Does Delegation of Fiscal Policy to an Independent Agency Make a Difference?

Evidence from intergovernmental transfers in India

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Abstract

One area of fiscal policy in which several countries have delegated responsibility to an independent agency is the distribution of national resource transfers across regional and local governments. Such delegation is expected to promote equity and efficiency, and mitigate distortions created by political incentives. This paper tests whether delegation to an independent agency indeed makes a difference by contrasting the impact of partisan politics on two types of fiscal transfers to states in the Indian federation over a period of time, 1972-1995. The pattern of evidence shows that while the transfers that are determined by the central political executive are indeed distributed to favor particular states that are politically important for the central ruling party, the transfers that are delegated to an independent agency serve to constrain such partisan impact.

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1. Introduction

Normative theories of fiscal federalism postulate that intergovernmental transfers should be determined by equity and efficiency considerations, to support local governments in providing differentiated public goods to heterogeneous populations, while ensuring an even distribution of basic services across all regions (Musgrave, 1959, 1983; Oates, 1972; Gramlich, 1977). However, empirical evidence shows that political variables representing electoral incentives of public agents are significant determinants of the variation in fiscal transfers to sub-national jurisdictions within countries (Inman, 1988; Grossman, 1994; Pereyra, 1996; Worthington and Dollery, 1998; Porto and Sanguinetti, 2001; Johansson, 2003). In order to mitigate political distortions, several federations around the world have attempted to create politically independent bodies that are responsible for determining federal transfers to sub-national jurisdictions. This creates an opportunity to test the general hypothesis of whether delegation of fiscal policy to an independent agency indeed makes a difference in curbing political influence. This paper provides some answers to this question by contrasting political effects on two different channels of transfers in one large federation, India.

The Indian federation provides a valuable laboratory for this purpose because of the existence of two major channels of general purpose federal transfers to state governments: one that is determined by an explicitly political body made up of the executive heads of the central and state governments, while the other is determined by a quasi-judicial body with constitutional authority. Using disaggregated data on transfers and political variables for the major Indian states from 1972-1995, we find a pattern of evidence that shows that while the transfers that are determined by political agents are

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1 A more recent literature focuses on the inefficiencies created by local taxation due to inter-jurisdictional tax competition and mobility, that creates a valuable role for central taxation and regional distribution via grants-in-aid (Inman and Rubinfeld, 1996, provide a review).

2 The Commonwealth Grants Commission in Australia is the best example from amongst the older federations of the world. However, it is in the newer federations in Asia and Africa that decision-making over intergovernmental transfers are increasingly being delegated to an independent agency, such as the National Finance Council in Malaysia, the Revenue Mobilization Allocation and Fiscal Commission in Nigeria, and the Finance Commission in India (which is studied here).

3 While considerable empirical research exists for the effects of delegating monetary policy to an independent central bank, our understanding of this issue for fiscal policy is limited by lack of empirical evidence.
indeed distributed to favor particular states that are politically important for the central ruling party, the transfers delegated to an independent agency serve to constrain such partisan impact. These two types of transfers are by far the largest source of central assistance to the states, together constituting 30 percent on average of state revenues, and over 50 percent of state borrowing.

By using the existence of delegation in a specific area of fiscal policy—intergovernmental fiscal transfers—that is expected to be heavily influenced by political factors, this paper is able to address the broader issue of the role of institutional interventions in mitigating the effects of political opportunism. It therefore provides lessons for institutional design to address other areas of fiscal policy with costly political distortions. Specifically, it contributes a new idea to the literature on the impact of budgetary institutions on fiscal discipline which has studied the impact of delegation to different decision-makers within the government, such as centralization of authority in Ministers of Finance over budget aggregates (Von Hagen, 1991, 1992; Alt and Lowry, 1994; Poterba, 1994). Following in this vein, Eichengreen, Hausmann, and Von Hagen (1999) have suggested delegation of decisions over debt ceilings to an independent agency as a policy option for countries with fiscal instability. This paper provides empirical evidence to inform such innovative ideas for institutional solutions to politically difficult policy issues.

There is considerable evidence that political factors are significant determinants of the allocation of national resources across regions, either through direct spending by the national government or as general transfers to sub-national jurisdictions. One of the more consistent empirical findings across countries with unequal distribution of political representation across regions is that regions with higher political representation per capita receive greater government spending per capita (Wright, 1974; Porto and Sanguinetti, 2001; Ansolabehere, Gerber, and Snyder, 2002). New evidence is emerging for finer forms of political targeting at disaggregated levels of individual electoral districts.

Three features of voting at district levels have been found to be empirically significant in influencing the distribution of national resources, whether as transfers to local governments or through direct spending programs: one, the degree to which voters
are “core” supporters of the party in power at the center in that they vote largely on ideological grounds, usually measured empirically as the proportion of votes received by a ruling party; two, the degree to which voters are “swing”, that is, with weak ideological links to the party, usually measured empirically as the extent to which the political race in a district is “tight”; and three, the degree to which the electorate participates in elections (as in voter turnout) and is informed about policies. (Schady, 2000; Case, 2001; Johansson, 2003; Miguel and Zaidi, 2003; Stromberg, 2004; Cole, 2004).

For more aggregate levels of sub-national governments, such as states in large federations that receive fiscal transfers but do not correspond to electoral districts, a different set of political variables are likely to matter, if at all. The literature referred to above on the importance of political representation of regions has identified this one factor, which is usually in the nature of a time invariant region fixed effect.4 Do more varying political conditions such as electoral competition between political parties impact the distribution of general-purpose transfers to large provincial governments, to be used at the latter’s discretion, and therefore, a relatively weak instrument for targeting particular electoral constituencies? This question is relevant for large developing countries, such as India, Nigeria, Argentina, Mexico, that typically have substantial fiscal transfers flowing from central to state governments in general aid of state budgets, untied to any particular spending program, and constituting a significant proportion of state revenues (Ahmad, 1997).

In addition to contributing to the literature on institutions by testing whether delegation to an independent agency makes a difference, this paper adds to the political economy literature by deriving and estimating the impact of political incentives on general-purpose transfers to states in a large developing country. These general-purpose transfers are quite different fiscal instruments from specific purpose transfers used extensively in both developed and developing countries for particular types of spending programs such as in health, education, or for the welfare of poor households (Ahmad,

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4 Ansolabehere et al (2002) exploit variation before and after a unique event—court-ordered re-districting—to identify the effect of political representation. In general, variation over a period of a few years in representation per capita might arise from variation in population size, rather than from changes in the rules of political representation, which are relatively rare events.
1997). The difference is likely to be particularly important from a political perspective, because contrary to untied transfers in general aid of state budgets, specific purpose transfers are more likely to be “targetable” to individual political constituencies within states because of conditionalities imposed by central ministries, or more likely to be associated with the central political executive by voters because they finance programs publicly announced by the central government. For example, in India states receive transfers for various “central schemes” in health, education and poverty alleviation which they are required to spend within the conditions imposed by central ministries, and these “schemes” are prominently advertised in central political campaigns (such as drives for universal basic education, or employment guarantee for poor households). How can politics impact general-purpose transfers in aid of state budgets that are not as easily “targetable” to individual political constituencies, nor prominently associated with the central political executive?

This question has thus far not been sufficiently addressed in the literature. Grossman (1994) and Worthington and Dollery (1998) have estimated effects of a range of political variables on general-purpose transfers to states in the U.S. and Australia respectively, interpreting their results rather broadly as suggestive of the importance of “political capital” of states, but they do not derive where such “capital” comes from. Several working papers are exploring political effects on transfers to states in India, but focusing largely on the specific purpose transfers. Das Gupta, Dhillon and Dutta (2004) develop a formal model to derive how and why politics might impact transfers; they show that if spending from transfers leads to voter “goodwill” for the political party ruling the central government, then the central government targets those states with additional transfers where increased voter “goodwill” is more likely to improve its electoral objectives. They provide empirical evidence for specific purpose transfers which they argue is consistent with their model’s predictions. Rao and Singh (2000) also provide evidence that politics matters for specific purpose transfers. Singh and Vasishtha (2004) provide preliminary evidence that politics matters for general purpose transfers, using data limited to a few years, but they do not analyze why particular types of political variables matter for particular types of transfers. That is, none of these papers provide
definitive conclusions or explanations of the impact of politics on general purpose transfers.

