agencies can be created and sustained, and it is not clear that they can be created everywhere. Even within India it is difficult to address counterfactuals such as whether political authorities will agree to delegate additional powers over debt oversight to the independent agency, and whether the agency will continue to effectively curb national partisan influence even after this additional delegation. The immediate purpose of this paper is to argue that the creation of independent fiscal agencies and delegation of debt oversight to them is a fruitful policy agenda to explore, much in the spirit of an earlier agenda pursuing independent central banks. Additional research on the political conditions under which effectively independent fiscal agencies can be created, and delegated sufficient authority would usefully serve this agenda.

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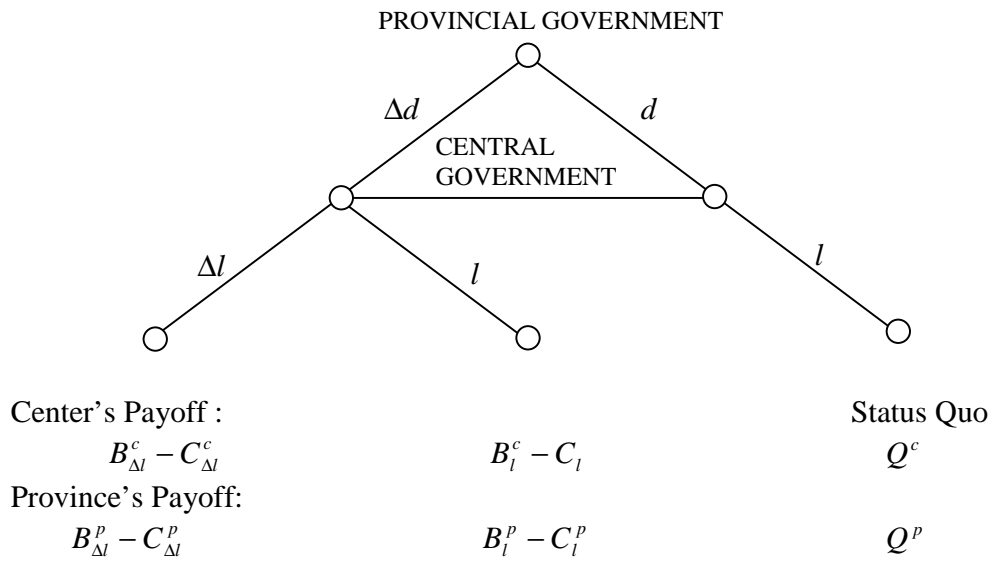
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**Figure 1.**



**Table 1. Summary Statistics<sup>a</sup>**

| <i>Variable</i>                                                                                          | <i>No. of Obs.</i> | <i>Mean</i> | <i>Std. Dev.</i> |
|----------------------------------------------------------------------------------------------------------|--------------------|-------------|------------------|
| Real fiscal deficit <sup>b</sup>                                                                         | 360                | 193.41      | 118.62           |
| Real state income                                                                                        | 360                | 4803.73     | 1807.98          |
| Total population (in thousands)                                                                          | 360                | 47396.79    | 28163.28         |
| Political affiliation<br>(=1 if center and state govt. belong to same political party)                   | 360                | 0.62        | 0.49             |
| Absolute number of seats allotted to a state in the national legislature                                 | 360                | 33.55       | 18.91            |
| Proportion of seats in the national legislature (allotted to the state) controlled by state ruling party | 360                | 0.62        | 0.31             |
| Proportion of seats controlled by national ruling party                                                  | 360                | 0.62        | 0.31             |
| Affiliation * State ruling party seats                                                                   | 360                | 0.47        | 0.41             |
| (1- Affiliation) * State ruling party seats                                                              | 360                | 0.15        | 0.26             |
| (1- Affiliation) * National ruling party seats                                                           | 360                | 0.15        | 0.26             |
| Vertical Fiscal Imbalance (Total grants/total revenues, in percentage)                                   | 360                | 37.22       | 13.93            |
| Tax sharing and grants determined by the independent agency (Non-discretionary grants)                   | 352                | 173.32      | 64.80            |
| Grants determined by central political agencies (Discretionary grants)                                   | 352                | 105.98      | 64.45            |

a. Fiscal variables and state domestic product are in per capita 1992 Indian rupees

b. Fiscal Deficit = Total current expenditure + total capital expenditure – total revenue + (loans by state government – recovery of loans).

