Measuring Benefit Incidence
Health and Education

Theoretically, there are two approaches to analyze the distributional impacts of public expenditure in social sector – in particular, education and health sector, benefit incidence studies and behavioural approaches. The behavioural approach is based on the notion that a rationed publicly provided good or service should be evaluated at the individual's own valuation of the good. This is what Demery (2000) called as a 'virtual price'. Such prices will vary from one individual to another. This approach emphasizes the measurement of individual preferences for the publicly provided goods. The methodological complications in the valuation of revealed preferences based on the microeconomic theory and the paucity of unit record data related to the knowledge of the underlying demand functions of individuals or households led to less practicability of the behavioural approaches in estimating the distributional impact of public expenditure.

The second approach, Benefit Incidence Analysis (BIA), is a relatively simple and practical method for estimating distributional impact of public expenditure across different demographic and socioeconomic groups. The genesis of this approach lies in the path-breaking work by Meerman (1979) on Malaysia and Selowsky (1979) on Colombia. BIA involves allocating *unit cost* according to individual utilization rates of public services. BIA can identify how well public services are targeted to certain groups in the population, across gender, income quintiles and geographical units. The studies on BIA revealed that a disproportionate share of the health budget benefits the elite in urban areas, or that the major part of education budget benefits schooling of boys rather than girls, which has important policy implications.

Public expenditure: Benefit Incidence Analysis (BIA) theory and methodology

Following Demery (2000), there are four basic steps towards calculating benefit incidence.

Estimating unit cost

The unit cost of a publicly provided good is estimated by dividing the total expenditure on that particular publicly provided good by the total number of users of that good. This is synonymous to the notion of per capita expenditure, but the denominator is confined to the subset of population who are the users of the public good. For instance, the unit cost of the elementary education sector is total primary education spending per primary enrolment, while the unit cost of the health sector could be total outpatient hospital spending per outpatient visit.

Identifying the users

Usually the information on the users of publicly provided goods are obtained from household surveys with the standard dichotomy of data into poor and non-poor, male and female headed households, rural and urban, and so on.

Aggregating users into groups

It is important to aggregate individuals or households into groups to estimate how the benefits from public spending are distributed across the population. Empirical evidence has shown that the most frequent method of grouping is based on income quintiles or monthly per capita expenditure (MPCE) quintiles. The aggregation of users based on income or mpce quintiles could reveal whether the distribution of public expenditure is progressive or regressive. The spatial differentials in the public expenditure delivery though cannot be fully captured through the rural–urban dichotomy, it can provide broad policy pointers with regard to the distributional impact of publicly provided goods across rural and urban India. Yet another significant grouping is based on gender, after or before categorizing the unit utilized based on geographical units. The grouping of users based on gender is often ignored in studies on BIA.

Calculating the benefit incidence

Benefit incidence is computed by combining information about the *unit costs* of providing the publicly provided goods with information on the *use* of these goods.

Mathematically, benefit incidence is estimated by the following formula:

$$X_j \equiv \bullet_i U_{ij}(S_i / U_i) \equiv \bullet_i (U_{ij} / U_i) S_i \equiv \bullet_i e_{ij} S_i$$

where C_j = sector specific subsidy enjoyed by group j;

U_{ij} = utilization of service i by group j;

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U_i = utilization of service i by all groups combined;
S_i = government net expenditure on service *i* and
e_{ij} = group j's share of utilization of service *i*.

Review of benefit incidence

Public services delivery is sought to be evaluated vis-à-vis the three E's – effectiveness, efficiency and equity. Within this frame, BIA is an analytical tool to study particularly the *equity aspects* of public service delivery and public expenditure and inform priorities for fiscal reallocation, when necessary.

Simply stated, BIA is a method of computing the distribution of public expenditure across different income quintiles, different genders, different regional divisions, etc. The procedure involves allocating per unit public expenditure according to individual utilization rates of public services.

The main body of research in this field has emerged from the World Bank with major contributions from Lionel Demery, Florencia Castro-Leal, Peter Lanjouw, Martin Ravallion, etc. and has been applied to public services such as health, education, water and sanitation. The next few paragraphs summarize briefly a couple of studies of BIA to provide a sense of its application and scope.

In a review of the benefit incidence studies on education, Demery (2000) compares education subsidies across the various quintiles in three countries Colombia, Côte d'Ivoire and Indonesia. She begins by observing that the poorest quintile gained just 15 per cent of the total education subsidy in Indonesia, only 13 per cent in Côte d'Ivoire and 23 per cent in Colombia. What determines these shares? First is the allocation of the education subsidy across the various levels of schooling, basically, the supply side. In Indonesia, the government allocated 62 per cent of total education subsidies to primary education, while in Côte d'Ivoire, the share was under 50 per cent. The Ivorian government spent relatively more on tertiary schooling (18 per cent) compared to just 9 per cent in Indonesia. Colombia's allocations were quite different, with a much lower share being allocated to primary schooling (just 41 per cent) and a much higher share to tertiary education (26 per cent). But surprisingly, the low allocation of the education subsidy to primary schooling in Colombia does not seem to have led to a lower share going to the poorer quintiles. The answer, the author argues, lies mainly with the second set of factors determining benefit incidence—household behaviour. We can consider these to be the demand side factors. Differences in household behaviour are reflected in the quintile shares of the subsidy at each level of education. Primary enrolments and, therefore, the primary subsidy in the poorest quintile represented 22 per cent of the total primary enrolment subsidy in

Indonesia, just 19 per cent in Côte d'Ivoire and 39 per cent in Colombia. 'It is the combined influence of these enrolment shares and the allocation of government subsidies across the levels of education that yields the overall benefit incidence from education spending accruing to each of the quintiles'.

Typically, the BIA studies report the results in terms of the extent of progressivity and targeting that is implied in the public expenditure distribution vis-à-vis a benchmark distribution. Note that targeting is a means of increasing the 'efficiency' of a programme by increasing the benefits the poor can get from a fixed programme budget. Conversely, it is a means that will allow the government to reduce the budget requirement of the programme while, ostensibly, still delivering the same benefits to the poor. One way to assess the targeting of government subsidies is with reference to the graphical representation of the distribution of benefits, i.e. the benefit concentration curve. Davoodi et al. (2003) classify the benefits as progressive if the concentration curve for these benefits is above the Lorenz curve for income or consumption, but below the 45-degree line. Benefits from government spending on a service are said to be pro-poor (targeted) if the benefit concentration curve is above the 45-degree line, which we would be using as a methodology in analyzing the benefit incidence in health sector spending.