This paper derives theoretical predictions about the impact of politics on general-purpose transfers from a model of electoral competition between rival political parties that care about representation in both state and national legislatures, where voters credit incumbent political parties for greater spending in their constituencies. General purpose transfers in India that are the focus of this paper are an intrinsic and fungible part of state government budgets, to be spent at the discretion of the political party controlling the state government, and flow systematically through bureaucratic agencies. Voters are not likely to be able to distinguish how much of state revenues comes from such transfers, or what role the central political executive plays in targeting their state with additional transfers. The model developed therefore assumes that voters credit only the state-level incumbent political party for general spending from these transfers. This assumption leads to the prediction that transfers determined at the discretion of the central political executive will be targeted to states governed by the central ruling party.5

We test our model’s predictions against competing hypotheses from different models in the literature of which states might be favored by transfers determined at the discretion of the central political executive. Consistent with our model, we find that one particular political characteristic matters above all else—whether a state is governed by the same political party that governs at the national level. We find that transfers in India that are determined at the discretion of political agents are significantly and substantially greater when a state is governed by the same political party governing at the center. Furthermore, amongst co-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. If the ruling party controls less than half of the state’s seats in the national legislature then an affiliated state receives additional transfers that are more than 30 percent of the sample average of discretionary transfers. If proportion of seats controlled by the ruling party is an indicator for party popularity, then states where the

5 This approach is in contrast to the model and empirical results in Dasgupta, Dhillon, and Dutta (2001), which also includes specific purpose transfers by central ministries, some of the political benefits from which can spill-over to the central ruling party, irrespective of the affiliation of the state government.
party controls a high proportion of seats can be characterized as “core support” states, and correspondingly, where the party controls a low proportion of seats can be characterized as “swing” states, following a large theoretical and empirical literature (Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1998; Case, 2001; Cole, 2004; Miguel and Zaidi, 2003). Our results therefore show that affiliated states that are “swing” receive more transfers, and that “swing” status matters only in interaction with affiliation.

We find evidence that transfers that are determined by the independent agency serve to constrain these partisan effects on resources available to state governments. Politically affiliated states receive lower constitutional transfers than non-affiliated states, with coefficient estimates suggesting that non-affiliated states receive additional constitutional transfers in the tune of 30 percent of the sample average of such transfers. The partisan impact on pooled transfers, adding together the two types of general purpose transfers, is insignificant. We argue that these results suggest that constitutional rules indeed act as a check on politically motivated distribution of resources by the national executive. The mandate of the independent agency is to provide equalizing transfers, with greater resources allocated to disadvantaged states. If non-affiliated states are politically disadvantaged, and likely to have fewer national resources directed towards them, whether through intergovernmental fiscal transfers or direct spending by the central government, then greater constitutional transfers would be directed to them not because of any political motives of the independent agency but because they happen to be the resource-poor states.

In the next section we provide some details of the Indian fiscal and political institutions, focusing on the nature of the independent agency, and the dynamics of electoral competition. Section 3 develops a political economy model for political influence over inter-government transfers, based upon the nature of fiscal and political institutions in India. Section 4 describes the data, and presents and interprets the empirical evidence. Section 5 concludes.
2. Fiscal and Political Institutions in India

Fiscal Institutions

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 stability, international trade, and any policies with extensive spillovers across state boundaries. Expenditure responsibilities for most public goods, such as in agriculture, irrigation, rural development, industries, basic health and education are assigned to the states, while social assistance programs, such as food subsidies, are concurrently shared with the center.\(^6\) 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 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.\(^7\) A large part of state expenditures is financed by general-purpose transfers, including both grants and share in centrally collected taxes, and loans from the central government. General purpose grants to state governments constitute about 35 percent of state revenues (Rao and Singh, 2000). Fiscal deficits of state governments are largely financed by loans from

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\(^6\) Even with subsidized food programs, where food is usually procured centrally and then distributed to the states, it is the state government that actually distributes the food to citizens. That is, the machinery of the state government is responsible for implementing most public service programs in India.

\(^7\) 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, 2001). 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.
the central government, constituting more than 65 percent of total borrowing by the 15 major states in the sample studied here. There are two central agencies determining general purpose transfers from the center to the states—(i) an independent agency, the Finance Commission, whose membership is non-political and determined by constitutional rules, and (ii) a government agency with political representation, the Planning Commission, which is chaired by the Prime Minister.

Article 280 of the Indian Constitution of 1950 mandates the appointment of a Finance 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 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.

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 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.

Although the Constitution only provides for one body to determine transfers to the states, another central agency consisting of technical experts, the Planning Commission, also makes regular transfers to states. 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. It’s 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.\(^8\) However, since new commissions are appointed according to a constitutionally established cycle, the tenure of the Finance Commission is not congruent with the electoral cycle that changes the executive government.

In the sample of 15 major states studied here, from 1972-1995, tax devolution and grants by the Finance Commission makes up about 24 percent of state revenues. Planning Commission transfers are devolved to states as a combination of grants and loans, which is institutionalized to approximate a 30:70 ratio, that is, 30 percent of total transfers are devolved as grants, and 70 percent as loans. Grants by the Planning Commission constitute about 6 percent of state revenues, and loans constitute more than 50 percent of

\(^8\) We scrutinized the membership of individual Finance Commissions from 1951 to the present and found that every one of them included one Justice (either sitting on a State High Court or the Supreme Court of India, or retired from one) and one technical expert with no political experience. However 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, but there does not appear to be a systematic bias towards either the central or individual state governments from the identity of the members.
state borrowing. Table 1 provides a summary description of these agencies and the general purpose transfers they make to states.\(^9\)

The distribution of both Finance and Planning Commission transfers across states is supposed to be formula-driven, but these distribution formulae are complex and strictly apply only to some portions of transfers, therefore leaving room for discretion within both agencies. Successive Finance Commissions have put different weights on the criteria of tax derivation, population, per capita state domestic product, and a variety of measures for relative poverty and “backwardness” of states. The overall objective of the Finance Commissions has been to provide greater resources to states that are disadvantaged in terms of generating own public resources, or have greater need for public spending (Thimmaiah, 1981; Venu, 1978; and the web page of the Finance Commission, http://fincomindia.nic.in/). Plan transfers have been devolved according to different versions of the Gadgil formula established in 1969, which puts the greatest weight on state population, but discussions within the Planning Commission have also reflected similar concerns for redistribution to resource-poor states.

The deliberation process of the Finance Commission and Planning Commission are similar—each solicits suggestions from state governments, in addition to requiring them to submit specific details about their finances and fiscal needs. However, as noted earlier, the decision-making authority of the two agencies differs fundamentally—while the Finance Commission is legally independent of other central government agencies, and makes decisions about tax-sharing and grants to states that are binding on the central government, the Planning Commission is a central government agency, working in an advisory capacity and under the general guidance of the central political executive.

If the central government makes decisions of resource transfer to regional governments based on political considerations, we would expect the evidence for this to

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\(^9\) In addition, individual central ministries make specific-purpose transfers (consisting of both grants and loans) and provide matching grants for sector projects, such as in health and education, some of which are processed through the Planning Commission. These specific-purpose grants constitute less than 10 percent of total state revenues, and the loans constitute less than 5 percent of total state borrowing (Rao and Singh, 2000). In a previous version of this paper, Khemani (2003) showed that political effects on such specific purpose transfers can be distinguished from that on general purpose transfers that become a part of state budgets.
be reflected in the pattern of distribution of discretionary transfers executed by the Planning Commission. If constitutional rules for the transfers of the Finance Commission do not make a difference, then we would expect similar political considerations to be reflected in these transfers. However, if the constitutional rules do make a difference, then we expect Finance Commission transfers to reflect the overall objectives of economic efficiency and regional equity, and not the political objectives of the central government.

Political institutions

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 national districts distributed in any manner across the states,10 is invited to form the national government, headed by a Prime Minister and a cabinet of ministers. 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. 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.

There exists a large political science literature analyzing party competition in India from which we derive the following brief description.11 A single political party dominated electoral competition in the early years of India’s democracy, namely the Indian National Congress (hereafter referred to as the Congress), largely due to the historical legacy of being the leader of the independence movement against British

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10 That is, a party does not have 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.
11 Some of the references providing good overviews and recent developments are Brass (1990), Manor (1994), and Yadav (1996).
colonial rule. However, in the late 1960s the Congress party began to face stiff challenges from rival political parties in state assembly elections, several of which were emerging regional parties with limited national standing. These regional parties began to replace the Congress as the governing party at the state level. Since the 1980s state politics has been characterized by frequent turnover in government—it is not uncommon for a party that wins a landslide of seats in a state Vidhan Sabha in one state election and to be routed in the very next election.

The Congress lost control of the national parliament for the first time in the national elections of 1977, when a new national-level opposition political party was forged through alliances between political leaders previously belonging to disparate political groups. However, it came back to power in an early election in 1980. It similarly lost control of the national parliament in the 1989 elections to a new political party created for the explicit purpose of organizing a unified opposition to the Congress, only to return quickly to power in 1991 with early elections. By the 1990s, seat control in the national parliament became increasingly fragmented across different political parties, including regional parties with their power bases at the state level. Since 1989, multi-party competition for the national parliament appears firmly established, with national parties like the Congress and BJP (Bharatiya Janata Party) leading coalition governments that depend upon the support of regional political parties.

