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Electoral Timing, Party Alignment and Tax Incentives through Intergovernmental Transfers

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Abstract: *By factoring in the role of political factors this study is an empirical attempt to assess the impact of transfers from upper to lower tier governments under situations favourable for playing pork barrel politics. Using panel data analysis we have found that impact of intergovernmental transfers depends upon the nature of transfers and if transfers are uncertain or meant for programmes that are to be completed on sharing basis, they may incentivise the lower tier governments to increase their own tax revenues thereby enhancing their fiscal space. This positive relationship is insensitive to electoral timing and party alignment thereby reducing scope for pork barrel politics by upper tier governments. The negative impact of transfers as could be inferred from 'swing voter' and 'loyal voter hypothesis' is also not empirically supported. Lower SDP and higher rural population have negative impact on own revenues of lower tier governments. Study suggests that for strengthening the fiscal space of lower tier governments increased devolutions should be made via channels that focus on outcomes of expenditures, cost sharing by lower tier governments and improving the rural economy.*

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1. Introduction

Fiscal decentralisation that characterises the relationship between different tiers of government is seldom balanced in terms of tax and expenditure assignments. As a balancing measure, the system of fund transfers from upper to lower tier governments is a widely adopted mechanism. These funds are essentially required for providing meritorious goods (Musgrave, 1959) and for addressing the vertical imbalances if any (Hunter, 1977). Oates (1999) emphasised the need for transfers from upper tier governments for 1) internalisation of spillover benefits, 2) fiscal equalisation across jurisdictions and 3) to achieve the national policy objectives like an improved overall tax

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system. A severe limitation of this widely used mechanism of intergovernmental transfers is that the grantor government bears the burden of imposing the taxes, while the recipient government receives the money for expenditure purposes. This asymmetry between the political 'unpopularity' of imposing taxes and the political 'popularity' of spending money is said to foster fiscal irresponsibility. Because lower tier governments find it easy to substitute costly tax collection by funds received from upper tier governments thereby caring less about the gap between their resources and expenditures. More specifically, according to Litvack, Ahmad and Bird (1998), such transfers may induce low 'tax effort' by lower tier governments. Bordignon, Giannini and Panteghini (2001) argue that the existence of asymmetric information between central and local governments tends to drive local jurisdictions to under-tax or overspend to gain from the equalisation scheme at the expense of other jurisdictions. Besfamille and Sanguinetti (2005) investigate moral hazard in local tax collection under the tax-sharing regime, concluding that central transfers tend to induce local governments to reduce tax efforts.

In the past few decades, there has been an increased thrust on the role of political factors on economic outcomes. Although the mechanism whereby these political factors influence the economic outcomes is not clear, there is growing empirical evidence regarding the significant role of political factors (mostly qualitative in nature) on economic variables. Tax efforts made by lower tier governments (measured in terms of tax rates, the extent of tax base, per capita revenues of lower tier governments etc.) as an economic outcome is no exception to this. This is evidenced by studies like Roubini and Sachs (1989), Inman and Fitts (1990), Alt and Lowry (1994), Borge (1995) and Falch and Rattso (1999) which show a negative relationship between political strength and variables like tax rates, deficits and public sector spending. These studies motivated us to investigate the relationship between funds transfers from upper tier governments and tax efforts of lower tier governments under different political situations. As such, unlike previous studies that test the impact of transfers from upper tier governments to lower tier governments using some economic factors as control variables, this study empirically examines the lenient tax behaviour as a possible effect of pork barrel politics.

The remainder of the study is organised as follows. The next section briefly discusses the theoretical background regarding the impact of transfers on tax revenues of lower tier governments and develops the rationale for the present study. In section 3, we review the studies relevant to the topic with special reference to the Indian economy. In section 4, the methodology is discussed followed by empirical analysis in section 5. In section 6, the results of our empirical exercise are discussed, and the conclusions are presented in section 7.

2. Theoretical Justification

In any federal system where there is a flow of formal intergovernmental grants rather than a pure system of direct expenditures, allocative and distributive considerations arise because of the possibility that such grants might distort the tax efforts or expenditure programmes of sub-national government. However, one of the desirable effects of federal fiscal transfers is that national financial resources are allocated between the competing needs of central and state governments in such a way so as to achieve optimum supply of public and merit goods to all the citizens of the federation (Thimmaiah, 1980). Oates (2005), distinct from other classifications, has classified the literature on the impact of grants into first and second generation theories. While the first generation theories are mainly concerned with allocative effects (with more emphasis on "Fly paper" effect)[1] of grants, the second generation theories are primarily concerned with the efficiency and equity implications of these grants. In the more recent literature which Oates (2005) described as second generation theories, the primary focus has moved away from explaining the allocative effects towards a broader concern with equity and efficiency effects of intergovernmental grants in decentralised federal systems. This literature finds that the effect of intergovernmental grants depends on the structure of the sub-national fiscal system (like nature of tax competition, tax assignment and types of functions performed by sub-national governments) and that the institutional arrangements for implementing intergovernmental programmes (like balance budget requirements) are important.

Three themes (fiscal competition, soft budget constraint, federal insurance and moral hazard problem) dominate this strand of literature. Studies related to fiscal competition maintain that fiscal competition enhances not only the accountability of government to citizens but also creates negative externalities that affect the level and pattern of economic activity (Oates, 2005). The negative effects come to fore because jurisdictions compete for relatively mobile capital resources, with potential for 'race to the bottom" local tax rates and public expenditure (Cai & Treisman, 2004). Studies focusing on soft budget constraints admit that lower tier governments often have a lower capacity to meet all their expenditure needs thereby creating a vertical fiscal gap which is supposed to be filled by equalising transfers from the centre. However, if these transfers are not properly designed, they can create soft budget constraints (Kornai, 1979) along with the expectations that the federal government will 'bail out' the failing sub-national government.

The third theme running in these second generation theories is labelled the "federal insurance and moral hazard problem". Intergovernmental grants

meant for sub-national governments can serve as a form of insurance against negative shocks to the sub-national economy (Gamkhar & Shaw, 2007). These transfers are typically designed as equalising transfers, i.e., a decrease in output of a state increases the net transfers received by the state. However, these equalising transfers distort states' fiscal decision-making by causing a moral hazard problem. The federal insurance against stochastic shocks may discourage states from making provisions for contingencies in their budgets such as maintaining 'rainy day' funds (Oates, 2005). Also, when states receive the equalising transfers, it typically imposes a penalty on the state if the transfers are reduced when tax revenues rise (Bareti, Huber & Lichtblau, 2002). For a recipient government, this creates a perverse incentive effect. As such, the jurisdiction avoids this penalty by slackening the enforcement of federal tax regulations.