Davoodi et al. (2003) compile a large dataset on the incidence of health and education spending, based on the existing studies utilizing BIA. The dataset covers 56 countries in which BIA(s) were performed between 1960 and 2000. These countries represent different stages of economic development and various levels of health and education services. The authors find, among other things, that overall education and health spending are poorly targeted; benefits from primary education and PMC go disproportionately to the middle class, particularly in sub-Saharan Africa, HIPCs and transition economies; but targeting has improved in the 1990s. For all regions, spending on secondary and tertiary education primarily benefits the non-poor, and there is a strong evidence of middle-class capture. Simple measures of association also show that countries with a more pro-poor incidence of education and health spending tend to have better education and health outcomes, good governance, high per capita income, and wider accessibility to information.

To cite two examples, from applications that are around: Castro-Leal et al. (1999) in their estimation of benefit incidence in a set of African countries obtain that the government subsidies in education and health care are generally progressive but are poorly targeted to the poor and favour those who are better-off. Based on their analysis, the authors then suggest that unless better-off groups can be encouraged to use private service providers, especially at the secondary and tertiary levels, it is difficult to envisage how government education subsidies can be better targeted to the poor. We shall revisit this logic later in Chapter 8 on the Benefit Incidence Analysis of education spending.

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In a study on India, Sankar (2009) asks whether the benefits of public spending on elementary and secondary education are equitably distributed by gender. Comparisons of quintile shares of public education subsidies indicate that in the state of Bihar, the poorest quintiles receive disproportionately small benefits. Further, girls in poor quintiles are especially worse off, confirming that the distribution of public subsidies on education in the state is highly regressive. In Kerala, on the other hand, the expenditure pattern is pro-poor with poorer expenditure quintiles getting a disproportionate share of total benefit, both in rural and urban areas. There is greater gender parity in benefit distribution in Kerala.

Most studies on BIA have worked with average benefit as the conceptual unit. In an important methodological refinement, Lanjouw and Ravallion (1999) introduce the distinction between average and marginal benefit. They use cross-section data to assess the extent to which the marginal benefit incidence of primary school spending differs from average incidence. They regress the 'odds of enrolment' (defined as the ratio of the quintile specific enrolment rate to that of the population as a whole) against the instrumented mean enrolment ratio (the instrument being the average enrolment rate without the quintile in question). The estimated coefficient indicates the extent to which there is early capture by the rich of primary schools. Under the circumstance, any increase in the average enrolment rate is likely to come from proportionately greater increases in enrolment among the poorer quintiles. That would lead to higher marginal gains to the poor from additional primary school spending than the gains indicated by the existing enrolments across the quintiles.

In a recent application of benefit incidence to public expenditure on education in the Philippines by Manasan et al. (2007), the results indicate that the distribution of education spending is progressive at the elementary and secondary level, using national averages. On the contrary, it is regressive for the intermediate and college level. Extending the analysis to the sub-national levels yields that the urban areas usually attract higher subsidies compared to the rural areas.

Lanjouw and Ravallion (1999) have argued that the marginal benefit from a service may be distributed quite differently from the average incidence. Their results for India indicate that whereas the poorest quintile gains just 14 per cent of the existing primary education subsidy in rural India, they would most likely receive 22 per cent of any additional spending.

Are the benefits of public spending equitably distributed by gender? Are gender benefit gaps different for poor and non-poor? Sankar (2009) estimates the benefit incidence across different expenditure quintiles (MPCE) in elementary and secondary education, between rural and urban areas and across sub-sectors in the

two states of Kerala and Bihar for the year 1996. The service under consideration is enrolment in public schools. Comparisons of quintile shares of public education subsidies indicate that in Bihar, the poorest quintiles receive disproportionately small benefits. Further, girls in poor quintiles are especially worse off, confirming that the distribution of public subsidies on education in the state is highly regressive. In Kerala, the expenditure pattern is pro-poor with poorer expenditure quintiles getting a disproportionate share of total benefit, both in rural and urban areas. Also, along the expected lines, the author finds that there is great deal of gender parity in benefit distribution in Kerala.

Benefit incidence in health

Using the CSO National Sample Survey data for units utilized and the budget data for expenditure in health sector, the benefit incidence of health sector expenditure can be calculated. Table 7.1 shows the relative share of the public expenditure captured across different income quintiles. The analysis revealed that the poorest quintile (poorest 20 per cent of the population) captured 9.1 per cent of the total net public expenditure on health sector. The richest income quintile benefited around 40 per cent of the total net public expenditure in health sector. The analysis revealed that public expenditure on health sector is highly regressive; it is pro-Q5 in distribution. In other words, the public expenditure on health sector is highly inequitable. The estimates of BIA for quintile-wise health sector are given in Table 7.1.

Table 7.1: Quintile-wise benefit incidence for health sector

Q1	9.1
Q2	17.5
Q3	12.4
Q4	23.4
Q5	37.6

Source: CSO, NSSO 60th round: January–June 2004, Schedule 25: Morbidity, Health Care and the Condition of the Aged.

The above analysis is confined only to the public sector – for both inpatient and outpatient services. Such benefit incidence does not exist in case of private sector. Since tax-subsidy benefits do not exist for private sector, the BIA cannot be attempted. However, the quintile-wise health services utilization across public and private sector can be analyzed.

Table 7.2: Public and private sector hospitalization rates by income quintile

	Public	Private	Hospitalization per 100,000 population
Q1	53.6	46.4	2,594
Q2	45.6	54.4	2,795
Q3	41.0	59.0	2,310
Q4	37.6	62.4	2,506
Q5	26.1	73.9	3,373

Source: Ibid.

Table 7.2 revealed the rates of hospitalization in the private and public sectors by income quintiles. The data analysis revealed that the rate of private hospitalization increases with income. Also, the poorest seem to have greater reliance on public hospitals, although the share of private sector is close to 50 per cent. In comparison, the richest quintile utilized only 26.1 per cent of public hospital facilities (Table 7.2).

In case of institutional deliveries, the data analysis revealed that the rate of utilization of public sector services monotonically declines as the income increases (Table 7.3). While 69.8 per cent of the top quintile availed the private sector health services for delivery, the poorest quintile availed only 31.3 per cent of private sector services (Table 7.3).

