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Family Spending on Education in India
Pattern and Determinants

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Abstract

The present paper estimates the drivers of education spending of households across economic groups. The questions that are explored include: (i) does expenditure on education vary across economic groups and over time? In other words, whether expenditure elasticity varies by levels of income and over time? (ii) The subsidiary question is to understand the gender bias in education spending across these groups? As a corollary to this, at which levels of education and to what extent the gender bias in expenditure on education is estimated using the hurdle model. The paper uses the NSSO survey data of 52nd, 64th and 71st rounds, relating to schedule 25.2, on Social Consumption: Participation in Education. Based on the expenditure elasticity, it has been found that middle class spend proportionately more than bottom (justifiably) but also at the top expenditure quintiles. The difference between middle and top expenditure groups elasticity is marginally advantageous to the middle and the gap widening in the 71st round. This emerging middle class and their aspirations for education and upward mobility is noticeable. Years of schooling of the head of the household has a positive and significant probability of family spending on education over expenditure classes and across time. Point to be noted is in the middle expenditure group, the average effect is more compared to top expenditure category, like the one observed in per capita consumption expenditure. Yet another significant factor is the skill type of the head of the households. Skill type depicts that positive and significant probabilities of family spending on education over full and sub-samples.

Caste dummy, being SC/ST (socially deprived section of the population) statistically and significantly reduces the probability of spending on education across the board. Children who reside in rural areas (D_sector) spend less family expenditure on education compared to those who live in urban areas. The female bias in 10-14 age-group is quite substantial and has widened in 2014 compared to previous years. In age class pertaining to secondary schooling 15-19, the female bias is apparent and widened compared to earlier rounds. There is clear statistically significant gender bias across age and expenditure groups. The bias is though prevalent across expenditure groups, seems to have more among the bottom expenditure class compared to middle and top expenditure groups. This phenomenon is found across all three rounds of data, indicating that gender bias had remained during the two decades. The moot question here is will this gender bias alter? If transforms, when will it alter and how long will it take for such change? In the absence of such a move, what ought to be the government's policy towards financing of education especially on girls given the immense positive externalities of girls' education? Hence, the analysis categorically suggest for strong support for financing girls' education by the government, especially the poor and middle income groups.

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I. Introduction

Neoliberal policies have been adopted since late 1980s both globally and in India. As part of this economic policy reforms, growth in public provisioning of social services including education, healthcare, and other essential services has been on the decline. Government allocation towards social sector has been on the decline, indicating 'state's withdrawal ensuing more private sector participation and privatization of social services (Panchamukhi 2000; Mooji and Dev 2004; Pal and Ghosh 2007). The decades of economic reforms depict a number of detrimental moves in the financing of education in India. Paradoxically at a time when, India urgently needs to prepare her bulging youth for the fourth revolution, where her comparative advantage in the service sector and in knowledge-based work depends on it. At the macro level, there has been a paradigm shift in the approach to financing education from public or (state) funding to household (private) funding from family resources (Tilak, 2004). Such moves can be evidenced from the increase in fees, privatization of publicness in state institutions, increasing private sector in education paving way for more cost sharing and cost recovery from households. Such a paradigm shifts are found to be structural in nature.

Though such structural changes are beyond the control of households, they do entail changes in their expenditure patterns relating to household spending on education, health and other essential services. Parallel to this, the share of middle income population is found to be rising. One of the estimates show that the Indian middle class is expected to expand by more than 10 times from its current size of 50 million to 583 million people by 2025[1] (Benhocker et al, 2007). Several forces are driving this shift— income growth; increasing urbanization; favorable demographics; technology and innovation; and evolving consumer attitudes besides changing family structure, etc. Over the recent decades, there have been two noteworthy changes in consumer spending patterns. The first is a rise in the total amount spent on education, leisure and telecommunications, driven by both greater demand, as well as change on the supply side. The second is the shift towards better,

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[1] A study by the McKinsey Global Institute forecasts that if India can achieve 7.3 percent annual growth—a reasonable assumption if economic reforms continue—consumer spending will quadruple, from about 17 trillion Indian rupees ($372 billion) in 2005 to 70 trillion rupees in 2025.

higher-priced sub-segments in the same historical categories ranging from food to consumer durables. The digital technology and the internet enable Indians to gain access to global education, healthcare and other products and services.

Favorable demographic edge, increasing income trends combined with the aspirations of the growing middle class for upward economic mobility are being seen as catalyst in boosting the social demand for education. Share of education expenditures in the household budget has been increasing in recent decades. Moreover, the emerging demand for higher education predominantly comes from the growing middle class, which is increasingly diverse (Mukherjee et al, 2012). In rural areas, households emerging from poverty would prefer educating their children a priority, while higher-income urbanites would be spending more on better-quality education, university degrees, and study-abroad programmes. Yet another changing phenomenon more among the middle class is increasing acceptance to consumer loans, student loans, etc. The culture of acceptance for taking up loans and repaying them over regular installment payments for fulfilling their growing aspirations have been on the rise.

On a different note, while such structural changes are beyond the control of households, they do entail changes in their household expenditure patterns on education, health and other essential services. Hence, it would not be appropriate to attribute the growth of expenditure by relatively poorer households to voluntary choice alone. Hence it is argued that one of the important sources of growth of the service sector (education and health) expenditures in India can be with compulsions, rather than the affluence, of the poor. These decline in public expenditures on items which are essential in nature, may have forced households to substitute private for public provisioning, leading to increasing demand on the household budget, (Basu and Debarshi, 2015). While explaining the calorie consumption puzzle over the past four decades, Basu and Basole, (2013) show statistically significant negative effect of a rising share of expenditures on non-food essentials, viz., health, education, transportation and consumer services on calorie intake. In the same vein, Wong (2016) cautions that middle income is in the middle class of India but not in the Middle India - they are actually in the upper middle class of India using India's Consumer Expenditure survey data.

Extending this argument on family spending on education entails a direct and positive linkage between augmentation of private education and household expenditures on education at all levels of education, more so in higher education. This is one of the key aspects contributing to the increasing budget share of household spending on education since 1990s – the last three decades of liberalization, globalization and privatization. Since mid 1980s, the growth of private institutions has been mushrooming. These private institutions offer market-oriented professional courses which cater to the unmet demand for specific subjects and have increased the intake capacity in those market induced skill oriented disciplines. But, they arrive at a high individual cost. This aspect is examined further in the section on descriptive statistics.

In this light, this paper examines the pattern and determinants of household expenditure on education across well-being measures over the last two decades. Wellbeing a relatively new academic field became popular with the 2010 publication of Stiglitz *et al* (2010). Wellbeing is defined as the extent to which a person owes to a high quality of life, can achieve desired outcomes in life and can contribute to society. It is multidimensional, capturing all important aspects in life, including mental health, physical health, economic wellbeing, social wellbeing and liveability. Well-being is the measurement of standard of living of human being. Measurement of it can take one of two forms: constituents and determinants of well-being. Health, welfare, freedom of choice and more specifically, basic liberties, come under constituents of well-being; and those which reflect the availability of food, clothing, shelter, portable water, legal aid, education facilities, health care, etc, are examples of the determinants of well-being (Dasgupta, 1990).

It is well known that education and well being is closely related. Easterlin (2001) and many others have argued that people with more education and thus high levels of income have a higher subjective well-being than those with a lower level of education. This paper makes an attempt to examine education spending behaviour of households an objective well being measure across economic status. In other words, how does household expenditure on education vary across economic status? Given this background, the rest of the paper is organized as follows: Section II presents a brief review of earlier studies. The data sources and methodology adopted in

the paper is discussed in Section III. The pattern of the expenditure on education across economic status on select characteristics is discussed in section IV. Section V discusses the results of the estimated models. The last section concludes with policy implications.

II. Review of Earlier Studies

Growing literature examine the drivers of household educational expenditure more so in the last two decades. This aspect has received moderately less attention compared to the aspects on demand for education and determinants and disparities in educational attainment. This review covers studies that have analysed family allocation of expenditure on education. It attempts to review the related literature under broad categories using the method of estimation, viz., studies using simple Ordinary Least Squares (OLS); Linear Probability Model (LPM) or Tobit models; Working-Leser or Engel framework and hurdle models. Many earlier studies estimate the determinants of family expenditures on education using OLS with double log models, estimating the income elasticity of education expenditures, (Tilak, 2002; Andreou, 2012; Spieß and Storck, 2015; Rizk and Ali, 2016). Invariably all studies reviewed here estimate the income elasticity of family expenditure on education. The most proximate determinants across studies include income and education levels of the head of the households, besides a number of household characteristics such as location, household size and number and share of school aged children (details in the annexure 1 on Review table on select earlier studies). Overall, the results of the studies suggest that families with higher income, whose heads are educated and reside in urban areas tend to spend more on education compared to poor and rural families.

Using LPM, Huston (1995) examines the drivers of education expenditures with an aim to understand the value of education placed by the households. Value of education expressed as the ratio of education expenditures to the expenditures on non-necessities in a household is regressed on a set of household characteristics such as age, education level, income, race, family size and region. By estimating the LPM, she found that age, education level, income, region, race, and family size are significant factors in assessing the importance households place on education. Since the information on expenditure on education is truncated in the data set, many

studies apply censored regression or Tobit model. For instance, Huy (2012) estimates the determinants of demand for education using household expenditure on education, rather enrolment. By estimating Tobit, Acar *et al* (2015) examine the evolution of income elasticity over time and across income groups for Egypt; while Ebaidalla (2017) estimates it for Sudan.

Unlike the earlier studies, Joonwoo and Hong (2009) by adapting the semi parametric estimation approach estimate the non-linear Engel curve. They show that Engel curve has the inverted-U shape, showing different patterns according to householder's education levels. Their estimated income elasticity indicates that that private education expenditure is a normal good in South Korea. Within Engel framework, Acerenza and Gandelman (2017) estimate the drivers of expenditures on education in 12 Latin American countries along with USA and estimate the income elasticity of education spending using Working-Leser framework.

Though Tobit models are widely used for the corner solutions, the problem with Tobit models is that it treats both positive and zero values as the same decisions, rather than treating them as two diverse decision making process. This is circumvented by hurdle model (details in the Method section). Using double hurdle model which takes these two decisions into account, Jenkins et al (2019) estimate the drivers of expenditure on education for Nigeria. They find that income elasticity of education expenditures is four times higher for top income households vis à vis the bottom category.

Besides, another set of studies examine gender bias in family spending on education, more so in South Asia viz., India and Pakistan. Engle curve approach has also been used to test for gender gaps in education expenditure. For instance, Subramanian and Deaton (1991) come across a weak pro-male bias in the age group 10–14 years in rural Maharashtra. Lancaster et al, (2008) also estimate a pro-male bias in the age group of 11–16 years in the rural areas of Bihar and Maharashtra. Unlike these studies, using hurdle models, Kingdon, (2005); Azam and Kingdon (2011) and Aslam and Kingdon (2008), estimate the gender bias in intra-household allocation in India and Pakistan. They find that gender bias in intra-household resource allocation towards girls is pronounced more at the age group of girls at the secondary and higher levels of education. Kingdon and

associates find a greater pro-male bias in enrolment decisions in the age group of 15–19 years but further a larger predisposition in expenditure decisions in the age group of 10–14 year old girls. On the similar issue, but from estimating the female bargaining power on the share of educational expenditures in family budget, using 3SLS method, Nordman and Sharma (2016) estimate a negative difference in the marginal effects between female and male across age groups, implying that families spend more on boys' education than that of girls, though the pattern varies across rural and urban India.

