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1. Introduction

In most federal countries the need for inter-governmental transfers arises mainly for the reasons of: (i) internalization of spillover benefits to other jurisdictions; (ii) fiscal equalization across jurisdictions; and (iii) an improved overall tax system (Oates, 1999). Further transfers are also essential from one tier to other tier of governments in addressing vertical fiscal imbalances if any (Hunter, 1977) and for provision of meritorious goods (Musgrave, 1961). Central transfers mainly supplement the revenue shortfall of a state that arises due to its low taxable capacity of and high unit cost of providing essential services. The design of transfers should aim at achieving the desired objectives of fiscal equity and efficiency, in providing normatively designed level of services across the states, but they should not provide perverse incentives on states' fiscal responsibility. Sometimes it is possible that various transfer mechanisms may exert certain unintended economic effects on allocation, efficiency and equity. Therefore it is extremely important to examine the incentive effects of federal transfers on states' own revenue and spending. Here to make the analysis simple, we have considered only the impact of transfers on state's expenditure and tried to observe expenditure stimulating impact of transfers.

Finance commissions (FCs) are used to recommending non-plan revenue deficit grants to states after making a normative assessment of the non-plan revenue gaps of the states. This gap-filling approach adopted by different FCs is strongly criticized by Lakdawala(1967), Sastry(1966), Rao and Chelliah (1996), Rao(1997), and Rao and Sen(1998) for different reasons. Their common observation is that this approach exerts disincentive effects on states' tax effort and expenditure economy and it may give scope to the states to maximize grants by underestimating their revenues and exaggerating their expenditures on the non-plan revenue account. Further, some studies (Rao and Singh, 2000; Biswas and Marjit, 2000; Dasgupta, Dhillon, and Dutta, 2001; and Khemani, 2003) verify the influence of political elements and lobbies in recommending discretionary component of transfers to states. Again, it is a common practice among the states to spend more on various pet schemes and fulfilling pre-election commitments for political gain and to remain in power. In order to meet these additional spending, the states demand more central transfers as an easy source rather than exploiting their own resources by way of additional tax and non-tax revenues, which is politically unattractive. These aspects induce us to empirically examine whether federal transfers exert adverse incentives on states' expenditure economy or fiscal responsibility.

Though a large literature is developed at international level to examine the expenditure impact of federal fiscal transfers, the issue is sparsely addressed in the Indian context. From this perspective the objective of this paper is to analyze the effect of central transfers on states' spending and to observe whether the central transfers encourage laxity in states' spending. The rest of the paper is structured as follows. Section-2 reviews the relevant literature pertaining to the analysis of incentive effects of federal transfers on states' spending. The data and methodology used in the study are analyzed in section-3. Empirical results of the analysis of incentive effects of federal transfers are discussed in section-4. Conclusive remarks are given in Section-5.

2. Selected Review of Literature

Several important studies at International level analyzed the impacts of federal transfers on tax efforts and expenditure of local governments. Lotz and Morss (1967), Bahl (1971, 1972) provided different indices for measuring tax efforts and analysed the same for various developing countries in a comparative perspective. Livtack, Ahmad and Bird (1998),

Baretti, Huber and Lichtblau, (2000) and Besfamille and Sanguinetti (2005) found that the central transfers affect the incentives of local Governments and discourage their tax efforts. Similarly, studies like those of Sacks and Harris (1964), Bahl and Saunders (1965), Gramlich (1968), Auld (1976) and Benton (1992) tried to explain the budgetary effects of federal transfers on expenditures of local governments. The common observation of these studies was that the State and the local governments' expenditures were positively stimulated by the wide-spread availability of federal grant-in- aid.

While analyzing budgetary impacts of federal grants, several studies highlighted on the issue of fly-paper effect. Gramlich and Galper(1973); Inman (1979); and Islam and Choudhury (1989) have analyzed the fiscal behaviour response of State and local governments to federal grants. It is observed that federal grants stimulate local spending and the expenditure response to increase in lump-sum resources transfers is higher than that of increase in voter incomes in the States, which is fly paper effect. But, the existence or the size of the fly paper effect is questioned on the grounds of flaws in terms of statistical or specification errors that existed in those studies and lead to an overestimation of such effect (King 1984 ,Megdal 1987 ,Moffitt 1984 , Zampelli 1986 and Becker 1996). However, disagreements still persist in literature regarding the existence and magnitude of fly-paper effect.

In Indian context there are few analytical and empirical studies that evaluate the effects of central transfers. Studies like Chelliah et al. (1981); Jha et al. (1999); Naganathan and Sivagnanam (2000); and Panda (2009) examined the impacts of Central transfers on tax efforts of Indian States. These studies suggested that the central transfers had adverse effects on states' own tax efforts. Similarly in the context of expenditure impact, Chanda (1965) and Lakdawala(1967) initially stated the problem of incentive effects of transfers ,but their empirical exercise did not address this. While studies of Reddy (1976); Bhal and Pillai (1976); and Thimmaiah (1980) examined the impact of transfers on states' expenditure, Lalvani (2002); and Karnik and Lalvani (2005) empirically verified the fly paper effect in Indian context.

Reddy (1976) examined the determinants of inter-State expenditure differentials considering a data set of 16 Indian States for two different years: 1962-63 and 1972-73. A multiple regression technique was employed in a cross-section framework for analysis. Per capita expenditures, concerning the various functional heads were alternatively regressed on per capita income, density of population, urbanization, per capita federal aid and per capita debt services. From the analysis he found that much of the variance in expenditures of 1962-63 and 1972-73 was explained by per capita federal aid and per capita debt services. Further, he observed that the influence of federal transfers on expenditure differentials had gradually waned and by 1972-73, it was no longer a force to reckon with for expenditure differentials. The reason which he had cited for this was that the federal transfers had flowed to those states whose level of social consumption was lower than the average of all states; and helped thereby the process of equalization in social consumption.