Table 7.3: Quintile-wise distribution (in per cent) of institutional deliveries in public and private sector

	Public	Private	Institutional deliveries per 1,000 births
Q1	68.7	31.3	332
Q2	61.4	38.6	357
Q3	53.7	46.3	378
Q4	43.2	56.8	423
Q5	30.2	69.8	705

Source: Ibid.

Table 7.4: Distribution (in per cent) of public and private sector shares in preventive and curative health service delivery

	Public	Private
Pre-natal care	57.2	42.8
Post-natal care	44.2	55.8
Institutional delivery	48.6	51.4
Hospitalization	48.6	51.4

Source: Ibid.

The analysis revealed that 57.2 per cent of poor population utilized the services of public sector for prenatal care, while 44.2 per cent availed the public sector for post-natal care (Table 7.4). The hospitalizations and institutional deliveries have similar share for public sector at 48.6 per cent.

Intertemporal benefit incidence analysis of health sector

A few benefit incidence studies of public expenditures have been carried out for health sector in India. There are few studies that look at how the incidence of such expenditures has been changing intertemporally. This section is an intertemporal analysis of benefit incidence carried out for health sector in India. Using two rounds of nationwide household surveys (NSSO rounds – 52nd and 60th rounds on health) to analyze the distribution of public expenditures on health services in India over the last few decades and also to examine the health sector sub-national budgets using Finance Accounts, an illustrative exercise is attempted in this section on intertemporal BIA.

Comparative analysis of two recent rounds of 52nd and 60th rounds revealed that over the two time points, there is a shift in the per capita medical expenditure (inpatient statistics) in the upper and lower quintiles, Q1 and Q5, respectively, such as the share of health expenditure incurred by poor income households has increased from 6.45 per cent to 10.24 per cent in Q1, while decline of health expenditure is noted over the time points for Q5 from 53.18 per cent to 35.30 per cent.

The sector-wise analysis revealed that the per capita expenditure for inpatient treatment in private hospitals has increased over the time points from 67.12 per cent in 52nd round period to 73.13 per cent in 60th round period. The gender-wise analysis revealed that the pattern of health costs also undergoes shifting patterns with more health costs share for women in the recent round (Table 7.5).

Table 7.5: Comparative analysis of two recent rounds: Inpatient per capita medical expenditure gender, geographic unit, sector (public–private type of hospital) and consumption quintiles

	Per capita medical expenditure for inpatient	
	52nd round	60th round
Sex		
Male	57.67	53.4
Female	42.33	46.6
Geographic unit		
Rural	43.79	39.52
Urban	56.21	60.48
Type of hospital		
Public	32.88	26.87
Private	67.12	73.13
Consumption-based income quintile		
Q1	6.45	10.24
Q2	9.12	14.1
Q3	12.61	18.62
Q4	18.64	21.74
Q5	53.18	35.3

Source: CSO (various years), NSSO 52nd and 60th health rounds, CD ROM.

Data revealed that the benefit incidence for men (54.05 per cent) relatively more than the incidence of health care on women (45.95 per cent) in the 52nd round period, while the shares have marginally decreased/increased for men/women in the 60th round period to 52.45 per cent and 47.55 per cent, respectively (Table 7.6). The quintile-wise benefit incidence showed that over the two points, the incidence on Q1 had marginally increased from 17 per cent to 20 per cent, while the penultimate quintile (Q4) and middle quintile (Q3) noted a decline in the shares over the two time points (Table 7.6).

The benefit incidence by type of hospital in aggregate revealed that over the years, the incidence pattern has shifted more to private than public sector. The disaggregation of incidence according to geographical units revealed that the incidence of health expenditure is more in rural units than in urban units over the two time points of survey, which has significant policy implications in terms of

strengthening the health sector financing in rural units and distributional impacts of public expenditure on health sector.

Table 7.6: Comparative analysis of two recent rounds of benefit incidence: Gender, geographic unit, sector (public–private type of hospital) and consumption quintiles

	Benefit incidence	
	52nd round	**60th round**
Sex		
Male	54.05	52.45
Female	45.95	47.55
Geographic unit		
Rural	53.57	63.67
Urban	46.43	36.33
Type of hospital		
Public	52.65	46.18
Private	46.43	53.82
Consumption-based income quintile		
Q1	17.05	19.2
Q2	18.23	20.29
Q3	19.06	16.44
Q4	21.97	19.35
Q5	23.69	24.72

Source: Ibid.

Analysis of out-of-pocket expenditure in health

National Health Accounts 2004–05 stated that out-of-pocket expenditure constitutes the single most significant source of health sector financing in India. Private spending constitutes 78 per cent of all expenditure on health. In terms of the aggregate, therefore, private spending imposes a significant burden on citizens, especially the poor. This point has to be borne in mind while we do the BIA of the public spending on health sector. Table 7.7 provides the detailed breakup of the share of health expenditure by various sources.

Table 7.7: Health sector financing in India

Source of funds	In per cent
Central Government	6.78
State Government	11.97
Local Bodies	0.92
Total public funds	**19.67**
Households	71.13
Social Insurance Funds	1.13
Firms	5.73
NGOs	0.07
Total private funds	**78.05**
Central Government	1.56
State Government	0.24
NGOs	0.47
Total external flows	**2.28**
Grand total	**100.00**

Source: Ministry of Health and Family Welfare, Government of India, National Health Accounts, 2004–05.

Disaggregated quintile-wise distribution (per cent) of out-of-pocket spending revealed that over the years, except for the states like Haryana, Tamil Nadu and two North Eastern States such as Mizoram and Tripura, the out-of-pocket spending share of lowest income quintile (Q1) has increased from 52nd round to 60th round. On the other hand, the share of out-of-pocket spending by the highest income quintile declined for all states with Tripura as an aberration (Table 7.8).

