

Centre-State Spending on Elementary Education: Is it Complementary or Substitutionary?

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Sukanya Bose, Manasi Bera and Priyanta Ghosh



National Institute of Public Finance and Policy

New Delhi

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Sukanya Bose, Manasi Bera and Priyanta Ghosh

Abstract

The objective of this paper is to empirically address the question of Centre-State relation in financing elementary education. The idea of financial concurrency in financing education and the experience of various centrally sponsored schemes provides the historical context for the analysis. The empirical question focuses on the impact of SSA's central grants on States' spending behaviour. Is the relationship complementary or substitutionary? The paper also explores the impact of the 13th Finance Commission's grants for elementary education. The results indicate that the central grants for SSA (and the 13th FC grants) has a complementary impact on State's spending, though the incremental effect varies across states. The results are particularly pertinent for the 16 focus States, which have large additional financial requirements. It is important to restore financial concurrency between the Centre and the States, for universalization of elementary education of an equitable quality, a task that is far from over. We also argue for a specific purpose grant by the 15th Finance Commission based on equalisation principle.

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I. Introduction

Resource constraint has been an enduring problem for the public education sector in India. The fundamental nature of basic education notwithstanding, adequate resources have been hard to come by. A recent assessment of the gaps in the physical and human resources for fulfilling the Right to Education across the States of India, presents a disconcerting picture of gaps existing at many levels (Bose et al, 2020). The gap between the normative requirement and actual expenditure is particularly large in the poorer States requiring not only a higher overall fiscal push, but one that would address the unequal positions of the States.

The inability of States to spend adequately on basic education has tremendous adverse consequences. The intrinsic and instrumental role of investing in public education is well documented. Furthermore, public spending on children assumes greater importance in societies and economies, such as India, that are characterised with huge structural inequalities of diverse nature and need State interventions to ensure redistribution of income, opportunities and freedoms (Sen, 1992; Jha et al 2019). Cross country global analysis shows that public investment and human development achievement go hand in hand; the current HDI values have a strong positive relation with past values on per capita public expenditure on health and education (UNDP, 2013). Across Indian States, there is strong positive correlation between public investment in education and child development and empowerment. States that spend more on education score higher on the Education and Empowerment Index (Jha et al, 2019). From the growth perspective, researchers have noted that several Indian States could be stuck in classic low-level equilibrium trap characterised by low human development and economic growth combination, calling for policy action (Mukherjee et al, 2014).

Intergovernmental transfer is an important mechanism to level the horizontal and vertical imbalances in resources across the Indian States. The federal structure of India comprises of governments at union, State and local levels. There is wide variation in economic structure and levels of development across jurisdictions leading to difference in their expenditure needs and revenue capacity. Also, as per the Constitutional directives, different levels of governments have different powers and responsibilities. While the Union government collects the major share of taxes, State governments are assigned the responsibility to make most of the expenditures on social services. Own tax and non-tax revenues of the poorer States are relatively small. Imbalances in their abilities to raise resources have led to substantial differences in standards of social and economic services across States. Under the circumstances, the inter-governmental transfer mechanism is the only way to correct for the differences in fiscal capacities. Equalisation, in this context implies similar levels of per capita availability of the service. That is, lack of association between taxable capacity and per capita public spending on social and economic services.

The three main arms of the transfer mechanisms have been devolution of Central taxes based on recommendation of the Finance Commission (FC), various kinds of plan grants which were decided by the Planning Commission till recently, and the Finance Commission grants. As is well-recognised, devolution of divisible

pool of central taxes only partially offsets the imbalances across States (Rao, 2017b). It has not been able to mitigate the differences in taxable capacities. While the tax devolution has been progressive in nature, they have not been sufficiently so. For merit goods, such as elementary education (EE), there has always been a strong case for additional transfer of resources to the States.

Centrally sponsored schemes (CSS), such as the Sarva Shiksha Abhiyan (SSA), have been the main route through which the additional transfers of resources to States for financing education takes place. With the enactment of the Right to Education (RTE), the importance of SSA, which was already an existing scheme for universalisation of elementary education, increased. As the CAG's (2017) performance audit on the implementation of the RTE observed, the Union government doesn't make any separate financial provision for the implementation of the Act. SSA was adopted as the main vehicle for the implementation of the Act. The RTE Act also calls on the Central government to refer to the Finance Commission (FC) "the need for additional resources to be provided to any State government so that the State government may provide its share of funds for carrying out the provisions of the Act" (Section 7). Thus, we observe that the grant mechanism has been assigned a central role in the conception of supplementary funding to the States for financing of EE.

Tension between the Central Government and the State governments surrounding the CSSs

In direct opposition to the above expectations, the grants for EE have dried up, especially in the recent years (see next section). While part of this is due to the overall compression in government expenditure to conform with the FRBM targets in a scenario of weak revenue growth, there are arguments from fiscal federalism perspective which have called out the grant mechanism. Let's look at the two major objections to central grants.

In the context of Centre-State financial flows, the issue of centralizing tendencies of CSS have been raised often. It is argued that transfer of resources by the mechanism of grants affects the freedom and manoeuvrability of the States in setting priorities and States should be allowed to set priorities rather than acting on Central command and control. Echoing this view, Guhan (1995) notes that a combination of paternalistic, populist, and bureaucratic factors explains the proliferation of CSS in numbers and amount. More recently, Chakraborty (2019) terms the Indian federal arrangement with conditional and unconditional grants as a fragmented one and strongly backs the 14th Finance Commission recommendations for a greater devolution of untied funds to the States. While this is true to an extent, the possibility of local capture is also a reality. As some have noted, earmarking and conditionality in grants have been effective in counteracting the potential for capture of local governments by local elites and in directing funds for redistribution to the neediest (Kochar et al., 2009). There is also no reason why the State priorities will always be correct. At times, the higher level of the government needs to set the priorities, which the lower level of government may miss. Writing in the context of the US, Tsang and Levin (1983) note "Left to its own preferences and budget, a local government might not take all national concerns into account when providing education. For example, it might set a low priority for providing special educational assistance to

disadvantaged, handicapped, and bilingual children relative to national priorities. It is these disparities between local decisions and national or State concerns that become the focus of federal policy. Higher levels of government will seek to get lower levels of government to meet the overall social priorities as well as those of the lower governmental unit.” (Tsang and Levin 1983: p. 331) We will see how this argument applies to school education in India (see Section 2).

The other objection refers to the fungibility of finances, an issue that we will explore in this paper. A central idea in the theory of fiscal federalism is that all grants, earmarked or not, are essentially fungible in the sense that they may in effect be reallocated to other than the targeted spending categories – or result in tax reductions instead of spending increases of any sort. In other words, while the purpose of the specific-purpose grant from the centre may be to ensure minimum standards of services across States by adding to the State’s expenditure on services, if States reduce their own expenditure as a result of Central transfers, the system may not move in the desired direction.

The mechanism of matching shares was invented so that States have a stake in the programme and contribute proportionately. The potential for grant funds to crowd out spending that the recipient government would otherwise undertake in the targeted area is generally less for open-ended matching grants, which lower the relative price of targeted spending, than for the other forms of earmarked grants – closed ended matching and categorical block grants (Smart and Bird 2009). That is, the design of grant matters. Furthermore, a large number of empirical studies have confirmed the existence of “fly paper effect”, which would suggest that grants do not crowd out spending that would otherwise have been undertaken by the recipient government, but result in incremental spending (Hines and Thaler 1995). The evidence also suggests that the flypaper effect, the notion that money sticks where it hits, is not an anomaly.

For school education, there is a rich literature on the impact of different kinds of grants – mostly non-matching earmarked grants - across different levels of government in the US. Based on a comprehensive survey of empirical studies in this regard, Tsang and Levin (1983) conclude that the effect of such grants on the total educational expenditure of a local government have either been substitutive or stimulative. A higher-level government can alter the behaviour of lower level governments by changing their *preferences, relative prices of goods and income*. The marginal propensity to spend State block grants for education ranges from a low of 0.16 to a high of 1.06. The individual characteristics of a local government strongly influences the fiscal response as does the design of the intergovernmental grant.

Several European countries have used the intergovernmental grant mechanism for school education. Westberg (2013) examines the role of the grant mechanism in the spread of mass education in Sweden as far back as the 19th Century. Government grant reform of 1871 had established matching grants as the dominant government grant formula. “Despite the growth in these grants, and the fact that they provided local school districts with between 26% and 31% of their funding in 1865–1900, the government grants did not crowd out local funding. Instead, the matching grants were perceived as an incentive, influencing school district behaviour. The government grants stimulated the school districts to

increase local funding at the pace corresponding to that of national government grants. These revenues were subsequently used to add additional teachers to the staff and to raise teacher salaries. The grants also seem to have influenced school districts' choice of teachers." (Westberg, 1871, p.20)

The empirical literature on the impact of grants is fairly limited for the developing countries. Huang et al (2018) observe a substitutive effect of categorical transfer to education in Central and Eastern China, but stimulating effect in Western China which is economically less developed and has low local public education expenditure. This suggests that poorer regions have a higher tendency of incremental spending on social sector with increase in income or expansion of fiscal capacity through grants. In the context of expenditure on health sector in India, Rao and Choudhury (2012) and Rao (2017a) find that the States substituted Centre's transfer by cutting down its own expenditure on health during 1990s till 2015. Given the limited fiscal space, States may reduce their own expenditure and reallocate the funds to other sectors.