The emergence of regional parties in India can be attributed to the nature of electoral competition along the lines of caste, religion, and linguistic identities that vary systematically across states (Weiner and Field, 1974). Chhibber (1995) and Weiner and Field (1974) suggest that there are limited ideological differences between parties along the lines of economic policy, but rather, party identity is driven by social, ethnic, and regional differences. 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).

The spending instruments available to state governments have direct impact on people’s lives, such as provision of education, health, water services, and construction of local roads. There are three large chunks that account for the bulk of central government
spending—defense, debt-servicing, and various agricultural subsidies that are actually distributed through state governments (Varshney, 1995). Thus, the politically influential fiscal instruments available to the center, subsidies, depend upon the states’ political machinery for distribution. If a party loses control of a state government it loses control over public instruments to buy political support through targeted provision of benefits. Hence, it is not surprising to note that if a party comes to power in a state (by winning a majority of seats in the state legislature), then in the next national elections that party also tends to win seats to the national legislature from that state. Additional spending by state governments might then yield benefits in the form of additional seats for the political party in power in the state, in both state and national elections. Thus, parties can be expected to care about their control of state governments, and indeed are known to do so in the Indian political literature.

In the next section we develop a simple model of electoral competition across political parties based on these Indian fiscal and political institutions, and derive the implications for politically motivated regional resource transfers by a central executive.

3. A Simple Model

We first present a basic model of intergovernmental transfers, determined under the overall objective of maximizing social welfare, and therefore reflecting standard normative considerations of equity and efficiency. We then augment the model to describe how political considerations may change the allocation of transfers across states, and obtain testable implications for the effect of political variables on these transfers.

Let $S$ denote the number of states in a federal country, where any state $s$ consists of a continuum of identical citizens normalized to one, with an exogenous level of

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12 An example from the state of Andhra Pradesh is illustrative in this context. The Congress party lost control of the state government in Andhra Pradesh in the 1983 state elections to a new regional party, the Telegu Desam. In the next national elections in 1984, even though it won an overwhelming majority of seats in the national legislature, the Congress lost most seats from Andhra Pradesh to the Telegu Desam, despite the latter’s novice status in national politics.
income $Y_s$, and preferences defined over a state-level public good $Z_s$ and private consumption $C_s$:\footnote{This basic model is adapted from Porto and Sanguinetti (2001).}

$$U_s = U_s(C_s, Z_s)$$  \hspace{1cm} (1)

The public good $Z_s$ is produced by the state government at a cost of $P_s$ per unit. The production of this public good is financed by general-purpose transfers $G_s$ provided by the central government from an exogenous endowment $R$.\footnote{We abstract from all considerations of inter-district allocations within a state because the type of transfers considered here are aggregate transfers to state budgets, and not even defined at the district level. We also abstract from all considerations of state taxation here to focus on the issue of intergovernmental transfers.} Hence, the budget constraint for the government of state $s$ can be written as follows:

$$G_s + Y_s = P_s * Z_s + C_s$$  \hspace{1cm} (2)

The state government allocates the grant as a social welfare maximizer to produce that level of the public good that maximizes the utility function given in (1), subject to the overall budget constraint given in (2). Let the indirect utility function for state $s$ (following this socially optimal distribution of resources) be denoted as:

$$V^s(Y_s, G_s, P_s)$$  \hspace{1cm} (3)

with the partial derivatives of the functions being $V_y > 0$, $V_g > 0$, and $V_p < 0$. A central agency chooses the allocation of grants $G_1, G_2, ..., G_s$, to maximize a social welfare function that gives equal weight to every citizen (with one representative citizen in each state):

$$sw = \sum_{s=1}^{S} (V^s(Y_s, G_s, P_s))$$  \hspace{1cm} (4)

The first order condition that needs to be satisfied for optimal transfers $G_r$ and $G_s$ to any two states $r$ and $s$ is given by:

$$V^r_g(Y_r, G_r, P_r) = V^s_g(Y_s, G_s, P_s)$$  \hspace{1cm} (5)
which is simply the condition that marginal benefits from additional transfers to each state have to be equal. Porto and Sanguinetti (2001) show that under fairly general specifications of utility, we have:

$$\frac{\partial G_s}{\partial Y_s} \leq 0$$  \hspace{1cm} (6)$$

that is, transfers are greater to states with lower income. Under somewhat stricter conditions, namely, that the elasticity of substitution for the utility function $U_s$ is less than one, we have:

$$\frac{\partial G_s}{\partial P_s} \geq 0$$  \hspace{1cm} (7)$$

that is, transfers will be greater to those states with higher costs of producing public goods.

Now we introduce explicit political considerations into the analysis, based upon the fiscal and political institutions existing in India. Political parties $A$ and $B$ compete for seats to the national and state legislatures, and care about representation of the party in both legislatures.$^{15}$ Without loss of generality, let party $A$ be the incumbent party at the level of the central government, whilst amongst the $S$ states in the federation, a subset $S_A$ have incumbent governments belonging to party $A$, and the remaining subset $S_B$ have incumbents belonging to party $B$.

From the description of fiscal institutions in India we assume that voters evaluate state-level political incumbents on the basis of public goods provided to them, since state governments are primarily responsible for most public goods, and that voters cannot directly credit (nor blame) the central political executive for general-purpose transfers directed to their state because of the difficulty in observing which transfers are determined at the center’s political discretion. We characterize the voting behavior of the representative citizen of any state $s$ in accordance with models of probabilistic voting

$^{15}$ In fact, as described on page 11, a party is likely to be particularly keen to have control over a state government because much of the spending instruments with direct impact on voters lies at the level of the state.
where voters evaluate incumbent political parties on the basis of their performance in office, as compared to a randomly distributed cut-off point, $\sigma_s$, whose cumulative distribution function is given by $\Phi(\sigma_s)$. We assume that the first derivative of this function, the probability density function is always greater than 0, that is, it is asymptotic at its tails, $\phi(\sigma_s) > 0$.

In addition, there is a state-specific popularity bias in favor of the national ruling party $A$, denoted by the parameter $\mu_s$. The representative voter of state $S_A$ votes for party $A$ in a state election if:

$$V^s(Y_s, G_s) + \mu_s > \sigma_s$$

On the other hand, the representative voter in a state in $S_B$ votes for party $A$ in a state election if:

$$V^s(Y_s, G_s) - \mu_s < \sigma_s$$

that is, if it does not vote for the incumbent rival party. We therefore interpret the randomly distributed cut-off point for re-election, $\sigma_s$, as the threshold for evaluating the performance of an incumbent party. Incumbent parties can win control of a state with low threshold values even at low levels of public goods.

Following (8) and (9), the probability that a state is won by the ruling party $A$ in a state $a$ in subset $S_A$, where the incumbent party is political party $A$, is given by:

$$D_a = \Phi(V^a(Y_a, G_a, P_a) + \mu_a)$$

On the other hand, for state $b$ in subset $S_B$, where the incumbent party is political party $B$, the probability that the state is won by the national incumbent, party $A$, is:

$$D_b = 1 - \Phi(V^b(Y_b, G_b, P_b) - \mu_b).$$

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16 We abstract from specific actions a state government can undertake to affect electoral success, and continue to assume that it has no instruments to strategically target resources, such as to specific districts, to effect electoral outcomes, other than maximizing utility to maximize the probability that voters will vote for them. Once again, this is because the focus of the paper is on the targeting behavior of national governments, and on instruments of aggregate spending by state governments.
From expressions (10) and (11), we have:

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\frac{\partial D_a}{\partial G_a} = \phi(V^a(Y_a, G_a, P_a) + \mu_a) V_g^a > 0
\]

and

\[
\frac{\partial D_b}{\partial G_b} = -\phi(V^b(Y_b, G_b, P_b) - \mu_b) V_g^b < 0
\]

We assume that political parties care only about their electoral objectives. The national incumbent party \(A\) chooses the distribution \(G_s\) to maximize the expected number of states where it wins elections, subject to an overall resource constraint \(R\), for such transfers, and institutional constraints on minimum transfers, \(T_s\), to all regions. The Lagrange for the national incumbent \(A\) can therefore be written as:

\[
L = \sum_{S_a} D_a + \sum_{S_b} D_b + \lambda (R - \sum_{S_a} G_a - \sum_{S_b} G_b) + \sum_{s=1}^{S_a+S_b} \eta_s (T_s - G_s)
\]

For any state \(a\) in subset \(S_A\), and \(b\) in subset \(S_B\), the following are the first order conditions of the national party’s optimization problem:

\[
\frac{\partial D_a}{\partial G_a} = \lambda + \eta_a, \quad \frac{\partial D_b}{\partial G_b} = \lambda + \eta_b
\]

The conditions in line (12) imply that the solution for \(G_b\) will be a corner solution given by any institutional constraints on the national government regarding the provision of certain minimum level of resources to each sub-national jurisdiction, \(T_b\). This is because a political party increases its chances of losing elections by providing additional resources to its rival party, and would therefore only want to transfer the minimum possible to its rivals. If the overall size of central resources \(R\) is large enough, the model predicts:

\[
G_a > G_b
\]

That is, if the national political executive has control over general-purpose transfers to states, and a large enough budget to accommodate institutional constraints of
minimum transfers to all states, it should provide greater transfers to its partisan affiliated states. Second order conditions are required on the shape of the utility and density functions to ensure that the distribution \( G_a \) across affiliated states maximizes the expected number of states where the party gets re-elected. These are derived in Appendix 1.