Table 7.8: Quintile-wise comparison of per capita out-of-pocket medical expenditure for inpatient for 52nd and 60th rounds

	60th round					52nd round				
	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Andhra Pradesh	11.17	10.38	17.81	15.34	45.30	4.08	6.59	8.00	12.86	68.47
Assam	8.84	10.79	14.22	18.08	48.07	8.57	7.67	13.63	21.54	48.59
Bihar	11.93	10.83	13.82	32.50	30.92	7.76	10.27	15.52	26.73	39.72

Table 7.8 continued

Table 7.8 continued

Goa	20.38	9.50	12.52	19.36	38.24	4.11	10.72	13.73	23.27	48.17
Gujarat	11.47	14.63	14.28	27.44	32.18	7.76	10.93	12.66	21.42	47.23
Haryana	5.55	11.31	27.95	22.45	32.74	8.80	9.98	13.96	18.97	48.29
HP	13.08	13.98	18.13	28.00	26.81	7.22	12.37	10.45	20.98	48.98
J&K	18.31	10.75	17.56	21.82	31.56	10.22	10.63	14.83	20.98	43.34
Karnataka	11.71	13.80	17.90	19.89	36.70	5.57	13.40	18.91	21.36	40.77
Kerala	11.65	15.45	17.59	21.96	33.35	4.97	6.99	10.27	13.42	64.35
MP	15.16	17.04	20.82	18.48	28.50	8.99	12.78	13.34	20.23	44.66
Maharashtra	10.52	15.15	19.40	22.74	32.18	7.24	9.34	13.93	21.75	47.74
Orissa	11.05	19.23	17.85	24.12	27.75	6.18	9.50	13.47	17.89	52.96
Punjab	7.36	9.49	33.96	24.96	24.23	5.52	8.85	15.69	21.76	48.17
Rajasthan	15.03	16.29	16.70	21.46	30.53	6.64	13.01	13.92	20.70	45.73
Tamil Nadu	5.05	14.06	16.45	14.44	50.00	5.83	7.90	10.96	18.67	56.65
Uttar Pradesh	14.45	15.86	17.34	22.88	29.48	8.27	9.15	12.06	19.28	51.25
WB	8.22	14.45	18.81	20.17	38.36	4.20	8.14	16.23	18.51	52.92
North east										
Arunachal Pradesh	29.87	13.45	11.39	33.07	12.22	5.25	5.66	19.37	14.95	54.76
Manipur	14.13	15.34	16.56	21.58	32.39	7.91	8.62	14.19	22.22	47.06
Meghalaya	7.43	12.39	10.06	21.92	48.21	5.59	23.89	13.36	19.58	37.57
Mizoram	8.20	14.06	15.41	17.63	44.70	9.91	12.47	12.22	15.64	49.75
Nagaland	17.67	9.95	12.05	32.39	27.94	6.17	10.16	12.74	15.91	55.02
Sikkim	9.92	11.63	17.53	23.51	37.41	2.94	6.00	7.85	23.34	59.87
Tripura	2.37	2.12	7.06	4.24	84.21	5.69	8.50	12.34	21.42	52.05
All India	**10.24**	**14.10**	**18.62**	**21.74**	**35.30**	**6.45**	**9.12**	**12.61**	**18.64**	**53.18**

Note: Same as for Table 8.7.

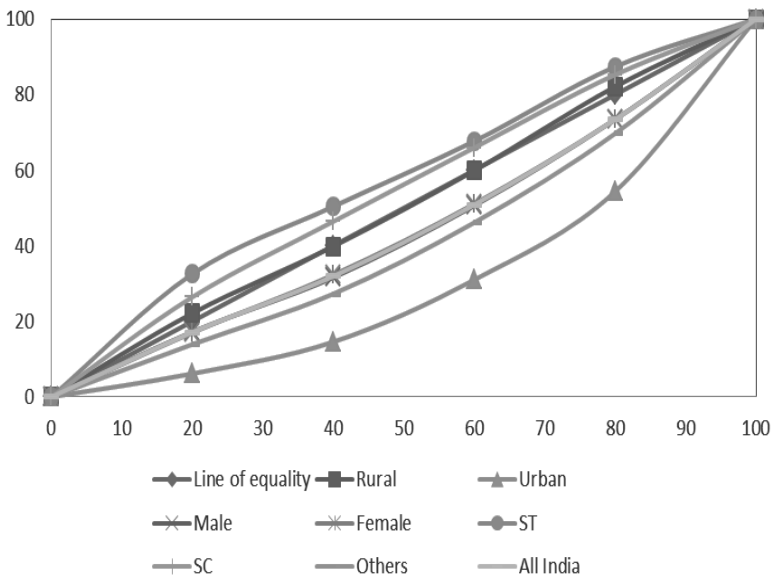*Source:* CSO (various years), NSSO 52nd and 60th health rounds.

The increase in the out-of-pocket spending by the poor quintile across states over the years is a matter of urgent concern, especially when the major chunk of this expenditure may turn catastrophic expenditure. Against this backdrop

analysis, now we turn to examine the benefit incidence of public expenditure on health across states in India, wherever amenable to analyze with sub-state details as well with a rural urban disaggregation.

Regional and social analysis of benefit incidence of public expenditure on health

The incidence of public expenditure is examined in this section for aggregate as well as disaggregate levels, including rural and urban, gender and social groups. Figure 7.1 revealed that public expenditure on health is progressive for women and social groups and slightly in case of rural areas. It also revealed that in case of social groups and women, more people are accessing the public sector health services across all mpce quintiles.

Figure 7.1: Incidence of public spending: Aggregate versus distribution

Source: CSO (various years), NSSO 60th health Rounds, CD ROM.

The overall picture, however, masks significant variation among states. Figure 7.2a,b,c compares the incidence of public expenditure benefit in three low-income states. It reveals that the pattern and extent of geographical inequality in Bihar and Madhya Pradesh is similar to the aggregate picture, while Chattisgarh has highly equal distribution of benefits except in urban sector.