The objective of this paper is to examine the impact of the grant mechanism for elementary education on States' expenditure. Is the relationship complementary or substitutionary? As per our knowledge, this question has not been explored in the context of grants for school education for India. The idea of financial concurrency in financing education and the experience of various CSS provides the historical context (Section 2). The empirical method and estimations in Sections 3 and 4, respectively, focus on the specific question of impact of SSA on States spending behaviour. It also explores the effect of the 13th Finance Commission's grants on EE. The findings lead to a set of policy recommendations (section 5).

II. Historical Context of Intergovernmental Transfers in Elementary Education

Historically, left to themselves in the post-independence years, only a handful of States such as Himachal Pradesh, Tamil Nadu and Kerala chose education sector as priority. The Directive Principles of State policy were far reaching in their vision. Very few States, however, adopted them. There were shortages of teachers and classrooms everywhere; single teacher schools were in large numbers. Similarly, mid-day meal (MDM) programme was demonstrated for over twenty years in Tamil Nadu. Yet very few of the other States chose to implement the scheme until the Supreme Court ruling came.¹

To set national priorities, and to work in concurrence – Centre and States – to achieve these objectives was therefore crucial. Arguing strongly for financial concurrency, V. K. R. V. Rao (1972), then union minister for education and youth services, noted, "In respect of universal primary education which is a constitutional directive, some States can reach the goal in 10 years while others may need more than thirty to do so... Anything that the Centre can do to reduce

¹ People's Union for Civil Liberties v. Union of India & Ors, In the Supreme Court of India, Civil Original Jurisdiction, Writ Petition (Civil) No.196 of 2001

these imbalances will be welcome in all quarters...Centre should increase its investment in education and make larger grants available, not only for the Central sector, but also for the Centrally sponsored sector. We need not only more education, but good education as well; and if this is to be provided and greater equality in educational opportunity is to be created to promote social justice and the creation of a socialistic pattern of society more funds will have to be found for education... I recommend very strongly “financial concurrency” in education...” (1972: 182-183).

Table 1: Expenditure on different schemes for elementary education by the department of education of Central government (in Rs Crores)

Schemes	1990-91	1991-92	8th plan (1992-97)	9th plan (1997-2002)	10th plan (2002-07)	11th plan (2007-12)	12th plan (2012-17)
Teacher training	18	42	426	784	915	1600	3168
Non-formal education	35	40	594	737	10	0	0
Operation Black Board and Other grants	150	176	1111	1748	28	0	0
Mahila Samakhya	0	0	19	31	78	209	120
District Primary Education Programme	0	0	482	3848	3341	103	0
Mid-Day Meal	0	0	1241	6499	12477	38294	50911
Sarva Shiksha Abhiyan (including KGBV and NPEGEL)	0	0	0	576	28271	77420	116119
Scheme for minority education	0	0	0	0	0	363	943
Other expenditure	24	25	145	303	521	66	72
Total	226	283	4018	14526	45639	118056	171332

Source: AOBEE; for 2012-13 to 2016-17 Expenditure Budget, GoI.

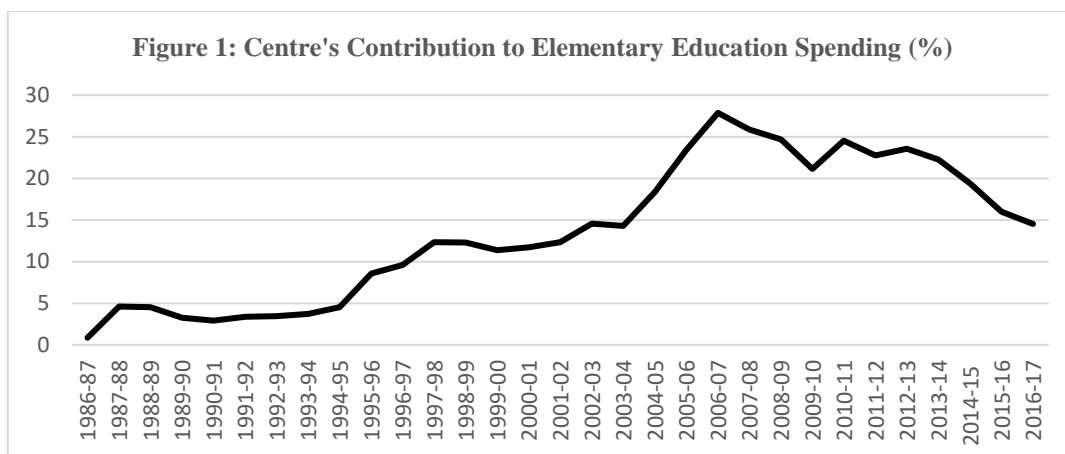
Note: Teachers training includes Teacher's training, NCTE, Strengthening of teacher's training institute; Scheme for minority education includes Scheme for providing quality education in madrassas, Infrastructure development in minority institution; Other expenditure includes Educational Technology Programme, Shiksha Karmi Project in Rajasthan, Bihar Education Project, Bal Bhawan Society, Lok Jumbish/ Rajasthan Education project, Joint GoI-UN program for primary education, Support to one year pre-primary in govt local body etc.

With the inclusion of education in the concurrent list in 1976, Centre was expected to play a greater role in financing education (Tilak, 1984). Govinda and Bandopadhyay (2008) highlight that the proactive manner in which the GoI acted following the adoption of the National Policy on Education, 1986 stands out as a landmark innovation in education policy. This made the GoI the prime mover in designing and implementing development initiatives in EE. Direct involvement of the central government in strengthening infrastructure and delivery of EE allowed

the States to act favourably. Operation Black Board initiated by the central government was focused on making single teacher primary schools as two teacher schools with one of them being a lady teacher. Around the same time the scheme for restructuring and reorganization of teacher education was launched. District Primary Education Programme (DPEP) was launched in mid 1990s to universalize EE in selected districts of the country and gradually spread to 242 districts. The most important consequence of the DPEP is a relaxation of the resource constraints in planning education (Tilak, 2002). Educational planning under austerity had been the characteristic feature of planning education in India for a long time, as in many developing countries. Perhaps for the first time, the districts in India were told that each district participating in the DPEP would be given about Rs 40 crores for a seven-year period. MDM, which was already in operation in a few States, was universalised across the country with cooked meals replacing dry ration. Central financing for MDM recorded an increase over the last three plan periods (Table 1).

SSA, a major CSS, was conceptualized in 2000-01 as additional finances by the GoI over and above the existing State expenditures to invest in various components of education expenditure on quality improvement and capacity building. The first decade of the millennium witnessed unprecedented levels of attention paid to education in terms of programmes in the country and investments (Govinda and Sedwal, 2017). There was rapid spread of educational facilities in terms of new schools, and official statistics recorded near universal enrolment of children in primary schools. Children from marginalized social groups became part of the mainstream education system and there was a conscious effort towards gender parity. SSA, which worked through the system of matching grants with a declining central share through the lifecycle of the grant, accounted for more than 80 percent of plan expenditure (Sankar, 2007).

However, as the literature suggests, SSA had several weaknesses. Along with the issue of States' sovereignty, the one size fits all approach and a uniform matching formula for most States has continued to be a problem (Jha and Rani, 2016; Rao, 2017b; Sankar, 2007, Mukhopadhyay et al 2017). Particularly, on the question of adequacy and equity in fund flows across States, SSA didn't do enough. The quantum of SSA central grants to the States was far short of the resources necessary to meet the funding deficits for the poorer States (Bose et al, 2020). In fact, it was during the SSA years that the financial concurrency began to be reversed. Centre's share in total public expenditure on EE increased from 0.6 percent in 1981-82 to 8.6 percent in 1995-96, reaching 28 percent in 2006-07 (Figure 1). Beyond 2006-07 there is a reversal of the trend. The share of Centre's expenditure in total expenditure on EE has come down to 14 percent in 2016-17. The 12th plan period actually saw an absolute decline in Centre's expenditure on EE (Appendix Table A1). Central allocation on SSA has stagnated or even fallen in some recent years.



Note: Expenditure in 2015-16 is RE and 2016-17 is BE. Expenditure on Central sector schemes such as KVs and Navodaya are not included in Centre's expenditure on EE as per AOB; Scholarship schemes run by the Ministry of Social welfare and empowerment, GoI are not included as these expenditures are not separable by levels of education.