As highlighted in the introduction, yet another consideration espoused in this paper is the changing perspective on macro economics, thereby the well being and their connect with expenditures on education, health, etc. Well-being is defined as the positive state of happiness or absence of depression and can be measured objectively and subjectively. Objective measures of wellbeing use indicators such as income, education, labour force status or homelessness. To understand what has happened over time, an attempt is made here to explore this issue using the National Sample Survey Organization (NSSO) rounds on social consumption on education. Since there is no information on the subjective wellbeing indicators in the NSSO survey, we are constrained to use the per capita consumption expenditure groups.

The important research questions that are examined here include: (i) does expenditure on education vary between / across well being levels and over time? In other words, whether income (expenditure) elasticity varies by levels of income and over time? (ii) The subsidiary question is to estimate the gender bias in education spending across these groups? As a corollary to this, at which levels of education and to what extent the gender bias in expenditure on education is estimated using the hurdle model. These questions and the empirical estimates are significant for the government financing of education in India.

III. Methodology and Data

The present paper uses the Engel curve framework for analyzing the education expenditures, which is originally used to model the relationship between consumer income and quantity demanded[2]. Working (1943) proposed the log-linear

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[2] Engel curves have been estimated for a variety of consumption goods.

budget share specification, which is known as the Working-Leser model, since Leser (1963) found that this log-linear functional form fit better that relates commodity budget shares linearly to the natural log of total expenditure. This model is used to find the relative share of different heads of household expenditure and investment. This Working-Leser specification can be extended to include the socio demographic variables, which take the form of:

$$wi = \alpha + \beta \log(xi/ni) + \gamma \log ni + \Sigma \theta_k(nk_i/ni) + \varphi zi + \mu i \qquad (1)$$

Where wi is the budget share of education of the ith household, xi is the total expenditure of the household, ni is the household size, the sign of the β coefficient determines whether goods and services are necessities or luxuries, log ni allows for independent scale effect, nk_i/ni age-sex composition and zi is a vector of other household socio-demographic characteristics. ε is a disturbance term capturing unobserved characteristics, $\varepsilon_i, \sim N(0, \sigma^2\varepsilon)$. Equation (1) captures four types of variables: variables for household heads (age, educational attainment and skill levels), variables on household characteristics (household size, location and region), variables on students (age-gender class) and policy variables (whether children benefit from midday meals (MDM), scholarship, etc). The details of the variables and notations are reported in Table 1.

The dependent variable, expenditures on education is distributed with substantial number of zero expenditure entries[3]. Tobit models are the natural choice for such corner solutions. But, the inadequacy of the Tobit model is that a single mechanism determines the choice between the zero expenditure on education (y = 0) versus positive expenditures on education (y > 0) and the actual amount of expenditures incurred i.e. y > 0. Alternatives to Tobit models, called hurdle models or two-tiered models allow the initial decision of y > 0 versus y = 0 to be separate from the decision of how much y given that y > 0.

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[3]   Tables 2 and 3 reveal the extent of households with zero education expenditures across expenditure quintiles and educational attainment of the households respectively.

The present paper uses the Hurdle model (Wooldridge, 2002, pp. 546-548). The hurdle or the first tier is whether to spend on education or not. A simple hurdle model is specified as:

$$\Pr (w = 0 \mid x) = 1 - \Phi(x\gamma) \text{ ------- (2)}$$
$$\log (w / x, w > 0) \sim \text{Normal} (x\beta, \sigma^2) \text{ ------- (3)}$$

where w is the budget share as in equation (1), x denotes the vector of explanatory variables. γ and β are the parameters and σ the standard deviation are to be estimated. Equation (2) states the probability that w is zero or positive and equation (3) say that conditional on w>0, w / x follows lognormal distribution. As equation (2) is a binary probit, we can get a maximum likelihood estimate (MLE) of γ using w = 0 verses w > 0. The MLE of β is the OLS estimator by regressing log (w) on x vector of explanatory variables, using the positive education expenditures. σ is the usual standard error from this OLS regression. The estimation turns into simple as we assume that conditional on w > 0, log(w) follows a classical linear model. The conditional mean, i.e., E(w / x, w > 0) and the unconditional mean, E(w / x) are easy to obtain by using the properties of log normal distribution.

The present paper attempts to estimate the simple hurdle model following Wooldridge, (2002). In the existing literature, equation (1) is estimated using either OLS or Tobit. However, few recent studies use somewhat different versions of hurdle models. For instance Kingdon (2011) used the simpler version of the log normal distribution while Jenkins et al (2019) applied the truncated normal model. Both however make the conditional independence assumption.

Conventionally education expenditure in the budget share of families at the household level is used in the estimation of equations 1 to 3. This paper prefers to use the unique individual data that is available on each child besides the rich information available on the supply side or the policy variables. This aspect has been rarely examined by earlier studies. Moreover, Kingdon (2005, 2008 and 2011) demonstrate that using individual-level data on educational expenditures on each child in the sample is a better alternative than using aggregate household level data[4].

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[4] Kingdon and her associates concludes that for those concerned with reliably measuring gender bias in the intra-household allocation of expenditure, household level expenditure data is a poor substitute for individual level expenditure data.

Studies in India used the India Human Development Surveys (IHDS) to examine the household expenditures on education, but rarely the NSSO surveys. It is important to note these are dedicated surveys to collect information on the household expenditures on education from time to time. The present study adds value to the existing studies; it attempts to examine the drivers of expenditure on education over a period of time and across expenditure groups. In other words, it attempts to examine how the drivers of family spending on education have evolved over time. Following simple hurdle model is suitable given that education expenditure follows log normal distribution (see figures A1 at annexure 4).

Data

The paper uses three rounds of data from the nationally representative surveys of NSSO (52nd, 64th and 71st rounds on Social Consumption: Schedule 25.2: Participation in Education, covering the period from 1995-95 to 2014. We use the household and individual data from the 52nd round on Attending an Educational Institution in India: Its Level, Nature and Cost covering the period from July 1995 – June 1996. A stratified multi-stage design was adopted for the survey, covering the number of households of 43076 in rural and 29807 in urban areas with the total sample of 3,71,672 persons (GoI, 2008). The present paper uses the relevant information from Blocks 2-6 of the schedule 25.2, containing household consumption expenditure, household characteristics of the members, besides other variables. The second stratum in this round covers the age group 5-24 years and we use the same as benchmark[5].

In the 64th round, schedule number 25.2 on Participation and Expenditure in Education collected by NSSO and the period of survey covering July 2007 to June 2008. A stratified multi-stage design was adopted for the survey covering a total sample of 445960 persons consisting of 63318 rural and 37263 urban households (GoI, 2010). The second stratum in this round and the 71st round was the age group between 5-29 years and we use that as a benchmark in our estimations. The present paper uses the relevant information from Blocks 2-6 of the schedule 25.2, containing

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[5]   It is equally important to note that during this period the GER in higher education remained as low as around 7 per cent and the concept of lifelong learning and its practice had been quite limited.

household consumption expenditure, skill category, socio-economic characteristics of the household members, besides many other variables. The detail of variables is reported in Table 1.

The 71st round data of NSSO on 'Participation and Expenditure in Education' covered six month duration starting from January to June 2014. A stratified multi-stage design was adopted for the survey covering 36479 and 29447 households in rural and urban India respectively. The total number of individuals covered are 1,78,331 in rural and 1,32,496 in urban India, (GoI, 2015a). The present paper uses extensively the information from Blocks 2-6 of the schedule 25.2 in understanding the central question of the paper, viz., factors that influence the household expenditure on education.

Variables

Table 1 report the variables included in Hurdle regressions. They are grouped as: household head characteristics, household characteristics, student related, and policy variables.

Table 1

Variables Used in the Models across NSSO Surveys

Vector	Explanatory Variables	Nature of variables	52nd	64th	71st
Household head characteristics	Log per capita Cons. Expr.	Continuous	✓	✓	✓
	Head_age	Continuous	✓	✓	✓
	D_Head_Gender	Dummy; =1 for male; 0 for female	✓	✓	✓
	Head_years schooling	Continuous	✓	✓	✓
	Skill_ISO*	Categorical; (4 skill levels)	x	✓	✓
Household	Log Hhsize	continuous	✓	✓	✓
	D_Caste	Dummy; =1 if SC/ST; 0 = others	✓	✓	✓
	D_sector	Dummy; =1 if rural; 0=urban	✓	✓	✓
	i.Region[6]	Categorical (6 categories)	✓	✓	✓
Student related	Female Age5-9	Dummy	✓	✓	✓
	Female Age10-14	Dummy	✓	✓	✓
	Female Age15-19	Dummy	✓	✓	✓
	Female Age20-24/20-29	Dummy	✓	✓	✓
	Male Age5-9	Dummy	✓	✓	✓
	Male Age10-14	Dummy	✓	✓	✓
	Male Age15-19	Dummy	✓	✓	✓
	Male Age20-24/20-29	Dummy	✓	✓	✓
Policy Variables	D_Mgt_type	Dummy- =1 if Govt/LB; 0 otherwise	✓	✓	✓
	D_MDM	Dummy; =1 if yes; =0 if No	✓	✓	✓
	D_Stationery	Dummy; =1 if yes; =0 if No	✓	✓	✓
	D_Text_Books	Dummy; =1 if yes; =0 if No	✓	✓	✓
	D_Scholarship	Dummy; =1 if yes; =0 if No	✓	✓	✓

Note: * details in annexure 2 and Tables A1 and A2.

The rationale for the choice of these variables is as per the espoused model. However, we have made an effort to include alternative variables like skill level of

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[6] Northern: Jammu and Kashmir, Himachal Pradesh, Punjab, Chandigarh, Haryana, Delhi, and Rajasthan
North East: Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Meghalaya, and Assam
Eastern: Bihar, Sikkim, West Bengal, Jharkhand, Orissa, and Andaman and Nikobar Islands
Central: Uttarakhand, Uttar Pradesh, Chhattisgarh, and Madhya Pradesh
Western: Gujarat, Daman and Diu, Dadra and Nagar Haveli, Maharashtra, and Goa
Southern: Andhra Pradesh, Karnataka, Lakshadweep, Kerala, Tamil Nadu, Pondicherry, and Telengana

the head of the households, region, etc. In the 64th and 71st rounds, the variable National Classification of Occupation (NCO) 2004 provides 3 digit industrial codes. This has been classified into four skill levels. By applying ILO's International Standard Classification of Occupations (ISCO-08) concepts to NCO (2004) and adapting to GoI (2015), we have classified the skill levels, where skill is defined as the ability to carry out tasks and duties of a given job for which the person earns a remuneration. In keeping with the skill levels defined in Table A1, so as to accommodate with the Indian situations and occupations, GoI (2015b) classified the divisions of skill levels vis a vis occupations and is reported in annexure Table A2. Accordingly, using NCO (2004) as illustrated in Tables A1 and A2, we arrive at four hierarchical skill levels. Skill level 1 is treated as the base category and used as dummy variables.