The present study is related to this moral hazard problem theme wherein lower tier governments may decrease their revenues (in per capita terms) in response to funds received from upper tier governments. However, as already mentioned, we have introduced the political factors so as to assess whether lenient tax behaviour is associated with the political characteristics of a lower tier government. Two of the political situations that may distort the tax behaviour of a lower tier government and have been empirically tested in this study are alignment and election time. A lower tier government which is run by the same political party as the one ruling at the upper level may find it easy to bargain for extra funds and hence may substitute its revenues by transfers from the centre. There also lies the possibility that the ruling party at the top, in order to widen its political presence may direct more funds (through programmes that are identified with top layer governments) towards nonaligned states making it easier for lower tier government to avoid higher taxation.[2]

Similarly, during election years, a ruling party at lower tier may resort to tax leniency so as to garner extra political support in terms of votes. Also, there is the possibility of the significant interaction effect of these two political factors whereby an aligned state may be resorting to lenient tax behaviour during election years only.

Since for empirical verification, we are using data from the Indian federal system, we identify our lower tier governments with the Indian states in our sample and upper tier government with the central government in India. Also, the transfer of funds in India during the analysed period has been through multiple channels (having different characteristics) providing an additional opportunity to assess the impact of transfers through different channels separately in our analysis. As such, we provide a summary account of studies in this direction conducted with special reference to India.

3. Literature Review in the Indian Context

In the Indian context, among the early studies that have identified the issue of tax (revenue) efforts are Lakadwala (1967), Chanda (1965) and Bhargava (1968). These studies were followed by studies like Reddy (1975), Chelliah and Sinha (1982), Thimmaiah (1979), Oomen (1987) and Sarma (1991) which, besides emphasising the significance of tax effort in the distribution of federal transfers, also attempted to develop reliable indicators for relative tax efforts of states. With regard to the impact of federal transfers on expenditure behaviour of states, the empirical study by Bahl and Pillai (1976) was the first of its kind involving a cross-section model for 17 Indian states. This study rejected the lax expenditure behaviour of states in response to federal transfers thereby negating the 'fiscal irresponsibility' hypothesis in the Indian context.

However, the validity of inference made in this study on the basis of the lack of a relationship between statutory grants and expenditures was questioned by Rao (1977), Chelliah (1981) and Thimmaiah (1981). Their argument was that in order to make a definite statement about irresponsible fiscal behaviour, it is necessary to examine the tax effort implications of grants besides examining their expenditure impact. Following this, in 1982, a research team under the chairmanship of R.J. Chelliah from National Institute of Public Finance and Policy (NIPFP) specifically examined, for the first time, the impact of union transfers on the tax efforts of Indian states. From the empirical analysis, the study concluded that federal transfers as a whole have a dampening effect on tax efforts of sample states, though his effect may not specifically be attributed to policies proposed by the Finance Commission.

Ranjana (1984), using data from 1952 to 1977, examined the allocative effects of central transfers (excluding loan component) for the Indian economy as a whole. Allocative effects have been considered on two dimensions- expenditure and revenue dimension. Also, the overall grant structure has shown a dampening effect on the tax efforts of state governments. Sarma (1991) made an empirical effort to check the suitability of various variants of covariance models for estimating the tax efforts of states. Jha, Mohanty, and Chatterje (1995) using data for the period from 1982 to 1992 viewed the taxable capacity of the state to be given by contour function analogous to production function as used by Cornwell, Schmidt and Sickles (1990). The study concluded that there existed significant differences in the tax efforts across states and those differences were increasing over the period. Sen (1997) in his study titled "Relative Tax Efforts by Indian States" estimated the relative tax effort index of states for 15 non-special category states.

Naganathan and Sivaganam (2000) maintained that the linkage between union transfers and tax efforts of state might be of three kinds. First, in anticipation of an assured share from union transfers states may dampen their tax efforts because taxing locals is politically unattractive. Hence, instead of tapping the excess tax potential, states may substitute union transfers to meet their expenditure needs. Second, transfers may directly encourage the tax potential and hence the tax efforts of the states. Third, the effect may be neutral. The study finds that the Finance Commission transfers have discouraged the revenue efforts of the states.

Rajaraman and Vasistha (2000) examined the impact of state government transfers on tax efforts of local governments (Panchayats) using data for 1993-94. Empirical results verify the negative impact on tax revenues of lump-sum untied grants that are predictable and vary. Coondoo et al. (2001) examined the relative tax performance of 16 Indian states including 15 non-priority states and Assam (a priority state) for the period from 1986-87 to 1996-97. The results indicate that slope parameters are significant implying that with an increase in per capita state domestic product (SDP), the relative position of states in terms of tax to SDP (Tax-SDP) also increases. Purohit (2006) adopted a regression approach to compare the relative tax efforts and taxable capacity of the central government of India with average tax efforts of 19 other similar countries. The results indicate that Gujarat, West Bengal and Andhra Pradesh ranked first, second and third respectively in the tax efforts. Khemani (2002) points out that one of the prominent issues in fiscal federalism at present is the risk of fiscal indiscipline and macroeconomic instability in developing countries that are rapidly decentralising and delegating increasing powers to lower tie governments. The results show that those states whose governments belong to the same party as that ruling at the centre have higher deficits. On the other hand, states ruled by rival parties have lower deficits. This gives a clear indication of political vulnerability of national ruling parties to their partners at the state level.

Reddy (2015) using the budgetary figures of two consecutive years examined whether the implementation of the Fourteenth Finance Commission has flushed the states with additional resources or their fiscal space has been reduced. Dwibedi et al. (2016) used a different approach for comparing the tax efforts of West Bengal and Andhra Pradesh wherein they made use of National Sample Survey Office data on consumption expenditure. The authors argued that in the existing federal system of India, states largely collect their revenues through indirect taxes. As such, differences in tax efforts can largely be explained in terms of differences in consumption of goods from which indirect tax are collected.