Source: AOB

In the past, Finance Commissions have recommended grants for education. The 12th FC (2005-10) recommended grants towards equalization of educational expenditures for eight States (Assam, Bihar, Jharkhand, MP, Orissa, Rajasthan, UP and WB). The grant amount of Rs 10,172 crores was to be utilized only for the sector with minimum conditionalities governing the release and utilization of the grants. The 13th FC (2010-2015) recommended grant for EE specifically to the tune of Rs 24,068 crores, covering most States. The grant was to enable the States to meet the higher matching share for SSA allocations. The volume of the grant, though was meagre, compared to the gaps in funding that the States had. A minimum expenditure growth of 8% in States' expenditure was required to avail the grant.

The 14th FC (2015-2020) chose not to provide any specific purpose grant for education to the States. Instead the States were expected to spend out of the greater tax devolution and the corresponding increases in revenues. It seems that this has not happened in adequate measure. Based on our own calculations for the last three years from State Budgets, we find that the overall growth in expenditure of the States on EE has been very modest.² Even though the growth in nominal GDP exceeded 11%, between 2015-16 to 2017-18, the average annual growth in EE expenditure was 7.9% for all-India, and 6.3% for the poorest States combined (Bihar, UP, MP, Odisha, Rajasthan, W. Bengal, Chhattisgarh and Jharkhand). Growth in per child expenditure is even more pale.

The above trends – both the long run picture and the most recent trends when financial concurrency has been reversed, central grants are stagnant/falling and it looks like that States are cutting back on their expenditure - present an urgency to examine the impact of intergovernmental transfers for EE on States' expenditure pattern. Did the growth in Central spending create conditions for

² We don't have information on actual expenditure in the recent period from Analysis of Budget Expenditure on education (AOBE), the main data source used.

growth of States' expenditure on education or did it substitute it? Remember States provide the bulk of the spending on education and bear the primary responsibility for service delivery.

III. Methodology and Data

The Centre-State relation in financing elementary education in India is examined in this paper using both all-India and State-level evidence.

Aggregate Model

First, to have an understanding of overall picture we use time series regression covering the period, 1989-90 to 2017-18 i.e. 29 years. As we saw in the last section, CSS for educational development has a long history, which calls for a review of the long-run relationship. The equation specification is the following

$$GRSEE_t = f(GRCEE_t, GRCEE_{t-k}, GRGDP_t, EEPREF_t, GREENROL_{t-k}) \quad (1)$$

t, t-k denote time

Where,

<i>GRSEE_t</i>	Growth in States' expenditure on EE
<i>GRCEE_t</i>	Growth in Centre's expenditure on EE (through CSS)
<i>GRGDP_t</i>	Growth in GDP
<i>EEPREF_t</i>	Preference for EE, measured as share of expenditure on EE in total expenditure
<i>GREENROL_{t-k}</i>	Growth in elementary enrolment

The objective here is to estimate the effect of growth in centre's expenditure on EE through CSS on growth in States' expenditure on EE at the aggregate level, after controlling for GDP growth, preference for EE and growth in elementary enrolment. The primary variable of interest is GRCEE. A positive coefficient of GRCEE would indicate complementary relation between Centre and State expenditure on EE, while negative coefficient would suggest substitutionary relation. A complementary relation would support the argument of continuing central push as it encourages States to spend on EE. Lag values of growth in the centre's expenditure are also considered to take into account the possibility of lag effects. GDP growth indicates expansion in capacity to finance EE, while EEPREF represents the willingness to prioritise education spending. Both GDP growth and education priority are expected to have positive relation with GRSEE. The trend in elementary enrolment represents the demand side factor while the others constitute the supply side factors. A lagged value of the elementary enrolment is used to take into account the possibility of reverse causality. The growth rate specification has been preferred over the level specification as the growth series are found to be stationary while level series are not. The variable EEPREF is stationary in level. Ordinary least square method is used for estimation.

State-level model

While the aggregate model explains the overtime variation in the spending behaviour, it cannot capture the difference in the spending behaviour between the States. There are important structural differences in the characteristics of the States such as variation in capacity and preferences, etc. which makes it imperative to do a State level analysis. A State level model using panel data, which captures both State and across time variations in the variables is specified (equation 2 to 4 below). The analysis is done with a balanced panel of 28 States observed over the period 2005-06 to 2017-18.

$$PCHSEE_{it} = g(PCHCenSSA_{it}, PHCSR_{it}, Statepref_{it}, HDI_{it}, ENROLPS_{it}, SCS_i, \nu_i, \eta_t) \quad (2)$$

$$PCHNetSEE_{it} = g(PCHCenSSA_{it}, PHCSR_{it}, Statepref_{it}, HDI_{it}, ENROLPS_{it}, SCS_i, \nu_i, \eta_t) \quad (3)$$

$$PCHNetSEE_{it} = g(PCHCenSSA\&FC_{it}, PHCSR_{it}, Statepref_{it}, HDI_{it}, ENROLPS_{it}, SCS_i, \nu_i, \eta_t) \quad (4)$$

(*i* denotes States, and *t* denotes time)

Where,

<i>PCHSEE_{it}</i>	Per child State's expenditure on EE
<i>PCHNetSEE_{it}</i>	Per child net State's expenditure on EE is the expenditure of the State, net of State's release under SSA
<i>PCHCenSSA_{it}</i>	Per child SSA central grant to the State.
<i>PCHCenSSA\&FC_{it}</i>	Per child SSA central grant inclusive of 13 th FC grant for EE
<i>PHCSR_{it}</i>	Per child State's revenue
<i>Statepref_{it}</i>	State's priority towards overall education
<i>HDI_{it}</i>	Human development index
<i>ENROLPS_{it}</i>	Relative size of the public sector enrolment
<i>SCS_i</i>	Special category State dummy (1 for SCS and 0 for GCS)
<i>ν_i</i>	State fixed effect
<i>η_t</i>	Time fixed effect

The variation in Per Child State's expenditure on EE (PCHSEE) is sought to be explained through variation in a set of independent variables: SSA central grant to the States, State's revenue capacity, State's priority towards education, HDI and enrolment share in public school (see Appendix Table A7 for definition and data source). A positive coefficient of PCHCenSSA would indicate 'stimulative / complementary effect' on PCHSEE while a negative coefficient will suggest 'substitutive effect' of central grant. State's revenue is expected to have a positive effect on PCHSEE. State's priority in expenditure reflects its preference for education. A higher preference should result in higher expenditure on EE.

The reason for including HDI needs an explanation. Though the rich States are more likely to have higher HDI, there are States such as Himachal Pradesh with moderate revenue levels but high per child spending. The push for higher educational spending comes from the higher levels of HDI achieved and social consensus around it. A negative effect of ENROLPS on PCHSEE is anticipated.

The size of the public sector varies across states. Ceteris paribus, large size of the public sector can squeeze the per child spending by the States as resources are being shared among the large number of enrolled children in the public schools.

Special category states (SCSs) suffer from various cost disabilities and will have higher per child expenditure on EE. Time fixed effect control for the business cycle effect or time specific macro-economic shocks such as hike in the teacher salary due to 6th Pay Commission. The inclusion of the time fixed effect also takes into account the change in the SSA sharing formula between centre and the States. It has changed from 25:75 during 2005-06 to 2006-07 to 35:65 during 2007-08 to 2014-15 and further to 40:60 since 2015-16 for the general category States.

All the variables are expressed in constant price. GDP deflator is used to adjust for inflation. The variables are normalized using child population of elementary age group (6 to 14 years), i.e., the target group - instead of the usual practice of normalizing with overall population.³

Along with equation (2), the regression equation for Per Child State's expenditure on EE net of States contribution on SSA (PCHNetSEE) is estimated (equation 3) to see the impact of central grants on the untied part of State's expenditure.

From the perspective of EE expenditure, an important intervention was the recommendation of the 13th FC for a specific purpose grant for the sector as discussed in Section 2. To examine the effect of this grant, we estimate equation (4) for the 13th FC period. The SSA grant and the 13th FC grant are combined into a single variable (PCHCenSSA&FC) since the two grants are correlated. As we know, the 13th FC grant was given in order to enable the States to meet the higher matching share of SSA, which would impose additional financing burden on the States.

The choice between Fixed Effect (FE) and the Random Effect (RE) is central to the estimation of regression equation involving panel data. Both the methods have advantages and disadvantages. The FE eliminates the unobserved time invariant variables by transforming the original model in mean deviation. In doing so it solves the potential endogeneity problem that may arise due to the presence of unobserved time invariant omitted variables. However, with the transformation of the original model FE completely removes the "between" the cross sections variation and consider only the information which varies over time "within" the cross sections. RE model on the other hand takes into account both the 'within' and 'between' variation in the data and therefore more efficient compared to the FE model. However, RE estimate may not be consistent as it does not eliminate unobserved time invariant variables but rather assumes that they are uncorrelated with the regressor (Baltagi, 2005; Bell and Jones, 2014).