Bhal and Pillai (1976) estimated the allocative effects of inter-governmental flows by various types, like shared taxes, statutory and non-statutory grants, and loans on developmental and non-developmental expenditures, using a cross-sectional framework for 17 Indian States for the year 1970-71. They found no significant relationship between States' per capita expenditures and statutory grants and loans. Hence, they concluded that there was no evidence of substitutive effects and so, rejected the hypothesis that States tended towards fiscal irresponsibility as a result of the FC's methodology. However, non-statutory grants showed a consistent stimulative effect on states 'expenditure. But, the validity of this model and the methodology used were strongly criticised by Rao (1977) and Chelliah et al. (1981).

Thimmaiah (1980) made an attempt to analyse the allocative efficiency and equity in federal fiscal transfers in India. He tried to include both revenue and expenditure dimensions in evaluating the impact of transfers on allocative efficiency or fiscal responsibility effect. He considered data set for the periods covering second FC (1957-58 to 1961-62) to seventh FC (1979-80 to1983-84). Separate log linear multiple regressions were run for each FC on a cross section frame work, besides pooling the time periods to find average figure. For a comparative analysis, annual data of planning commission transfers were also used for the same period and similar procedure applied to obtain coefficients. To test allocation efficiency effect of federal fiscal transfers, he alternatively regressed Central government supported per capita development expenditure of the States on current account and non-supported per capita development expenditure of the States on a set of variables like FC grants, PC grants, own State revenues, market borrowings, surplus/deficit of States and gross central loans in per capita terms.The empirical results indicated that grant-in-aid recommended by FC had fiscal irresponsibility effect on the fiscal behaviour of the State governments, while plan grants or Central government loan did not have such effect. Though the findings of the study sounded well in favour of PC transfers, the methodology used may not be free from providing biased estimates. Considering a cross section framework with fewer data points (though pooled time periods), running separate regressions for different commissions' recommendations and using explanatory variables like, revenue, grants , loans and surplus/deficits which may be highly correlated, multi-collinearity problem cannot be avoided. Hence, it needs to be re-examined on a comprehensive data set using suitable panel data models.

While the study of Lavani (2002) empirically tested the fly-paper effect of lump sum grants in Indian States considering a data set of 14 major States for two different periods i.e., 1980-81 to 1989-90 and 1990-91 to 1997-98, Karnik and Lalvani (2005) empirically examined the fiscal response of urban local governments to State government grants in the context of fly-paper effect and asymmetry hypothesis, for Maharashtra State in India. The results vindicated fly-paper effect and suggested that grants stimulated expenditures to a greater extent than income.

The analysis of literature indicates that though there is wide literature developed in examining the expenditure impact of federal transfers at the international context, the issue is not much explored in Indian federal fiscal relations. Studies in Indian context are mostly based on older data set and they suffer from lack of using appropriate econometric methods to analyze the impacts of central transfers on states' spending.

3. Empirical Framework of the Study

The effort to assess the impact of central transfers on states' expenditure needs careful selection of time period and states. We have tried to include maximum number of states and a longer time period as best possible. Considering this in mind the necessary data for present analysis are obtained for the period of 1980-81 to 2004-05 for 22 states[1] that existed during 1980, from various secondary data sources. Prior to 1980 data are not available for many states. Further on the basis of recommendation of Twelfth Finance Commission, States in

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[1] The Indian Union consists of 28 States and seven Union Territories. 22 States of them are considered for the study, on the basis of adequacy of availability of data. Union Territories are not taken into account as they are directly governed under the administration of Union Government and funding provisions to them are different from States. The States considered in the study for analysis are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Manipur, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

India enacted Fiscal responsibility and Budget management (FRBM) act in 2005-06 and took expenditure controlling measures to bring revenue deficit and fiscal deficit to a level of zero percent and three percent respectively by 2009-10. So the pattern and response of expenditure would be different since 2005-06 than it did for the period 1980-2004. To avoid discontinuity of expenditure data, use of data is limited to the period 1980-81 to 2004-05. The figures for Bihar, Madhya Pradesh and Uttar Pradesh are considered for undivided states in order to maintain continuity in data. As per 2001 census the states considered in the present study accounts for 92.40 percent of country's population and 90.3 percent of area of the country.

Appropriate selection of variables and use of suitable method to analyse the objectives are also equally important. Panel models are found to perform better than the conventional models based on a single dimension of either time-series or cross-section of data. In these models the substantial increase in degrees of freedom helps to increase the reliability of estimates. Further, the quality of parameter estimates might be better as the pooled sample permits the incorporation of specificities of individual groups or states in the model. Considering this in mind, we have employed two way fixed effect model to analyse the expenditure impact of central transfers. Fixed effect within as well as GLS for random effects estimation techniques are adopted to obtain coefficients. The Hausman (1978) test statistic is used to make a choice between the coefficients of fixed effect and random effect. The coefficients which are supported by Hausman test are only reported.