From the studies pertaining to tax efforts in India summarised above, one finds that this issue (tax effort) in Indian finances has been studied as early as 1965 when India had not completed two decades of sovereign existence.

However, in all these studies, the impact of federal transfers on tax efforts of constituent states has been discussed with special reference to their economic and demographic characteristics. As far as political characteristics are considered, states have been treated as equal, and political factors were assumed to have no role in tax efforts of sub-national governments. Also, the relationship between fiscal transfers and tax revenues (or total revenues in general) is inconclusive. As an improvement, this study, besides testing empirically whether transfers from upper tier governments through different channels have a significant (positive or negative) impact on own revenues of lower tier governments, also examines the use of taxation powers by lower tier governments for playing pork barrel politics.

4. Methodology

From the literature pertaining to the measurement of tax incentive effects of intergovernmental transfers, three different approaches are discernible- 1) macroeconomic approach, 2) representative tax and 3) regression approach. The macroeconomic approach, also called the income approach, measures the fiscal capacity in terms of the income of a country or state. The Advisory Commission on Intergovernmental Relations (1971) states, "Most of the taxes are paid out of the current income. Unless a community is drawing down its capital stock, its income is a measure of its capacity to meet both public and private needs". Thus, as per this approach, income is a broad measure of taxable capacity. Based on this approach, many studies have used per capita tax revenue, tax income ratio, and modified tax income ratio[3] have been used as measures for tax effort.

The representative tax system (RTS) is a micro oriented approach which defines "tax capacity" (or yield of representative tax system) as the absolute amount of revenue that each state would raise if it applied an identical set of effective rates to the selected tax bases. In this method, the estimated tax yields vary only because of differences in underlying bases. Under the RTS approach, tax capacity measure is not concerned with whether an individual state is imposing a low or high tax burden compared to other states. Rather, the capacity measure pertains only to the level of economic resources in any state, which may be considered as potentially taxable, whether or not that particular state taxes those resources and regardless of the intensity with which a state utilises those taxable resources. In other words, instead of taking proxies for potential tax bases (like GSDP, the degree of urbanisation, export level etc.), a number of taxes are selected (like corporate tax, sales tax, income tax) and an appropriate base is selected for each tax, and a representative tax rate is estimated thereof.[4]

The third approach is the regression or econometric approach which is considered an improvement over traditional tax effort measures because it

establishes that in addition to aggregate income (i.e., SDP used in the denominator as a measure of tax potential in traditional methods) other factors also affect the taxable capacity of an economy. These factors are called 'capacity indicators'. Since the present study focuses on the significance of political factors as determinants of revenues, the regression approach is appropriate. Also, considering the nature of data and objectives of the study, a variant of regression analysis-panel data regression has been used. While discussing the appropriateness of this technique for measuring the tax efforts J.V. Sarma referred to techniques of the Representative Tax System (RTS) and Aggregate Cross-Section Regression and maintained that these earlier techniques fail to distinguish residual variations due to factors affecting tax effort from that due to random disturbances arising out of sampling fluctuations. Further, in the case of the RTS method, detailed data on tax revenues is needed for all individual states. The author suggests the use of panel data models which provide tools to identify the common traits among tax behaviour of states on the one hand, while on the other separates the effects of state-specific factors from that of pure random disturbance factors. Further, the problem of multicollinearity is minimised and the quality of parameter estimates might be better as the sample is purged of peculiarities of individual groups/states (Sarma, 1991).

4.1 Panel Data Regression

Since we will be using data of 14 states over (i.e. we will be having cross-sectional time series data), it will be apt to use panel regression analysis for this empirical exercise. The main advantage of having panel data is that it allows us to test and relax the assumptions that are implicit in a cross-sectional analysis. Researchers in many disciplines including economics, accounting, finance and marketing have increasingly relied on panel data to model the behaviour of individuals and firms. They have done so because panel data analysis allows them to control for temporally persistent unobserved differences among individuals or firms that in many instances may bias estimates obtained from cross-sections. Further, the problem of multicollinearity is minimised and the quality of parameter estimates might be better as the sample is purged of peculiarities of individual groups/states (Sarma, 1989). We make use of both Fixed Effects Model (FEM) and Random Effects Model (REM) specifications of panel estimation technique and the choice between the two for any particular case is made on the basis of "Hausman test". A brief introduction of these models along with the specification test is given below.

4.1.1 Fixed Effects (FEM) or Least Square Dummy Variable Method (LSDV)

In this model, we let the intercept of each cross-sectional unit (i.e., states) to vary so as to capture the individual differences that may exist among them (states). However, we assume that slope coefficients are constant across the units. We estimate the model of the type as:

$$Y_{it} = \beta_{1i} + \beta_2(X_{2it}) + \beta_3(X_{3it}) + \dots\dots + \beta_n(X_{nit}) + u_{it} \quad (1)$$

where subscript "i" stands for ith state and 't' for the t th time period observation for that particular state or to be general "i" is a cross-sectional identifier and t is time period identifier. Y represents the dependent variable, and X_j (j=1, 2, …, n) represents the explanatory variables which in this study may be political, economic or of demographic nature. To capture different values of $\beta_1$for different states, we will make use of dummy variable technique and estimate the following equation :

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \cdots + \alpha_n D_{ni} + \beta_2(X_{2it}) + \beta_3(X_{3it}) + \cdots + \beta_n(X_{nit}) + u_{it} \quad (2)$$

where $D_{2i}, D_{3i}, \dots, D_{ni}$ are $(n-1)$ dummy variables chosen for n states so as to avoid the problem of the dummy variable trap. Such that $D_{2i} = 1$ if observation belongs to the 2nd, otherwise 0. Similarly, $D_{3i} = 1$ if observation belongs to the 3rd state otherwise 0. The same approach will be followed for other states. The estimates of $\alpha_2, \alpha_3, \alpha_4 \dots\dots \alpha_n$ will show how intercept terms for 2nd, 3rd,… and nth state respectively differ from intercept term of arbitrarily chosen first reference state.