For estimating equation (2), RE model is preferred over the FE model since in our analysis of intergovernmental transfers on States expenditure, both 'within' and 'between' variations are important. In the data, a substantially large proportion of the overall variation is explained by the 'between' State variation which FE fails to account for. For instance, SSA central grant varies more across States and education preference varies only marginally across time; eliminating these variations reduces the explanatory power of the model. The fact that FE in

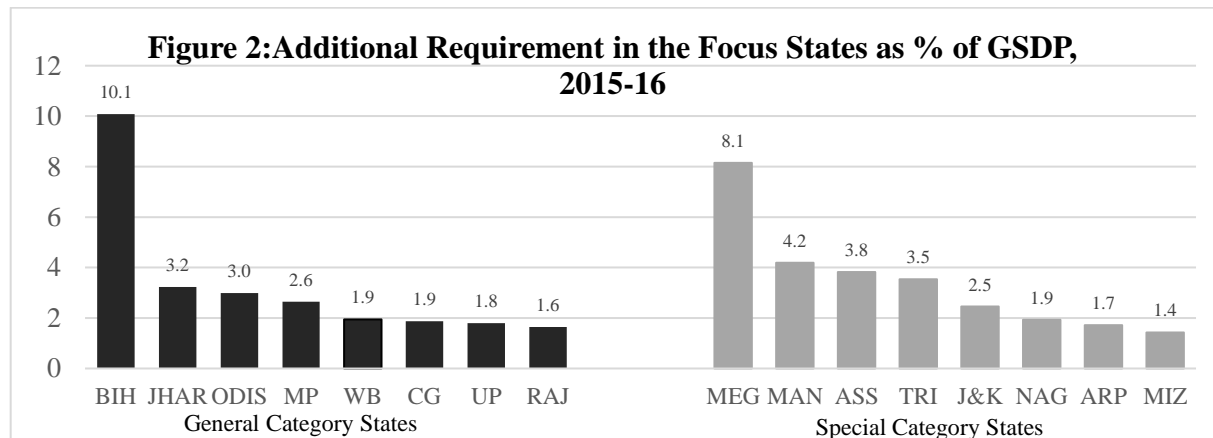
³ It makes a considerable difference to cross sectional variables as the child population to overall population varies considerably across States:13% in Goa and Kerala to 24% of total population in Bihar and UP.

our case removes the time invariant variable Special category States dummy (SCS), which is an important variable affecting per child State expenditure further justifies the use of RE. To insulate RE estimates from the endogeneity problem due to the presence of unobserved time invariant State effects, a fairly large set of controls have been taken including those that take care of the State characteristics, such as HDI. In any case, FE results are also reported for the robustness of our result.

The table for the summary statistics (Appendix Table A2) suggests the use of logarithmic transformation of the dependent variables and some of the independent variables (PCHCenSSA, PCHCenSSA&FC, PCHSR) in the regression equations. Panel data is prone to heteroscedasticity problem. To control for that, Huber-White robust standard errors are used.

Classification of States

In order to understand the differential effect of intergovernmental transfer across States, we have classified States in certain broad groups. The logic of the classification comes from our previous study on resource adequacy in the context of RTE (Bose et al, 2020), where the normative resource requirement for RTE and the actual expenditure on EE have been compared. Additional requirement, i.e. the gap between normative requirement and actual expenditure, is estimated at 10.1 percent of GSDP for Bihar. Among seven other general category States, it ranges between 3.2 percent of GSDP (Jharkhand) to 1.6 percent of GSDP (Rajasthan). Among the SCSs, for Meghalaya, the additional requirement to GSDP stands at 8.1 percent, whereas it is 1.4 percent for Mizoram with six more SCSs lying in between (Figure 2). The additional requirement signifies the resource inadequacy to meet the normative standards of RTE.



Source: Bose et al (2020)

We call the set of 16 States in Figure 2, Focus States (FS). Among the 29 States of India, these are the States where additional requirement is higher than 1% of GSDP. The group of 16 focus States comprises of two sub-groups – General Category Focus States (GCFS) and the Special Category Focus States (SCFS), each constituting of eight States. Though there are important differences in the nature of disadvantages that these two subgroups of States suffer from, and hence need to be considered separately, all the 16 States are characterised by high additional requirement relative to their revenue base. Central assistance would be

particularly important for these States.⁴ Thus, the State level panel data analysis looks specifically at the FS, along with GCFS and SCFS. Besides, Major State, is the broader group, on which the analysis has been conducted.

The following are the three groups of States

Major States: Andhra Pradesh (with Telangana), Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal

GCFS: Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and West Bengal

SCFS: Arunachal Pradesh, Assam, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Tripura

Data Issues and other Limitations

The challenges of finding appropriate data series are quite acute at the State level. Analysis of Budgetary expenditure on Education (AOBE), published by MHRD, doesn't provide data on inter-governmental transfers at the State level. These have to be obtained for the specific CSSs from their respective website, where old data is replaced with new data. While a panel estimation with longer time frame would have been ideal, the starting point of 2005-6 was dictated by the availability of data on SSA expenditure.⁵

The AOBE data comes with a lag of several years. For the period beyond 2014-15, the State's expenditure on EE had to be arrived at through a different method (see Appendix Table A7).

The available data doesn't capture all the relevant variables. Centre's overall expenditure on SSA is available but is not reported State-wise. As a proxy, researchers have generally used Centre's release of funds for SSA to approximate the Centre's expenditure on SSA, ignoring spillover across the years. The use of proxies may result in measurement issues in regression estimation.

Besides data issues, one would like to recognise some limitations of the model per se. While the paper intends to draw a causality from central transfer to the States' spending behaviour, the causality may run from the opposite direction as well. This may lead to a reverse causality problem. Lagged values of the independent variables are often used to overcome this problem. However, the lag value of the SSA central transfer isn't used in our analysis as it would mean losing some observations, when the total number of observations itself is not too large. Another way of correcting the reverse causality problem is the use of simultaneous equation model, but that would have rendered the analysis more complex, and less amenable to interpretation.

The *ceteris paribus* interpretation of the regression analysis while useful in establishing the causal relationship between two variables, essentially is an

⁴ See Bose et al 2020 for an elaboration of the argument and supporting evidence.

⁵ In the absence of data on earlier time period, the impact of equalisation grant given to the 8 States in 12th FC award period could not be analysed.

abstraction from the way macroeconomic variables behave in the real world. Pattern of spending by States is actually determined by a combination of factors working together simultaneously. For example, revenue receipt of the States increased during the 14th Finance Commission period (2015-16 to 2019-20) along with the decline in the central transfer under the CSS including SSA, both of which together impacted the States' spending behaviour. Within a regression framework, the main way to capture the simultaneous effect of two variables is through the use of the interaction variables. However, where multiple variables are working together, this would require interaction across many variables which makes the regression analysis too complicated to come to any reasonable policy conclusion.

IV. Econometric Results

Aggregate Model

OLS regression result for all-India, examining the impact of growth in Centre's expenditure through CSS on the growth in States' expenditure is presented in Table 2. Results show a significant positive relation at second lag while the growth in current expenditure does not have any significant association with growth in States' expenditure on EE. One reason for the lagged effect could be that the central spending has been typically through plan grant, whereas the States incur non-plan expenditure. For instance, expenditure on teachers' salaries, that comprise the major part of States' budgets, may happen with a lag following introduction of a new programme or expansion of an existing one. Selection, appointment and training can bring in implementation lag. States may take time for their own planning and expenditure adjustments.

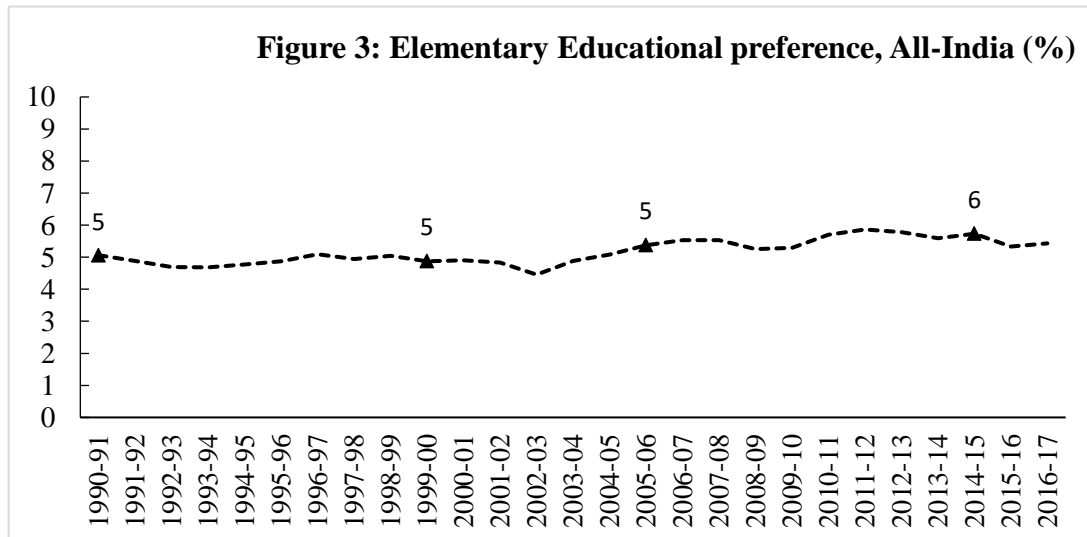
Growth in GDP has a significant positive effect on expansion of States' expenditure for EE as expected. However, priority towards EE does not have any significant relation to States' expenditure. This could be due to negligible variation in priority towards EE over the years (Figure 3). There is no significant relationship between the growth rates in enrolment and growth rate in States expenditure over the three decades, which indicates that there is excess demand that the supply didn't fill in.