Fixed and Random effect models of panel data are used for analysis. Alternatively we regressed states' aggregate expenditure, revenue expenditure, capital disbursements of the state in percapita terms, on a set of variables indicating need, resource capacity as well as various types of transfers. Transfers are considered in aggregate as well as channel specific terms in separate models in order to evaluate aggregate and channel specific impact of transfers on spending respectively. GSDP is widely used as a proxy variable to indicate the resource capacity of states. The change in per capita GSDP of a state tends to change its taxable capacity and hence expenditure of states. Further increase in voters' income in terms of GSDP or advancement of economy will put pressure on government to spend more on various expenditures. Similarly Density of population is used as a variable to represent the need of the states' economy. Density of population can be considered as more appropriate proxy to measure the need of the state as it gives weightage both to population and area of the states. An alternate variable that is the ratio of revenue expenditure to own revenue receipt of states(RREOR) is also regressed on aggregate transfers and a set of control variables identified above in order to examine the incentive effect of transfers on expenditure economy.

In order to analyze the fly paper effect, lump-sum revenue transfers from the centre is used as the variable of interest. As the required variable is not readily available from the existing data sources, grants from the central sector and central sponsored schemes have been deducted from aggregate revenue transfers in order to obtain lump-sum resource transfers. Fly-paper effect refers to the empirically observed phenomenon of a general lump sum grant (an unconditional grant) to a community exhibiting a far greater stimulatory effect on local government spending than an equivalent increase in individual income. Use of a linear functional form (Becker 1996) or use of inappropriate variables or omission of appropriate variables (Hamilton 1983) in an analysis of expenditure impact of lump sum grants may over-estimate the coefficient and vindicate the fly-paper effect. Considering this in mind, we have employed a double log specification.

In case of panel data, sample size increases and the tendency of variables moving together is reduced. However in order to verify the presences of multicollinearity, partial correlation coefficients among the explanatory variables are computed. Results are reported in table 1. Though partial correlation coefficients of PCSTT with PCGSP and PCDSG are slightly higher than the permissible limits, variables are not omitted from the study

considering the objective of analysing the channel specific impact of transfers. However, as a robustness checking of the results these variables are alternatively considered along with control variables.

Given these considerations, the panel model specified to empirically examine the impact of channel specific federal fiscal transfers on states' spending is:

$$PCEXP_{hit}= \beta_0 + \beta_1 PGSDP_{it}+ \beta_2 POPDN_{it}+ \beta_3 PCSTT_{it} + \beta_4 PCGSP_{it} + \beta_5 PCDSG_{it} + \lambda_i + \mu_t + \varepsilon_{it}$$

The model used to examine the impact of aggregate transfers on states' spending is :
$$PCEXP_{hit}= \beta_0 + \beta_1 PGSDP_{it}+ \beta_2 POPDN_{it}+ \beta_3 PARTC_{it} + \lambda_i + \mu_t + \varepsilon_{it}$$

Alternatively the model used to examine the impact of transfers on expenditure economy is:
$$RREOR_{it}= \beta_0 + \beta_1 \ln(PGSDP_{it})+ \beta_2 \ln(POPDN_{it})+ \beta_3 \ln(PARTC_{it})+ \lambda_i + \mu_t + \varepsilon_{it}$$

The model used to verify the fly paper effect of federal transfers is:
$$\ln(PCEXP_{hit})= \beta_0 + \beta_1 \ln(PGSDP_{it})+ \beta_2 \ln(POPDN_{it})+ \beta_3 \ln(PCLST_{it})+ \lambda_i + \mu_t + \varepsilon_{it}$$
where,
$PCEXP_h$ = per capita State expenditure of type h; and h = 1,………,3;
$PCEXP_1$ = per capita aggregate expenditure of the States (PCAEX);
$PCEXP_2$ = per capita revenue expenditure of the State (PCREX);
$PCEXP_3$ = per capita capital disbursement (PCCAD);
PGSDP = per capita GSDP;
POPDN = density of population;
PCSTT = per capita statutory transfers from Centre;
PCGSP = per capita grants for State plan;
PCDSG = per capita discretionary grants;
PARTC = per capita aggregate revenue transfer from Centre;
PCLST = per capita lump-sum transfer from Centre;
RREOR=Ratio of revenue expenditure to own revenue receipts of states in percent;

i = 1………..22; t = time (1, 2, 3,…, 25); t = current year; i = State;
ε= random error terms; λ and μ = panel specific effect; β_0 = intercept coefficient; and β_i = coefficients of explanatory variables

The explanatory variables taken in the model can have both temporal and spatial variations. But, there are certain determinants which vary in one dimension. State specific dummies are included (vector λ_i in the equation) to control for time invariant and state specific unobservable explanatory variables like institutions and other factors. Similarly, over time the Central government brings certain policy changes or schemes for health and implements them across states. The impact of such policies, which are state invariant and time specific are incorporated in the above equation by the vector μ_t by including time dummies. The unexplained variations in the regression are controlled by the error term ε_{it} which is assumed to be normally distributed, homoskedastic and independent across observations.

The Gross State Domestic Product (GSDP) data at current prices and constant prices in1980-81 series and 1993-94 series are obtained from Central statistical organization (CSO). Again these data of 1980-81 series are converted to 1993-94 series using splicing method to make them comparable with CSO data given in 1993-94 series. We have taken mid year population figures from CSO and recovered price deflators from the ratio of current to

constant price GSDP figures. These are used to convert the fiscal data to constant price terms (with 1993-94 prices as base) and to percapita terms wherever necessary. Data pertaining to density of population are obtained by interpolating census-data for 1981, 1991 and 2001.