Yet another alternative variable to represent the regional variation into the model, we classify the 32/35/36 states of India over three rounds respectively into six regions and keep south as the reference category. The detail of the states in each region is explained in foot note 6 below table 1. Following the tradition of many earlier studies, the age-gender class is used as one of the important arguments. This age composition broadly relate to the levels of education viz., primary (5-9), upper primary (10-14), secondary (15-19) and graduates and above (20-24/20-29), keeping female at the age group 5-9 as the reference category. The gender bias is identified using these set of dummy variable and test for the differences in the female and male coefficients using chow test. Another important dimension covered in the paper is the set of policy variables, like the type of institutions students attend, whether government provided or not. Further, the incentives in both kind and cash have been incorporated such as whether children benefit from MDM, receive the incentives in kind like textbooks and stationary; cash incentives like scholarship. This is yet another reason to use the individual data instead of the household data. This set of variables entail the complementary nature of private spending with that of public spending on education and is an added value in the paper. The summary statistic of the selected variables is reported in Table 8 in annexure 4. Before discussing the results, we examine the pattern of household expenditure on education on select characteristics in the following section.

IV. Pattern of Family Spending on Education

This section makes an attempt to examine the budget share of education expenditures across expenditure groups using household data. This is followed by the analysis of descriptive tables and figures on the key variables using individual data. Analyses of data over time reveal a sharp increase of education's share in the average household budget (see Tables 2 and 3). Given the estimation issues of zero education expenditures as explained in the previous section, the columns 2 and 3 of these two tables display the distribution of zero education expenditures across expenditure quintiles and educational attainment levels of head of the household. As one would expect the share of households with zero expenditure do not decline across expenditure categories over three rounds (Table 2). On the contrary, it clearly shows a declining trend when tabulated against the educational attainment of the head of the households (Table 3).

With regard to the budget share of family expenditure on education, on an average, 7.1% is the budget share in 1995-96 which increased to 10.4% over a 12 year period in 2007-08, while in 2014, within a period of just seven years, the budget share has raised over 23.5 per cent in 2014 (Table 2). As households become economically better off, their share of education spending gradually rises from 4.2% for the bottom 20% households to 11.6% for the top 20% in 1995-96. But the range has increased both at bottom 6.5% and top quintiles with 18.5%. The extent of increase is farther in 2014 that the budget share of education expenditures is quite high even at the bottom expenditure quintiles as 16.4% while it is 34% among the top expenditure quintile. There could be many plausible reasons for this increase:- (i) Households increasingly realize the economic and social benefits of education. One side of the argument is that rise in incomes through economic growth has paved way for a larger space for education in their budgets. This is also the reason why the rich households tend to spend more. (ii) Yet other arguments are such that education is becoming expensive and more and more private players occupying the public space of education, where cost of education has been on the rise at an increasing rate. This issue is examined in detail later in this section.

Table 2

Households with Zero and Positive Education Expenditures, Budget Share, Expenditure on Education, PCEXP by Expenditure Quintiles in the NSSO surveys

Per Capita Income Q	Zero (%)	Positive (%)	Ed Ex Share	Exp on Ed (Rs)	PCEXP (Rs)
52nd Round 1995-96					
Q1 (Bottom 20%)	40.41	59.59	0.0416	1852	6528
Q2	36.26	63.74	0.0500	2915	9190
Q3	35.19	64.81	0.0650	4559	11830
Q4	36.92	63.08	0.0838	7255	15678
Q5 (Top 20%)	42.07	57.93	0.1157	14085	27858
Total	38.17	61.83	0.0707	6029	14048
N (HH)	27,878	45,161	45,161	45,161	45,161
64th Round 2007-08					
Q1 (Bottom 20%)	42.96	57.04	0.0648	2380	6324
Q2	47.35	52.65	0.0731	3714	9393
Q3	50.18	49.82	0.0936	6037	12511
Q4	52.16	47.84	0.1213	10153	17428
Q5 (Top 20%)	55.09	44.91	0.1850	24523	35334
Total	49.53	50.47	0.1042	8776	15429
N (HH)	49,809	50,731	50,731	50,731	50,731
71st Round 2014					
Q1 (Bottom 20%)	35.10	64.90	0.1641	7391	8060
Q2	32.88	67.12	0.1766	12004	12296
Q3	35.75	64.25	0.2204	18269	16042
Q4	34.54	65.46	0.2780	30152	22863
Q5 (Top 20%)	32.05	67.95	0.3398	63457	46759
Total	34.12	65.88	0.2355	26170	21118
N (HHs)	16,766	32,374	32,374	32,374	32,374

Source: Unit records of households of the corresponding NSSO Rounds

Note: HH – households; Exp on Ed – average expenditure on education in 2011-12 prices; EdExShare – share of education expenditure in total consumption expenditure; PCEXP – per capita consumption expenditure in 2011-12 prices.

Among those who spent positive expenditures on education, the gap in the average expenditure on education is around 7.6 times higher from the bottom expenditure category to the top 20 percent in 1995-96. While the same gap has

increased to 10.3 times in 2007-08, but declined marginally to the tune of 8.6 times in 2014. It is important to note this gap is rather more to that of the gap in per capita consumption expenditure between the bottom and top quintiles. The same ratio also known as polarization ratio is 4.3 (7.6 in education expenditure) in 1995-96 and increased to 5.6 (10.3) in 2007-08 and more or less remained at 5.8 (8.6) in 2014. Across three rounds and over time the dispersion in spending on education and consumption expenditure prevails, while it remains higher among the mean education expenditures.

Since the per capita consumption expenditure is a flow variable, an attempt is made here to examine the budget share of education spending over a stock variable based on the educational attainment of the head of the households. The patterns on zero verses positive expenditure on education provide a striking difference between when the head of the household is with no education or illiterate and the rest of households having any level of education (Table 3). Further, the variations across levels of education of the head of the household remain minimal across rounds.

Table 3

**Households with Zero and Positive Ed. Expenditures, Budget Share, Expenditure
on Education, PCEXP by Education Levels of head of the Household in
the NSSO surveys (%)**

HH Head Education	Zero (%)	Positive (%)	Ed Ex Share	Exp on Ed (Rs)	PCEXP (Rs)
52nd Round 1995-96					
No Education	48.05	51.95	0.0466	3132	10446
Elementary	33.37	66.63	0.0661	5080	12789
Secondary	30.09	69.91	0.1021	9652	18524
Higher	33.03	66.97	0.1203	14427	24934
Total	38.17	61.83	0.0707	6029	14048
HHs	27,878	45,161	45,161	45,161	45,161
64th Round 2007-08					
No Education	55.91	44.09	0.0623	3731	10130
Elementary	47.85	52.15	0.0885	6161	13090
Secondary	43.21	56.79	0.1600	14760	21062
Higher	46.54	53.46	0.1899	24249	31130
Total	49.54	50.46	0.1042	8776	15427
HHs	49,809	50,731	50,731	50,731	50,731
71st Round 2014					
No Education	48.09	51.91	0.1342	10857	13313
Elementary	33.91	66.09	0.1900	17760	17130
Secondary	25.26	74.74	0.3106	35311	25370
Higher	27.64	72.36	0.3982	59336	37882
Total	34.12	65.88	0.2354	26178	21118
HHs	16,766	32,374	32,374	32,374	32,374

Source: Unit records of households of the corresponding NSSO Rounds
Note: Exp on Ed – average expenditure on education in 2011-12 prices; Ed Ex Share – share of education expenditure in total consumption expenditure; PCEXP – per capita consumption expenditure in 2011-12 prices.

In terms of budget share of expenditure on education, the disparity has been quite wide apart from 4.6% among illiterate heads of households to that of 12% among heads with higher education in 1995-96. This gap has widened to the tune of 6.2% to 19% in 2007-08. This has further widened in 2014 from 13.4% among illiterate heads to that of 40% among heads with higher education in 2014. It can be noted in comparison with the education expenditure gap across expenditure quintiles from Table 2, the education expenditure gap is wider among educational categories of the head of the households. The share of budget expenditures on education across both expenditure and educational levels widened over a period time, the extent of

variation is accentuated across educational attainment levels of head of the households.

Average expenditure on education over illiterate head of the household with that of the heads with higher education reveal the variation is 4.6 times more expenditure on an average. The same is 6.5 times in 2007-08, while this has declined to 5.5 times in 2014. Though declined, when examined over a period of time, the dispersion widened in terms of family spending on education. But in terms of per capita consumption expenditure levels, the variation is minimal from 2.4 per cent in 1995-96 to that of 3.1% in 2007-08 and declined to 2.8% in 2014. On similar lines, Shukla and Bardoi, (2013) point out that share of other than food items like education, health, durable goods, consumer services and conveyance, is increasing. Household expenditure on education has risen across income brackets; even among the poor. This feature depicts that the members of India's new middle class share dreams of upward mobility. The bottom quintiles and no or low of levels of education families draw their inspiration from the success of professionals such as software engineers and entrepreneurs. Indeed, education is viewed as one of the key instruments for economic and social mobility. Empirical evidences suggest that there is significant demand from the middle class, both for cheap consumption goods as well as investment goods, particularly those that target human resources such as health and education (Chakravarty, 2018). This phenomenon resembles Baumols cost disease[7].