Table 2: OLS regression result (All India)

Dependent variable: Growth in States' expenditure on EE ($GRSEE_t$)		
Period of Analysis: 1989-90 to 2017-18		
	(1)	(2)
Growth in Centre's expenditure on EE ($GRCEE_t$)	-0.047 (0.047)	-0.078 (0.051)
First lag of Growth in Centre's expenditure on EE ($GRCEE_{t-1}$)	0.013 (0.046)	0.004 (0.046)
Second lag of Growth in Centre's expenditure on EE ($GRCEE_{t-2}$)	0.025** (0.011)	0.021* (0.011)
Growth in GDP ($GRGDP_t$)	0.808*** (0.286)	0.825*** (0.279)
Preference for EE ($EEPREF_t$)	2.476 (2.829)	3.181 (2.795)
First lag of Growth in elementary enrolment ($GREENROL_{t-1}$)		0.714 (0.475)
<i>Constant</i>	-6.485 (14.76)	-10.613 (14.632)
R ²	0.445	0.497
Adjusted R ²	0.325	0.360
DW Stat	2.031	1.908
No. observations	29	29

Source: Own estimation

Note: *significant at 10%, **significant at 5%, ***significant at 1%. Robust Standard errors are reported in parentheses



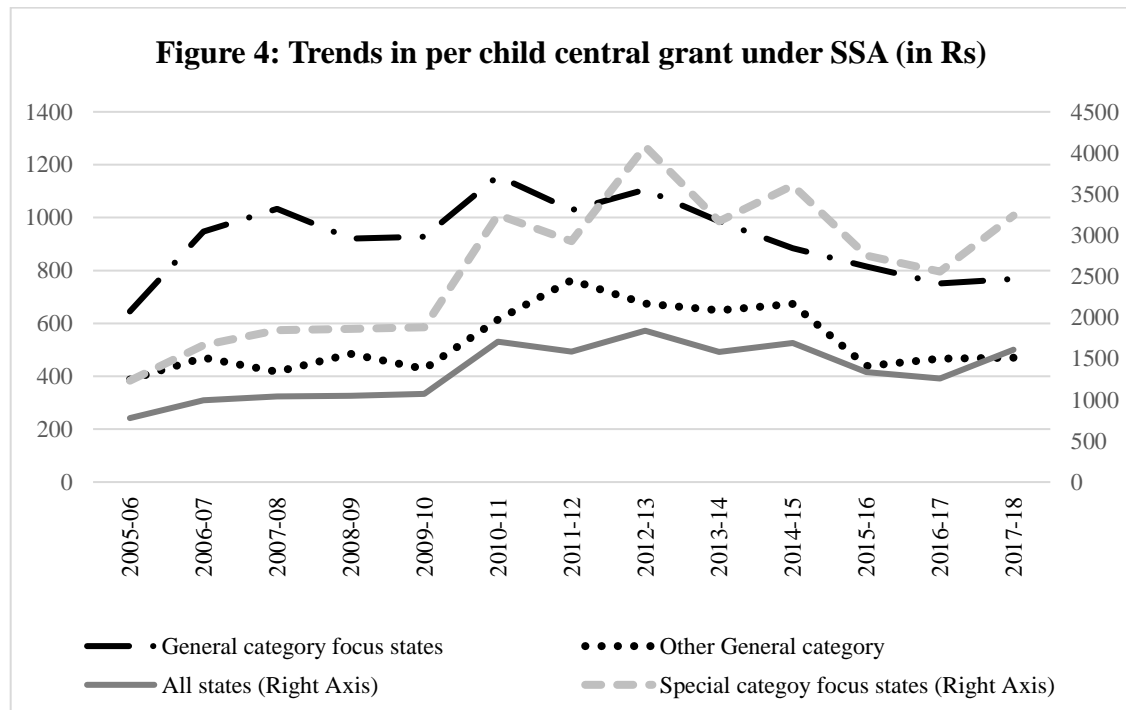
Source: Expenditure on EE: AOB (various years); Total Expenditure: Indian Public Finance Statistics)

Note: Expenditure includes revenue + capital expenditure of Centre and States; 2015-16 (RE) and 2016-17 (BE)

State-level panel Model: Major States and Focus States

Before we discuss the results of the panel models, it would be instructive to look at the movement across time of the main independent variable of interest (Figure 4). Between 2005-6 to 2012-13, the per child central grant under SSA adjusted for inflation (PCHCenSSA), rose, though there were temporary blips such as in 2008-9. Beyond 2012-13, PCHCenSSA has declined in absolute levels for all groups of States. Among the various State groupings, SCSs have the highest levels of PCHCenSSA. The GCFSs have received higher PCHCenSSA compared to the remaining general category States. This gap, however, has increasingly narrowed, particularly beyond 2012-13. Thus, the period under analysis shows both an uptrend and downtrend in the PCHCenSSA that must be taken into account while analysing the results.

The differences across groups of States are also reflected in the mean values of the other independent variables (Table 3). Relatively low revenue capacity, level of spending, human development achievements, on the one hand, and the relatively larger size of the public schooling (government including aided) sector, characterise the GCFS vis-à-vis the other groups. Notably, State priority to education by the GCFSs, is not lower than the rest. To allege their underdevelopment to lack of priority, as is often done, would be an error. Per child expenditure, however, remains low because of the low overall expenditure base despite higher priority to education. For the SCFS, the existing expenditure levels are relatively higher but so are the special needs of these States (Bose et al, 2020).



Source: SSA website

Note: The States have been classified into mutually exclusive groups. Figures are expressed in 2011-12 price

Table 3: Comparison of States' characteristics between different groups of States: Mean Values for 2005-06 to 2017-18

	General category focus States	Special category focus States	Other States
Per child State expenditure on EE in Rs (<i>PCHSEE</i>) [#]	3835	7337	7936
Per child State net expenditure on EE in Rs (<i>PCHNetSEE</i>) [#]	3206	6827	7531
Per child central grant under SSA in Rs (<i>PCHCenSSA</i>) [#]	921	2621	788
Per child State's Revenue in Rs <i>PHCSR</i> [#]	32064	46179	91901
Proportion of total State expenditure on education (<i>Statepref</i>) (%)	17.16	15.44	16.12
Human development Index (<i>HDI</i>) (0-1 scale)	0.56	0.63	0.66
Relative size of the public sector (<i>ENROLPS</i>) (%)	78.63	70.38	72.46

Source: See Appendix Table A7

Note: The States have been classified into mutually exclusive groups. # Expressed in 2011-12 price

The regression results for the panel data models are presented in Table 4 for the Major States, GCFs and SCFs. The impact of SSA central grant on States spending has been examined controlling for State revenues, State priority for education, HDI and share of students in public schools. Taking a cue from the previous result, Figure 4, the analysis factors in the possibility of a change in the relationship between PCHCenSSA and PCHSEE around 2012-13, by introducing an interaction term. It distinguishes the post 2012-13 period, the starting year of the 12th plan, from the preceding years.

Results show a positive significant effect of PCHCenSSA on per child State expenditure in case of the Major States. It implies greater PCHCenSSA has enabled the Major States to raise the State expenditure on EE across time, *ceteris paribus*. Moreover, the States receiving higher grant from the Centre have spent more on EE, compared to other Major States, *ceteris paribus*. The result is similar for the SCFs. For the GCFs, the coefficient of PCHCenSSA is positive and significant, though only at 10% level of significance.⁶

Complementarity in expenditure between SSA central grant and States expenditure is found for all the categories of States. The increment in State spending is higher in case of the SCFs. Rs 100 increase in SSA central grants leads

⁶ Results are broadly similar for the Fixed effect models, except for the SCFs (Appendix Table A4).

The panel model shows a significant contemporaneous effect of central grant on the State expenditure although in the aggregate model we do not find so. The use of growth specification of the variables in the aggregate model as against the level specification in the State level model explains the difference. State's spending increases contemporaneously following an increase in the central grant, however, the rate at which States increase their spending mightn't increase to the same extent. Another reason could be the inability of the aggregate model to capture the State level variations. Significant cotemporaneous effect of the State level model reflects that at a point in time States receiving greater central grant under SSA are also the States spending more. Intertemporally, there could be differences in the speed of response across States, which drives the result.

to Rs 37 (Rs 36) increase in State expenditure for GCFSs (Major States). For the SCFSs, a similar increase in SSA central grant leads to Rs 71 increase in State expenditure, despite the fact that the matching share for SCFSs is much lower (90:10).