Transfer of resources in terms of sharing taxes and grants are considered as a whole, as well as the transfers mediated by individual channels to know their specific impact on spending of states. The central transfers are classified as follows (i) statutory transfers=share in central taxes + statutory grants, (ii) Grants for state plan schemes, (iii) Discretionary grants =Grants for central sector + Grants for central Sponsored Schemes, and Resource transfer from centre= i + ii +iii+ other non plan grants excluding statutory grants .Besides loans mediated to states from center are not taken into account, as they are not mere transfers. Similarly, the aggregate expenditure of the states is regrouped as (i) revenue expenditure and (ii) capital disbursements. Own revenue receipt of states is obtained by summing up states' own tax and non-tax revenues.

The figures for various types of transfers, own revenue receipt, revenue and capital expenditure are obtained from different issues of RBI Bulletin, and State Finances-A study of budgets, RBI. To neutralize the impact of inflation, all fiscal data are converted into constant terms using GSDP deflator. Both the dependent and independent variables are taken in per capita rupees, while density of population is taken in numbers. The variable RREOR is a ratio. Further, these equations are also considered in double log-format to derive log-linear specification coefficient, as a robustness checking of findings.

4. Empirical Results and Discussion

The results based on the empirical model that is outlined in previous section are analyzed in the following sub-sections. In order to analyze the incentive effects of central transfers states' expenditure in aggregate as well as in disaggregate terms are alternatively regressed on a set of control variables and the variable of interest that is central transfers. In order to verify channel specific impact of transfers on states' spending, variable of interest that is central transfers is used in aggregated as well as disaggregated terms in separate models. The control variables which include GSDP and Density of population remain same for all the regression models. Time specific and state specific dummies are included in all models to control for unobserved time-invariant and state-invariant factors.

4.1 Impact of aggregate transfers on States' expenditure

The results of expenditure impact of overall central transfers on states' spending are reported in table-2. The results of the Hausman test revealed that the difference in coefficients between the fixed-effects and random-effects models is systematic, and provides evidence in favour of the random-effect coefficients for first two equations (states' aggregate expenditure and revenue expenditure) and fixed effect model for capital disbursement equation. Here, we have confined our analysis of results to linear specification. However as a robustness checking of results, estimation is also done in a double-log specification.

From the regression results reported in table-1 it is observed that the variable of interest that is per capita revenue transfers from the centre (PARTC) emerged statistically significant at one percent level of significance and found to be positive for all three equations: States' aggregate expenditure(PCAEX); revenue expenditure(PCREX) and capital disbursements(PCCAD). The positive sign of the coefficients indicates that Per capita revenue transfers from the centre as a whole positively influences states' aggregate expenditure and its components. The PARTC coefficient is found to be 1.098, 1.199 and 0.185 respectively for states' aggregate expenditure, states' revenue expenditure and states'

capital disbursements. The results provide that a one unit increase in per capita central revenue transfers to states increases their per capita revenue expenditure and aggregate expenditure by more than a unit. But, the capital disbursements of the state do not respond much to change in central revenue transfers to states, which is a matter of concern. The results indicate that the states' revenue expenditure and aggregate expenditure are highly stimulated by widespread availability of central transfers. Furher, the central transfers not only highly influences states' spending but also they affect the pattern of spending in favour of revenue expenditure.

The control variable like Gross state domestic product (PGSDP) emerged significant and positive for all three dependent variables. This indicates that with advancement of economy and revenue capacity states' expenditures vary upward. The other control variable used in the study is density of population which represents the demand side factor for states' expenditure. In linear specification this is found to be statistically insignificant in influencing states' expenditure.

As a strategy to check the robustness of original results, the specification of equation has been changed from linear to log-linear. The estimation results of log-linear specification are provided in table-3. The estimation in log-linear specification also provides similar result to that of baseline results estimated in linear specifications. Though numerical magnitude of coefficients changed marginally, the sign of the variable of interest remained same. Per capita aggregate revenue transfer from Centre (PARTC) is significantly and positively affects all categories of expenditure. One percent increase in per capita aggregate Central transfers brings an increase of 0.92 percent in per capita aggregate expenditure, 1.03 percent in per capita revenue expenditure and 0.44 percent in states' per capita disbursements. The expenditure elasticity responding to central transfers for revenue expenditure exceeds unity. This indicates that revenue expenditure of the states is highly stimulated in response to change in central transfers. However, the response of capital expenditure to central transfers is not encouraging. The control variables like PGSDP and POPDN emerged significant in log linear specification. The findings of this robustness strategy suggest that the baseline results are robust and quite insensitive to change of specification from linear to log-linear.

The second strategy to check the robustness of results is adopted by including additional public choice variable like state election year dummy (SELYD) in the estimation. During the election year, the states are used to spend more on various flagship schemes, fulfilling incomplete promises made in earlier election manifesto and on various developmental activities to lure voters. Besides they incur huge expenses in conducting elections too. Hence, state election year dummy is hypothesized to positively affect states' spending. For a given State-year, SELYD is equal to one if a State legislative assembly election is held in that particular year and is zero otherwise. Results of this estimation are reported in table-4. State election year dummy is never emerged to be statistically significant in influencing states' spending. But the base line findings of impact of transfers remain insensitive to inclusion of this variable, though value of coefficients slightly changed.

4.2 Impact of disaggregated transfers on States' expenditure

Table-5 shows the regression results that examine the influence of various categories of transfers on states' aggregate expenditure and its components. Instead of considering aggregate transfers, here important components of transfers are taken as explanatory variables in order to examine channel specific impact of central transfers. The control variables used in earlier models like PGSDP and POPDN are also used here. The results of the Hausman test revealed that the difference in coefficients between the fixed-effects and random-effects models is systematic, and provides evidence in favour of the fixed-effect coefficients for all

expenditure equations. Hence, fixed effect within coefficients is only reported. Here we have only confined our analysis of results to linear specification only. The log-linear transformation to analyze the impact of channel specific transfers is not considered because some figure for PCGSP and PCDSG take zero values from the available data sources.