Enrolled Ratio and Expenditure on Education

From this section onwards, as noted elsewhere, the unit of analysis in this paper is the unique individual data of the relevant age group. We limit our analysis to children of school going age and as defined in the NSSO surveys and hence accordingly from 5 to 24 ages in 1995-96 and 5-29 ages in 2007-08 and 2014. Individual data covering all ages is 3,71,672, while our analysis has been restricted to the 1,61,222 who fall in the age class of 5-24 in 1995-96. Similarly, total individuals in 64th round is 4,45,960, while the analysis pertains to the 5-29 age class

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[7] It entails that the cost of industrial goods such as cars, TVs, fridges, mobile phones, etc in techno-robot milieu to plunge, while the cost of services in labour-intensive sector, viz., schooling, health care, child care, legal services, etc to grow.

which is 2,01,040. In the 71st round, the sample of individuals covered include 3,10,827, our analysis is limited to 1,48,013 in the age class of 5 to 29. The descriptive tables report the enrollment ratio of eligible age group children and household expenditure on education of the enrolled children by age gender class across rural and urban India over three expenditure groups, viz., bottom, middle and top. These summary statistics are reported in tables 4A, 4B and 4C in annexure 3 corresponding to 1995-96, 2007-08 and 2014 respectively. These summary tables and the box plots in Figure 1 below on the enrolled ratio of eligible children and household expenditure on education present interesting insights:

Figure 1

Box plots of Household Expenditure on Education in 2011-12 prices and Ratio of Enrolled Children to Eligible Children in the NSSO Rounds
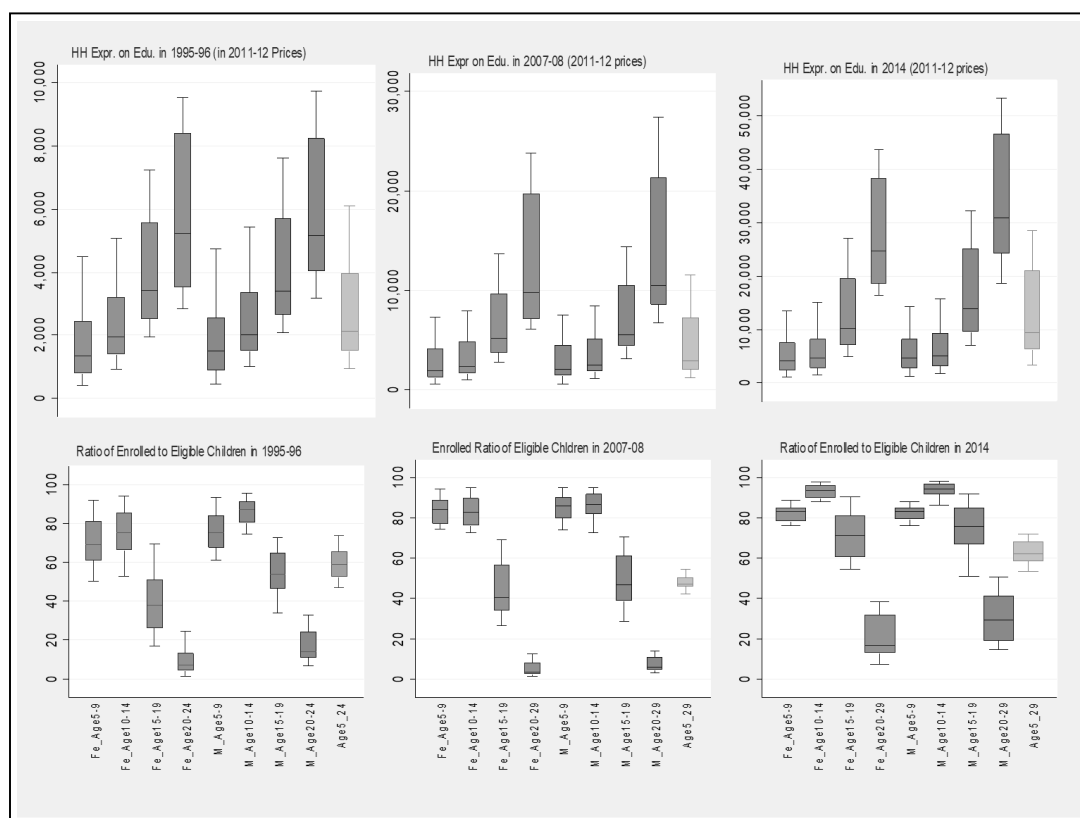
Source: Based on tables 4A, 4B and 4C in annexure 3.

The spread of enrolled ratio across expenditure groups and gender in the age class of 5-9 to 10-14 has narrowed down as we move from 1995-96 to 2014. Gender bias at these two age groups is almost vanished. Indeed, the enrolment ratio of AISHE and UDISE indicate that GER is marginally better for girls than boys across levels of education in the recent years. However, this does not mean families spend

more on girls than on boys for education. Gender bias in education spending starts at the age class 5-9 and pervade across expenditure groups, location across both rural and urban India and over time across three rounds. Gender bias gets widening as the children move up in the ladder in age classes 15-19 and 20-29. This is clearly visible from the length of the box plots between male and female in these groups. In the case of age class 15-19, the gap is more in rural than in urban areas. In urban areas, gender bias in enrolled ratio is more visible among the bottom expenditure groups than in middle and top expenditure group. As we move on to the age gender class 20-29, gender bias is very high in both urban and rural areas, but more accentuated among the rural areas across expenditure groups in 1995-96. However, over time, in 2007-08 and 2014, gender gap declines in urban areas especially among top expenditure groups. Also gender bias declines in rural areas as well across the Enrolled Ratio (ER) in the 20-29 age class (Figure 1).

While we report the declining trend of gender gap in ER is not the case when we examine the gender differences of the families investing on education. The spread of family investment on education has remained marginally better off for boys than girls during 1995-96 across age gender class. Gender gap in spending is widening over time (see the box plots in Figure 1). But the details in the descriptive tables from 4A to 4C at the annexure 3 clearly bring out the gender bias in education spending in both rural and urban areas and across three rounds. Unlike in ER where the gender bias was more among rural areas, but in education spending, it is more in urban areas across all three rounds, the gap in education spending widens as the age class move upwards.

Enrolled Ratio and Expenditure on Education across by Management Type

At the macroeconomic level, the private education surge can be explained under two broad phases of development and financing of education, viz, the rise of private education since 1985 till 2000 and the trends in the recent decades of post millennium. A couple of phenomenon reinforce each other, viz the growth of private education, more so in higher education and within higher education the market oriented skill driven courses on the one hand, and rising cost of these private self financing courses on the other (Geetha Rani, 2019). These dynamics and the structural changes in the financing of education over time at the micro level,

however, could have been captured with a longitudinal data. In the absence of that an attempt is made here to examine this intricate relationship by looking at the descriptive statistics under three rounds of NSSO. Tables 5A, 5B and 5C in annexure 2 report the enrolled ratio of children by management type and household expenditures on education across expenditure groups in each of the NSSO rounds respectively. There are interesting insights from these tables and figure 2A.

Figure 2A

Growth of Ratio of Enrolled Children to Eligible Children by Private Unaided Management Type across NSSO Rounds
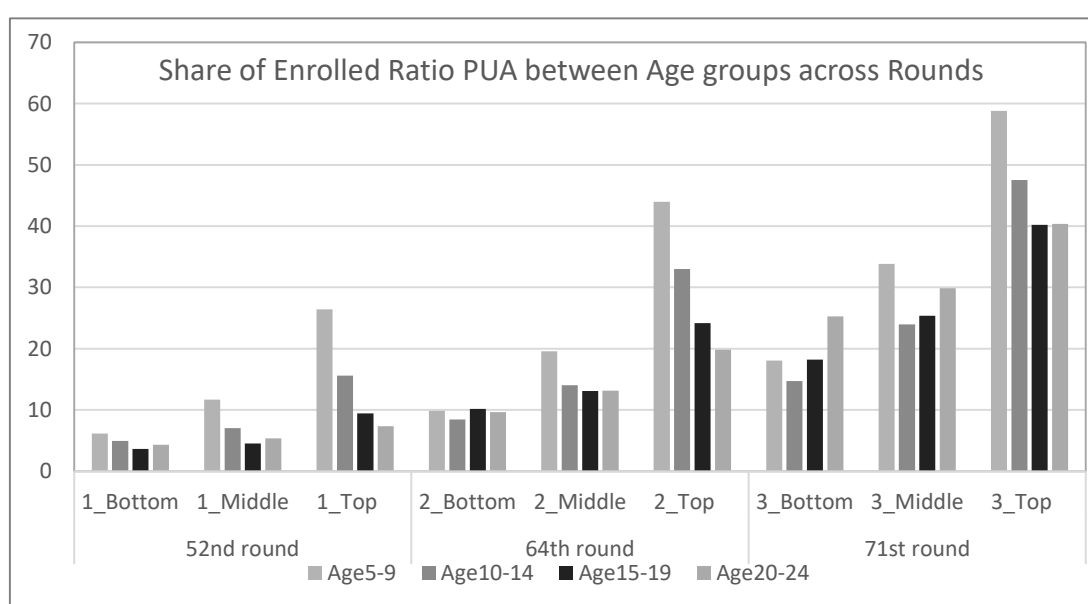
Source: Based on Tables 5A, 5B & 5C

The share of enrolment under private unaided management type has been steadily progressing from bottom to top expenditure groups across three rounds. The highest share of private unaided sector is among the primary age group children, starting from 6.15% among the bottom expenditure category in 1995-96 augment to 18% by 2014; while among the middle expenditure groups, commencing from 12% to 34% during the same period; whereas among the top expenditure category, it moved from 26% to 59% during the same period. It is quite clear that the movement to private unaided sector is occurring more among the lowest expenditure categories, followed by middle and then the top expenditure categories in this primary age group. This social demand for private unaided sector has resulted in moving away from the government schooling to a larger extent. Low-cost or low-fee private sector

is growing and capturing the demand from majority of the poorest section of the population. A similar pattern is observed at other age groups as well, though the degree of penetration is relatively less compared at each age group. That the next highest share is followed by age group 10-14 corresponding to upper primary and observed a similar share across 15 to 19 and 20 to 24 age groups relating to secondary and higher education across expenditure groups and over three NSSO rounds.

Unlike the enrollment pattern across age groups over economic categories in three rounds is quite contrast when we examine the household cost of education by management type. The household expenditure on education is reported in the second panel of tables 5A, 5B and 5C. Though the share of primary age group 5-9 in PUA is the largest across rounds, their household cost has been as expected would be the lowest. But, it has increased many folds (11 times) among the bottom expenditure category than the middle and top expenditure categories ((10 times each). That the household expenditures in 5-9 age group in 1995-9 was Rs.226/- and increased to Rs.6693/- in 2014, while among the middle category it improved from Rs.410/- to that of Rs.10801/ during the same period; whereas among the top expenditure category, the household expenditure was Rs.846/- in 1995-96 and increased to Rs.21240/- by 2014 (Figure 2B).

Figure 2B

Growth of Household Expenditure on Education under Private Unaided Management Type by Expenditure Categories across NSSO Rounds
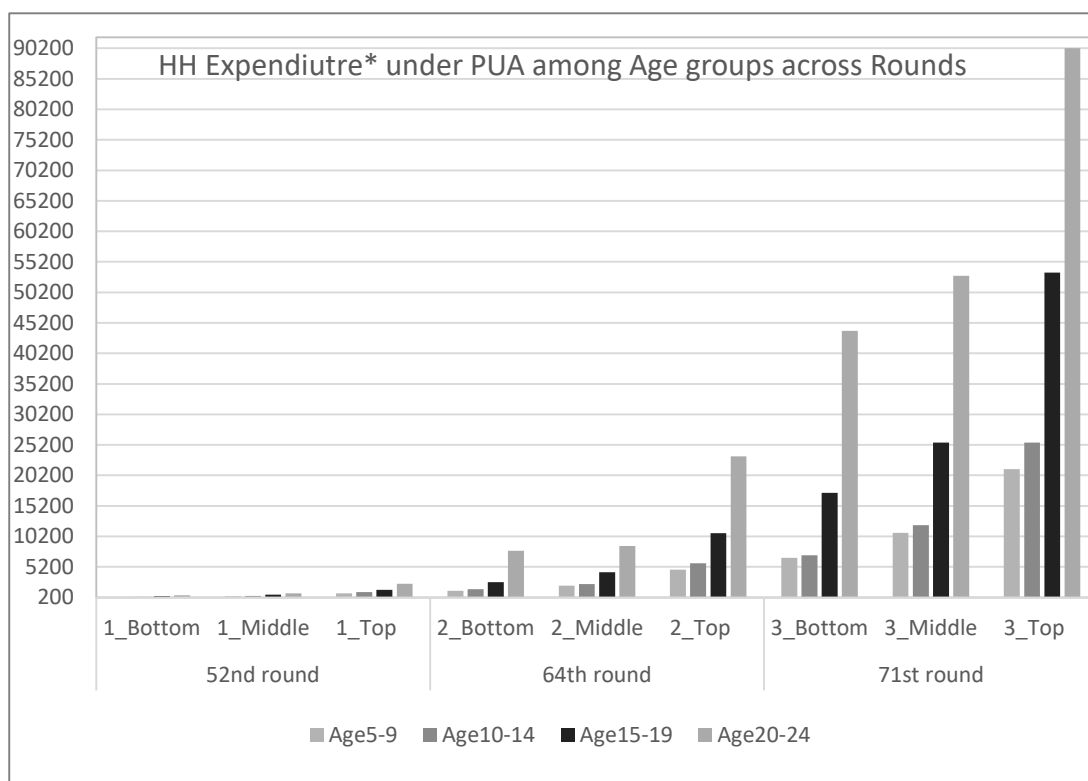
Note: * in 2011-12 prices Source: Based on Tables 5A, 5B & 5C