Table 4: Determinants of per child State expenditure, RE model

Dependent variable: Per child State expenditure on EE (PCHSEE)			
Period of Analysis: 2005-2017			
Independent Variables	Major States	General Category Focus States	Special Category Focus States
	(1)	(2)	(3)
Per child central grant under SSA (PCHCenSSA) [@]	0.054** (0.027)	0.088* (0.050)	0.252** (0.099)
Per child central under SSA (PCHCenSSA)*post 2012-13 @	-0.026 (0.041)	0.030 (0.079)	0.004 (0.093)
Per child State's Revenue (PCHSR) @	0.443*** (0.129)	0.804*** (0.136)	0.679*** (0.174)
Education Preference (<i>Statepref</i>)	0.061*** (0.007)	0.048*** (0.008)	0.061** (0.024)
Human development Index (<i>HDI</i>)	0.430 (0.666)	-0.623 (0.764)	4.211** (1.890)
Relative size of the public sector (<i>ENROLPS</i>)	-0.007*** (0.002)	-0.006*** (0.002)	-0.004 (0.006)
Constant	2.465** (1.162)	-0.630 (1.112)	-2.945 (2.647)
Year dummy	Yes	Yes	Yes
R ²	0.7608	0.8895	0.7100
Overall specification	32442.37***	230.33***	163.09***
Observations	208	104	104
Number of States	16	8	8
Method	RE	RE	RE

Source: Own calculation

Note: Robust standard errors are reported in parentheses. Hausman statistics has not been reported as Random Effect (RE) is the preferred method. '***', '**' and '*' refers to 1%, 5% and 10% level of significance. @ expressed in log.

The interaction term indicates no significant difference in the relationship in the post-2012 period compared to the preceding years for this set of States. When we correlate the regression results with the declining trend in PCHCenSSA as observed in Fig 4 in the post-2012 period, it raises an alarm. Since the PCHCenSSA and PCHSEE are found to be complementary, a decline in PCHCenSSA would exert a downward pull on PCHSEE, if other sources of financing for the States remain unaltered.⁷

⁷ The post 2012 period, includes the 14th FC period, when the two variables, SSA central grant and State revenue were moving in opposite direction, the latter due to the higher devolution of central

Per child State revenue (PCHSR) has positive and significant coefficient for all the groups (Table 4). The coefficient of State's preference for education suggests a positive impact on PCHSEE. The insignificant impact of HDI may be explained by the high correlation between HDI and per child States revenue (Appendix Table A3). Size of the public sector has the expected negative significant coefficient which means States with large size of the public sector have lower PCHSEE. These are typically the large Eastern States who have a greater share of the public schools but have low spending capacity, which forces these States to spread the resources thinly across children. All these States figure among the GCFs as per our classification.

It would be interesting to see the relative effect of SSA central grant vs. increase in revenue on State's expenditure on EE. The elasticities in the estimated equations enable us to make the comparison. Though the coefficient for per child State revenue (0.80) is higher than PCHCenSSA (0.09), for an increase of State revenue equivalent to increase in SSA central grant in absolute amount, the increase in PCHSEE is smaller compared to the increase associated with PCHCenSSA (Table 5). For instance, in case of Odisha, an increase of Rs 9 in PCHCenSSA (1%), raises PCHSEE by Rs 4 (0.13%). While for an equal increase in per child State revenue of Rs 9, the increase in PCHSEE is Rs 0.66 (last column, Table 5). This pattern is true across States. The effect of SSA grant in raising States expenditure on EE is higher in absolute terms than general transfer which adds to the revenue of the State.

Table 5: Comparison across Δ in Central Grant for SSA Vs Δ in State's revenue (Rs): Elasticity corresponding to Table 4 (column 2) for the 8 General Category Focus States

States	1% of PCHSOR	Δ PCHSEE with 1% increase in PCHSOR	1% of PCHGOI	Δ PCHSEE with 1% increase in PCHGOI	Δ PCHSEE with Δ PCHSOR \approx 1% of PCHGOI
Bihar	202	22	9	2	1.01
Chhattisgarh	462	48	13	5	1.34
Jharkhand	255	21	5	2	0.43
Madhya Pradesh	363	29	11	3	0.92
Odisha	466	36	9	4	0.66
Rajasthan	383	40	14	4	1.47
Uttar Pradesh	273	25	9	3	0.80
West Bengal	344	24	9	3	0.61

Source: Own calculation

Note: Δ represents change; The figures are based on 2013-14 values of the variables.

Coming to the results, for equation 3, the impact of central grants for SSA on per child State spending net of State share under SSA (PCHNetSEE) is found to be negative insignificant for the major States and GCFs (Appendix Table A5). For these States, once the tied part of the State expenditure is removed, the impact of

taxes to the States. However, this effect is not separately studied, as the data is available only for three years.

SSA central grant weakens. Whereas the SSA grant has propelled State's expenditure in a positive direction, it has not positively impacted the untied expenditure by the States.⁸ The positive push to expenditure has happened in large part due to the sharing formula and demand for matching grants from the States. The results, however, in no way suggest that States have substituted their own spending by Central grants.

For the SCFSs, the coefficient of PCHCenSSA is positive and significant at 5% level (Appendix Table A5). Since the tied part of the State expenditure is relatively small because of the sharing formula 90:10 for these states, there is not much difference whether the dependent variable is PCHNetSEE and PCHSEE. Unlike GCFSs, SSA central grant has given a positive push to the untied expenditure for SCFSs. Note that these States have received a higher Central grant per child (Table 3). It is quite likely that, when the quantum of grant is higher, there is a higher positive impact on States spending extending beyond SSA expenditure, all else remaining same.

Impact of the 13th FC grant

The 13th FC had recommended specific purpose grant on EE for the period 2010-11 to 2014-15. The impact of the grant on States net spending (PCHNetSEE) has been examined for the major States and the 16 focus States.⁹ The idea here is to see whether the larger transfer through the two channels together could nudge the PCHNetSEE over the 13th FC award period.

The results presented in Table 6 show that the per child central grants on SSA when combined with the FC grant on EE has a positive and significant impact on PCHNetSEE, the untied State expenditure on EE for the 16 focus States. Whereas PCHCenSSA didn't have significant positive impact on PCHNetSEE for the GCFS (Appendix Table A5), PCHCenSSA&FC has a positive significant impact for the 16 focus States, including GCFSs. It appears that the 13th FC grant provided an additional push to expenditure for EE to the 16 States in a way that the SSA grants alone could not do. This prompted the States to act favourably by raising their own expenditure on EE. It is possible that a certain threshold level of additional funding may be necessary to push the States to raise their expenditure. The five-year time frame of FC grant, rather than the annual planning of SSA, provides a certain certainty to States on the funds available to them.¹⁰

⁸ The term untied is used in a relative sense compared to the previous result. PCHNetSEE still includes the States contribution to MDM. Matching grant on SSA, though, constitutes the overwhelming portion of the tied expenditure of the States, which has been netted out.

⁹ The relation has not been examined for the GCFS and SCFS separately, due to insufficient observations.

¹⁰ As expected, the impact on PCHSEE of PCHCenSSA&FC is positive significant (not reported).

Table 6: Determinants of per child net State expenditure during the 13th FC period, 2010-2014

Dependent variable: Per child net State expenditure on EE (<i>PCHNetSEE</i>)		
Period of Analysis: 2010-2014		
Independent Variables	Major States	Focus States
	(1)	(2)
Per child central grant inclusive of SSA and 13thFC (<i>IPCHCenSSA&FC</i>)@	-0.047 (0.083)	0.111** (0.043)
Per child State's Revenue (<i>PHCSR</i>)@	0.734*** (0.186)	0.554*** (0.167)
Proportion of total State expenditure on education (<i>Statepref</i>)@	0.066*** (0.012)	0.043*** (0.010)
Human development Index (<i>HDI</i>)	-0.031 (2.084)	3.773*** (1.148)
Relative size of the public sector (<i>ENROLPS</i>)	-0.004 (0.003)	-0.002** (0.001)
Special category States dummy (<i>SCS</i>)		0.203 (0.191)
Constant	0.046 (0.966)	-1.181 (1.827)
Year dummy	Yes	Yes
R ²	0.7140	0.7348
Overall specification	546.12***	457.89***
Observations	80	80
Number of States	16	16
Method	RE	RE

Source: Own calculation

Note: Same as Table 5. @ expressed in log

It may be pointed out here that the 13th FC grant to the States was more progressive in its distribution than the SSA central grant. Despite the conditionalities that the 13th FC grant on EE put on the States, the FC grants followed the equalisation principle more closely than the SSA grant.¹¹ Table 7 compares the share of 16 focus States vis-a-vis the rest of the States in the distribution of conditional grants. It shows a higher share for the focus States, which are also the most resource scarce States, in the overall pool of specific purpose grant recommended by the 13th FC. The same is reflected in the comparison of the correlation coefficients between the States' revenue and the two grants. The correlation coefficient between States' revenue PCHSR and the 13th FC grant is negative and statistically significant, whereas it is positive and insignificant vis-à-vis SSA grant, PCHCenSSA (Table 7). This might be the reason why one finds a positive significant relationship between PCHCenSSA&FC and

¹¹ Refer to the debate on the question of conditionalities surrounding the 13th FC grant on education published in EPW, volume 46 (17).