Given the overall resource constraint, \( R \), if there are differences across affiliated states in the popularity of the ruling party, \( \mu_s \), and if the national political executive has information about this parameter, would it target transfers more finely to particular types of affiliated states?\(^{17}\) Much of the literature on politically motivated distribution of resources has made specific predictions about how voters’ party preferences might influence distribution, as measured at the disaggregated level of electoral districts. Dixit and Londregan (1996), Cox and McCubbins (1987) and Lindbeck and Weibull (1987) provide theoretical underpinnings for when a party should target resources to “core supporters”, defined as voters with strong preferences for the party, or, to “swing” voters, defined as those with weak party preferences whose voting decision is determined by how much public goods they receive from an incumbent party.

In the empirical literature at the level of individual electoral districts, “core support” is usually measured as the proportion of votes received by a party in previous elections, and “swing” is measured as the extent to which the electoral race in the district was tight. Case (2001) interprets empirical findings of greater block grants in Albania to districts where the President received more votes in the past election as evidence of targeting of core supporters. Cole (2004) finds that state governments in India supply greater subsidized agriculture loans in election years to those electoral districts where the ruling party had a narrow margin of victory (or loss). Miguel and Zaidi (2003) find that the national ruling party in Ghana spends substantially more in those administrative districts from where it “swept” the previous elections, that is, where it won all the parliamentary seats allotted to the district. For such higher level jurisdictions that consist

\(^{17}\) This model does not yield any predictions for targeting amongst non-affiliated states because each non-affiliated state is predicted to receive only the minimum transfers that are consistent with institutional constraints, \( T^b \), (that might differ across non-affiliated states depending on their economic conditions).
of multiple single-member electoral districts, the proportion of districts won by a party can be a measure of “core support”. Thus, the empirical evidence is mixed on whether parties target those regions where they received more votes/districts, or those regions where the race was tight; presumably, the direction of impact depends upon the policy instruments and political institutions under consideration.

What is the theoretical prediction provided by this paper about the impact of party popularity on transfers to affiliated states? Let us suppose two affiliated states start off at the same level of popularity, \( \mu \). If the Lagrange multiplier \( \eta_a \) is the same for all affiliated states, the national ruling party should distribute resources across affiliated states to satisfy the first order conditions given in (14), from which we have:

\[
\frac{\partial D_{a1}}{\partial G_{a1}} = \frac{\partial D_{a2}}{\partial G_{a2}} = \lambda + \eta_a , \text{ for any two affiliated states, or,}
\]

\[
\phi(V(G^*_1) + \mu)V_g(G^*_1) = \phi(V(G^*_2) + \mu)V_g(G^*_2)
\]

(16)

where \((G^*_1, G^*_2)\) is the solution to the optimization problem. If everything is equal, between the two states, that is, the functional form of the utility and density functions are the same and they have the same income and price of public good provision, we have \(G^*_1 = G^*_2 = G^*\).\(^{18}\) Let us suppose that the centre receives new information about the party’s popularity from recent elections and finds that between two affiliated states, the party is more popular in one than in the other, that is, \(\mu_1 > \mu_2\).

We can show that re-distribution of transfers across the two states with differing levels of party popularity depends upon the slope of the density function at the point \(G^*\). If \(\phi_\sigma (G^*) < 0\), that is the initial equilibrium is at the downward sloping part of the density function then we have \(G_2 > G^* > G_1\), that is, greater transfers directed to states where the party is less popular. Alternately, if \(\phi_\sigma (G^*) > 0\), that is the initial equilibrium is at the upward sloping part of the density function then we have the opposite relation, {

\(^{18}\) Empirically, this means we would estimate impact of political changes within the same state as popularity of the party changes within the state, controlling for changes in income, and assuming change in “price” of the public good is a time invariant characteristic of states.
$G_2 < G^* < G_1$, that is, greater transfers directed to states where the party is more popular. This result is formally derived in Appendix 2.

Intuitively, if the density function is upward sloping around $G^*$ then the increase in probability of re-election with greater transfers is higher in the state with greater party popularity. Thus, if a center wants to maximize the number of states where it wins re-election, it should direct transfers to where there is greater “bang-for-the-buck” which in this case happens to be the high popularity states. Conversely, if the density function is downward sloping, then the increase in probability of re-election with greater transfers is higher in states with lower party popularity, that is, the bang-for-the-buck is greater in low popularity states. This is pictorially represented in Figure 1.

The model therefore does not make firm predictions about whether amongst affiliated states, it is the “core support” states, as defined by those states where the party is more popular, that would receive more (or less) transfers. The question is therefore an empirical one. Recent results in Cole (2004) suggest that political parties in India target services to districts where popular support for the party is lower, as demonstrated by targeting of districts where the electoral race is tight.

The central prediction of the model presented here, that co-partisanship of the state government with the national government is the critical political determinant of general purpose transfers, contrasts with another model in the literature on transfers in India (Das Gupta et al, 2004). Das Gupta et al (2004) make two different assumptions than the ones here—first, that some political benefits of transfers directly spills-over to the national government, so that it can claim credit for greater transfers even to non-affiliated state governments; and two, that states where the national ruling party wins a large proportion of seats in the state legislature are “safe”, so that providing more public resources to them will not yield additional political gains. Empirically, Das Gupta et al (2004) define “safe” states as those where the ruling party wins more than 57 percent of the seats in the state legislature, and predicts that those states where it wins close to 50 percent of the seats can be favored with transfers, irrespective of political affiliation. The model in this paper does not make firm predictions about whether states where the ruling party controls a larger or smaller proportion of districts will be favored, but does predict
that any impact of district-share, as a measure of party popularity, will matter only in interaction with co-partisan states. In the empirical work below we will test these competing hypotheses when applied to general purpose transfers.¹⁹

Finally, if delegation to an independent agency constrains political influence we expect that the political variables described above would have no impact on transfers determined by this agency, once economic variables relevant to the agency’s mandate are taken into consideration.

4. Data and Empirical Evidence

Data

Disaggregated data on the two different types of transfers—constitutional transfers determined by the independent agency, the Finance Commission, and discretionary transfers determined by the political agency, the Planning Commission—are available since 1972 in 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.²⁰ The data on intergovernmental transfers is combined with political and economic data available from other sources for 15 major states of India over a 24 year period from 1972-1995. The political data is compiled from Butler, Lahiri, and Roy (1995). State demographic and economic characteristics, and a state-level price index to convert all variables into real terms are available from a data set put together at the World Bank, which is described in detail in Özler et al (1996). Table 2 provides summary statistics for each of the variables included in the analysis.

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 are provided with extraordinary central

¹⁹ In their empirical work, Das Gupta et al (2004) test their model’s predictions using data on specific purpose transfers. As mentioned earlier, this paper does not analyze nor take a stance on political effects on specific purpose transfers except to observe that they are likely to be different from those on general purpose transfers because of their different institutional structure.
²⁰ I am grateful to Bhaskar Naidu of the World Bank’s South Asia regional division for providing me with some of this data that had already been compiled in their research groups.
transfers. We exclude the newly created states and the special states, and focus on the 15 major states that have existed since the early days of the federation.\textsuperscript{21}

\textit{Empirical Specification}

The constitutional transfers of the Finance Commission and the discretionary transfers of the Planning Commission both emphasize state population and income (or rather, it’s inverse, in order to redistribute resources to poorer states) as the main criteria for distribution across states. Various measures of poverty and “backwardness” have also been emphasized, but most often as the ranking of a state’s income level compared to others. Thus, income, population, and state fixed effects (capturing the relative position of states along the dimension of economic development) should explain a large part of the variation in these central transfers across states. In addition, variation over time may be explained by year-specific shocks to the center’s available resources for regional distribution, and hence common to all states. Hence, the econometric specification implied by a strict economic model of transfers would be as follows:

\[ G_{it} = \gamma Z_{it} + \eta_i + \lambda_t + \epsilon_{it} \]  

(17)

where \( G_{it} \) are per capita transfers, either constitutional or discretionary; \( Z_{it} \), is a vector of state economic characteristics that dominate the distribution criteria, namely, per capita state income and total population; \( \alpha_i \) represents state-level fixed effects; and \( \delta_t \), are year effects included to control for various shocks to the national economy and fiscal resources in any given year.