As levels of education increase, the cost of education too raises. However, the rate at which it increase across income / expenditure category over rounds indicate that the highest increase is in the age group 20-24. That the expenditures among this age group from 52nd round to that of 64th round was 15 times higher compared to 5.6 times hike between 64th to 71st round among the bottom expenditure category. While it was ten times from 52nd round to that of 64th and 6.2 times increase between 64th to 71st round among the middle expenditure category. This is in contrast to 9.5 and 4 times during the same period among the top expenditure category. What is clearly indicated in this analysis is that the bottom expenditure category exit from the government schooling and move towards PUA schools across levels of education and more predominant in the primary age group. On the expenditure front, the cost of higher education is one of the highest and here as well the bottom expenditure groups tend to spend many fold comparatively to that of middle and top expenditure categories.

Enrolled Ratio and Expenditure on Education across Regions

Enrolled Ratio across Regions

The region wise enrolled ratio across age gender and expenditure class in Tables 6A, 6B and 6C and in summary Figures 3 and 4 is reported in annexure 3. They bring out the pattern and disparity of gender gap. This is further illustrated through gender gap in the enrolment ratio in Figure 6 for the enrolled ratio (ER) across three rounds of NSSO in annexure 3. Trends and patterns that emerge though are mixed and varying across age-class (implicitly levels of education) and expenditure class, yet the following pointers from these tables and figures are noteworthy: (i) Across these three rounds of surveys, the gender gap in ER declined among both expenditure class and age classes. (ii) Gender gap in ER has been the largest among 15-19 age class across rounds. As the filtering of gender bias, large part of it might be due to early marriages and cultural norms occurred at this age class. However, as we move over time, this larger gender gap appears to be shifting towards the 20-29 age class especially in the latest round (71ˢᵗ round in 2014). (iii) Yet another interesting trend observed over time is the girls replacing the enrolment advantage over boys at the entry age class of 5-9, that being extended to 10-14 age class. This can be attributable to a number of significant interventions by the GoI starting from DPEP, SSA and Right to Education over the two decades or more. (iv) The regional disparity getting declined at the young age classes 5-9 and 10-14 as we move across time points. However, the dispersion shifting towards to the older age classes of 15-19 and 20-29.

Expenditure on Education across Regions

It is equally important to unfold how the family spending on education varies across regions in India. A similar attempt as in the previous section is pursued and the results are reported in Figure 5 and tables 7A, 7B and 7C at annexure 3. These expenditures are comparable as expressed in 2011-12 prices over the period from 1995-96 to 2014. One can note the following insights from these tables and figure: (i) Per student or mean expenditure on education increases as we move from bottom to top expenditure classes. (ii) The difference between bottom and middle expenditure classes are substantial, when compared between middle and top

expenditure classes. This trend persists across time period. (iii) The variation is widening as we move up in 15-19 age class and the highest regional disparity reported in the top expenditure classes among 20-24 / 20-29 age classes. Using the 71st round, Chandrasekhar et al (2019) find that the average share of expenditure on higher education out of total household expenditure is 15.3 per cent and 18.4 per cent for rural and urban households who participate in higher education. This average is higher in the southern states since individuals from these states are more likely to be enrolled in private unaided institutions where fees are higher and are more likely to be pursuing technical education. (iv) In many regions, we do find that mean expenditure on boys is lesser than girls across age classes. However, this does not present any discernible pattern across regions or age classes.

V.   Results and Discussion

The Present paper uses the Engel Curve Framework for analysing the education expenditures and applies the hurdle model. Accordingly, three equations in each category, viz., (i) the likelihood of whether the households incur educational expenditure on the children or nor capturing via Probit, the first tier in the Hurdle model (ii) the conditional OLS on the positive education expenditures incurred on the currently attending children. We run OLS as our dependent variable education expenditures (LEdEx) is log normally distributed (see Figure A1: Histogram of LEdEx in 52nd, 64th and 71st Rounds at annexure 4). (iii) The unconditional estimates capturing the impact of both the decisions to spend and the amount to spend. These three set of equations are estimated across three income groups and on full sample, hence 4X3=12 equations for each NSSO rounds. Then over three rounds, it is 12X3=36 equations altogether. The set of explanatory variables almost remain the same across three NSSO rounds except for the availability of data (details in Table 1). The correlation coefficient matrix of the selected variables are reported in the annexure 4 from Tables A1 to A3 corresponding to three surveys. Individual data covering eligible school going age class is 1,61,222 but those who spend positive education expenditure is 91,700 in 1995-96. Similarly, in 64th round, our analysis pertains to the 5-29 age class consisting of a sample of 2,01,040. Among them, who incur positive education expenditures are reported in 94,199 students.

In the 71st round, our analysis is limited to 1,48,013 in the age class of 5 to 29, while 93,445 children spend positive expenditures on education.

The relevant statistics from the estimated results of probit, conditional OLS and unconditional estimated effect of spending on education (36 equations) are reported in tables 9A, 9B and 9C in annexure 4. These hurdle models are estimated across full sample, three sub samples based on three groups of per capita consumption expenditure, viz., bottom, middle and top category. We will focus on the reported results of the unconditional estimates, because this is the one which provides the combined marginal effect of both estimates that we are interested in whether to spend and the amount to spend on education.

Per Capita Consumption Expenditure

With the eligible age group of school or college going individuals, the paper attempts to explore whether the threshold levels of income (expenditure) affect the decision on the family expenditures on education. The probability of spending on education improves as families move from bottom to that of middle expenditure group, but marginally declines at the top expenditure group. The unconditional estimates provide the elasticity, i.e., parameter estimates of β in equation (1). We can note that elasticity is more than one across the board that indicates spending on education is elastic. But the scene in 2007-08 is quite different that expenditure elasticity with respect to education is inelastic, range between 0.163 among the bottom class to 0.380 among the top class. This change is after more than a decade of neo-liberal economic policies making spending on education less elastic, though the budget share from 1995-96 to 2007-08 are increasing as reported in Tables 2 and 3. While in 2014, the elasticity is more than one across middle, top and full sample and closer to one (0.892) among the bottom expenditure class. This is something similar to the findings of Subramanian (1995) for India and Jenkins, et al (2019) for Nigeria. The interesting trend is that the middle income group, in other words, the middle class spends proportionately more than bottom (understandably) but also at the top expenditure quintiles. Similar results have been reported by Acar et al (2016) in the context of Turkey. This emerging middle India and their aspirations for education and upward mobility are clearly evidenced through the expenditures on education, especially with the movement from bottom to middle expenditure class.

The difference between middle and top expenditure groups' elasticity is marginally advantageous to the middle class and the gap widens in the 71st round. From human capital theory perspective, investment on education improves employability of an individual thereby increasing his future income, and standard of living. This permits further lifestyle quality choices that are otherwise not available to individuals with less education and lower incomes. On the contrary, for the poorest families, there is barely adequate income to even start making some positive education expenditure. But if the income of the poor increases and able to reach to middle category, expenditure on education of the family becomes a priority.

Household Size

Household size indicates scale effect and the fertility preference per se. However joint family system prevails in India, more in rural parts. This variable has a significant and positive impact on the probability of spending on education. The larger households generally tend to spend lesser on education of the children. But the unconditional estimates of the elasticity coefficient are positive and significant. The amount spent on each additional child adds on to 17%, 13%, 12% and 15% among full, bottom, middle and top expenditure class in 1995-96. But, the same variable does not show significant probability of spending on education, but both conditional and unconditional estimates are negative and significant in 2007-08. The larger family size in bottom class tends to spend about 5% less, compared to 3% less spending across middle and top classes. Similar pattern continues in 2014, estimates of all three models show negative and significant co-efficient values. The amount spent on each additional child on average reduces to 18%, 19%, 20% and 18% across full, bottom, middle and top expenditure classes. This evidence indicates the quantity-quality trade off on the number of children the families / couples would like to have and their investment on education.

Characteristics of the Head of the Household

The family fixed effects are examined using years of schooling, age and gender of the household. Years of schooling of the head of the household has a positive and significant probability of family spending on education over expenditure classes and across time. Educational attainment of the head of

the household is a stock variable unlike the per capita consumption expenditures, a flow variable. The unconditional average marginal effects consistently increase from bottom to top expenditure class. However, in 2007-08 and 2014, the average marginal increase in spending is lesser compared to the marginal effect noted in 1995-96. But the point to be noted is in the middle expenditure group, the average effect is larger compared to top expenditure category, like the one observed in per capita consumption expenditure. Many studies confirm the same finding for example for India using IHDS II survey (Azam and Kingdon, 2011); for Vietnam (Huy, 2012); and for Nigeria (Jenkins, et al, 2019).

Age of the head of the household indicate the experience, not necessarily to capture the money aspect of experience as a wage premium in wage equations, but from the perspective of investing on human capital of their off springs. This variable exerts positive and significant probabilities of family spending on education across expenditure categories and over NSSO rounds. But, the average marginal effects are tiny with less than an average of 2 to 3% increase in family spending on education. The negative and significant coefficient on gender of the head of the household indicates that being male reduces the family spending on education. The average effect reduces at an increasing rate across expenditure categories. Similar pattern is observed in 2007-08 and 2014, though with a substantially lower effects.

Yet another significant factor that is expected to have positive influence on family spending on education is skill type of the head of household. Skill type, having four categories, the dummy variable on skill levels from 2 to 4 depict positive and significant probabilities of family spending on education over full and sub-samples in 2007-08 while it is significant only among middle expenditure class in 2014. The positive and significant co-efficient on this dummy variable Skill_2 suggest that the average family spending on education improves by 4%, 3% and 5% across bottom, middle and top expenditure classes respectively. While the same variable in 71st round, exert a substantially higher average effect of 18% and 27% across bottom and middle expenditure class while it is statistically insignificant at the top expenditure class.