Maddala and Lahiri (2012) stated two important arguments in connection with the use of FEM. First, as is common in the analysis of variance literature, if we want to infer only a chosen set of cross-sectional units, then we should treat β_{1i} as fixed to capture their specific characteristics. On the other hand, if we want to make inferences about the population from which the cross-sectional data was drawn, we should treat β_{1i} as random. The second argument applies to the cases where we have some time invariant variables (like race, gender and years of schooling) as explanatory variables. In such cases, the basic equation will look like:

$$Y_{it} = \beta_{1i} + \beta_2(T_{it}) + \beta_3(X_{3it}) + \dots\dots + \beta_n(X_{nit}) + u_{it} \quad (1.1)$$

where T represents the time-invariant variable. If we estimate the above equation using the FEM, there is no way we can estimate the parameter β_2 because β_{1i} captures the effect of T_{it}. In this case, we have to use REM.

4.1.2 Random Effects Model (REM) or Error Components Model (ECM)

For robustness of our results, we will also try to estimate the coefficients using the alternative approach where instead of using too many dummy variables, we assume that intercept term is a random variable with a mean β_1 and intercept term for the individual state can be expressed as $\beta_{1i} = \beta_1 + \varepsilon_i$ such that i=1,2 ,3,……n (number of states) where β_1 represents the common mean value for intercept and ε_i represents the individual differences in the intercept term for each state. To obtain their estimates, we consider the following models:

$$Y_{it} = \beta_1 + \varepsilon_i + \beta_2(X_{2it}) + \beta_3(X_{3it}) + \ldots\ldots + \beta_n(X_{nit}) + u_{it} \quad (3)$$

$$Or \quad Y_{it} = \beta_1 + \beta_2(X_{2it}) + \beta_3(X_{3it}) + \ldots\ldots + \beta_n(X_{nit}) + u_{it} + \varepsilon_i \quad (4)$$

$$Y_{it} = \beta_1 + \beta_2(X_{2it}) + \beta_3(X_{3it}) + \ldots\ldots + \beta_n(X_{nit}) + \omega_{it} \quad (5)$$

The composite error term ω_{it} consists of two components, ε_i, which is cross-sectional or individual specific and u_{it} which is the combined cross-sectional and time series error component.

The arguments in favour of REM are that the LSDV method often results in a loss in a large number of degrees of freedom (in case the number of cross-sectional units is large) and it also eliminates a large portion of total variation under certain conditions. Also, $(\beta_1 + \varepsilon_i)$ represents a total of several factors specific to cross-sectional units and thus it represents 'specific ignorance' and can be treated as a random variable by the same argument whereby we treat u_{it} (representing 'general ignorance') as a random variable. This is done in the case of REM and not in LSDV.

4.1.3 Hausman Test

While dealing with panel regression, an important issue that arises is to choose between FEM and REM. The appropriate choice of the model hinges on the assumption one makes about the likely correlation between individual or cross-section specific error component (ε_i) and the regressors on the right hand side. As Wooldridge contends, "In many applications, the whole reason for using panel data is to allow the unobserved effect to be correlated with the explanatory variables." If ε_i is correlated with any of regressors (X_{kit}),

the random effects estimator is inconsistent while the fixed effects estimator remains consistent. Thus, in a large sample we expect that the fixed effects estimator converges to a true parameter value while the random effects estimator converges to some value other than the true parameter value. Therefore, in case there exists some correlation between ε_i and any of regressors (X_{kit}), one could expect that there will be significant difference between random and fixed effect estimates. Using this logic, Hausman (1978) developed a test to check for any correlation between ε_i and any of regressors in a random effects model. The test compares the coefficient estimates of random effects with those of fixed effects with the null hypothesis that FEM and REM estimates do not differ significantly, or in other words, there is no correlation between ε_i and any of regressors. Since there can be one or more than one regressors in a panel regression for comparison of estimates, we can use both t test (in case comparison is made for a single variable estimate) and F-test or chi square test. But what is commonly used in case of the Hausman test is a statistic with chi square distribution which jointly tests how close the differences between pairs of coefficients (i.e., FEM and REM coefficients) for various regressors are close to zero.

5. Empirical Analysis

In this section, we present a detailed account of our empirical exercise regarding the impact of intergovernmental transfers (aggregate and disaggregate terms as transferred through different channels) on per capita revenues (taken as a proxy for tax effort) of Indian states using regression approach.

5.1 Sample

At present, the Indian Union comprises 29 states and seven union territories including four newly created states (Jharkhand, Uttarakhand, Chhattisgarh and Telangana,) and one small state (Goa) which was upgraded from union territory status in 1987.[5] Also, three states of the Indian Union (Assam, Nagaland and Jammu and Kashmir) were given special category status in 1969. This status was accorded to other states at different points of time, and this category now comprises 11 states[6], with Uttarakhand being the latest addition to list in 2011. These states have been given special attention and additional funds of different magnitudes channelled to them with due consideration to their hilly and difficult terrain, low population density sizeable share of the population as tribal, strategic location along borders, economic and infrastructural backwardness and non-viable nature of state finances.

Since the present study aims at determining the impact of intergovernmental transfers on the revenues of Indian states, special category states cannot be taken at par with non-special category states as the former may be having different taxable capacities because of different socioeconomic and geographic conditions. In order to ensure a homogeneous sample, we exclude this group from our list of sample states. Leaving this group of special category states and newly born states, our sample reduces to a set of 14 states that may be treated as homogeneous for the devolution of central funds. The 14 sample states considered for analysis are: Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

5.2 Variables and Data

The present study entails the use of political, economic and demographic variables. While economic variables considered are mostly standard variables as used in the field of economics, the political variables constructed are proxy or dummy variables that could catch the political behaviour of agents as they act in the process of federal transfers. We have classified the variables into three different categories: political, fiscal and demographic. Fiscal and demographic variables are as per the definition adopted in the budget and census documents of the government of India.