The regression results of per capita aggregate expenditure, per capita revenue expenditure and per capita capital disbursements of the state are displayed in three different columns in table-5. The results suggest that per capita statutory transfers (PCSTT) recommended by the Finance Commission, one of the variables of interest emerged statistically significant and found to be positive for all categories of transfers. While, the coefficient of statutory transfers is observed to be more than 2.5 for per capita aggregate expenditure and per capita revenue expenditure, it is only 0.26 for per capita capital disbursements. This indicates that finance commission transfer highly stimulates states' aggregate expenditure and revenue expenditure, but it fails to do so for capital disbursements. Similarly another significant and potential influence arises from Per capita grants for state plan as recommended (PCGSP) by the Planning Commission. The PCGSP is significantly and positively affects states' aggregate expenditure and its components. However, percapita discretionary (PCDSG) grant recommended by Central ministry found to be significant only for PCCAD. The findings of results indicate that central transfers recommended by different channels stimulate states' spending and its components. Central transfers not only influence the size of spending but also the pattern of spending. The control variable that emerged significant is PGSDP. The demand side and need based factor like population density (POPDN) fails to influence various categories of expenditure. The overall findings suggest that various transfers widely stimulate and positively influence states spending. Further the states' spending is largely determined by revenue capacity and availability of central transfers than the need-based determinants.

In order to verify the robustness of results, the channel specific transfers are considered alternatively along with the control variables in estimation. This is mainly done to avoid the problem of multicollinearity in estimation. The results are reported in table-6. The findings suggest that the impact of channel specific transfers on spending is well perceived and results are similar to those of original results.

4.3 Impact of transfers on states' expenditure economy or fiscal responsibility

In order to examine the impact of central transfers on states' expenditure economy, the ratio of revenue expenditure to own revenue receipt of states' is regressed on the explanatory variables identified earlier. In comparison to per capita revenue expenditure, the ratio of revenue expenditure to own revenue receipt of states' can help better to be used as a proxy to capture the expenditure economy of states or fiscal responsibility of states. Because, this gives weightage both to own revenue generation and expenditure of states. A fiscal responsible state or state that aims for expenditure economy would always try to minimize the ratio of revenue expenditure to own revenue receipt. On the other hand increase in this ratio indicates that increase in revenue expenditure of states without proportionate increase in own revenue receipt (or with decrease in own revenue receipt). Here we have only taken revenue expenditure of states because this component constitutes the major component of expenditure and widely increasing over the years. With easy availability of central transfers, a state may increase its revenue expenditure without appropriate mobilizing of its own revenues; as a result the ratio of revenue expenditure to own revenue receipt of the state would increase. Further the coefficient of transfer variable exceeding one indicates expenditure stimulating or fiscal irresponsible effect of transfers on expenditure. This is

because, keeping own tax revenue of states unchanged, one percent increase in percapita transfers, should increase states' revenue expenditure percapita by less than a percent(because gross transfers to states accounts less than 100 percent of states revenue expenditure).

The regression results indicating expenditure economy of states are given in table- 7. The findings of results suggest that the per capita aggregate revenue transfer, the variable of interest emerged to be significant and positive in influencing the ratio of revenue expenditure states' to their own revenue receipt. One percent increase in percapita revenue transfers from the centre increases the ratio of states 'revenue expenditure to their own revenue receipt by 6.26 percent. This indicates that central transfers are highly expenditure stimulating and they provide adverse incentives on states' expenditure economy.

4.4 Results in Flypaper context

Fly-paper effect refers to the empirically observed phenomenon of a general lump sum grant (an unconditional grant) to a community exhibiting a far greater stimulatory effect on state government spending than an equivalent increase in individual income. This indicates the overreaction of state expenditure to unconditional central transfers. In order to examine the fly-paper effect, all categories of expenditure in per capita terms are alternatively regressed on the set of control variables and per capita lump-sum transfers (PCLST) from the Centre. The literature suggests that use of inappropriate functional form mainly linear can result in fly-paper effect being inflated to a large extent. Considering this, a logarithmic functional form is specified for estimation. As direct lump-sum transfer data are not available, they are obtained by deducting transfers for specific schemes like grants for Central sector and centrally sponsored schemes from aggregate revenue transfers from Centre. Further, lump-sum transfers are normalised by population in order to get per capita lum-sum transfers (PCLST).

The regression results pertaining to fly-paper effect hypothesis are reported in table-8. The variable of interest that is per capita lump-sum transfer (PCLST) found to be significant and positive for all categories of expenditure. Further the size of coefficients of PCLST for different categories of expenditure is found to be higher than that of GSDP which validates fly-paper effect in Indian context. This indicates that the expenditure response to lump-sum transfer is higher than that of states' GSDP and it stands for all categories of expenditure in India. The stimulatory effect of expenditure to transfers may arise due to the fact that states try to maximise their budget with an aim to spend more on public goods than their voters. The vindication of fly-paper effect in Indian context also supports the disincentive effect of the central lump-sum transfers. The states do not exploit their revenue base, i,e GSDP to the fullest to mobilise own revenues in order to finance their spending. On other side, they heavily depend on central aid and meet the increased spending through transfers. Hence, expenditure response to states' GSDP is lower in comparison to the same of central transfers.