If the national government is able to use its political discretion in distributing transfers to states, then the model in section 3 predicts the single-most important criterion to be the party identity of the state government—whether it belongs to the same party as that at the national level. However, the model recognizes that all co-partisan states might not receive greater transfers in equilibrium because of overall resource constraints, and institutional constraints on minimum transfers to each region, and that the center might therefore target particular co-partisan states depending upon the extent of its party’s

\textsuperscript{21} 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. A sixteenth major state, Jammu and Kashmir, has been excluded because of the political uncertainties in the region that continue to this day.
popularity. Thus, indicators of party popularity are also likely to matter. Although the model doesn’t make firm predictions about the direction of impact of measures of party popularity, it does predict that these measures should only matter in interaction with affiliated states, and not in non-affiliated states.

We therefore estimate the following specification to test the model’s predictions against alternate hypotheses:

\[ G_{it} = \alpha AFFILIATION_{it} + \beta AFFIL*Natn\’lRulingParty\’sStateLegislatureSeats_{it} \]
\[ + \chi (1-AFFIL)*Natn\’lRulingParty\’sStateLegislatureSeats_{it} \]
\[ + \delta AFFIL*Natn\’lRulingParty\’sNatn\’lParliamentSeats_{it} \]
\[ + \phi (1-AFFIL)*Natn\’lRulingParty\’sNatn\’lParliamentSeats_{it} \]
\[ + \gamma Z_{it} + \eta_i + \lambda_t + \epsilon_{it} \]  

(18)

where \( AFFILIATION_{it} \) is an indicator of political affiliation that equals 1 when the incumbent party (or the leading party of a coalition government, from which the state Chief Minister comes) in state \( i \) at time \( t \) belongs to the same party as that governing at the center (or the leading party of a coalition government, from which the Prime Minister comes) at time \( t \), and 0 otherwise; the next two variables are the interaction of political affiliation and non-affiliation with the proportion of seats in the state legislature controlled by the national ruling party; the next two variables are the same interactions with the proportion of seats allotted to the state in the national parliament that is controlled by the national ruling party. Higher proportion of seats won by a party in a state in either state or national elections is a measure of greater popularity of the party.

The fixed-effects specification implies that, \( \alpha \), the coefficient on political affiliation, is identified from variation within a state from its own average transfer receipts when it is affiliated and not affiliated with the center.

The model in section 3 predicts that fiscal instruments over which the central government is able to exercise political discretion would be manipulated to distribute resources across state governments such that:

\[ \alpha > 0 \]
Amongst affiliated states if the center targets those states where the party is more popular, or “core support” states to use the terminology of the literature, we would have $\beta > 0$ and $\delta > 0$

That is, “core support” states are captured here as those states where the national ruling party wins a larger proportion of districts in the state and national legislatures. However, the opposite could also be true, that is, the party could give fewer resources to its core-support states. The model predicts that coefficients $\chi$ and $\delta$ would be statistically indistinguishable from 0 because non-affiliated states receive only minimum transfers, irrespective of the national ruling party’s popularity in the state.

Specification (18) is general enough to test our model’s predictions against several alternate and competing hypotheses. Several models of bargaining within legislatures highlight the importance of individual legislators, and therefore emphasize the importance of the number of legislators belonging to the ruling party, irrespective of affiliation of the executive government at the state level (Weingast et al, 1981; Inman, 1988; Rao and Singh, 2000). These kinds of “bargaining” models would suggest that the national ruling party’s control of state legislators is likely to be significant irrespective of affiliation, that is, $\beta = \chi > 0$. If the central assumption of our model that national parliament members cannot directly control nor claim credit for transfers to states is invalid, then we should see $\delta = \phi > 0$, that is, states with more national legislators belonging to the ruling party should receive more transfers, again, irrespective of party affiliation.

Das Gupta et al (2004) predict that states where the ruling party is close to the 50 percent mark of seats in the state legislature receive greater transfers. To test this, we create an indicator variable that equals 1 if the state ruling party controls equal to or less than 51 percent of seats in the state legislature, and test for its impact on transfers alone and in interaction with party affiliation with the national government. We replace the proportion of districts in the state legislature controlled by a party with this indicator variable, in interaction with party affiliation. Thus, we estimate the following equation:

$$G_{it} = \alpha AFFILIATION_{it} + \mu AFFIL*StateRulingParty’sStateSeatsLessThan51percent_{it}$$
+ ν (1−\text{AFFIL})^{\text{StateRulingParty’s State Seats Less Than 51\%}}_{it} \\
+ δ \text{AFFIL} \cdot \text{Natn’l Ruling Party’s Natn’l Parliament Seats}_{it} \\
+ φ (1−\text{AFFIL}) \cdot \text{Natn’l Ruling Party’s Natn’l Parliament Seats}_{it} \\
+ γ Z_{it} + η_i + λ_t + ε_{it} \quad (19)

According to Das Gupta et al (2004) we should expect \(μ = ν > 0\), or at least \(μ\) being larger in size compared to any other political impact coefficients.

If delegation to an independent agency makes a difference, then we expect to find the coefficients on the political variables statistically indistinguishable from 0 when \(G_{it}\) includes only those transfers determined by the independent agency. If delegation truly makes a difference in that it undoes any partisan impact on total general-purpose transfers available to state governments, then we should expect the political coefficients to be 0 when \(G_{it}\) includes the sum of the two types of transfers.

Results

Ordinary Least Squares (OLS) estimates of specifications (18) and (19), with clustering by state, are presented in Table 3, separately for each type of general purpose transfers considered in this paper. In Column (1) we find that discretionary transfers are directed towards affiliated states as the model predicts, and furthermore towards those affiliated states where the national ruling party controls a smaller proportion of seats allotted to the state in the national legislature. The coefficients on the interaction of affiliation with the party’s seats in the state legislature are not significantly different from 0. The results therefore suggest that representation from a state in the national legislature is a better signal of changes in party popularity than representation in the state legislature, once we control for the party identity of the state ruling party which assures a certain minimum representation of the party.\(^{22}\) The central political executive thus appears to target those affiliated states in particular where its party popularity is low, as evidenced

\(^{22}\) If we include only the proportion of seats of the national ruling party in the state and national legislatures, without any indicator for the identity of the state ruling party, we find the point estimate on the party’s control of state legislature seats to be positive but not significant, suggesting a tension between the positive effect of the seats needed to form a government, and the negative effect of popularity as measured by higher proportion of seats. These results are available upon request, and not presented here in the interest of brevity.
by lower proportion of seats in the national legislature from the state. If the ruling party controls less than half of the state’s seats in the national legislature then an affiliated state receives additional transfers that are more than 30 percent of the sample average of discretionary transfers. If the ruling party controls less than a quarter of the state’s seats in the national legislature, then an affiliated state receives additional transfers that are more than 50 percent of the sample average. Non-affiliated states receive fewer transfers irrespective of the national party’s representation in and from the state.

It might be that multicollinearity problems are preventing us from identifying the effect of proportion of state legislature districts controlled by the national ruling party, because of its correlation with party identity of the ruling state government, and with districts won in national elections. Specification (19) attenuates these multicollinearity problems by replacing districts won in a state legislature with an indicator variable for closeness to 50 percent of seats required to form a single-party government, and allows us to test our model against the one presented in Das Gupta et al (2004). Column (2) of Table 3 presents the estimates of specification (19) for discretionary transfers. We find that co-partisanship of the state government is still the critical political determinant of transfers, with no significant effect of closeness to the 50 percent mark of districts controlled by the ruling party in the state legislature. Instead, proportion of districts in the national legislature controlled by the ruling party in affiliated states continues to be significant, once again confirming the targeting of those affiliated states where party popularity is lower. We will return to discussing why in affiliated states the party’s control of seats in the state legislature appears to be a less important predictor than its seats in the national legislature, but we first discuss the results on whether delegation makes a difference.

The impact of partisanship on constitutional transfers is a striking contrast—politically affiliated states receive lower transfers, almost 30 percent lower than the sample average of constitutional transfers, which is contradictory to the predictions of the model of political opportunism. This is a surprising result, because the simplest expectation if delegation makes a difference would be for politics to have no impact. We argue that this result should be interpreted as follows: since non-affiliated states are politically disadvantaged, and therefore likely to have fewer national resources directed
towards them, whether through intergovernmental fiscal transfers or direct spending by the central government, evidence on their fiscal needs that are considered by the independent agency as part of its deliberation process (as described in section 2) is likely to reflect this fiscal disadvantage and thereby prompt the agency to provide them with greater transfers. Thus, greater transfers to non-affiliated states are made by the independent agency not because of political motives but because they happen to be the resource-poor states.