PCHNetSEE for the focus States, whereas the same doesn't hold for the Major States.

Table 7: Share of 16 Focus States and Other States in Centre's Conditional Transfer on Elementary Education

	Proportion of SSA Central Grant flowing to		Proportion of 13 th FC award flowing to	
	16 Focus States	Other States	16 Focus States	Other States
2005-06	71.01	28.99		
2006-07	75.50	24.50		
2007-08	78.81	21.19		
2008-09	73.97	26.03		
2009-10	76.33	23.67		
Average	75.12	24.88		
2010-10	74.90	25.10	79.78	20.22
2011-12	68.08	31.92	80.79	19.21
2012-13	73.94	26.06	81.64	18.36
2013-14	74.94	25.06	82.31	17.69
2014-15	70.69	29.31	82.18	17.82
Average	72.51	27.49	81.34	18.66
	Correlation between PCHSOR and PCHCenSSA		Correlation between PCHSOR and Per child FC grant	
	0.050 (0.34)		-0.277** (0.001)	

Source: SSA website, 13th FC report

Note: p values are in the parentheses

V. Policy Implications

The main findings from the regression analysis can be summarised as follows.

- A positive significant relationship indicative of complementarity is found between the central grant on SSA and the state expenditure on EE for all the categories of states, after controlling for other factors. The impact of SSA grant is relatively stronger for the SCFSs, compared to the GCFs.

- A positive significant relation implies that an increase in the SSA central grant has caused an upward movement in states' expenditure on EE, *ceteris paribus*. The flip side is that when the SSA central grant stagnates or falls – which actually happens over a considerable part of the period under analysis – state expenditure on EE also falls, *ceteris paribus*.

- One can see that the relation is driven by the tied component of SSA grant, since the relation becomes insignificant after netting out the same from states' expenditure, for the GCFs and the Major States. It is but expected that the matching grant will have a role in establishing complementarity. For the SCFSs with a much higher central share in SSA expenditure, a positive significant impact on the untied part of state expenditure on EEs is obtained.

- The 13th FC grant award (2010-11 to 2014-15) provided the states additional fiscal space for spending on EE. Along with the SSA central grant

it reinforced the complementarity in spending for the 16 focus states. The 13th FC grant scored better on equalisation compared to the SSA central grant.

- The aggregate model also indicates a complementarity between growth in CSS spending for EE and growth in state expenditure, but with a lag.

Need to Restore Financial Concurrency

What do these results based on past trends mean for public expenditure on EE, especially for the focus states? It bears repeating that the additional requirement on EE is very large for these states (Figure 2). Public resources are necessary to fill the teacher gaps, bring about parity in pay around a decent salary norm, run teacher education institutions and teacher training programmes, provide for an adequate management structure, provide for maintenance of schools, learning resources and students' entitlements, etc. Concerted effort is needed for inclusion of out of school children, among other things (Bose et al, 2020). The 16 focus states cannot meet these gaps by themselves due to the small revenue base compared to the disproportionately high requirements. There is an imminent need for a big push in terms of additional financing for these states. Higher transfer through additional grants is important for the focus states for narrowing the resource gaps. Addressing adequacy issues would automatically address inequalities across states.

This calls for a restoration of concurrency in financing elementary education, and a reversal of the current trend. The presence of complementarity between central grants for SSA and states spending, as indicated in this paper, needs to be tapped to provide the necessary fiscal resources for continuation of the existing programmes, expansion and improvements in the system. Central transfer through SSA has played a positive role and therefore must be continued, expanded but also strengthened to embrace the equalisation principle. A higher Central share in SSA for the GCFS, as demonstrated in the case of SCFS, should be considered for a more positive impact on States' spending.¹²

In addition, the concerns on the question of autonomy to determine educational strategies based on local contexts needs to be addressed. Financial concurrency and need-based decentralised planning and implementation should go hand in hand.

Why not raise state priority in EE spending or raise States revenue base?

States' priorities to education spending has a significant positive impact on the states' expenditure. The trend indicates that states' priorities have moved in a narrow range over the past few decades. While it is true that state priority is higher in the 16 focus States (particularly among the GCFS) than the rest, there's been no upward movement in the variable (Appendix Table A6). It shows the limited fiscal space of these states and lack of reprioritisation option, which is often suggested as a way to raise education expenditure, ignoring the actual trend. The National Education Policy (GoI, 2020) recommendations are on a similar vein

¹² Rani (2016), Sankar (2007) and many others have made recommendations along similar lines.

when it says that the investment in education is to be increased from current 10 percent of overall public expenditure to 20 percent over a 10-year period, both for the Centre and the States. With the clear evidence of reversal in financial concurrency presented in Section 2, and the stagnant trends in State priorities, the strategy approach to financing in NEP, 2020 seems unreal. For NEP, 2020 to have real teeth, the Centre should lead by example, raise allocation on education and restore financial concurrency.

States revenue indeed has a strong positive impact on education expenditure and could be considered as a strategy for raising states' expenditure on education. The elasticity comparisons show that the expansion in revenues in that case has to be considerably higher. Unfortunately, this avenue has always been limited for the poorer states. Also, if the growth in untied funds happens at the cost of CSS funding, it is a cause for concern. The SSA can have a much greater direct impact through additional specific purpose funds from the Centre and matching share by the States, along with an indirect impact through states spending on education. Since the impact of growth of untied funds is negotiated through competing demands and priority accorded to the sector by the States, it is expected to be weaker. This is broadly how the states responded in the context of the 14th FC, which ruled in favour of greater untied funds and against special purpose grant (Amar Nath and Singh, 2019; Bose et al, 2020).

15th FC and the need for Equalisation Grant

The positive effect of the 13th FC grant, over and above the SSA grant, on states spending should be considered by the 15th FC to propose an equalisation grant for EE. Unlike the 13th FC, however, the FC grant has to be much larger in volume. The grant has to be based on equalisation principle and extend to the 16 focus states. In other words, we are calling for a differential treatment across states. The basis for equalisation grant needs to be the additional funding that the states require, so as to be able to meet the gap in basic facilities in public schooling as per the RTE. The recent Report of the 15th Finance Commission for FY 2020-21 (GoI 2019) recommends performance-based grant for EE (the magnitude is yet to be announced). These conditional grants to states are to provide financial incentives for best performing States judged in terms of improvement in certain performance parameters. As Smart and Bird (2009) note, this approach simply cannot work. "Such a post-hoc approach is unlikely to amount to much in a world in which most local governments depend on secure (pre-committed) grant funding to carry out many of their activities, in which many grants are intended in large part to meet "needs" rather than to reward those who have already succeeded in doing so, and in which, in any case, "good performance" invariably lies in part in the eyes of the beholder." (Smart and Bird 2009: p. 15)

One would also like to draw attention to the fact that performance-based grant violates the principle of equalization governing FC transfers. Penalising the poorly performing states by depriving them of the necessary funds, would mean penalising the children. Instead a need-based equalisation grant addressing the unequal positions of these states is what is the need of the hour. This is necessary to equalise the opportunities across children, irrespective of their background.

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APPENDIX
Table A1: Average annual nominal growth of expenditure on elementary education

Plan	Centre	State	Total
6th (1980-85)	46.9	20.2	20.4
7th (1985-90)	146.6	17.5	18.3
8th (1992-97)	53.3	13.6	15.5
9th (1997-2002)	12.6	12.5	12.5
10th (2002-07)	41.3	14.9	19.8
11th (2007-12)	16.3	20.3	19.1
12th (2012-17)	-2.1	14.0	10.8

Source: AOBEE; Expenditure in 2015-16 is RE and 2016-17 is BE.

Note: Expenditure on Central sector schemes such as KVs and Navodaya are not included in Centre's expenditure on EE as per AOBEE.

Table A2: Summary Statistics: 16 Focus states (2005-06 to 2017-18)

Variables	Obs	Mean	Standard Deviation	Min	Max
Per child state expenditure on EE in Rs#	208	5586	3333	1730	19215
Per child state net expenditure on EE in Rs#	208	5016	3188	1567	18741
Per child central grant under SSA in Rs#	208	1771	1654	80	12625
Per child central grant (SSA+13th FC) in Rs# \$	80	2414	2027	594	12770
Per child State's Revenue in Rs#	208	39122	28571	11478	234030
Proportion of total State expenditure on education in %	208	16.30	3.24	8.96	26.98
Human development Index in 0-1 scale	208	0.60	0.06	0.47	0.72
Relative size of the public sector in %	208	74.50	18.02	2.86	100.00

Note: #Expressed in 2011-12 Price; \$ calculated for the period 2010-11 to 2014-15.