D_Skill_3 display positive and significant probabilities of spending on education among the sub-samples of middle, top and full samples but not among

bottom sub-sample in 2007-08. But, the pattern is not the same across in 2014, where Skill_3 indicate positive and significant probabilities of spending on education over all categories except top expenditure class. The unconditional average marginal effects suggest that family spending on education will increase by 7%, 6% and 4% across the three expenditure groups in 2007-08, while substantial increase of 52% and 48% more compared to other skill levels among bottom and middle expenditure class but statistically insignificant at top expenditure class. The highest skill level captured via the dummy variable Skill_4 report positive and significant probabilities of household spending on education in 2007-08 across the board. While in 2014, it is the same except across the top expenditure class. Coefficient values of Skill_4 exert an average increase of 7%, 8% and 9% of family spending on education. In 2014, the marginal effects are substantial that it can add family spending by 24% and 54% over others in bottom and middle expenditure class.

The caste dummy, that being SC/ST (socially deprived section of the population) statistically and significantly reduces the probability of spending on education across the board. It does not have the income (expenditure) thresholds, that it is generally believed that economic capacity can offset the caste deprivation, where education is viewed as the medium to break social mobility. That however does not hold in the present study in any period. The families belonging to SC/ST compared to others as the average marginal effect is negative and statistically significant across the board and suggest reduced family expenditure on education. The reduction in figures varies from 4% to 5% in 2007-08; 12% to 20% in 2007-08 and 21% to 28% in 2014.

Location

Children who reside in rural areas (D_sector) spend less family expenditure on education compared to those who live in urban areas. The probability of this dummy variable is negative and statistically significant across sub-samples and full sample over time. The combined marginal effect suggest that on an average residing in rural areas reduces the expenditure by 7%, 8%, 5% and 8% across full, bottom, middle and top expenditure groups in 2007-08, while this average reduction of expenditures have risen to 10%, 25%, 7% and 19% across the same in 2014.

But the reduction was substantial in the corresponding figures of 33%, 43% and 59% among bottom, middle and top expenditure class in 1995-96. The mean expenditures reported in descriptive tables 4A, 4B and 4C and the results analysed here confirm the differences. This has been found in a number of studies (Nordman and Sharma, 2016; Jenkins et al 2019). One of the plausible reasons for these differences across surveys could be due to a number of government intervention to promote schooling that was initiated since 2000 through Education for All schemes like *Sarva Shiksha Abhiyan* and later the implementation of Right to Education Act, boosted good amount of government expenditure in to the schooling system. However, the difference in the reduction between rural and urban family expenditures has been contained compared with 1995-96 to 2014.

Yet another location related variable examined here is to what extent the regions play a role in the expenditures on education. We categorize 32/35/36 states of India into six broad categories of region based on the direction of their location as south, west, east, NES, north and central. The states included under each category are explained in the note given below table 1. Leaving south[8], we create five dummy variables to denote regions. The probability of children reside in western India, spending on education is positive and significant among the bottom class, on the contrary the probability of family spending on education is negative and significant among the top class. In the full and sub sample middle expenditure class, the probit is not statistically significant in 1995-96. The combined effect suggest that D_west exert an average an increase of 18% spending on education compared to south region, but it reduces the spending by 21% among the top class. In 2007-08, the probit results are negative though statistically insignificant across the board. The combined effect suggest that the reduction of family spending on education occur at 4%, 6% and 7% across full, middle and top expenditure class. The similar trend continues in 2014 that the probit is negative and statistically significant suggesting that possibility of no positive spending across the board. The combined effects suggest substantial reduction in family spending to the tune of 46%, 44%, 61% and 34% among the full, bottom, middle and top expenditure classes respectively. The extent of reduction increases as we move up in the expenditure

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[8]   Southern part of India is educationally and economically better off than the rest of India besides being better in terms of many of social and human development indicators. The southern states' fertility rates have started declining since 2001.

class from bottom to top in both 64th and 71st rounds. The western part of India includes some of the economically prosperous states though socio-cultural milieu probably is not conducive for families investing on education.

In the case of D_east, the probability is negative and significant among the full sample, bottom and top expenditure class in 1995-96. However, the combined effect is statistically significant only among the full sample reducing the spending by 4% and bottom expenditure class by 6%. In 2007-08, the probit suggest that the possible positive spending is negative and significant across the board. The unconditional marginal effect indicate that the reduction of family expenditures by 4%, 6% and 7% across full middle and top expenditure categories. Analogous pattern continues in 2014 in probit results, while the combined effects reveal substantial reduction in family spending for the children and families living in eastern India to the tune of 46%, 31%, 15% and 38% across full, bottom, middle and top expenditure classes.

The north eastern regions (NES) generally face the cost differential due to its hilly landscape. But that does not show up in the family spending that the probability of spending on education is negative and strongly significant across the board in 1995-96 and in 2014, while the same is found to be positive across the board in 2007-08. The combined effect exerts a negative coefficient value indicating an on average 7% education spending among the full and 15% reduction among the middle expenditure class. Similar to 1995-96, the combined effect suggest a substantial lessening of family spending an on average by 43%, 25%, 54% and 59% across the full, bottom, middle and top expenditure classes. But in 2007-08, the combined effect indicate substantial increase in spending an on average of 18%, 27%, 19% and 12% across the full, bottom, middle and top expenditure class.

With regard to D_north, the probit is negative and significant across the board in 1995-95 and 2014 saying that there is no possible positive spending in the region compared to the south region. The combined effect suggests that the reduction of family spending an on average is 15% among the top expenditure class and the rest of the cases, it is statically insignificant. While the combined effect is negative and significant entailing the decline of family spending on education to the substantial tune of 40%, 29%, 41% and 56% across full, bottom, middle and top

expenditure categories. It is important to note that the states that fall in north region are the so called BIMARU the economically and educationally backward states in India. However, the same dummy variable in 2007-08, the probit is negative and significant across full, middle and tope expenditure classes. The combined effect is however positive and significant and indicates an on average add to 15%, 23%, 16% and 9% across full, bottom, middle and top expenditure groups.

With regard to D_Central, the probit result is positive and significant across full sample, bottom and middle expenditure class, saying that the children and their families reside in central part of India more often make a positive spending on education. The combined effect suggest that the spending on education an on average increase by 11% among full sample, 20% and 11% among poor and middle expenditure class. On the contrary the same dummy variable in 2007-08 indicates that the probit is negative and significant across full sample and the sub sample bottom, while it is negative and significant across the board in 2014. The combined effect in 2007-08 is negative and significant suggest a decline in family spending by 6%, 2%, 7% and 9% across full, bottom, middle and to expenditure groups. In 2014, the combined effect suggest a substantial decline of family expenditures on education to the tune of 42%, 38%, 45% and 32% in the same sequence of full and sub samples. The set of dummy variables on region highlights the regional disparity in family spending on education. These differences can be attributable to the state policies besides the cultural and social values placed on education.

Child Related: Age Gender Class

Yet another important question is how gender gap in expenditure behaves across expenditure groups. The set of age-gender related socio-demographic variables introduced in the model covers the number of children in each school going age range between 5 and 29 that has been categorized into 10 different age-gender class. Grouping of age largely relate to the levels of education viz., primary (5-9), upper primary (10-14), secondary (15-19) and graduates and above (20-24/20-29). Equality of the male and female coefficients across age groups is tested using chi2 test and presented at the bottom rows of each of the tables 9A, 9B and 9C.

Keeping Female5_9 age group as base category, the dummy variable on D_male5_9 indicate positive and significant probit across the board. The combined marginal effect of the strong positive and significant coefficient values indicate the family spending increase an on average by 22%, 17%, 26% and 20% across full, bottom, middle and top expenditure classes in 1995-96. In 2007-08, the dummy variable on D_male5_9 indicate positive except bottom class but insignificant probit across the board. Nonetheless the combined marginal effect is positive and significant. These coefficient values indicate the family spending add to 3% each across the board except in middle expenditure class. With regard to 2014, the same variable D_male 5-9 depicts positive and significant probabilities only in bottom expenditure class. However, the combined effect is positive and significant suggesting an increase in family spending an on average of 11% and 12% across bottom and top expenditure classes.

The probability of the variable D_female10-14 is positive and significant across the board in 1995-96. The combined effect suggest a substantial increase in family spending to the tune of 66%, 53%, 70% and 73% across full, bottom, middle and top expenditure groups. While the same age class in male, expressed as D_male10-14 exert a negative and significant probit results across full, middle and top expenditure class. The combined effect of this variable is positive and significant and suggests the family spending on education increase an on average substantially to the tune of 49%, 82%, 54% and 12% among full, bottom, middle and top expenditure groups. It can be noted that the increase in average spending across female raise as they move from bottom, middle and top expenditure classes. But in the case of male, the reverse i.e. decline in average spending as they move up in the expenditure ladder is observed. It implies that the boys in the bottom expenditure classes are spent more on education compared to girls. The test of equality of female and male coefficients of chi2 reported in table 9A clearly establishes the gender bias in family spending on education in the age class 10-14, corresponding to upper primary schooling level itself.

In 2007-08, the probit of D_female10-14 entail positive and significant values across full sample and bottom sub sample. However, the combined effect is positive and significant across the board, signifying the increase of family spending

on education an on average by 14%, 19%, 14% and 7% across full, bottom, middle and top expenditure classes. The same age group among male children is denoted by D_male10-14, entail positive and significant probabilities across the board suggesting possible positive spending. As expected, the combined effect is positive and significant across the group. The co-efficient values suggest an increase in the family spending on education by 17%, 23%, 17% and 8% across full, bottom, middle and top expenditure classes. The female bias is quite apparent across the full and sub samples. Further, the female bias appears to be greater than 1995-96. The test of equality of female and male coefficients of chi2 as reported in table 9B for the year 2007-08 noticeably points to the gender bias in family spending on education among upper primary schooling age class of 10-14.

In 2014, the probability of D_female10-14 is positive and significant across the full and sub samples. Also the combined effect is positive and significant indicating that the families spending on education augment substantially an on average by 107%, 71%, 85% and 170% across the full, bottom, middle and top expenditure classes. The same age group among male, noted as D_male10-14, imply positive and significant probabilities saying the likelihood of possible family spending on education. The combined effect of the unconditional values of the coefficients are positive and significant indicating that the family spending on education boosts up an on average to 136%, 90%, 126% and 195% across the full sample and the sub samples in the sequence respectively. The female bias in this age group is quite substantial. It is noticeable that the female bias has widened in 2014 compared to previous years. Over the years, the female bias has widened at this age group pertaining to upper primary schooling. The test of equality of female and male coefficients of chi2 as reported in table 9C for the year 2014 noticeably points to the gender bias in family spending on education among upper primary schooling age class of 10-14.