For political variables, we have made use of proxy variables based upon the election timing and affiliation between political parties ruling at different levels. The two political variables used have been defined as:

a) Legislative Assembly Election Year Dummy (LAED)

If elections for the state assembly are supposed to be held during a financial year, there is the possibility that ruling party at the centre may channel additional funds towards politically important states. If elections are supposed to be in the very beginning of a financial year, the preceding financial year may witness increased fund flow and lax tax efforts on the part of states. On the other hand, if elections are supposed to be in the latter half of the current fiscal year, additional funds may be channelled during the current financial year. If such situations are to be captured simultaneously, it would be tantamount to considering two years for a single state election that might distort the results. To avoid labelling two consecutive years as election years, we consider a financial year to be an election year if either election was held in the latter half of that year or in the first half of next year.

b) Alignment

This variable captures the nature of political affiliation between the party (or coalition group) at the centre and ruling party (or coalition group) at state. Considering the political institutions of Indian politics, various types of affiliations are possible between the government at the centre and government at the state level. For lucidity purposes, we have defined two dummy variables for alignment as: a)Alignment dummy of type I(hereafter ALG1): if the ruling party at the centre (or leading coalition party in case of coalition government at the centre) is same as that of ruling party (or leading coalition party in case of coalition government at the centre) at state level we say state is having an alignment of type I. b) Alignment dummy of type II (here after ALG2): This type of alignment, besides including the relationships of nature captured by ALG1, also considers the situations in which ruling party at the centre (or leading coalition party at the centre in the case of a coalition government) is a coalition partner at the state level, but is not the leading coalition party at state. ALG2 is included to capture, if significant, the influence of a party ruling at the state and coalition partner at the centre but is not the leading coalition party. Otherwise, the need would have arisen to assume that a party of such a nature has insignificant influence without actually checking its empirical validity.

The data for variables used was collected for 33 financial years stretching from 1980-81 till 2012-13. We have chosen this period for analysis because data for some federal transfers in the disaggregated form in the case of few states included in the study is not available for some years before 1980-81. We used secondary data only, and sources of data for variables used include government publications and official web sites of the Reserve Bank of India, Election commission of India and Census India.

5.3 Econometric Specification for the Present Study

The general representation of the empirical panel model used is presented in equation (6).

$$Y_{it} = \beta_{1i} + \beta_2(pol_{it}) + \beta_3(fis_{it}) + \beta_3(dem_{it}) + u_{it} \quad (6)$$

i= 1, 2, …, 14;
t= 1980-81, …, 1912-13

where subscript 'i' stands for i^{th} state and 't' for the t^{th} period observation for that particular state or to be general 'i' is a cross-sectional identifier and 't' is period identifier. Y represents the dependent variable which could be

any measure for states' revenues in per capita terms (per capita tax revenues, per capita total revenues). 'Pol' refers to a vector of political factors that may affect revenues of states. 'fis' and 'dem' respectively represent vectors of fiscal (like per capita revenue expenditures, GSDP) and demographic (like rural population) factors that are supposed to affect the revenue collections of states.

6. Results and Discussion

We started with four different panel regression specifications wherein we used per capita tax revenues as the dependent variable and different combinations of central transfers as explanatory variables. Central transfers were used in both aggregate and disaggregate forms and were further classified based upon the route of transfer (Finance Commission and non-Finance Commission transfers) so as to have a clear idea of the impact of different kind of transfers on per capita tax revenues. The first specification is presented in equation (7).

$$Y_{it} = \beta_{1i} + \beta_2(ALG1_{it}) + \beta_3(LAED_{it} * ALG1_{it}) + \beta_4(LAED_{it} * (1 - ALG1_{it})) + \beta_5(PSDP_{it}) + \beta_6(PCRX(-1))_{it}) + \beta_7(SHPS_{it}) + \beta_8(PCGP_{it}) + \beta_9(PCGN_{it}) + u_{it} \quad (7)$$

After making changes in the set of independent variables, we formed the second, third and fourth specifications. The results of the analysis for all four specifications tested are presented in Appendix 1 and 2. In all the four models, using likelihood ratio test, both F and chi-square statistics are significant implying that state-specific characteristics have a significant impact on per capita revenues. The results reveal that state domestic product and revenue expenditure with one period lag are positive and significant (at 1% level of significance). This implies that states' capacity to raise the revenues is positively related to SDP and while raising their tax revenues, they assign due weightage to their last year's revenue expenditure. Share of agriculture in SDP although positively related is significant at different levels of significance for different models thereby implying uncertainty about its true nature. This may be due to its different impacts on revenues at different levels of development. In specification 4, we added the variable proportion of the rural population to capture the backwardness of a state. The coefficient for this variable is negative and significant. This maybe due to the low income of the rural population that, in turn, decreases per capita revenues of states.

The coefficients of fiscal transfer variables make important revelations regarding the impact of different kinds of transfers on per capita revenues. Model 1 shows that grants routed through the Planning Commission in

aggregate form have positive and significant impacts on revenues (per capita terms) while grants routed through the Finance Commission (in aggregate form) have insignificant, although positive, impact on per capita tax revenues. Thus, grants through different channels exhibit different impacts on fiscal space for states. This result is further confirmed by models 2, 3 and 4 wherein we have taken grants in disaggregate form for both channels. Discretionary grants (involving CSs and CSSs) and grants for state plans show significant positive impact on per capita tax revenues. This may possibly be due to the uncertain nature of these transfers and also for the reason that to avail such funds; states have to contribute a proportion of total expenditure under CSSs. To arrange for state contribution, states may be increasing their revenue efforts thereby increasing per capita tax revenues. Grants through the Finance Commission are characterised by certainty (because of legislative roots) and also of anuntied nature because of which states feel free to lax their efforts for revenue collection that results in a decrease in tax revenues. In model 3, besides grants, we also introduced per capita share in a central pool of divisible taxes and the coefficient for this also turns to be insignificant implying that it also fails to induce higher tax efforts on the part of states, probably for the reasons given for the case of grants.

In the case of political variables, the results show consistency in all the four models. The alignment variable of type I (ALG1), wherein we consider relatively strong political affiliation only, has an insignificant coefficient in all four models as shown in Appendix 1 and 2. It implies that aligned states compared to nonaligned states do not show lax behaviour when it comes to raising tax revenues. As such, the claim that relatively strong political affiliation with the central government induces a state to show lenient behaviour in taxing resources and expects more from central government transfers is not empirically supported. To capture the effects of relatively low strength political affiliations, we introduced the alignment variable of type II. The results are presented in Appendix 3 and 4. Changing alignment to type II does not significantly change the results and the claim that alignment does not induce lax behaviour stands valid in this case. We also checked for the presence of such possible lax tax efforts on the part of states during election years. As presented in Appendix 1, 2, 3 and 4, the coefficients for an interaction effect between alignment (of both types) and election year are not significant. It implies whether a state is aligned with the central government or not; it does not move towards significant tax cuts during election years for political gains. Thus, the claim that aligned states resort to significant tax reductions during election years as an instrument to woo voters is not empirically supported.