5. Conclusion

The present study examines the incentive effects of central transfers on states' spending in India. The findings of results suggest that per capita resource transfers in channel specific and in aggregate terms from the centre are found to be significant and positively associated with states' aggregate expenditure, revenue expenditure and capital disbursements in per capita terms. The revenue expenditure elasticity coefficient responding to central transfers is found to be greater than unity. The ratio of revenue expenditure to own revenue receipts of states in percent is also significant and positively related to per capita resource

transfer. Further, the expenditure response to increase in lump-sum resources transfers is higher than that of to increase in voter incomes in the states, which validates fly paper effect in Indian context. This provides us to conclude that central transfers not only have stimulatory effect on states' spending but also they have disincentives on expenditure economy of states. There is a need of reexamining the design of transfers and the ratio of lump-sum transfers to specific purpose transfers in order to address the adverse incentives. Proper assignment of weight to fiscal performance or appropriate incentives for fiscal responsibility of states in transfer design can help to address the disincentive effect of transfers on expenditure economy of states.

References

Auld, D.A.L. (1976) "Provincial Grants and Local Government Expenditures" *Public Finance Quarterly* **4 (3)**, 295-306.

Bhal, Roy W. (1971) "A Regression Approach to Tax Effort and Tax Ratio Analysis" *IMF Staff Paper* **18(3)**, 570-607.

Bhal, Roy W. (1972) "A Representative Tax-System Approach to Measuring Tax Effort in Developing Countries" *IMF Staff Papers* **19(1)**, 87-120.

Bahl, R.W. and V. Pillai (1976) "Allocative Effects of Intergovernmental Flows in Less Developed Countries: A Case Study of India" *Public Finances/Finances Publiques* **31(1)**, 73-89.

Bahl, R.W. and R. J. Saunders (1965) "Determinants of Changes in State and Local Government Expenditure" *National Tax Journal* **18**, 50-57.

Bareti, C., B. Huber and K. Lichblau (2000) "A Tax on Tax Revenue: The Incentive Effects of Equalizing Transfers: Evidence from Germany" CESifo working paper number 333.

Becker, Elizabeth (1996) "The Illusion of Fiscal Illusion: Unsticking Flypaper Effect" *Public Choice* **86(1\2)**, 85-102.

Benton, J. Edwin (1992) "The Effects of Changes in Federal Aid on State and Local Government Spending" *Publius: The Journal of Federalism* **22(1)**, 71-82.

Besafamille, M. and P. Sanguinetti (2005) "Exerting Local Tax Effort or Lobbying for Central Transfers? Theory and Evidence from Argentina" http://www.nd.edu/~kellogg/publications/ working papers/wps/315pdf., Retrieved on 08 May 2008.

Biswas, R. and S. Marjit (2000) "Political Lobbying and Discretionary Finance in India: An Aspect of Regional Political Influence in a Representative Democracy" Mimeo, Centre for Studies in Social Sciences: Kolkata.

Chanda, A. (1965) *Federalism in India*, George, Allen and Unwin: London.

Chelliah, R. J, O.K. Aggarwal, R. Ghosal, A. Gupta and M.G. Rao (1981) *Trends and Issues in Indian Federal Finance*, Allied Publishers Private Limited: New Delhi.
.

Dasgupta, Sugato, Amrita Dhillon and Bhaskar Dutta (2001) "Electoral Goals and Centre-State Transfers in India" Mimeo, Indian Statistical Institute: New Delhi.

Gramlich, E.M. (1968) "Alternative Federal Policies for Stimulating State and Local Expenditures: A Comparison of Their Effects" *National Tax Journal* **21(2)**, 119-29.

Gramlich, Edward M. and Harvey Galper (1973) "State and Local Fiscal Behavior and Federal Grant Policy" *Brookings Papers on Economic Activity* **1**, 15-65.

Hamilton, Bruce W. (1983) "The Flypaper Effect and other Anomalies" *Journal of Public Economics* **22(3)**, 347-361.

Hunter, J.S.H. (1977) *Federalism and Fiscal Balance*, Australian National University: Canberra.

Inman, R.P (1979) "The Fiscal Performance of Local Governments: An Interpretative Review" in *Current Issues in Urban Economics* by P. Mieszkowski and M. Staszheim, Eds., John Hopkins University Press: Baltimore, 270-321.

Islam, Muhammed N. and Saud A. Choudhury (1989) "The flypaper Effect and The Revenue Impact of Grants-in-aid" *Economics Letters* **30**, 351-356.

Jha, R., M. Mohanty, S. Chatterjee and P. Chitkara (1999) "Tax Efficiency in Selected Indian States" *Empirical Economics* **24(4)**, 641-54.

Karnik, Ajit and Mala Lalvani (2005) "Urban Local Governments and the Flypaper Effect: Evidence from Maharashtra, India" *Publius: The Journal of Federalism* **35(2)**, 273-295.

Khemani, S. (2003) "Partisan Politics and Intergovernmental Transfers in India" The World Bank working paper number 3016.

King, D. (1984) *Fiscal Tiers: The Economics of Multi-Level Government*, George, Allen and Unwin: London.

Lakdawala, D.T (1967) *Union-State Financial Relations*, Lalwani Publishers: Mumbai.

Lalvani, Mala (2002) "Flypaper Effect: Evidence from India" *Public Budgeting & Finance*, **22(3)**, 67-88.

Livtac, J., J. Ahmad and R. Bird (1998) "Rethinking Decentralization in Developing Countries" The World Bank sector studies series.