Though in the next age class, D_female15-19, we get the negative and significant probability indicating that possibility of no spending across the board, yet the combined effect exert a positive and significant coefficient values suggest the family spending increase an on average by 4%, 4%, and 11% across full, bottom and middle expenditure class in 1995-96. On the contrary, the combined effect is

negative and significantly reduces the family spending by 39% in the top expenditure class compared to the spending on female 5_9 age class. The same age class relating to male captured through the variable D_male15-19, exert a negative and significant probit across full sample, middle and top sub samples. Nonetheless, the combined effect is positive and significant with substantial coefficient values of 49%, 82%, 54% and 12% across full, bottom, middle and top expenditure classes. Unlike the upper primary age group, the gender bias is quite apparent in terms of the value of the coefficient. *The female bias in spending is accentuated in the secondary schooling age group across expenditure classes.* The extent of bias is more among the bottom and middle class compared to top expenditure class. The test of equality of female and male coefficients of chi2 reported in second from the bottom rows of table 9A evidently hold the gender bias in family expenses on education in the age class 15-19, equivalent to secondary schooling.

In 2007-08, D_female15-19 exert negative and significant probit across the board suggesting the likelihood of no positive family spending on education. Even so, the combined effect is positive and significant and suggests the increase in family spending on education is on an average by 35%, 44%, 36% and 26% across full and sub samples. The same age group in male denoted by the dummy variable D_male 15-19 wields the likelihood of no positive spending across the board but the coefficients are not statistically significant. However, the combined effect is positive and significant entailing the increase in family spending on education an on average by 39%, 50%, 41% and 29% across the full and sub samples. In this secondary schooling age class as well, the female bias is quite perceptible, however compared to 1995-96, the female bias appears to have declined. Test of equality of coefficients of chi2 as reported in table 9B for the year 2007-08 distinctly points to the gender bias in family spending on education among secondary schooling age class of 15-19.

In 2014, D_female15-19 exert negative and significant probit across the board as found in 2007-08. Yet, the combined effect is positive and significant and suggests increase in family spending on education is on an average by 10% across full sample. On the contrary, it displays negative and significant combined effect suggesting a reduction of 34% of family spending on education among the middle expenditure class. The same age group in male, D_male15-19 exerts the likelihood

of negative and significant coefficients across the board except top expenditure class. However, the combined effect is positive and significant entailing the increase in family spending on education an on average by 54%, 31%, 13% and 65% across the full and sub samples. In this age class pertaining to secondary schooling, the female bias is observable, however compared to earlier rounds of data in 1995-96 and 2007-08, the female bias appears to have extended. Test of equality of coefficients of chi2 as reported in table 9C for the year 2014 distinctly points to the gender bias in family spending on education among secondary schooling age class of 15-19.

Beyond age 20 which is usually relating to post secondary schooling, expressed via the dummy variables D_female20_24, the probit is negative and significant across the board in 1995-96. The combined effect suggest that the relationship is negative and significant indicating that the family spending on education on an average decline by 104%, 18%, 79% and 183% among full, bottom, middle and top expenditure classes. The same age class pertaining to male denoted by variable D_male20-24, exert a negative and significant probit across the board, saying the possibilities of no positive spending. Nevertheless, the combined effect is positive and significant indicating the increase of family spending on education an on average by 39% among the bottom expenditure class. But in the rest of the cases, it is negative and significant which suggest the fall in family spending to the tune of 50%, 24% and 133% across the full sample and middle and top sub samples, except the bottom expenditure class favoring an increase in expenditure for male. The test of equality of female and male coefficients of chi2 reported at the bottom row of table 9A evidently hold the gender bias in family expenses on education in the age class 20-24, equivalent to post secondary schooling.

In 2007-08, the dummy variable relating to female in the post secondary schooling denoted by D_female20-29 notify a negative and significant probabilities, which suggest the likelihood of no possible family spending on higher education. However, the combined effect is positive and significant that suggests the family spending raise by an on average 49%, 67%, 55% and 40% across the full and sub samples. The same age class relating to male is noted as D_male20-29 exerts a negative and significant probits across the board. Nonetheless, the combined effect

is positive and significant indicating that the family spending enlarges an on average by 54%, 70%, 58% and 45% across full, bottom, middle and top expenditure classes. The female bias is quite oblivious in this age class as well. When compared to 1995-96, the female advantage has vanished. Test of equality of female and male coefficients of chi2 reported at the bottom row of table 9B unmistakably hold the gender bias in family expenses on education in the age class 20-29, equivalent to graduate education and above. Sarkar (2017) using the same data source, but to study household expenditure on higher education, using simple OLS finds that due to huge economic burden of expenditure on higher education a typical household chooses to spend less on the girl child. It further reveals the parental education and household income play pivotal role in determining households' educational expenditure along with individual's caste group – specifically, households belonging to backward caste groups spend less than general category households.

In 2014, the dummy variable D_female20-29 exerts negative and significant probabilities, which suggest the likelihood of no possible family spending on higher education across the board. However, the combined effect is positive and significant that suggests the family spending raise significantly by an on average 192%, 119%, 221% and 273% across the full and sub samples. The same age class relating to male, noted as D_male20-29 exerts a negative and significant probits across the board. Also, the combined effect is negative and significant indicating that the family spending reduces substantially an on average by 117%, 58%, 140% and 193% across full, bottom, middle and top expenditure classes. Though the family spending decline across both age classes the female bias seems to be visible in this age class as well. Test of equality of female and male coefficients of chi2 reported at the bottom row of table 9C unmistakably hold the gender bias in family expenses on education in the age class 20-29, equivalent to graduate education and above. There is clear statistically significant gender bias across expenditure groups[9]. The bias is though prevalent across expenditure groups, seems to have more among the bottom expenditure class compared to middle and top expenditure groups.

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[9] The difference from female5_9 is significantly higher across male in the same age class. The difference actually rises as we move up in the ladder of age groups. This can be attributable to the simple reason that as the levels of education go up, the cost of education as well escalates.

Policy Variables

Besides these set of household head, household and student characteristics, the paper attempts to examine the policy variables such as whether the children enrolled are attending in government or local body type of schools or do they attend private schools and other school incentives such as whether the children receive the mid day meal (MDM)[10]. The dummy variable of D_Mgt_type exerts positive and significant probabilities across the board and over time. The combined effect of management type suggest strong positive and significant values, indicating the family expenditure on education augment considerably to the tune of 261%, 185%, 253% and 302% across the full and sub samples in 1995-96. The pattern is similar in 2014 as well, with the combined effect of substantially to the tune of 447%, 335%, 432% and 520% across the full and sub samples. But, the combined unconditional effect as expected is negative and significant and suggest that when children are enrolled in Govt/LB educational institutions, the expenditure on education by the family on an average declines, clearly evidencing the complementary nature of the government and household expenditures on education in 2007-08.

Yet another policy variable included in the models is the dummy variable on D_MDM, exhibit positive and significant probabilities in 1995-96 and 2014. The combined effect is positive and significant to the tune of 69%, 58%, 89% and 18% across full and sub samples. The same pattern observed in 2014 that the combined effect is positive to the levels of 94%, 113% and 80% across sub samples in the same sequence. On the contrary, the probit is negative and significant across the board except at top expenditure class in 2007-08. The combined effect as well is negative and significant which suggest the decline in the family spending on education to the tune of 37%, 29%, 34% and 46% across full and sub samples of bottom, middle and top expenditure classes.

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[10] These variables on scholarships, textbooks and stationery were initially included in the model ad later dropped due to estimation related issues.

VI. Concluding Remarks

The present paper makes an attempt to examine education spending behaviour of households across economic status groups. In other words, how does household expenditure on education vary across economic status? The questions that are explored include: (i) does expenditure on education vary across economic groups and over time? In other words, whether expenditure elasticity varies by levels of income and over time? (ii) The ancillary question is to understand the gender bias in education spending across these groups? As a corollary to this, at which levels of education and to what extent the gender bias in expenditure on education is estimated using the hurdle model. The paper uses the NSSO survey data of 52nd, 64th and 71st rounds, relating to schedule 25.2, on Social Consumption: Participation in Education.

Based on the expenditure elasticity, it has been found that the middle income group, rather the middle class spend proportionately more than bottom (justifiably) but also at the top expenditure quintiles. The difference between middle and top expenditure groups elasticity is marginally advantageous to the middle and the gap widening in the 71st round. This emerging middle class and their aspirations for education and upward mobility are noticeable, especially with the movement from bottom to middle expenditure class. From both the human capital and human development perspectives, spending on education is not just towards improvement of employability and better future earning, but also the spectrum of quality of alternative life choices they could have. But for the poorest families, there is hardly adequate income to initiate making some positive education expenditure. Nevertheless, when the income of the poor increases and able to reach to near basic minimum, expenditure on the education of the family becomes a priority.

The explanatory variable household size is negative and significant across expenditure class and over time, evidently indicating the quantity and quality trade-off of the number of children demanded in families and accordingly lesser or higher family spending on education. Years of schooling of the head of the household has a positive and significant probability of family spending on education over expenditure classes and across time. Point to be noted is in the middle expenditure group, the average effect is more compared to top expenditure category, like the one

observed in per capita consumption expenditure. Age of the head of the household indicate the experience, not necessarily to capture the money aspect of experience as a wage premium in wage equations, but from the perspective of investing on human capital of their off springs. This variable exerts positive and significant probabilities of family spending on education across expenditures categories and over three NSSO rounds. Yet another significant factor that is expected to have positive relation with family spending on education is the skill type of the head of the households. Skill type, having four categories, the dummy variable on skill levels from 2 to 4 depict that positive and significant probabilities of family spending on education over full and sub-samples in 2007-08 while it is significant only the middle expenditure class in 2014. The caste dummy, that being SC/ST (socially deprived section of the population) statistically and significantly reduces the probability of spending on education across the board. Likewise, children who reside in rural areas (D_sector) spend less family expenditure on education compared to those who live in urban areas.

Female bias in age class 10-14 is quite substantial and has widened in 2014 compared to previous years. Age class of secondary schooling 15-19 as well, the female bias is apparent and widens in 2014 compared to earlier rounds. Gender bias is though prevalent across expenditure groups, seems to have more among bottom expenditure class compared to middle and top expenditure groups. This bias is found across all three rounds of data, indicating that gender bias had widened during the two decades. The moot question here is how this gender bias will get reduced in the years to come? The boy child (children) in households get (gets) the top most priority for acquiring education. Such a disparity widens, when the resources are constrained. It is because of the low-value attached to female education in major parts of India, which connects with few deep-rooted gender relations. One such important feature is the perceived low benefits of investing on girls' education. The perception is popularly put as 'bringing up a daughter is like watering a plant in another's courtyard' (Sen and Dreze, 2013). Such choices of family's favouring boys' educational investment is detrimental to girls' schooling. Given that, yet another vital question is what ought to be the government's policy towards financing of education especially on girls given the immense positive externalities of girls' education? Hence, the analysis categorically suggest for strong support for

government financing of girls education especially the poor and middle income groups.