**Table 2. Effect of partisanship on state fiscal deficit**  
(std. error in parenthesis)

| Variable                                                                                  | (1)<br>OLS<br>(w/out fixed<br>effects) | (2)<br>OLS<br>(w/fixed<br>effects) | (3)<br>OLS<br>(w/ lagged<br>fiscal<br>deficit) | (4)<br>GMM          |
|-------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------|------------------------------------------------|---------------------|
| Seats allotted to state in national legislature                                           | -0.09<br>(2.23)                        |                                    |                                                |                     |
| Political affiliation<br>(=1 if center and state govt.<br>belong to same political party) | 20.22**<br>(10.09)                     | 53.41**<br>(27.50)                 | 63.27***<br>(23.38)                            | 62.93**<br>(29.29)  |
| Affiliation * State Ruling Party<br>Seats                                                 |                                        | -69.67**<br>(29.61)                | -66.69***<br>(24.47)                           | -53.58**<br>(22.48) |
| (1- Affiliation) * State Ruling<br>Party Seats                                            |                                        | -22.56<br>(24.80)                  | -3.23<br>(20.79)                               | 8.85<br>(17.58)     |
| (1- Affiliation) * National<br>Ruling Party Seats                                         |                                        | -4.95<br>(21.60)                   | 7.86<br>(19.05)                                | 9.71<br>(20.14)     |
| Lagged fiscal deficit                                                                     |                                        |                                    | 0.43***<br>(0.08)                              | 0.41***<br>(0.05)   |
| Real state income per capita                                                              | 0.02***<br>(0.004)                     | 0.01<br>(0.01)                     | 0.01<br>(0.01)                                 | 0.01<br>(0.01)      |
| Total population                                                                          | -0.001<br>(0.002)                      | -0.001<br>(0.001)                  | -0.001<br>(0.001)                              | -0.001<br>(0.001)   |
|                                                                                           | N=360<br>R-sq=0.49                     | N=360<br>R-sq=0.65                 | N=360<br>R-sq=0.82                             | N=360               |

*Notes:* Dependent variable is real fiscal deficit per capita; \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%; Columns (1), (2) and (3) report OLS regressions with panel corrected standard errors, for heteroskedasticity, autocorrelation, and contemporaneous correlation across panels; Year effects included, and state fixed effects in all but column (1); Column (4) reports the Arellano-Bond GMM estimates, one-step robust estimates

**Table 3. Effect of partisanship on state fiscal deficit—controlling for other political determinants**

(std. error in parenthesis)

| Variable                                                                                  | (1)<br>OLS                   | (2)<br>OLS<br>(w/ lagged<br>fiscal deficit) | (3)<br>GMM                 |
|-------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------|----------------------------|
| Political affiliation<br>(=1 if center and state govt. belong to<br>same political party) | 68.82**<br>(33.04)           | 70.28***<br>(27.21)                         | 66.43**<br>(31.52)         |
|                                                                                           | -80.45***                    | -73.75***                                   | -57.13**                   |
| Affiliation * State ruling party seats<br>(1- Affiliation) * State ruling party<br>seats  | (31.45)<br>-23.14<br>(25.56) | (25.90)<br>-4.59<br>(21.55)                 | (24.01)<br>8.03<br>(17.03) |
| (1- Affiliation) * National ruling<br>party seats                                         | 1.02<br>(22.02)              | 10.52<br>(18.91)                            | 9.20<br>(18.24)            |
| Coalition government<br>(=1 if state executive consists of a<br>coalition govt.)          | -12.21<br>(15.67)            | -7.98<br>(12.15)                            | -3.87<br>(7.52)            |
| State election year<br>(=1 in the year preceding a state<br>election)                     | -6.45<br>(8.39)              | -8.12<br>(8.64)                             | -11.62**<br>(5.59)         |
|                                                                                           |                              | 0.43***                                     | 0.40***                    |
| Lagged fiscal deficit                                                                     |                              | (0.08)                                      | (0.05)                     |
|                                                                                           | 0.01<br>(0.01)               | 0.01<br>(0.01)                              | 0.01<br>(0.01)             |
| Real state income per capita                                                              | -0.001<br>(0.001)            | -0.001<br>(0.001)                           | -0.001<br>(0.001)          |
| Total population                                                                          | N=360                        | N=360                                       | N=360                      |
|                                                                                           | R-sq=0.66                    | R-sq=0.82                                   |                            |

*Notes:* Dependent variable is real fiscal deficit per capita; \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%; Columns (1) and (2) report OLS regressions with panel corrected standard errors, for heteroskedasticity, autocorrelation, and contemporaneous correlation across panels; State fixed effects and year effects included; Column (3) reports the Arellano-Bond GMM estimates, one-step robust estimates