We support this argument by considering and refuting alternate hypotheses. What if a different political game is being played out within the independent agency? There is no reason to expect different political games across the two agencies, other than the potential lack of political discretion in the Finance Commission, circumscribed as it is by constitutional rules, because the two agencies are otherwise similar in that they both have a deliberation process that engages state and central governments, and they both deliberate upon similar instruments of resource transfer. For example, if political bargaining by non-affiliated states is what is driving the results for Finance Commission transfers, we should see the same effects on Planning Commission transfers because both agencies have formal consultations with state governments providing space for bargaining in both. Given the similarity between the deliberation processes across the two agencies, it does not seem possible to explain the effect of political affiliation on constitutional transfers by a model of explicit political motivation without coming into conflict with the evidence for discretionary transfers.

What if the results for constitutional transfers are driven by political affiliation of states with powerful political parties that have temporarily lost control of the national legislature, and hence register as non-affiliated for some years? We test for this by estimating whether Congress-controlled states receive the bulk of transfers, even after accounting for political affiliation, since the Congress party has been, by far, the historically dominant party in India. These results are reported in Columns (1) and (2) of Table 4. We also include vote shares for the Congress party in a state to control for voter tastes. We find no effect of Congress states on the distribution of either type of transfers, and the coefficient for affiliation remains unchanged for both types even after including the indicator variable for Congress states.
Can state affiliation of individual members of the Finance Commission explain the results for constitutional transfers? There is no reason for the individual affiliations of the members to be systematically correlated with the political affiliation between the center and the individual states, except if it were in the same direction as suggested by the model of political opportunism—that is, if the central political executive chose members from those states where it wanted resources to be targeted. Any coincidental correlation due to the existence of particular states that have been historically non-affiliated with the center and also happen to be states with a tradition of producing leading national policymakers, is unlikely to be behind these results because they hold even after including state fixed effects. Hence, even if the individual affiliation of Finance Commission members matters, it still does not explain the effect of center-state political affiliation estimated here.

We scrutinized the membership of individual Finance Commissions from 1951 to the present and found that every one of them included one Justice (either sitting on a State High Court or the Supreme Court of India, or retired from one) 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. There does not appear to be a systematic bias towards either the central or individual state governments from the identity of the members.

We therefore conclude that the only interpretation consistent with the pattern of results for both types of transfers is that while the one that is more amenable to control by political agents is indeed targeted to politically important states as predicted by a specific political economy model of central resource distribution, the other that is determined by an agency independent of political control, and with constitutional authority, indeed serves as a check on political opportunism.

If we pool the two types of transfers then the political impact almost disappears, with only a weak effect remaining for those affiliated states where the ruling party controls a small proportion of seats in the national legislature. Thus, overall, delegation to an independent agency appears to un-do partisan influence on the distribution of
resources across states in India. These results for pooled transfers are reported in Column (3) of Table 4.

*Endogeneity issues*

Estimating the potential effect of election outcomes on grants 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 transfers have an effect on elections, that is, election outcomes are influenced by transfers in past periods. We address this by using values of electoral outcomes that are determined before the start of a fiscal year, to predict fiscal transfers during the year. That is, in the regressions, the political variables used for state $i$ in year $t$ are taken from the most recent election before the start of fiscal year $t$ for which the fiscal variables are defined. The assumption is that these electoral outcomes are determined before transfers are made, and that the central political executive is likely to obtain political information from these outcomes when making its decisions for fiscal transfers for the year.

It might be argued that unobserved voter tastes and other shocks that affect both the political process of determining affiliation of the state government as well as inter-government fiscal transfers are driving the correlation between the affiliation indicator and transfers. For example, voters that have preferences for larger governments might vote for particular parties that are big spenders and also in power at the national level. However, the affiliation indicator is only partly driven by changes in state governments, and party by changes in national governments that are determined in conjunction with voters in other states. Ideally, we would like to estimate the effect of changes in affiliation arising only out of changes in the identity of the national government, that is more likely to be exogenous to a state’s own voter preferences. But in fact, a lot of the variation in affiliation in the Indian data comes from whether voters in a state elect a particular party, the Congress party, or not. The Congress party has dominated national government in India until the 1990s, although it has been frequently unseated from state governments. The Congress was driven out of power from the center by a coalition of opposition parties in the general elections of 1977 and 1990, and the states from where the non-Congress parties won the majority of their seats to the national legislature are
also likely to be the states where these opposition parties defeated the incumbent
Congress state government and took control of the state. Thus, a state is likely to be
affiliated with the center if its voters elect Congress to the state, except in the years 1977-
79 and 1990 when the opposite is true. Could the affiliation effect be driven by the
Congress-effect? In Table 4 we have already presented estimates including indicators for
a state government belonging to the Congress party, and vote shares for the Congress in
the state, and shown that these are insignificant and have no impact on the other
coefficient estimates.

We also argue that the effect of unobserved voter tastes and other shocks are
attenuated by the inclusion of state and year fixed effects. As discussed in section 2, 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 either region-
specific and largely invariant over time, or affected by time-specific shocks. In addition,
the nature of political competition revolves around access to instruments of state, and
greater public spending appears to be valuable to all types of voters.

In any case, for the central objective of this paper—to test whether delegation to
an independent agency makes a difference—concerns about unobserved voter tastes are
unlikely to create a problem. It is in fact hard to explain the opposite effect of
partisanship on discretionary and constitutional transfers by appealing to correlation of
unobserved voter tastes for public goods with both political affiliation and the size of
central transfers. Both types of transfers are general purpose transfers, and hence fungible
for the state government. The form of the empirical test undertaken here for the impact of
delegation to an independent agency is therefore robust to omitted variable bias due to
unobservable underlying voter preferences.

*Other political explanations?*

The pattern of evidence cannot be reconciled with other types of political
economy models in the literature such as a Weingast, Shepsle, Johnsen (1981) type story
of universalistic legislatures and “pork-barrel” politics, where individual legislators
bargain for greater resources to spend in their constituencies, which would predict that all
states, both affiliated and unaffiliated, tend to get greater transfers when they have more legislators from the central ruling party in either or both the state and the national parliaments. We find that partisan identity of the state government is a critical determinant of politically motivated transfers.

Another variable that has been important in the wider international political economy literature on intergovernmental transfers is per capita representation of regions in the national legislature. As discussed in section 2, since national electoral districts in India are distributed across states in proportion to their population, there is no real variation across states in per capita representation. But what if states with a larger absolute number of districts in the national legislature are the ones receiving the greatest transfers? There is large variation across states in this dimension, with the sample average number of seats 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 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. These results are reported in Columns (1) and (3) of Table 5 for each type of transfer. There is no evidence of targeting of those states that have greater absolute representation in the national legislature. Interestingly, when we take away the state fixed effects, the impact of co-partisanship for discretionary transfers becomes much larger, suggesting that some of the state effects are masking the very political effects we are trying to capture. Without state fixed effects we also see clear evidence of the equity objectives of the Finance Commission—it makes greater transfers to poorer states, in terms of income per capita.

Columns (2) and (4) of Table 5 report results from testing whether the effect of partisan affiliation is driven by the timing of state elections (which are not entirely captured by year effects because there is variation across states in when elections are held). The timing of state elections could be correlated with state expenditures, central transfers, and with the affiliation indicator. In fact, central governments may be providing greater transfers to affiliated states in an election year to influence electoral outcomes. In order to test for such electoral cycles, and the robustness of the affiliation effect to the
inclusion of the election cycle, we tried different specifications including the electoral cycle by itself and in interaction with the affiliation indicator. We find no significant effect of elections on transfers under political discretion, which is not surprising given the lack of evidence on large budget cycles around election times in the Indian states.\(^{23}\)

However, for constitutional transfers, we find a small negative effect of the election year in non-affiliated states, which implies that the additional transfer they receive in non-election years from the independent agency is slightly reduced in an election year.

The regressions reported here also control for the impact of coalition politics at the state level that might independently impact demand for public spending in a state because we include an indicator for whether the state ruling party controls less than 51 percent of seats in the state legislature. Most of the instances in which this variable equals 1 are instances where the ruling party was not able to cross the 50 percent threshold, and is leading a coalition government with support from other state parties. We tried other specifications where the indicator variable equals one for values strictly less than 50 percent for the ruling party’s seat share, and find no difference. We could argue that to some extent the state fixed-effects accounts for the proclivity of a state to have coalition governments since some Indian states have been systematically more stable than others.

Now we return to the issue of why our results show that amongst affiliated states the central political executive targets transfers on the basis of its party’s representation in the national legislature instead of the state legislature. Why does it not target those states, for instance, where it has a tenuous grip on power, as measured by controlling less than 51 percent of seats in the state legislature? This prediction by Das Gupta et al (2004) seems to be intuitively appealing.