For checking the robustness of our above results, we introduced our dependent variable in ratio form. In the first case, we used the ratio of grants

received and total non-tax revenues and regressed it on explanatory variables other than grants (represented by equation 8).

$$PGNT_{it} = \beta_1 + \beta_2(ALG1_{it}) + \beta_3(ALG1_{it} * LEED_{it}) + \beta_4((1 - ALG1_{it} * (LEED_{it}) + \beta_5(PSDP_{it}) + \beta_6(RUPP_{it}) + \beta_7(SHNP_{it}) + u_{it} \quad (8)$$

The results (results presented in Appendix 5) reveal that this ratio does not significantly change because of alignment or election year dummy. It implies that the proportion of grants in total non-tax revenues continues to remain almost the same thus negating any disproportionate change in total non-tax revenues. In the case second, we have taken the ratio of share in central taxes to total tax revenues as the dependent variable (Equation 9).

$$SCPT_{it} = \beta_1 + \beta_2(ALG1_{it}) + \beta_3(ALG1_{it} * LAED_{it}) + \beta_4((1 - ALG1_{it}) * LAED_{it}) + \beta_5(PSDP_{it}) + \beta_6(RUPP_{it}) + \beta_7(SHNP_{it}) + u_{it} \quad (9)$$

Again, for political variables, coefficients are insignificant implying that there occurs no disproportionate change in total tax revenues because of alignment or election year dummy. However, in the second case, the coefficient for the rural population is positive and significant. This may be because of relatively higher transfers for backward states through the Finance Commission.

Following the same procedure, we introduced per capita revenues as the dependent variable in four different models. Results of analysis are presented in Appendix 6 and 7. F and chi-square statistics of likelihood ratio test revealed a significant impact of state-specific characteristics thereby necessitating the use of different intercept terms to capture state-specific effects. In all the four models, per capita state domestic product and previous year's revenue expenditure are positively related with per capita revenues, and coefficients are significant at 1% level of significance. Thus, behaviour, in this case, is similar to per capita tax revenues. In the case of share of the primary sector in SDP, the coefficient is having positive sign in all four models but for model I, it is significant at the 5% level of significance, for models III and IV it is significant at 10% level of significance, while for model II it is not significant even at 10% level of significance. Thus, this variable coefficient changes its behaviour with a change in the model. As such, nothing conclusive could be said about the impact of SHPS on total revenues in per capita terms. In the case of fiscal explanatory variables representing various kinds of financial flows from the centre, the results are the same as in the case of PCOR. The transfers through the Planning Commission (both in aggregate and disaggregate form) show a positive and significant impact on revenues (in per capita terms). The transfers through the Finance Commission show an insignificant impact on per capita

revenues. Backwardness of the state as captured by rural population percentage (model 3) continues to show a negative impact on per capita revenues at 1% level of significance. In the case of the political variable election year for aligned as well as nonaligned states, the coefficients are insignificant. This implies that election timing does not significantly increase or decrease per capita revenues, and this behaviour does not change when we shift from aligned to nonaligned states. In the case of the alignment variable, the coefficient shows a significant impact on revenues (per capita) at 1% level of significance in case of model I, at 5% level of significance in the case of model III and model IV and at 10% level of significance in case of model II. So, it is sensitive to model specification consequent to which no valid inference could be drawn regarding its impact on total revenues of states' in per capita terms.

7. Conclusions

There are theoretical reasons to believe that transfers from upper to lower tier governments may induce low tax efforts resulting in low per capita tax revenues for lower tier governments. Furthermore, theoretical models from political economy also provide a plausible explanation regarding accentuation of this negative relationship through pork barrel politics. This study is an attempt to test the empirical validity of these arguments. The empirical results have made different revelations regarding the impact of transfers from upper tier governments on revenues of lower tier governments. First, we could not find empirical support for negative impact and the second impact on revenues is not the same for different kind of transfers. If transfers are of a certain nature, they do not have a significant impact on revenues of lower tier governments. If transfers are uncertain or related to expenditures done on a sharing basis, then instead of a negative impact, there is a positive impact of transfers on revenues of lower tier governments. Further, even if it is election time or upper and lower tier governments are aligned, the relationship between two is not distorted significantly. In other words, the dampening tax effort argument is not empirically supported even during situations favourable for playing pork barrel politics. This result stands whether the transfers are considered in aggregate or disaggregate terms (based upon channel of transfers). Among the variables considered, only the rural population negatively affects the revenues of lower tier governments. As such, results warn that using the dampening tax effort argument as a justification for a reduction in transfers from upper to lower tier governments may prove harmful by squeezing the fiscal space of lower tier governments and consequent reduction in development expenditures, especially in the social sector. In fact, any reduction will further accentuate the problem of dampening revenues for

states by adversely affecting their state domestic products. Further, continuing with the increasing quantum of such transfers, especially those meant for rural development, will address the problem of poor revenues associated with the rural population. In view of the fact that non-Finance Commission transfers (more specifically transfers for schemes executed on sharing basis) provide an incentive for higher tax efforts, it is suggested quantum of such transfers should be increased. Also, increasing the quantum of transfers for programmes specifically meant for rural areas will address the problem of poor revenues associated with larger rural population percentages. To conclude, resorting to squeezing of fiscal space of states by decreasing the transfer of resources and justifying it on the basis of disincentive effects will adversely affect the state economies.

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Notes

1. A large body of empirical literature available shows that the stimulus to the local public expenditure from lump-sum and general purpose non-matching grants far exceeds the effect of an equal increase in private income (Gramlich, 1977; Hines & Thaler, 1995; Baily & Connolly, 1998). This empirically observed response of public expenditure to lump-sum grants is known as the 'flypaper effect' reflecting the notion "money sticks where ithits".

2. The theoretical models (Lindbeck & Weibull, 1987, 1993; Dixit & Londregan, 1996, 1998) which favour swing voter hypothesis argue that voters tend to shift the party preferences depending upon the consumption levels they are offered. As such, there is a tendency that during election years, in order to vow the voters ruling party may resort to tax leniency to gain additional votes.