**Table 4a. Effect of intergovernmental grants on state fiscal deficit**  
(std. error in parenthesis)

| Variable                                                                                     | (1)<br>OLS<br>(w/ state fixed<br>effects) | (2)<br>OLS<br>(w/out state<br>fixed effects) | (2)<br>GMM<br>(grants/rev.<br>differenced) | (4)<br>GMM<br>(grants/rev.<br>in levels) |
|----------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------|--------------------------------------------|------------------------------------------|
| Vertical fiscal imbalance<br>(grants/revenues)                                               | -0.07<br>(1.11)                           | -0.21<br>(0.34)                              | -0.46<br>(1.41)                            | -0.11*<br>(0.06)                         |
| Political affiliation<br>(=1 if center and state<br>govt. belong to same<br>political party) | 63.11***<br>(23.35)                       | 56.22***<br>(21.90)                          | 61.31**<br>(27.21)                         | 60.68**<br>(28.99)                       |
| Affiliation * State ruling<br>party seats                                                    | -66.42***<br>(24.57)                      | -55.39***<br>(22.59)                         | -52.50**<br>(22.22)                        | -55.40**<br>(23.01)                      |
| (1- Affiliation) * State<br>ruling party seats                                               | -3.18<br>(20.80)                          | -6.63<br>(19.65)                             | 7.73<br>(17.02)                            | 10.48<br>(17.58)                         |
| (1- Affiliation) * National<br>ruling party seats                                            | 7.97<br>(19.16)                           | 1.37<br>(17.74)                              | 8.67<br>(19.76)                            | 6.63<br>(23.63)                          |
| Lagged fiscal deficit                                                                        | 0.43***<br>(0.08)                         | 0.58***<br>(0.08)                            | 0.40***<br>(0.05)                          | 0.38***<br>(0.05)                        |
| Real state income per<br>capita                                                              | 0.01<br>(0.01)                            | 0.01<br>(0.004)                              | 0.01<br>(0.01)                             | -0.01<br>(0.01)                          |
| Total population                                                                             | -0.001<br>(0.001)                         | -0.0002**<br>(0.0001)                        | -0.001<br>(0.001)                          | -0.001<br>(0.001)                        |
|                                                                                              | N=360<br>R-sq=0.82                        | N=360<br>R-sq=0.81                           | N=360                                      | N=360                                    |

*Notes:* Dependent variable is real fiscal deficit per capita; \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%; Columns (1) and (2) report OLS regressions with panel corrected standard errors, for heteroskedasticity, autocorrelation, and contemporaneous correlation across panels; year fixed effects included; Columns (3) and (4) report the Arellano-Bond GMM estimates, one-step robust estimates; Column (3) includes grants/revenues in first difference, while column (4) includes grants/revenues in levels

**Table 4b. Effect of intergovernmental grants on state fiscal deficit—3 stage least squares**

(std. error in parenthesis)

| Variable                                                                                  | (1)<br>Fiscal Deficit | (2)<br>Non-<br>discretionary<br>Grants | (3)<br>Discretionary<br>Grants |
|-------------------------------------------------------------------------------------------|-----------------------|----------------------------------------|--------------------------------|
| Non-discretionary grants                                                                  | -0.44**<br>(0.21)     |                                        |                                |
| Discretionary grants                                                                      | -0.76***<br>(0.23)    |                                        |                                |
| Non-discretionary grants (lag 1)                                                          |                       | 0.65***<br>(0.04)                      |                                |
| Discretionary grants (lag 1)                                                              |                       |                                        | 0.49***<br>(0.05)              |
| Political affiliation<br>(=1 if center and state govt. belong<br>to same political party) | 84.22***<br>(29.51)   | -28.89***<br>(7.37)                    | 27.16**<br>(11.35)             |
| Affiliation * State ruling party<br>seats                                                 | -93.23***<br>(23.06)  | 8.34<br>(7.66)                         | -15.75*<br>(9.79)              |
| (1- Affiliation) * State ruling party<br>seats                                            | -4.76<br>(26.36)      | -8.99<br>(8.88)                        | 12.11<br>(11.44)               |
| (1- Affiliation) * National ruling<br>party seats                                         | 1.53<br>(26.65)       | -18.62**<br>(8.87)                     | 9.67<br>(11.47)                |
| Real state income per capita                                                              | -0.003<br>(0.01)      | 0.002<br>(0.002)                       | -0.01*<br>(0.003)              |
| Total population                                                                          | -0.003***<br>(0.001)  | -0.0001<br>(0.0003)                    | -0.0004<br>(0.0004)            |
|                                                                                           | N=335                 | N=335                                  | N=335                          |
|                                                                                           | “R-sq”=0.75           | “R-sq”=0.89                            | “R-sq”=0.83                    |

Notes: \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%; 3-stage least squares estimates; State fixed effects and year effects included