Lotz, Jorgen R. and Elliot R. Morss (1967) "Measuring Tax Effort in Developing Countries" *International Monetary Fund Staff Papers* **14(3)**, 478-99.

Megdal, Sharon Bernstein (1987) "The Flypaper Effect Revisited: An Econometric Explanation" *The Review of Economics and Statistics* **69 (2)**, 347-351.

Moffitt, R.A. (1984) "The Effects of Grants-In-Aid on State and Local Expenditures" *Journal of Public Economics* **23**, 279-305.

Musgrave, Richard A. (1961) "Approaches to a Fiscal Theory of Political Federalism", in *Public Finances: Needs, Sources and Utilization*, National Bureau of Economic Research, Princeton University Press: Princeton, 97-133.

Naganathan, M. and K. Jyothi Sivagnanam (2000) "Federal Transfers and Tax Efforts of States in India" *Indian Economic Journal*, **47(4)**, 101-10.

Oates, W. (1999) "An Essay on Fiscal Federalism" *Journal of Economic Literature* **37**, 1120-49.

Panda, Prasant Kumar (2009) "Central Fiscal Transfers and States' Own Revenue Efforts in India: Panel Data Models" *Margin: The Journal of Applied Economic Research* **3(3)**, 223-242.

Rao, M. Govinda (1977) "Allocative Effects of Intergovernmental Flows in Less Developed Countries: A Case Study of India - A Comment" *Public Finances/ Finances Publiques* **32(3)**, 424-28.

Rao, M. Govinda and Nirvikar Singh (2000) "The Political Economy of Center-State Fiscal Transfers in India" Mimeo, University of California: Santa Cruz.

Rao, M.G. and R.J. Chelliah (1996) "Fiscal Federalism in India" Monograph number 8, Indian Council of Social Science Research: New Delhi.

Rao, M.G. and T.K. Sen (1998) *Fiscal Federalism in India*, Macmillan: New Delhi.

Reddy, K. N. (1976) "Inter-State Differences in Social Consumption" *Economic and Political Weekly* **11(24)**, 872-879.

Sacks, S. and Harris, R. (1964) "The Determinants of State and Local Expenditures and Intergovernmental Flows of Funds" *National Tax Journal* **17(1)**, 75-85.

Sastry, K.V.S (1966) *Federal-State Fiscal Relations in India*, Oxford University Press: New Delhi.
Thimmaiah, G. (1980) "Allocative Efficiency and Equity in Indian Federal Fiscal Transfers" *Margin* **12(2**), 30-46.

Zampelli, Ernest M.(1986) "Resource Fungibility, the Flypaper Effect, and the Expenditure Impact of Grants-in-Aid" *The Review of Economics and Statistics* **68 (1)**, 33-44.

Table 1: Partial Correlation Coefficients among Explanatory Variables

Variables	PGSDP	POPDN	PCSTT	PCGSP	PCDSG
PGSDP	1.0000				
POPDN	0.0241	1.0000			
PCSTT	0.3886	-0.3829	1.0000		
PCGSP	0.3362	-0.3675	0.5703	1.0000	
PCDSG	0.2260	-0.3928	0.6301	0.4271	1.0000

Table 2: Panel Regression Results: Linear Specification
(Impact of Overall transfers on states' spending)

Dependent Variable	PCAEX	PCREX	PCCAD
Explanatory Variables	*Random-Effect Model*	*Random-Effect Model*	*Fixed-Effect Model*
PGSDP	0.1145945* (0.0223426)	0.1016293* (.0213201)	0.0143412* (0.0049225)
POPDN	0.7302597 (0.8030879)	0.9618562 (0.760919)	0.0114352 (0.220295)
PARTC	1.098651* (.0762986)	1.199431* (0.0727767)	0.1859963* (0.0168215)
Constant	-74.02629 (314.4513)	-422.3907 (296.4669)	282.1585* (57.7597)
Hausman test (p-value)	2.10 (0.5522)	0.86 (0.8352)	48.85 (0.000)
Wald chi2	1409.44*	1149.54*	-
R^2 within	0.7154	0.6734	0.5246
R^2 between	0.8253	0.7715	0.9295
R^2 overall	0.7650	0.7152	0.7183
F test	-	-	193.14*

Notes: Standard errors are given in parentheses; and * indicates statistical significance at one percent level.

Table 3: Panel Regression Results: log linear Specification
(Impact of Overall transfers on states' spending)

Dependent Variable →	lnPCAEX	lnPCREX	lnPCCAD
Explanatory↓ Variables	*Fixed-Effect Model*	*Fixed-Effect Model*	*Random-Effect Model*
lnPGSDP	0.4329886* (0.029867)	0.4918631* (0.0305258)	0.2333* (0.0538942)
lnPOPDN	0.2320198* (0.0587807)	0.4204649* (0.0600774)	-0.2355737* (0.062455)
lnPARTC	0.9259827* (0.0327701)	1.03575327* (0.0334931)	0.4428267* (0.0438886)
Constant	-1.092377* (0.2181972)	-3.036694* (0.2230107)	2.459406* (0.4139777)
Hausman test (p-value)	11.69 (0.0085)	24.94 (0.000)	7.48 (0.0580)
Wald chi2	-	-	241.13*
R^2 within	0.7972	0.8349	0.2171
R^2 between	0.7219	0.5567	0.8101
R^2 overall	0.7376	0.6452	0.6658
F test#	688.00*	885.06*	-

Notes: Standard errors are given in parentheses; and * indicates statistical significance at one percent level.