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Figure 7.2a: Incidence of public spending: Gender and geography differentials of state-wise patterns: Bihar incidence of public spending: Gender and geography differentials of state-wise patterns: Bihar

Figure 7.2b: Incidence of public spending: Gender and geography differentials of state-wise patterns: Bihar incidence of public spending: Gender and geography differentials of state-wise patterns: Chhattisgarh
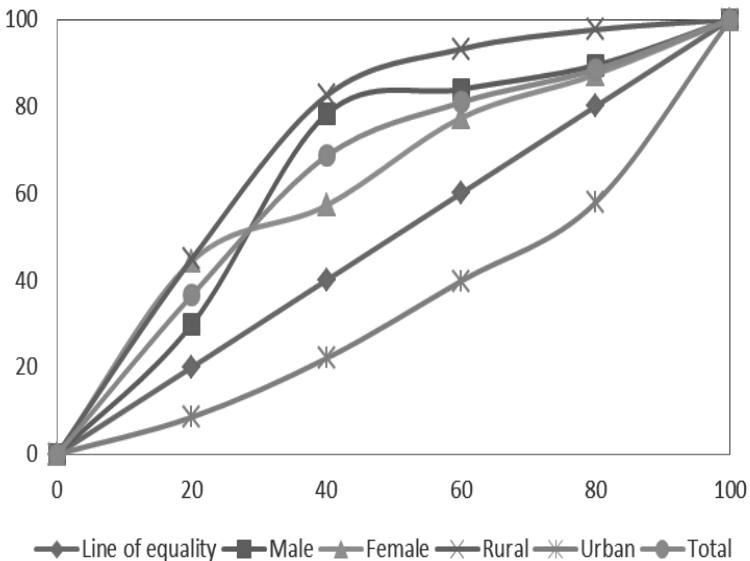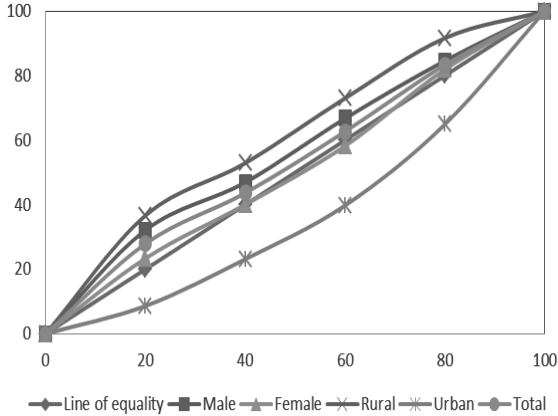

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Figure 7.2c: Incidence of public spending: Gender and geography differentials of state-wise patterns:Bihar incidence of public spending: Gender and geography differentials of state-wise patterns: Madhya Pradesh

Taking a subset of relatively richer states, our analysis reveals that there are significant variations in the distribution of benefits within this group as well. The pattern in Maharashtra is similar to Bihar and Madhya Pradesh, while Tamil Nadu has the most progressive distribution among all states taken together (Figures 7.3a and b). Kerala presents an interesting mix – the distribution is progressive at the higher income quintiles and the benefit-incidence curve crosses the line of equality at the third quintile (Figure 7.3c).

Figure 7.3a. Incidence of public spending: Gender and geography differentials of state-wise patterns: Bihar incidence of public spending: Gender and geography differentials of state-wise patterns: Maharashtra
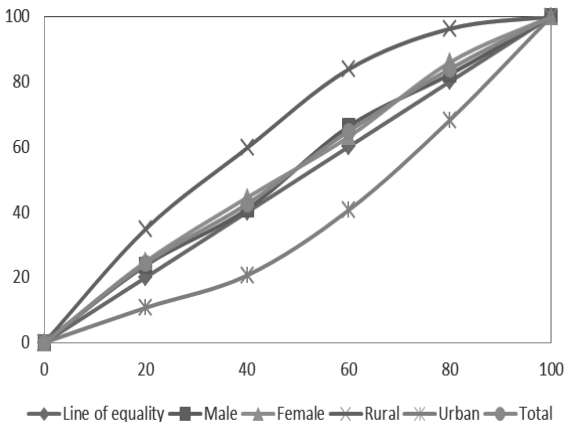

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Figure 7.3b. Incidence of public spending: Gender and geography differentials of state-wise patterns: Bihar incidence of public spending: Gender and geography differentials of state-wise patterns: Tamil Nadu
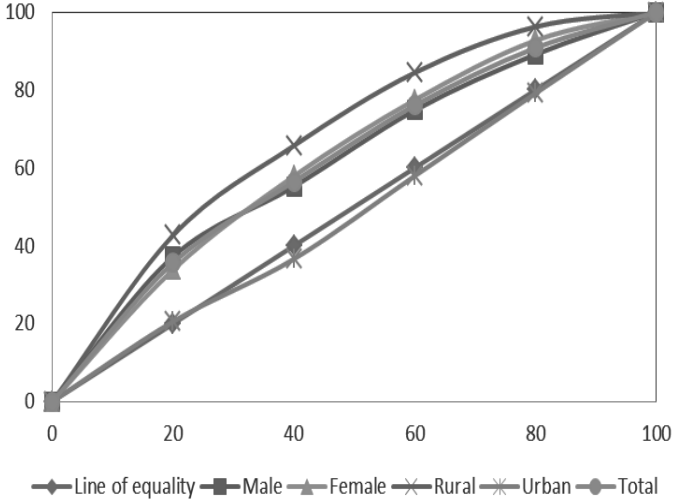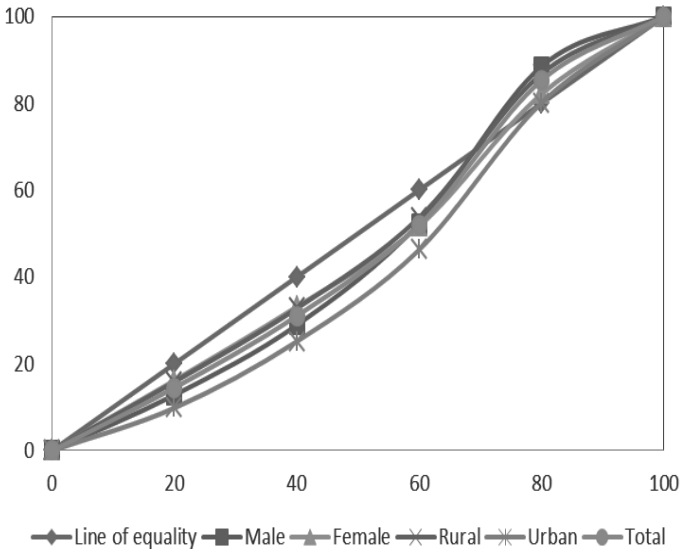

Figure 7.3c. Incidence of public spending: Gender and geography differentials of state-wise patterns: Bihar incidence of public spending: Gender and geography differentials of state-wise patterns: Kerala

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Interpreting the revealed incidence pattern of health sector

The broad conclusion drawn from the incidence analysis of health sector is that in most of the states in India, especially in the rural areas of as many as 10 states, viz. Bihar, Jharkhand, Orissa, West Bengal, Jharkhand, Madhya Pradesh, Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu, publicly financed health care system is the predominant sector for providing health services to the poor, especially among the lower income quintiles. This has significant policy implications, whether revamping the primary health centres and other health units in rural areas is important or universal access to health care through insurance schemes is the optimal solution. The differentials in incidence across sub-national governments point out to the variations in per unit cost of health spending across states, the problems related to accessing the health care, especially in rural units and the household behaviour of revealed utilization of particular system of health care.