Table A3: Correlation matrix, 2005-2017

	<i>PCHCenSSA</i> @	<i>PCHSR</i> @	<i>Statepref</i>	<i>HDI</i>	<i>ENROLPS</i>
<i>PCHCenSSA</i> @	1				
<i>PCHSR</i> @	-0.3433	1			
<i>Statepref</i>	0.1554	-0.2295	1		
<i>HDI</i>	-0.4785	0.8645	-0.0766	1	
<i>ENROLPS</i>	-0.0634	-0.4983	0.2902	-0.3868	1

Note: @ expressed in log

Table A4: Determinants of per child state expenditure, FE model

Dependent variable: Per child state expenditure on EE (PCHSEE)			
Period of Analysis: 2005-2017			
Independent Variables	Major States	General Category Focus states	Special Category Focus states
	(1)	(2)	(3)
Per child central grant under SSA (PCHCenSSA) [@]	0.062** (0.024)	0.088* (0.045)	-0.008 (0.020)
Per child central under SSA (PCHCenSSA)*post 2012-13 [@]	-0.025 (0.037)	0.025 (0.089)	0.066 (0.067)
Per child State's Revenue (PCHSR) [@]	0.276 (0.172)	0.966* (0.474)	0.105 (0.125)
Education Preference (<i>Statepref</i>)	0.058*** (0.007)	0.048*** (0.008)	0.069*** (0.013)
Human development Index (<i>HDI</i>)	0.148 (0.609)	-0.673 (0.931)	1.277 (1.111)
Relative size of the public sector (<i>ENROLPS</i>)	-0.006*** (0.002)	-0.007* (0.004)	-0.002 (0.001)
Constant	4.273** (1.608)	-2.075 (4.180)	5.939** (1.716)
Year dummy	Yes	Yes	Yes
R ²	0.9169	0.8931	0.8307
Overall specification	1453.72***	15.79***	7.06***
Observations	208	104	104
Number of States	16	8	8
Method	FE	FE	FE

Source: Own calculation

Note: Same as Table 4. @ expressed in log

Table A5: Appendix Table: Determinants of per child net state expenditure, RE model

Dependent variable: Per child net state expenditure on EE (PCHNetSEE)			
Period of Analysis: 2005-2017			
Independent Variables	Major States	General Category Focus states	Special Category Focus states
	(1)	(2)	(3)
Per child central grant under SSA (PCHCenSSA) [@]	-0.027 (0.028)	-0.029 (0.064)	0.252** (0.105)
Per child central under SSA (PCHCenSSA)*post 2012-13 [@]	-0.017 (0.056)	0.090 (0.099)	0.027 (0.108)
Per child State's Revenue (PCHSR) [@]	0.468*** (0.139)	0.930*** (0.161)	0.604*** (0.169)
Education Preference (<i>Statepref</i>)	0.061*** (0.008)	0.046*** (0.010)	0.067** (0.027)
Human development Index (<i>HDI</i>)	0.609 (0.856)	-0.673 (1.357)	4.611** (2.050)
Relative size of the public sector (<i>ENROLPS</i>)	-0.008*** (0.002)	-0.007*** (0.002)	-0.004 (0.006)
Constant	2.612** (1.254)	-1.175 (1.317)	-2.631 (2.867)
Year dummy	Yes	Yes	Yes
R ²	0.7452	0.8490	0.6432
Overall specification	15584.80***	1128.87***	45.59***
Observations	208	104	104
Number of States	16	8	8
Method	RE	RE	RE

Source: Own calculation

Note: Same as Table 5. @ expressed in log

Table A6: State priority for EE Expenditure

States	1991-92	1998-99	2001-02	2015-16	2016-17
Bihar	14.17	13.37	15.82	11.98	10.57
Chhattisgarh	-	-	8.68	10.35	9.28
Jharkhand	-	-	-	10.19	8.15
Madhya Pradesh	9.60	10.38	9.32	10.40	8.23
Odisha	9.51	10.41	9.00	8.41	7.65
Rajasthan	8.62	11.23	10.61	8.25	7.63
Uttar Pradesh	9.59	11.32	10.15	13.01	11.77
West Bengal	8.56	6.45	6.20	9.70	8.96
8 Focus states (GCS) Mean	9.98	10.56	9.27	10.79	9.54
Arunachal Pradesh	6.85	7.21	6.53	8.15	7.72
Assam	12.72	16.42	14.48	15.13	10.95
Jammu & Kashmir	2.82	3.79	4.60	7.63	6.90
Manipur	6.89	8.33	10.17	6.22	5.54
Meghalaya	9.15	9.24	9.40	9.52	7.38
Mizoram	7.01	6.99	7.62	8.26	7.27
Nagaland	5.13	7.34	7.46	6.94	6.16
Tripura	7.65	8.29	9.69	6.82	6.20
16 Focus states Mean	9.58	10.32	9.24	10.66	9.37
Andhra Pradesh	7.30	7.01	6.07	6.76	6.05
Goa	4.55	3.98	2.54	6.11	6.07
Gujarat	8.76	9.43	6.37	12.30	11.58
Haryana	6.55	6.75	6.50	8.29	7.29
Himachal Pradesh	8.70	9.95	9.86	8.79	7.67
Karnataka	8.16	9.19	8.00	7.34	6.87
Kerala	11.75	9.16	8.51	6.22	5.51
Maharashtra	8.05	8.11	11.90	10.15	9.21
Punjab	3.75	5.32	3.35	9.70	8.57
Sikkim	6.83	4.49	4.63	8.27	7.85
Tamil Nadu	8.21	9.72	7.90	7.29	6.78
Telangana	-	-	-	5.37	4.45
Uttarakhand	-	-	8.40	8.43	7.62
Other states Mean	7.86	8.24	7.92	8.33	7.50

Source: 1993-94, 1998-99: Total Expenditure on EE: AOB; Total Expenditure: Finance Accounts 2015-16, 2016-17: Total Expenditure on EE: Own calculation from Finance Accounts, state budgets; Total Expenditure: Finance Accounts

Note: State's priority for EE = (Total Expenditure on EE including Central Transfers)/ (Total Expenditure of the State) *100¹³

¹³ The priority for EE calculated here are not comparable with the all-India priority. The ratio is higher in the state-wise calculations as the denominator contains states' overall expenditure whereas the numerator includes Central transfers.

Table A7: Data definition and sources

Aggregate model

Variable	Definition and Source
Aggregate model	
<i>GRSEE</i>	Definition: Year on year growth in aggregate states' expenditure on EE. Source: Analysis of Budgeted Expenditure on Education (AOBE), MHRD. For the period 2015-16 to 2017-18, Finance Accounts and State budgets.
<i>GRCEE</i>	Definition: Growth in Centre's expenditure on EE. Source: AOBE. For the period 2015-16 to 2017-18, Expenditure budget, Department of School Education and Literacy, GoI.
<i>GRGDP</i>	Definition: Growth in Gross Domestic Product (GDP). Source: Handbook of Statistics on Indian Economy, RBI.
<i>EEPREF</i>	Definition: Preference/priority for EE: Expenditure on EE as proportion of total expenditure across sectors (%). Source: Expenditure on EE: AOBE; Total expenditure: Indian Public Finance Statistics.
<i>GREENROL</i>	Definition: Growth in elementary enrolment. Source: MHRD and DISE.
State-level model	
<i>PCHSEE</i>	Definition: Per child state's expenditure on EE. For 2015-2017, state's expenditure on EE is estimated by subtracting central grant under SSA and MDM from the total expenditure in each state. Population of children in the age group 6-14 is estimated by applying CAGR on the age wise population data. Source: 1. AOBE, Finance Accounts, State budgets. 2. SSA, MDM website and http://data.gov.in/ 3. Census
<i>PCHNetSEE</i>	Definition: Per child net state's expenditure on EE: State's release under SSA is subtracted from state's expenditure on EE to obtain net state's expenditure and then adjusted by child population Source: Same as for PCHSEE
<i>PCHCenSSA</i>	Definition: Per child SSA central grant Source: SSA website and http://data.gov.in/ .
<i>PCHCenSSA&FC</i>	Definition: Per child SSA central grant inclusive of the 13 th FC grant for EE. Source: SSA website and http://data.gov.in/ and Report of 13 th Finance Commission.
<i>PHCSR</i>	Definition: Per child revenue of the state net of central grant Source: State Finance Accounts (NIPFP databank)
<i>Statepref</i>	Definition: State's priority towards (overall) education: State's expenditure on "education, sports, art and culture" as proportion of total expenditure. Source: State Finance Accounts (NIPFP databank)
<i>HDI</i>	Definition: Human Development Index of each state Source: UNDP's subnational human development index, https://globaldatalab.org/shdi/ .
<i>ENROLPS</i>	Definition: Enrolment share in Public (Government including Aided) schools. Source: Flash statistics, DISE.

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Manasi Bera, is Research Fellow, NIPFP
Email: manasi.bera@nipfp.org.in
Priyanta Ghosh, is Research Fellow, NIPFP
Email: priyanta.ghosh@nipfp.org.in
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National Institute of Public Finance and Policy,
18/2, Satsang Vihar Marg, Special Institutional
Area (Near JNU),
New Delhi 110067

Tel. No. 26569303, 26569780, 26569784
Fax: 91-11-26852548

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