The reason is that the effective number of political parties engaged in electoral competition at the state level in India are not always two, but often more than two, so that if a state ruling party controls less than 51 percent of seats in the state legislature it is

\(^{23}\) Khemani (2004) finds no large increases in spending or deficits in states around election times. Only the composition of taxes and spending changes, in a pattern that is suggestive of targeting special interest groups.
usually because seat control is fragmented across multiple political parties. In such a situation several factors might make it difficult for the leading political party in the state government to make political gains from additional spending—one, the party’s control over spending allocation might be weak, if other political parties are powerful; two, credit for good performance might be shared with other parties in the coalition; three, voters in the state might be fragmented in party preference (that is, different small groups of voters might have preferences for different parties) making it difficult to sway a large number of voters towards the ruling party through additional spending. In contrast, in elections for the national parliament in a state there are fewer number of political parties effectively competing. Thus, proportion of seats won by the ruling party in an affiliated state is likely to be a better indicator of the preference of voters for the ruling party.

5. Conclusion

Recently there has been a surge in empirical evidence that national politicians make decisions of regional resource allocation based upon the optimization of their electoral objectives, in addition to any normative considerations of equity and efficiency. In order to mitigate these political compulsions, several federations around the world have attempted to create independent constitutional bodies that are responsible for determining federal transfers to sub-national jurisdictions. This paper tests whether delegation to an independent agency indeed makes a difference by contrasting the impact of political variables on different types of intergovernmental transfers to states in the Indian federation.

The empirical results indicate that when national political agents have decision-making authority over the distribution of resources across states, then the distribution of

24 Chhibber and Nooruddin (2004) calculate the effective number of parties competing in a state using a widely used measure in the political science literature first advocated by Laakso and Taagepera (1979): effective number of parties = 1/\sum(seats_i^2), where \(seats_i\) is the share of seats won in the state legislature by each party or independent candidate, denoted by \(i\), in a state election. Amongst the 88 state-year observations (24 percent of the sample) for which we have the state ruling party control less than 51 percent of seats in the state legislature, about 90 percent are associated with times when the effective number of parties is 3 or more.

25 Chhibber and Nooruddin (2004) provide evidence that the number of political parties in a state is correlated with parties having a caste base, that is, with different groups of voters having caste-based attachments to different political parties.
intergovernmental transfers is influenced by political considerations. Furthermore, the pattern of evidence is consistent with a particular model of electoral competition amongst rival political parties. National political parties provide greater resources to affiliated state governments, and amongst affiliated states greater resources are targeted to those states where the party controls only a small proportion of seats in the national legislature, rather than to states that are core support bases as measured by greater support for the party in previous elections.

The effect of partisan politics on transfers that are determined by an independent agency is strikingly contrary to the partisan effect on discretionary transfers. Constitutional transfers to affiliated states are significantly lower than to non-affiliated states. We argue that this result is consistent with the mandate of the independent agency to provide equalizing transfers, with greater resources allocated to fiscally disadvantaged states, and is not the outcome of deliberate political strategy. If non-affiliated states are politically disadvantaged, and likely to have fewer national resources directed towards them, whether through intergovernmental fiscal transfers or direct spending by the central government, then greater constitutional transfers would be directed to them not because of political motives but because they happen to be the resource-poor states.

In sum, if the two sets of transfers are pooled, the partisan impact disappears. This evidence suggests that while more discretionary transfers are amenable to serve political objectives, delegation of transfers to an independent agency indeed makes a difference, and counteracts the partisan effect on resources available to state governments.

References
The word “processed” describes informally reproduced works that may not be commonly available through library systems.


Singh, N. and G. Vasishtha, 2004. “Some Patterns in Center-State Fiscal Transfers in India: An Illustrative Analysis”, Mimeo, Department of Economics, University of California at Santa Cruz, Santa Cruz


Figure 1
<table>
<thead>
<tr>
<th>Decision-making Authority for Distribution Criteria</th>
<th>Share in State Revenues and Borrowing$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constitutional Transfers:</strong> tax sharing and grants determined by an independent agency</td>
<td>Finance Commission, an independent agency whose membership and powers are determined by the Constitution, and cannot be easily overridden by the cabinet or the legislature</td>
</tr>
<tr>
<td><strong>Discretionary Transfers:</strong> grants and loans determined by political agents (Grants: Loans = 30:70)</td>
<td>Planning Commission, a central government agency appointed by the central executive to serve in an advisory capacity, and work under the general guidance of the National Development Council, chaired by the Prime Minister, and including central cabinet ministers and state chief ministers</td>
</tr>
</tbody>
</table>

$^a$ Numbers are the sample average for 15 major states over the period 1972-1995.
<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance Commission Transfers (Constitutional Transfers)</td>
<td>352</td>
<td>173.32</td>
<td>64.80</td>
</tr>
<tr>
<td>Planning Commission Transfers (Discretionary Transfers)</td>
<td>345</td>
<td>126.39</td>
<td>92.03</td>
</tr>
<tr>
<td>Real state domestic product</td>
<td>360</td>
<td>4803.73</td>
<td>1807.98</td>
</tr>
<tr>
<td>Total population (in thousands)</td>
<td>360</td>
<td>47396.79</td>
<td>28163.28</td>
</tr>
<tr>
<td>Political affiliation (=1 if center and state govt. belong to same political party)</td>
<td>360</td>
<td>0.62</td>
<td>0.49</td>
</tr>
<tr>
<td>Proportion of seats in the state legislature held by representatives of the national ruling party</td>
<td>360</td>
<td>0.46</td>
<td>0.27</td>
</tr>
<tr>
<td>Proportion of seats in the national legislature held by representatives of the national ruling party</td>
<td>360</td>
<td>0.62</td>
<td>0.31</td>
</tr>
<tr>
<td>Indicator = 1 if state ruling party controls less than 51 percent of seats in the state legislature</td>
<td>360</td>
<td>0.24</td>
<td>0.43</td>
</tr>
</tbody>
</table>

- Fiscal variables and state domestic product are in per capita 1992 rupees
- There are missing observations for some state-years in the fiscal data.
- Proportion of the total seats allotted to the state in the national legislature

Table 2
Summary Statistics

---

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Obs.</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance Commission Transfers (Constitutional Transfers)</td>
<td>352</td>
<td>173.32</td>
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</tr>
<tr>
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<tr>
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<tr>
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<tr>
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<td>360</td>
<td>0.24</td>
<td>0.43</td>
</tr>
</tbody>
</table>

- Fiscal variables and state domestic product are in per capita 1992 rupees
- There are missing observations for some state-years in the fiscal data.
- Proportion of the total seats allotted to the state in the national legislature
### Table 3
Political Determinants of General Purpose Transfers
(std. errors in parentheses)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Discretionary Transfers</th>
<th>Constitutional Transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Political affiliation</td>
<td>91.21 (47.47)</td>
<td>67.67 (29.82)</td>
</tr>
<tr>
<td>Affiliation* National ruling party’s share of seats in state legislature</td>
<td>-43.27 (26.56)</td>
<td></td>
</tr>
<tr>
<td>(1-Affiliation)* National ruling party’s share of seats in state legislature</td>
<td>-35.91 (59.18)</td>
<td>-20.27 (53.47)</td>
</tr>
<tr>
<td>Affiliation* State ruling party has less than 51% of state legislature seats</td>
<td></td>
<td>24.06 (23.44)</td>
</tr>
<tr>
<td>(1-Affiliation)* State ruling party has less than 51% of state legislature seats</td>
<td></td>
<td>0.72 (12.17)</td>
</tr>
<tr>
<td>Affiliation * National ruling party’s share of state’s seats in national legislature</td>
<td>-107.27 (56.12)</td>
<td>-105.66 (50.05)</td>
</tr>
<tr>
<td>(1- Affiliation) * National ruling party’s share of state’s seats in national legislature</td>
<td>-46.33 (32.36)</td>
<td>-45.77 (31.28)</td>
</tr>
<tr>
<td>Real state income per capita</td>
<td>0.01 (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td>Total population</td>
<td>-0.002 (0.002)</td>
<td>-0.002 (0.002)</td>
</tr>
<tr>
<td>N = 345</td>
<td>R-sq = 0.66</td>
<td>N = 345</td>
</tr>
</tbody>
</table>