The BIA also revealed that in some states, the public health system has been 'seemingly' more equitable, and in a few states regressivity in pattern of utilization of public health care services is observed. Both these evidences were to be considered with caution. This is because of two reasons. One, the underdeveloped market for private inpatient care in some states might be the factor for disproportionate crowding-in of inpatients, which made the public health care system look 'seemingly' more equitable, especially among the lowest income quintiles. The 'voting with feet' to better private services (exit strategy) seems possible only for the affordable higher income quintiles. Two, the co-existence of well-performing public and private sectors of health (as in case of Kerala) might be reason which made the utilization pattern of public health care system regressive. In terms of public policy, the equitable pattern of public health care system in a few states is not a satisfactory state of public health system, rather it is an alarming call for effective regulations and participation of private sector health care systems as well as revamping of public health care system.

Benefit incidence in education

This section attempts to contribute to the sparse literature on benefit incidence studies on education in India. We study the benefit incidence of public expenditure on schooling in India through an analysis of expenditure across different expenditure quintiles, across different genders, different social divisions and regions for various levels of schooling. The analyses made at two points of time, 1995–06 and 2007–08 capture the change over the years.

Intertemporal benefit incidence in education

The unit data has been obtained from the 'Participation and expenditure in Education' of the National Sample Survey (NSS), 52nd round (1995–06) and 64th round (2007–08) and covers the whole of the Indian Union. The NSS provides detailed information on all persons in India 'who are currently attending at primary and post primary' in the age group 5–24 years.

The key variable used is gross participation rather than age-specific participation, which some studies have considered (see Sankar, 2009). Since the aim of the present exercise is to see how benefit is distributed across groups, including overage and underage students who nonetheless are participating and therefore benefiting from the public expenditure seemed appropriate.

The other set of data required pertains to per unit public expenditure. In India, the public expenditure on education is incurred both by the state governments and the union governments. The variations in per unit expenditure levels across states and the differences in emphasis on elementary versus secondary and higher education by the states have an important bearing on the distribution of benefits.

Data on public expenditure on education at various levels is obtained for the year 2007–08 from the Finance Accounts of the states. The major part of the expenditure is incurred under the heads 2,202 and 4,202 respectively on revenue and capital account. Besides the states spend on the education of the marginalized communities, under the head 2,225 (welfare of SC, ST and OBCs). These are the major expenses incurred by the state governments on education, though there are scattered expenditures by other ministries that could legitimately be considered as public expenses on education. To the states' expenditure on elementary education, we have added the centre's contribution to Sarva Shiksha Abhiyan (SSA), the major flagship programme of the Government of India with cost-sharing arrangements with the states. The centre's contribution needs to be added as this amount is directly transferred to the implementing agencies in the states bypassing the state budget. The total expenditure so obtained is divided by the number of students currently attending at each level, to obtain per unit public expenditure.

We do not take into account cost recoveries since the government does not obtain any revenues as cost recovery on elementary education, and very little at the higher levels of schooling. The other practice of netting out the out-of-pocket expenditure on schooling obtained from household surveys to calculate the 'subsidy' element has also not been followed here. The aim of this study is limited to understanding the incidence of public expenditure (rather than subsidies)

across genders, social groups, quintiles, regions, sectors and levels of schooling and its broad implications.

Figure 7.4 presents the quintile-wise distribution of students currently attending public schools at each level from the primary to higher secondary in the rural and urban areas separately in 2007–08. It shows that in the primary and also the middle level, the distribution of benefits is pro-poor with the benefit concentration curves lying above the 45 degree line (the line of perfect equality). As one moves from lower to higher levels of schooling, the distribution across quintiles, however, becomes regressive. At the secondary and higher secondary level, the benefit concentration curves lie below the 45 degree line, particularly in the rural areas indicating that the top quintiles partake of the maximum benefit of public education at these levels. Rural and urban areas have the same pattern except that the pro-poor nature of distribution at the elementary level is sharper in the urban areas: the share of the poorest quintile (Q1) is 34 per cent in the urban areas; it is 26 per cent in the rural areas at the primary level.

There are several contributing factors that explain the observed pattern:

(i) The more than proportionate share of Q1 and Q2 at the primary level in public schooling means that the poor are coming to school and are primarily dependent on the public schools for education. This is a very significant trend and related to the goal of universalization of education

(ii) On the other hand, Q4 and Q5 have correspondingly low shares in public schools at the primary level. The increased 'choice' for private schools is being exercised by these groups as they 'exit' from public schools. The phenomenon of choice and exit is stronger in the urban areas (see Box 7.1).

(iii) Though children belonging to Q1 and Q2 are entering schools, studying for a few years, retention is a major problem concentrated in these quintiles. Table 7.9 presents simple ratios comparing students at the present level vis-à-vis the previous level in public schools for two quintiles Q1 and Q5. This rough proxy for retention shows that the figure is around 33 per cent for Q1 and 71 per cent for Q5 on average. The high drop-out rates of students from the poorer quintiles automatically reduce the share of these quintiles at higher levels of schooling. Thus, the pattern of distribution of benefit reverses beyond the elementary level.