Table 4: Panel Regression Results: Linear Specification
(Impact of Overall transfers on states' spending including state election year dummy in estimation)

Dependent Variable	PCAEX	PCREX	PCCAD
Explanatory Variables	*Random-Effect Model*	*Random-Effect Model*	*Fixed-Effect Model*
PGSDP	0.11417* (0.02244)	0.101103* (0.021422)	0.01437* (0.00492)
POPDN	0.75602 (0. .81319)	0.98145 (0.77071)	0.01108 (0.22050)
PARTC	1.39944* (.076692)	1.20093* (0.07316)	0.18587* (0.01684)
SELYD	65.45623 (138.449)	70.739 (132.635)	-6.00325 (27.6004)
Constant	-92.7232 (321.666)	-440.3095 (303.287)	283.3947* (58.0909)
Hausman test (p-value)	1.92 (0.7505)	0.80 (0. 0.9381)	16.36 (0.0010)
Wald chi2	1405.70*	1147.07*	-
R^2 within	0.7155	0. 0.6736	0.5247
R^2 between	0.8251	0.7713	0.9295
R^2 overall	0.7650	0.7152	0.7182
F test	-	-	144.61*

Notes: Standard errors are given in parentheses; and * indicates statistical significance at one percent level.

Table 5: Panel Regression Results: Linear Specification
(Impacts of transfers at a disaggregate level)

Dependent Variable	PCAEX	PCREX	PCCAD
Explanatory Variables	*Fixed-Effect Model*		
PGSDP	0.1343954* (0.0229574)	0.1115078* (0.0219708)	0.0228876* (0.0047151)
POPDN	-0.1204856 (1.097239)	0.1324137 (1.050082)	-0.2528994 (0.2253575)
PCSTT	2.780297* (0.2781445)	2.517537* (0.2661904)	0.2627601* (0.057127)
PCGSP	0.903113* (0.1440998)	0.8022822* (0.1379067)	0.1008309* (0.0295961)
PCDSG	0.6880675 (0.9087352)	1.344281 (0.8696793)	0.656214* (0.1866414)
Constant	-186.2767 (285.7808)	-437.9614 (273.4984)	251.6846* (58.69533)
Hausman test (p-value)	198.26 (0.000)	175.03 (0.000)	197.66 (0.000)
R^2 within	0.7365	0.6987	0.5303
R^2 between	0.7447	0.6864	0.8805
R^2 overall	0.7404	0.6919	0.7170
F-test	292.29*	242.62*	118.12*

Notes: Standard errors are given in parentheses; and * indicates significant at 1% level.

Table 6: Impact of Channel Specific Transfers on States' Spending (Alternate consideration of transfer variables)

Dependent Variable-	PCAEX	PCAEX	PCAEX
	Fixed effect	Fixed effect	Random effect
PGSDP	0.2187　* (.01921)	.1930* (.0249)	0.4086* (.0175　)
POPDN	-2.206** (.8997)	1.1536 (1.2104)	-3.8974* (1.0450)
PCSTT	3.3942* (.2019)	-	-
PCGSP	-	1.726* (.1355)	-
PCDSG	-	-	5.4103 * (.9304)
Constant	-266.88 (434.85)	-18.511 (311.47)	-108.565 * (492.3307)
Hausman test (p-value)	178.00 (0.000)	155.03 (0.000)	7.20 (0.065)
R^2 within	0.7138	0.6987	0.5903
R^2 between	0.5750	0.6864	0.4302
R^2 overall	0.6425	0.6919	0.5101
F-test	436.00*	355.00*	-
Wald chi2	-	-	767.45*

Notes: Standard errors are given in parentheses; * indicates statistical significance at one percent level and** indicates statistical significance at five percent level.

Table 7: Panel Regression Results: Impact of Transfers on States' Expenditure Economy

Dependent Variable	Ratio of revenue expenditure to states' own revenue receipt in percent(RREOR)
Explanatory Variables	*Random-Effect Model*
Ln PGSDP	-2.3813　* (22.57345)
lnPOPDN	9.1911　* (33.26131　)
Ln PARTC	6.26098　* (20.81165)
Constant	-58.7042　* (169.6983)
Hausman test (p-value)	2.01 (0.5632)
Wald chi2	52.78*
R^2 within	0.4982
R^2 between	0.3124
R^2 overall	0.3841

Notes: Standard errors are given in parentheses; and * indicates statistical significance at one percent level.

Table 8: Panel Regression Results: Flypaper effect

Dependent Variable	lnPCAEX	lnPCREX	lnPCCAD
Explanatory Variables	*Fixed-Effect Model*	*Fixed-Effect Model*	*Fixed-Effect Model*
ln PGSDP	0.4289357* (0.0298092)	0.2923835* (0.0309131)	0.1887381* (0.0597867)
lnPOPDN	0.2059339* (0.0591172)	0.405106* (0.0613065)	-0.3543009* (0.1185684)
ln PCLST	1.041405* (0.0315695)	0.7455526* (0.0327386)	0.5309842* (0.0633173)
Constant	-0.7441643* (0.2186156)	-2.687355* (0.2267118)	2.996677* (0.4384665)
Hausman test (p-value)	12.74 (0.0052)	26.10 (0.000)	11.67 (0.0086)
Wald chi2	-	-	-
R^2 within	0.7988	0.8313	0.2313
R^2 between	0.7124	0.5426	0.7892
R^2 overall	0.7341	0.6362	0.6495
F test	694.65*	862.60*	52.66*

Notes: Standard errors are given in parentheses; and * indicates statistical significance at one percent level.