**Note:** State fixed effects and year effects included; OLS regressions with robust and clustered standard errors by state; Dependent variables and state income are in per capita 1992 rupees.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Discretionary Transfers</th>
<th>Constitutional Transfers</th>
<th>Pooled Transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Political affiliation</td>
<td>78.77 (34.29)</td>
<td>-39.09 (19.38)</td>
<td>42.54 (40.02)</td>
</tr>
<tr>
<td>Affiliation* State ruling party has less than 51% of state legislature seats</td>
<td>27.69 (28.86)</td>
<td>-14.45 (13.26)</td>
<td>17.05 (35.12)</td>
</tr>
<tr>
<td>(1-Affiliation)* State ruling party has less than 51% of state legislature seats</td>
<td>0.40 (11.64)</td>
<td>-14.08 (12.01)</td>
<td>-12.50 (17.24)</td>
</tr>
<tr>
<td>Affiliation * National ruling party’s share of state’s seats in national legislature</td>
<td>-107.20 (52.38)</td>
<td>17.30 (16.40)</td>
<td>-90.57 (49.94)</td>
</tr>
<tr>
<td>(1- Affiliation) * National ruling party’s share of state’s seats in national legislature</td>
<td>-50.46 (40.76)</td>
<td>-12.55 (22.98)</td>
<td>-60.24 (57.04)</td>
</tr>
<tr>
<td>=1 if state ruled by Congress party</td>
<td>-15.75 (21.55)</td>
<td>-3.05 (9.83)</td>
<td>-20.68 (25.07)</td>
</tr>
<tr>
<td>Percent votes for Congress</td>
<td>-5.62 (3.78)</td>
<td>1.73 (2.02)</td>
<td>-4.51 (4.75)</td>
</tr>
<tr>
<td>Percent votes for Congress-squared</td>
<td>0.07 (0.06)</td>
<td>-0.02 (0.03)</td>
<td>0.06 (0.07)</td>
</tr>
<tr>
<td>Real state income per capita</td>
<td>0.01 (0.01)</td>
<td>-0.003 (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td>Total population</td>
<td>-0.002 (0.002)</td>
<td>0.0002 (0.001)</td>
<td>-0.002 (0.002)</td>
</tr>
<tr>
<td></td>
<td>N = 345</td>
<td>N = 352</td>
<td>N = 345</td>
</tr>
<tr>
<td></td>
<td>R-sq = 0.68</td>
<td>R-sq = 0.83</td>
<td>R-sq = 0.79</td>
</tr>
</tbody>
</table>

Note: State fixed effects and year effects included; OLS regressions with robust and clustered standard errors by state; Dependent variables and state income are in per capita 1992 rupees.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Discretionary Transfers</th>
<th>Constitutional Transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Political affiliation</td>
<td>108.43 (37.71)</td>
<td>70.82 (30.33)</td>
</tr>
<tr>
<td>Affiliation* State ruling party has less than 51% of state legislature seats</td>
<td>26.90 (28.89)</td>
<td>24.32 (23.38)</td>
</tr>
<tr>
<td>(1-Affiliation)* State ruling party has less than 51% of state legislature seats</td>
<td>-5.07 (21.18)</td>
<td>0.43 (12.36)</td>
</tr>
<tr>
<td>Affiliation * National ruling party’s share of state’s seats in national legislature</td>
<td>-153.69 (66.86)</td>
<td>-106.49 (49.64)</td>
</tr>
<tr>
<td>(1- Affiliation) * National ruling party’s share of state’s seats in national legislature</td>
<td>-75.67 (46.29)</td>
<td>-44.00 (31.41)</td>
</tr>
<tr>
<td>=1 for a state election year</td>
<td></td>
<td>-6.58 (8.59)</td>
</tr>
<tr>
<td>Affiliation*State election year</td>
<td></td>
<td>-8.11 (10.90)</td>
</tr>
<tr>
<td>Number of seats allotted to the state in the national legislature</td>
<td>1.09 (1.72)</td>
<td>0.71 (0.84)</td>
</tr>
<tr>
<td>Real state income per capita</td>
<td>0.003 (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td>Total population</td>
<td>-0.002 (0.002)</td>
<td>-0.002 (0.001)</td>
</tr>
<tr>
<td></td>
<td>No state fixed effects</td>
<td>Includes state f.e.</td>
</tr>
<tr>
<td></td>
<td>N = 345 R-sq = 0.43</td>
<td>N = 345 R-sq = 0.66</td>
</tr>
</tbody>
</table>

*Note:* State fixed effects and year effects included; OLS regressions with robust and clustered standard errors by state; Dependent variables and state income are in per capita 1992 rupees
Appendix 1: Second-Order-Conditions for transfer distribution across affiliated states, $G_a$, to maximize the expected number of states where the party gets re-elected:

The first derivative of the probability of re-election in an affiliated state is given by:

$$\frac{\partial D_a}{\partial G_a} = \phi(V^a(Y_a, G_a, P_a) + \mu_a)V_g^a$$  \hspace{1cm} (A1)

The second order condition to find a maximum point is that the second derivative of the probability of re-election with respect to transfers be non-positive:

$$\frac{\partial^2 D_a}{\partial G_a^2} = \phi_{\sigma}(V^a(Y_a, G_a, P_a) + \mu_a)V_g^a V_g^a + \phi(V^a(Y_a, G_a, P_a) + \mu_a)V_g^a \leq 0$$

Or,

$$\phi_{\sigma}(V^a(Y_a, G_a, P_a) + \mu_a)(V_g^a)^2 + \phi(V^a(Y_a, G_a, P_a) + \mu_a)V_g^a \leq 0$$  \hspace{1cm} (A2)

Where $\phi_{\sigma}$ is the second derivative of the cumulative distribution function and $V_g$ is the second derivative of the utility function.

To satisfy condition (A2) we need one of the following to be true:

$$\phi_{\sigma} \leq 0 \text{ and } V_g \leq 0$$  \hspace{1cm} (A3)

Or

$$\phi_{\sigma} \geq 0 , V_g \leq 0 , \text{ and } \frac{\phi_{\sigma}()}{\phi()} \leq \frac{-V_g}{(V_g)^2}$$  \hspace{1cm} (A4)

(obtained by dividing A2 by the positive and non-zero function $\phi(.)$, and then re-arranging terms). That is, where the absolute rate of change in marginal utility is greater than the rate of change in the density function.

Or

$$\phi_{\sigma} \leq 0 , V_g \geq 0 , \text{ and } \frac{V_g}{(V_g)^2} \leq -\frac{\phi_{\sigma}()}{\phi()}$$  \hspace{1cm} (A5)

(obtained by dividing A2 by the positive and non-zero function $\phi(.)$, and then re-arranging terms). That is, where the absolute rate of change in the density function is greater than the rate of change in marginal utility.
Appendix 2: Deriving conditions under which affiliated states with greater popularity receive more or less transfers:

Following from equation (16), if we have $\mu_1 > \mu_2$, and the density function is downwards sloping at the critical point $G^*$, that is, $\phi_\sigma(G^*) < 0$, then we have

$$\phi(V(G^*) + \mu_1)V_g(G^*) < \phi(V(G^*) + \mu_2)V_g(G^*)$$

(A6)

The centre would therefore try to re-distribute transfers and choose a new point $(G_1, G_2)$ such that the left-hand side of (A6) increases in value and the right-hand side falls, to satisfy the first-order condition of equality. Hence, the new solution should satisfy:

$$\phi(V(G_1) + \mu_1)V_g(G_1) > \phi(V(G^*) + \mu_1)V_g(G^*)$$

and

$$\phi(V(G_2) + \mu_2)V_g(G_2) < \phi(V(G^*) + \mu_2)V_g(G^*)$$

(A7)

In order to achieve the inequalities in (A7), and given a downward sloping density curve, the centre will re-distribute to have $G_2 > G^* > G_1$, if utility is concave at $G^*$, that is if the second derivative is less than 0, $V_{gg}(G^*) < 0$. On the other hand, if $V_{gg}(G^*) > 0$, then we need the rate of increase in marginal utility due to increase in transfers to be smaller than the rate of decrease in the density function at the point $G^*$, to have the new solution characterized by $G_2 > G^* > G_1$. From condition (A5) derived in Appendix 1 we know this has to be true. Hence if the equilibrium level of transfers is located at a downward sloping part of the density function then states where the party is more popular will receive greater transfers.

If the density function is upwards sloping at the critical point $G^*$, that is, $\phi_\sigma(G^*) > 0$, then following equation (16) and $\mu_1 > \mu_2$ we have

$$\phi(V(G^*) + \mu_1)V_g(G^*) > \phi(V(G^*) + \mu_2)V_g(G^*)$$

(A8)
The centre would therefore try to re-distribute transfers and choose the new point \((G_1, G_2)\) such that the left-hand side of (A8) decreases in value and the right-hand-side increases, to satisfy the first-order condition of equality. That is, we want:

\[
\phi(V(G_1) + \mu_1) V_g(G_1) < \phi(V(G^*) + \mu_1) V_g(G^*)
\]

and

\[
\phi(V(G_2) + \mu_2) V_g(G_2) > \phi(V(G^*) + \mu_2) V_g(G^*)
\]

(A9)

Given an upward sloping density curve, the centre will re-distribute to have \(G_2 > G^* > G_1\), if \(V_{gg}(G^*) > 0\). But from implications (A3)-A(5) of the second order condition we know that the marginal utility and density functions cannot both be increasing. Hence, with an upward sloping density curve we need to have \(V_{gg}(G^*) < 0\), and then the rate of decrease in marginal utility due to increasing transfers has be smaller than the rate of increase in the density function if we are to have \(G_2 > G^* > G_1\). We know the opposite needs to be true to satisfy the second order condition, as shown by (A4). Hence, if the density function is upward sloping we have \(G_2 < G^* < G_1\) or greater transfers to status where the party is more popular.