Figure 7.4: Quintile-wise distribution of students attending public schools, 2007–08
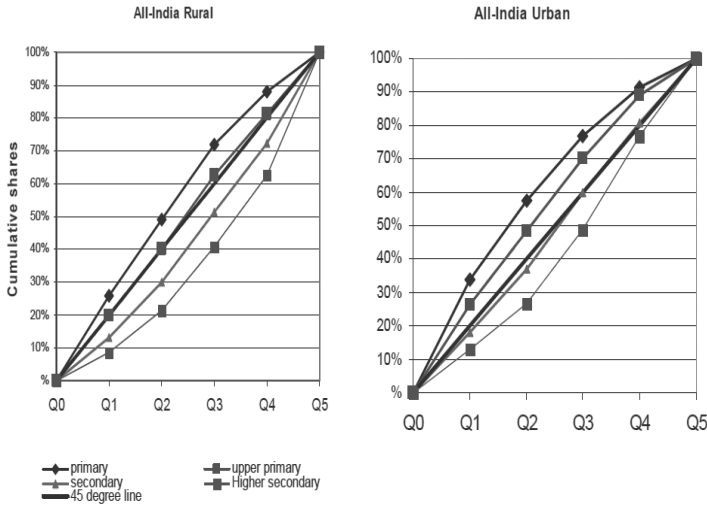

Table 7.9: A comparison of Q1 and Q5 for students attending public schools in rural areas 2007–08

	Number of students currently attending public schools at each level				
	Primary	**Upper primary**	**Secondary**	**Higher secondary**	**Average**
Q1	20,778,076	7,652,381	2,441,748	758,497	
% of Students in the present level vis-à-vis the earlier level for Q1		36.8%	31.9%	31.1%	33.3%
Q5	9,455,407	7,231,749	5,151,593	3,313,047	
% of Students in the present level vis-à-vis the earlier level for Q5		76.5%	71.2%	64.3%	70.7%

Box 7.1: Utilization of schooling facilities: Public versus private

The decades of universalization of education have been witness to a growing trend in private schools and a growing share of enrolments being accounted by schools run by private management (unaided). Between 1995–06 and 2007–08, the mean share

Box 7.1 continued

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of unaided private schools in current attendance grew from 8 per cent to 16 per cent, an increase which is statistically significant for a sample of 32 states (see Appendix Table 8B1).

Figure 7.5a: Utilization of public and private schooling at the elementary level, quintile-wise, 2007–08 and 1995–06 (rural)
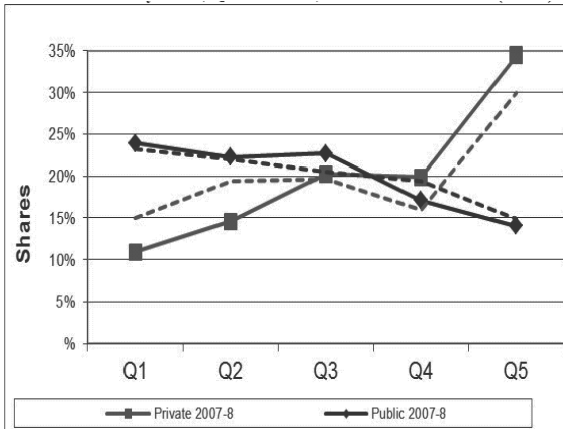

Figure 7.5b: Utilization of public and private schooling at the elementary level, quintile-wise, 2007–08 and 1995–06 (urban)
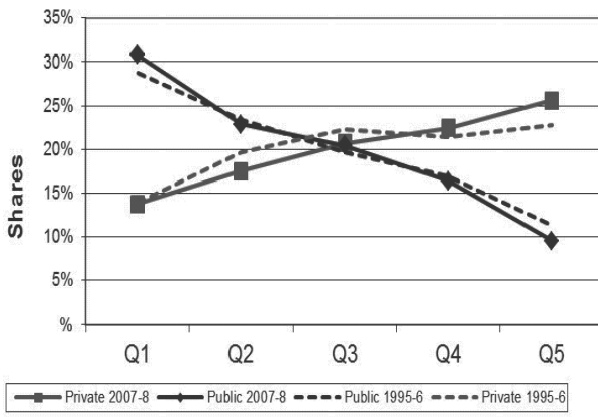

Figure 7.5a and b takes the total number of students currently attending private schools (unaided) at the elementary level, divides them into their respective quintiles

Box 7.1 continued

and plots the share of each quintile. This is placed against a similar curve drawn for the public schools. The data is presented separately for rural and urban areas. The dotted lines show the shares for 1995–06, whereas the bold lines plot the data for 2007–08.

The two curves (public and private) cross each other with the share of public falling across quintiles, whereas the share of private is seen to increase, a result that is along the expected lines. In the rural areas, the two lowest quintiles have a very low share in private schooling, Q3 and Q4 have equiproportionate shares and the topmost quintile alone accounts for 35 per cent of the total share of private schooling seats in the rural areas. Thus, the private curve is steep with the quintile-wise shares rising sharply. The public curve is less so, signifying less unequal distribution across quintiles.

In the urban areas, though the pattern is the same with the children from better-off household going predominantly to the private schools, the slopes are different. The public curve falls steeply across the quintiles, signifying unequal distribution across quintiles, the private curve rises more gently. The latter is owing to the fact that in the urban areas, the poorest too are 'exiting' the public schools for a private option so that even the lowest quintile accounts for about 14 per cent of pupils currently attending private schools. The difference in share between the top and the bottom quintile in private schooling is accordingly less sharp.

What is also noteworthy is that across the years, the vertical gap between the lines (private and public) has increased at the two ends of the spectrum (Q1 and Q5), both in rural and the urban areas. What does this indicate and what are the implications of this trend? We shall return to this question, in the seventh section of Chapter 7.

The analysis shows that the government expenditure in education at the elementary level is progressive and targeted to the poor and the marginalized sections, and this trend has strengthened over time. The interpretation of these results, however, warns of the increased polarization in schooling – where the rich go to private schools and the public schooling system caters only to the poor – that underlies the success of the so-called targeting in the distribution of public expenditure. We argue that the increased polarization of schooling by weakening 'the voice' of the people who remain within the public education system might have negative implications for the effectiveness of decentralization in improving public service delivery.

As Table 7.6 indicates, beyond the elementary level, however, the pattern of distribution of benefits is regressive, though improving over time. The high drop-out rate prevalent among the lower quintiles is the behavioural variable responsible, in the main, for the pattern. Another source of regressivity in the distribution

of benefits, we see, obtains from the per unit public expenditure on schooling. Despite recent attempts at offsetting the low revenue base of the poorer states in India through federal transfer mechanisms, we see that the pattern of per unit expenditure on schooling is unequal, with the richer states generally being able to spend more compared to the poorer states in India.

The period between 1995–06 and 2007–08 has been one of increased public policy intervention in education with a certain thrust towards universalization through both public and private channels. Comparing the distributions, we see that

(i)   The overall trend accords with a more progressive and targeted distribution of benefits of public schooling.

(ii) The quintile-wise distribution of currently attending students at the primary level has been surprisingly steady, in rural and urban areas across the two time points (Table 7.10).