3. It involves the measurement of the ratio between relative tax effort and relative fiscal capacity defined as:

$$Relative\ tax\ effort\ of\ r^{th}\ state\ = \frac{T_{pr}}{\sum \frac{T_{pr}}{n}} \times 100$$

$$Relative\ fiscal\ capacity\ of\ r^{th}\ state = \frac{\mathrm{Y_{pr}}}{\sum \frac{\mathrm{Y_{pr}}}{\mathrm{n}}} \times 100$$

where r =1, 2, 3, …, n (no. of states/regions) Y_{pr} = per capita income of r^{th} state, T_{pr} = per capita tax revenue of r^{th} state.

4. The procedure is carried out in the following steps:

a) As a first step, identify the major tax sources and respective bases for them. For example, land revenue and agricultural income tax, motor vehicle tax, electricity tax, stamp duty and property tax etc.

b) Collect data on respective tax bases for a set of taxes chosen as representative.

c) Estimate the average tax rate as:

$$T_{jy} = \frac{\sum_{i=1}^{i=s} T_{ijy}}{\sum_{i=1}^{i=s} TB_{ijy}}$$

Where T_{jy} measures national average tax rate for tax source j (j=1 to j=n) in year y
$\sum_{i=1}^{i=s} T_{ijy}$= Sum of tax revenues of all states (s in total) from source j in year y
$\sum_{i=1}^{i=s} TB_{ijy}$ = Sum of tax bases of all states for revenue source j in year y

d) In this step we apply the average tax rate on respective tax bases (as calculated in step 3) to calculate the provincial/state potential tax revenue from each source j in each year y. Mathematically it is given as

$$PTR_{ijy} = T_{jy} \times TB_{ijy}$$

where PTR_{ijy} = Potential tax revenue of province/state i from source j in year y; TB_{ijy} = Tax base of province/state from source j in year y.

e) We construct an index for fiscal effort (IFE_{ij}) for tax revenue of province/sate i from source j in year y as:

$$IFE_{ijy} = \frac{T_{ijy}}{PTR_{ijy}}$$

Then from above we overall index of fiscal effort for province i in year y as

$$OIFE_{iy} = \frac{\sum_{j=1}^{j=n} T_{ijy}}{\sum_{j=i}^{j=n} \mathrm{PTR}_{ijy}}$$

OIFE equal to 1 implies average tax effort, greater than one above average tax effort and less than one implies below average tax effort of the state concerned in a particular year.

5. The formation of Andhra state on linguistic basis in 1953 was followed by similar demands consequent to which Nehru announced the formation of three member States Reorganisation Commission (December 29, 1953) to study the question of reorganisation of states. Following its recommendations States, Reorganisation Bill came into force in November 1956, besides doing away with the four-category state classification, provided for the creation of 14 states and six union territories. There after the demand for creation of new states, reorganisation of boundaries and creation of new states continued consequent to which a number of Indian states kept on increasing. Telangana is the youngest state (29th) of Indian Union and it was inaugurated formally as the 29th state of India on June 2nd 2014.

6. These include eight states of northeast plus Jammu and Kashmir, Himachal Pradesh and Uttarakhand.

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Appendices

Appendix 1: Coefficient estimates for models I and II having PCOT as dependent variable

Explanatory variables	**I**		**II**	
Alignment (ALG1)	30.505	(38.527)	19.035	(36.537)
(Election year) × (Alignment)	0.384	(60.251)	53.813	(58.416)
(Election year) × (Non alignment)	-27.946	(48.723)	2.369	(45.331)
State Domestic product (per capita terms)	3.290*	(0.423)	3.697*	(0.402)
Per capita Revenue expenditure (one period lag)	0.242*	(0.034)	0.233*	(0.034)
Share of primary sector in GSDP(SHPS)	4.589*	(1.758)	2.966***	(1.628)
Per Capita plan Grants (PCGP)	1.207*	(0.179)	---	----
Per capita Non Plan grants (PCGN)	0.248	(0.233)	---	---
Per capita grants for state plan schemes (PCGS)	---	---	0.863*	(0.255)
Per capita discretionary grants (PCGD)	---	---	1.275*	(0.376)
Per capita grants through Finance commission (PCGF)	---	---	-0.360	(0.440)
Constant	-622.889*	(167.808)	-595.248	(204.494)
Cross Section Chi Square	628.175*		620.927	
Cross Section F	101.327*		112.692*	
Adjusted R Squared	0.667		0.882	
F Statistic	351.283*		318.266*	

t - ratios of respective statistics given in parentheses
PCOT= Per capita own tax revenues
* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance

Appendix 2: Coefficient estimates for models III and IV having PCOT as dependent variable

Explanatory variables	**III**		**IV**	
Alignment (ALG1)	28.847	(37.066)	31.377	(37.580)
(Election year) × (Alignment)	50.620	(58.363)	-26.367	(58.312)
(Election year) × (Non alignment)	6.627	(45.379)	-18.755	(47.361)
State Domestic product (PSDP)	3.853*	(0.418)	2.534*	(0.441)
Per capita Revenue expenditure (one period lag)	0.213*	(0.037)	0.176*	(0.034)
Share of primary sector in GSDP	3.350**	(1.642)	4.088*	(1.721)
Per capita discretionary grants (PCGD)	1.171*	(0.383)	----	-----
Per capita grants for state plan schemes (PCGS)	0.683**	(0.286)	----	-----
Per capita grants through Finance commission (PCGF)	-0.594	(0.470)	-----	-----
Per Capita share in Central taxes	0.141	(0.101)	------	-----
Per capita total grants (PCGT)	---	---	0.976*	(0.137)
Percentage of rural population (RUPP)	---	---	-46.594*	(8.196)
Constant	-608.304*	(84.764)	3139.915*	(664.276)
Cross Section Chi Square	528.513*		517.511*	
Cross Section F	82.312*		71.257*	
Adjusted R Squared	0.933		0.867	
F Statistic	231.9113*		366.506*	

t - ratios of respective statistics given in parentheses PCOT= Per capita own tax revenues

* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance

Appendix 3: Estimated coefficients for models I and II with PCOT as dependent variable (ALG2)