(iii) For the upper primary, secondary and higher secondary, the share of Q1 in public schooling has increased notably between 1995–06 and 2007–08 in rural and urban areas. This might be saying that universalization is beginning to extend beyond the primary level.

Table 7.10: A comparison of quintile shares of students currently attending public schools for each level (in per cent)

			All-India rural								
			2007–08					1995–06			
	Q1	Q2	Q3	Q4	Q5		Q1	Q2	Q3	Q4	Q5
P	26.0	23.1	22.8	16.2	11.8	100	26.3	23.5	20.6	17.8	11.8	100
UP	19.7	20.4	22.5	18.8	18.6	100	15.8	18.3	20.5	23.3	22.1	100
S	13.2	16.7	21.3	21.0	27.8	100	10.9	13.9	21.0	24.3	29.9	100
HS	8.6	12.6	19.7	21.5	37.6	100	6.4	11.6	14.6	22.5	44.9	100
All	21.7	20.9	22.4	17.8	17.2	100	20.9	20.4	20.3	20.2	18.1	100
			All-India urban								
	Q1	Q2	Q3	Q4	Q5		Q1	Q2	Q3	Q4	Q5
P	33.8	23.5	19.5	14.5	8.6	100	33.4	23.8	18.6	15.1	9.1	100
UP	26.4	21.9	21.7	19.2	10.8	100	21.8	22.7	21.2	19.7	14.6	100
S	18.0	19.1	22.6	21.0	19.3	100	14.2	20.1	23.8	22.8	19.2	100
HS	13.1	13.5	22.2	28.1	23.1	100	7.5	15.5	20.2	26.1	30.6	100
All	26.1	20.9	21.1	18.8	13.2	100	23.8	21.9	20.5	19.0	14.7	100

Notes: P – Primary, UP – Upper Primary, S – Secondary, HS – Higher Secondary, All – All Levels.

Distribution of benefits across gender and social groups

Besides the income and asset, poor, the other disadvantaged groups with historically low presence in schooling, have included the girl children and children from socially deprived groups, the scheduled castes (SCs) and scheduled tribes (STs). Public schooling is particularly important for these groups which face the burden of economic, social and intra-family deprivation. Representation of these groups in public schooling in proportion to their share in population can be a rough benchmark of equity in inclusion and of them benefiting adequately from public expenditure on education.

Table 7.11: Gender-wise distribution of students attending public schools (in per cent)

	2007–08			1995–96		
	Male	**Female**	**Gender gap**	**Male**	**Female**	**Gender gap**
All India – rural						
P	53.6	46.4	7.1	57.3	42.7	14.6
UP	54.6	45.4	9.3	63.2	36.8	26.4
S	57.9	42.1	15.9	68.0	32.0	36.0
HS	62.6	37.4	25.2	73.0	27.0	46.1
All	55.0	45.0	9.9	60.8	39.2	21.7
All India – urban						
P	52.4	47.6	4.8	53.1	46.9	6.3
UP	51.5	48.5	3.0	53.9	46.1	7.9
S	53.1	46.9	6.2	54.5	45.5	9.0
HS	53.5	46.5	6.9	55.3	44.7	10.6
All	52.4	47.6	4.9	53.8	46.2	7.7

Notes: P – Primary, UP – Upper Primary, S – Secondary, HS – Higher Secondary, All – All Levels.

Table 7.11 shows an improving scenario with respect to the girl children in public schooling. Between 1995–06 and 2007–08, there has been a significant drop in gender gap across the board from very high levels, particularly in the rural areas. Despite the decline, for secondary and higher secondary levels, the gender gap remains high in rural public schools. As in the analysis of quintile-wise distributions, the contributory factors probably consist of both forces of 'entry and exit'. There is an increased trend in the participation of females (entry), who usually are enrolled in public schools, whereas the parents are exercising a choice of pulling the male child out of the public system and into private schools (exit).

Table 7.12: Utilization of public schooling by different social groups

	2007–08					1995–06				
	P	**UP**	**S**	**HS**	**All**	**P**	**UP**	**S**	**HS**	**All**
Scheduled Tribe (ST)	11.0	9.7	7.0	5.8	9.8	7.7	6.8	5.7	4.3	7.0
Scheduled Caste (SC)	22.7	21.7	19.2	16.5	21.5	22.7	18.0	15.4	13.9	19.9
Others	66.2	68.6	73.8	77.7	68.8	69.6	75.1	78.9	81.8	73.1

As per the Census of India, 2001, Scheduled Castes constitute 16.2 per cent of the total population and the population of Scheduled Tribes accounts for 8.2 per cent of the total population of the country. Roughly these can be useful benchmarks against which to measure the share of social groups in public schooling (Table 7.12). Table 7.12 presents the share of these groups vis-à-vis others in public schooling for rural and urban areas combined at two time points. In the latest period, the distribution of public schooling shows that the SCs as a category have a share exceeding their share in population at all levels; the same is true for STs for the elementary levels. The decades of universalization have seen an increased share of these groups in public schooling.

Interpreting the evidence: Exit and voice

In the literature, the emphasis of BIA has been on proving or disproving whether distributions are progressive. A progressive distribution is generally thought to be superior as more and more students from the deprived groups partake from the public pie. If, in addition, the share of the top quintiles is falling in significant ways, it shows that the better-off sections are moving to more market-based solutions. This ability to segregate utilization by income/consumption between the public and private is thought to be necessary and useful for universalization in low expenditure settings, i.e. for governments that face a budget constraint.[1] Our analysis reveals that this may not be the case – the out-of-pocket expenditure (and hence lack of benefit from public expenditure) is increasing for lower quintiles in case of health, who also have lower rates of participation in higher levels of education. The problem of exit of higher income strata is a particular cause for concern, since it fragments the voice that would demand greater accountability

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[1]   See for instance Yates, 2011 for a similar argument on health.

for service delivery and is critical to the success of decentralized decision-making. Here, what we observe is that the exit option, brought to bear through private channels, can be instrumental in weakening the voice.

In the Indian context, there is not only a growing private sector competing with the government, but there is a large hierarchy of education and health providers catering to different groups and providing different choices. The link between decentralization and provider choice has not been adequately studied. However, our BIA points to a wide range of experiences at the state level which would warrant much more detailed analysis to unpack the links between the two. This is a topic that future researchers in this area may wish to tackle both theoretically and empirically.