Explanatory variables	**I**		**II**	
Alignment (ALG2)	7.686	(36.634)	0.089	(34.773)
(Election year) × (Alignment)	-16.294	(53.257)	25.85	(50.581)
(Election year) × (Non alignment)	-17.948	(53.503)	16.794	(50.291)
State Domestic product	3.331*	(0.421)	3.744*	(0.400)
Per capita Revenue expenditure (lag 1)	0.237*	(0.034)	0.230*	(0.033)
Share of primary sector in GSDP (SHPS)	4.645*	(1.772)	2.958***	(1.646)
Per Capita plan Grants (PCGP)	1.193*	(0.179)	---	----
Per capita Non Plan grants (PCGN)	0.273	(0.232)	---	---
Per capita grants for state plan schemes (PCGS)	---	---	0.854*	(0.255)
Per capita discretionary grants (PCGD)	---	---	1.264*	(0.377)
Per capita grants through Finance Commission (PCGF)	---	---	-0.407	(0.443)
Constant	-609.882*	(162.492)	-595.248	(204.494)
Cross Section Chi Square	627.2715*		618.853*	
Cross Section F	101.054*		111.932*	
Adjusted R Squared	0.861		0.881	
F Statistic	349.109*		317.469*	

t - ratios of respective statistics given in parentheses
PCOT= Per capita own tax revenues
* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance

Appendix 4: Estimated Coefficients for models III and IV with PCOT as dependent variable (ALG2)

Explanatory variables	III		IV	
Alignment (ALG2)	5.579	(35.044)	-6.126	(35.747)
(Election year) × (Alignment)	23.117	(50.562)	-31.061	(51.759)
(Election year) × (Non alignment)	22.073	(50.413)	-13.903	(51.970)
Per capita State Domestic product	3.896*	(0.417)	2.578*	(0.439)
Per capita Revenue expenditure (lag 1)	0.210*	(0.037)	0.171*	(0.035)
Share of primary sector in GSDP	3.327**	(1.661)	4.424*	(1.738)
Per capita discretionary grants (PCGD)	1.172*	(0.383)	----	-----
Per capita grants for state plan schemes	0.690*	(0.286)	----	-----
Per capita grants (Finance Commission)	-0.622	(0.473)	-----	-----
Per Capita share in Central taxes (PSCT)	0.128	(0.100)	------	-----
Per capita total grants (PCGT)	---	---	0.976*	(0.137)
Percentage of rural population (RUPP)	---	---	-46.651*	(8.228)
Constant	-594.456*	(84.795)	3152.166*	(667.185)
Cross Section Chi Square	522.450*		516.382	
Cross Section F	80.583*		70.996	
Adjusted R Squared	0.936		0.869	
F Statistic	230.812*		366.123	

t - ratios of respective statistics given in parentheses
PCOT= Per capita own tax revenues
* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance

Appendix 5: Estimated Coefficients in case dependent variables are PGNT and SCPT

Explanatory Variables	**Dependent Variables**			
	PGNT		**SCPT**	
Constant	0.781	(0.664)	0.944*	(0.340)
Alignment	0.021	(0.029)	0.0064	(0.015)
(Election year) × (Alignment)	0.009	(0.043)	0.018	(0.022)
(Election year) × (non-alignment)	-0.014	(0.037)	-0.001	(0.019)
State Domestic product (per capita)	0.350	(0.058)	0.080*	(0.029)
Percentage of rural population	0.016	(0.006)	0.027*	(0.003)
Share of non-primary sector in SDP	-0.001	(0.001)	-0.001	(0.001)
Adjusted R Squared	0.648		0.939	
F Statistic	45.631*		372.625*	
Cross Section F	42.895*		132.524*	
Cross Section Chi Square	377.031*		734.017*	

PGNT implies grants as proportion of total non-tax revenue and SCPT implies Share in central taxes as proportion of total tax revenues.
t- ratios of respective statistics given in parentheses
* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance

Appendix 6: Estimated coefficients for models I and II with PCOR as dependent variable

Explanatory variables	I		II	
Alignment	94.639*	(43.087)	73.669***	(42.485)
(Election year) × (Alignment)	-19.007	(67.362)	40.002	(67.924)
(Election year) × (Non alignment)	-0.871	(54.476)	43.829	(52.709)
State Domestic product (per capita)	2.206*	(0.474)	3.130*	(0.468)
Per capita Revenue expenditure(lag 1)	0.398*	(0.039)	0.332*	(0.039)
Share of primary sector in GSDP(PSDP)	4.012**	(1.968)	2.727	(1.894)
Per Capita plan Grants (PCGP)	1.299*	(0.201)	---	----
Per capita Non Plan grants (PCGN)	0.297	(0.261)	---	---
Per capita grants for state plan schemes (PCGS)	---	---	1.323*	(0.296)
Per capita discretionary grants (PCGD)	---	---	1.108*	(0.437)
Per capita grants through Finance commission (PCGF)	---	---	-0.381	(0.511)
Constant	-517.610*	(220.053)	-466.118***	(246.975)
Cross Section Chi Square	657.435*		607.191*	
Cross Section F	110.457*		107.736*	
Adjusted R Squared	0.867		0.874	
F Statistic	362.772*		295.248*	

* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance

Appendix 7: Estimated coefficients for models III and IV with PCOR as dependent variable

Explanatory variables	**III**		**IV**	
Alignment	87.711**	(43.029)	89.961**	(42.128)
(Election year) × (Alignment)	35.819	(67.752)	-43.062	(65.343)
(Election year) × (Non alignment)	50.144	(52.679)	6.624	(53.074)
State Domestic product (per capita)	3.356*	(0.486)	1.384*	(0.495)
Per capita Revenue expenditure period lag)	0.301*	(0.043)	0.337*	(0.039)
Share of primary sector in GSDP	3.209***	(1.907)	3.638***	(1.933)
Per capita discretionary grants (PCGD)	0.949*	(0.445)	----	-----
Per capita grants for state plan schemes (PCGS)	1.062*	(0.332)	----	-----
Per capita grants through Finance commission (PCGF)	-0.722	(0.546)	-----	-----
Per Capita share in Central taxes(PSCT)	0.207***	(0.117)	------	-----
Per capita total grants (PCGT)	---	---	1.045*	(0.154)
Percentage of rural population(RUPP)	---	---	-47.844*	(9.487)
Constant	-499.821	(98.399)	3333.072*	(773.014)
Cross Section Chi Square	543.490*		538.345*	
Cross Section F	86.705*		76.209*	
Adjusted R Squared	0.930		0.871	
F Statistic	221.826*		379.371*	

PCOR= Per capita own revenues;

t- ratios of respective statistics given in parentheses

* Significant at 1%; ** Significant at 5%; *** Significant at 10% level of significance