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Review of Earlier Studies on the Determinants of Expenditure on Education*

	Author	Dependent Variables	Model	Data and Methods	Results
1	Huston S. J. (1995) Objective: to analyze the impact of income and HH characteristics on the proportion of the non-necessity HH budget allocated to education goods &services.	ER = Education ratio; measured as proportion of HHX on education out of the non-necessity HH budget	$\ln[ER/(1-ER)] = \beta_0 + \beta_1 I + \beta_2 HC_i$ for all $i=1,....,n$; I = HH Income; HC = HH characteristics variables like Age of HH head, family size, region (DV), Race (DV), gender, presence of children	1990-91 BLS Consumer Expenditure Survey; uses modified Engel function; N =661 HHs; OLS for binary variable – Linear Prob. Model	Age, education, income, region, race, and family size are found to be significant.
2.	Tilak (2002) i. Elasticity between HHX on ed and Govt; PC and P/S – elementary – state level ii. elasticity bet HHYTot to HHX tot; hhY-hhX both pc; HHY pc-HHX p/s iii. determinants of HHX on edn_using OLS (27 eqns – across states, caste, boys/girls, mgt. type, ps primary; ps middle, ps elementary, etc)	State level: total HHX education (all levels), HHX on elementary P/S as Literacy (%) (1991); SDP/pc SDP (Rs.) (1994–95); GEX/pc Govt exp. on education P/C (1994–95); GEX on Ed/SDP % (1994–95); GEXELY/PS (Rs.) (1994–95); PTR in primary (1994); HABITAT % of habitations with a school (1993)	ln HHEX = a+ bi Xi +ε HHY Total annual (Rs.); HHY/pc per capita (Rs.); HHY/NonAg %; HHEX on education (Rs.); HHEX/pc on education (Rs.); HHEX/ps on education, p/s (Rs.); HHEXELY/ps on elementary ed p/s (Rs.); HHED: Highest education level of the head of HH in years of schooling; CASTE (DV): RELIGION (DV); GENDER, HH Size; OCCUPATION – DV; VDI Devt Index; on school/ PHC availability in a villages, etc	NCAER survey data on Human Development in rural India (HDI) (1994) & other secondary sources from MHRD, NCERT, etc	HH variables: HH income, education of head of HH, HH size, caste & religion are found to be significant.
3.	Kingdon, G. G. (2005) The data show gender bias in educational resource allocation marked it in rural India via non-enrolment of girls, implying zero educational spending. Hence, what is visible is a small gender bias in educational expenditure among enrolled children.	Simple hurdle model: $P(s =0 \mid x) =1-\varphi(x\gamma)$ (2) $\log(s) \mid (x, s >0) \sim N (x\beta^2, \sigma^2)$ (3); where s is the budget share of education, x is a vector of explanatory variables, γ and β are parameters to be estimated, and σ is the S.D. of s. Eq. (2) makes the probability of s zero or positive, and eq (3) states that conditional on $s >0$, $s \mid x$ follows a lognormal distribution.	Working's Engel as: $s_i = \alpha+\beta ln(x_i/n_i)+\lambda ln\ n_i + \Sigma\theta_k(nk_i/ni)+ \psi Z_i+ \epsilon_i$ (1) where x_i is total expenditure of HH i, s_i is the budget share of education { edu exp/xi}, ni HH size, and zi is a vector of other HH characteristics such as religion, caste, and HH head's education and occupation. ui is the error term. The term ln ni gives independent scale effect for household size. $j=1,…,J$ refers to the Jth age-gender class within the HH. HH – z vector – caste, religion, wage lab, education in years of schooling	1994 NCAER rural household survey of 16 major states in India Hurdle model estimation 16 states with one ols and 2 hurdle - Total 48 equations estimated	Engel curve method fails to find significant gender bias; individual expenditure data show significant bias. Two explanations: incorrect functional form of the budget share equation and the effect of aggregation of data at the HH level.

3a.	Azam Mehtabul and Geeta Kingdon (2011)	Estimate 3 equations for each state: Unconditional OLS of budget share of education at HH & individual level; Probit- budget share of education is positive or not at HH & individual level; Conditional OLS of log of budget share of education in the HH & individual level. Wi = log normally distributed and hence log of wi is the dep var in all models.	$Wi= \alpha+\beta ln(x_i/n_i)+\lambda ln\ n_i + \Sigma\theta_k(nk_i/n_i)+ \psi Zi+ \epsilon\ i$, where Wi is the budget share of education of the ith household; x_i is the total expenditure of the HH; n_i - HH size; x_i/n_i log of total per capita expenditure; nk_i/n_i - the fraction of the HH members in the kth age-gender class within HH i;Zi is a vector of other HH characteristics viz., head's education, gender, occupation and dummy variables to capture state etc. $\alpha, \beta, \lambda, \theta, \psi$ are the parameters to be estimated;	India Human Development Survey 2005: Engel curve- using the Working-Leser specification; Hurdle model	Found that pro-male gender bias exists in the primary school age group for many states; gender bias increases with age – greater for age group- 10-14 & 15-19 years. Pro-male gender bias in Ed. Exp. is greater in rural areas.
4	Aslam Monazza and Geeta Kingdon (2008)	Zi set = HH variables include head_female, head_marital, head_edu_miss ; primary, secondary, head_matric ead_occu_m iss,_service, white collar, urban, region dummies	$Wi= \alpha+(x_i/n_i)+\lambda ln\ n_i + \Sigma\theta_k(nk_i/n_i)+ \psi Zi+ \epsilon\ i$, where Wi is budget share of education of ith HH; x_i is total expr. of HH; n_i - HH size; x_i/n_i log of total per capita expenditure; nk_i/ni - fraction of HH members in kth age-gender class within HH i; Zi is a vector of other HH characteristics*; $\alpha, \beta, \lambda, \theta, \psi$ parameters to be estimated.	Pakistan Integrated Household Survey (PIHS 2001-2002), Hurdle Models; aggregation of data at HH level - is tested using individual-level data on each child in the sample.	Engel approach is found to be restrictive; data aggregation diminishes ability to detect gender bias. Using HH fixed effects find pro-male biases in education expr. *within-household*
5.	Joonwoo Nahm and Woo-Hyung Hong (2009) Engel curve for private education expenditure according to HH head education levels by employing a semi parametric method,	Engel curve functions are quadratic to log of total expenditure) and age of HH, demographic details as residential distinct (Seoul, for metropolitan), sex of HH head (=1 if male), status of empt (=1, if unemployed), and ownership of house (if HHs own their house). No. of children into two groups, high school students or lower and college student or higher, Educ. level 1 refers to HH head education of high school or lower, & education level 2 college or higher.	$Y_i* = x_i' \beta_0 + u_i$. (1) where y_i is the share of expenditure on private education, includes log of total household expenditure and variables of household characteristics. Two factors considered: i. consumption ability of HH and student's intellectual ability (captured trough mothers' education)	Korea Labor and Income Panel Study 9th waves, assuming different functional forms according to householder's education levels. Semi parametric method, Symmetrically Trimmed Least Squares (STLS) estimation; by OLS, Tobit and STLS	Engel curve has the inverted-U shape, showing different patterns as per HH head education levels. Income elasticity tells that private education service is a 'normal goods'.

6.	Huy, Vu Quang (2012) The purpose is to investigate the determinants of the demand for education in Vietnam by examining the education expenditure pattern of Vietnamese households.	Dependent Variable: logarithm of education expenditure; separate regressions are estimated for different income quintiles; separately for subsample with primary school-age, secondary school-age and college-age children. These eqs. focus on income effect and other family characteristics on the patterns of educational expenditure allocation among school-age children.	Indept. Var: HH head occupation (categorical); HH head education -cate, HH no of children-cate, other HH head characteristics – male, marital status, region Tobit model; where the households with no education expenditure are censored; $y_i^* = x_i\beta + \varepsilon_i$ where is the latent variable, and xi is the vector of household characteristics The observed yi (education expenditure) is defined as $yi = 0$ if, and if >0 & when positive in logarithmic scale.	Vietnamese HH Living Standards Survey from 2006 (VHLSS 2006); VHLSS 2006 data covers 9,189 HHs with 39,071 persons in 64 provinces; considered HH with dependent children and where their age was less than 23, so 4,578 valid responses.	i. HH income significant effects on educational expenditure. ii HH heads have higher level of edu. or with professional jobs enhances probabilities of edu. expenditure. iii HH with more primary or secondary school-age children spend more on edu. & less ed. spending by HHs with pre-school- or college-age children.
7.	Sofia N. Andreou, (2012) ,	Factors affecting expenditure on education; HH choice regarding public vs private schooling.	Income; no. of children (4 cate 0-5 ref; 6-12, 13-19, 20-30), region (5 categories), Head Occupation category, Head Gender, employer sector (Agri, construction; ref other) , Head age group; Head education categorical ref: primary), other House characteristics – sq.feet, no of rooms, rent, House type-categorical	Data from the Family Expenditure Surveys 1996/7, 2002/3 and 2008/9. OLS	Results show that level of education expenditure increases with income across years. % of HHs spending on pvt. tutorials range between 60-90% at primary&secondary education, while variation of this proportion over income groups remain stable.
8.	Carsten Schroeder, C. Katharina Spieß and Johanna Storck (2015) Analyzes private spending on various educational provisions such as child daycare services, private schools, or non-formal educational programs, i.e. sports clubs or music schools.	Relationship between Expenditures on Education Relative to HH Income and HH Characters: Dept Var	HH income, Youngest child below school age , Youngest child of primary school age, Reference: Youngest child of secondary school age; Number of children in the HH , Lone-parent household (Ref: Couple household); Both parents work full-time (Ref: Only one or no parent works full-time), At least one parent with university degree (Ref: No parent with university degree), Living in East Germany (Ref: Living in West Germany)	DIW Berlin is based on data from the Socio-Economic Panel (SOEP) study and the SOEP-related study, Families in Germany (Familien in Deutschland, FiD) for 2012	Findings: Families who actually spend money on their children's education, it is the low-income HH that use a higher share of their HH budget for this purpose - this applies both to overall education expr. & to spending on individual education services.

9.	Rizk Reham and Hala Abou-Ali (2016)	logarithm of annual household expenditure on education Income Quintile eqn 5 Age wise 3 eqns -pre and Primary, secondary and College-aged	XX is a vector of various family characteristics namely, household income, father's education, mother's education, parent's occupation, and geographic location of household. OLS $Y* = \beta'X + \mu$ (1) Where $Y*$ is logarithm of annual household expenditure on education.	Ffour countries employing Harmonized Household Income and expenditure surveys. The datasets used are 2010/2011 round of the HHIES of Egypt, Jordan and Palestine & 2009 round for Sudan.	HH in lower social strata are found to spend more on educating children's at all educational level with exception in Egypt, where wealthier household spend more on children's education.
10	Elif Öznur Acar, Seyit Mümin Cilasun and Burak Günalp (2016)	Estimates another eqn all same except dept. variable *educshr*	$lnedex = \beta_1 + \beta_2 \, lnexp + \beta_3 age + \beta_4 Emp + \beta_5 HHS + \beta_6 SHRPS + \beta_7 RUR + \beta_8 SHRFS + \beta_9 RURF + \beta_{10} NS + \sum \alpha_j EDUCD_j + \varepsilon$, where j = 2,3,...5(levels of edn); HH heads (age, education level-DV & empt. status - DV), HH characters (HH size, location RURAL – DV) & student variables (share of primary +high school students, & share of female students, interaction term- rural & share of female students; total no. of students in the HH (NS).	Turkish Household Budget Surveys from 2003, 2007 and 2012; Tobit regressions of real educational expenditures by income groups; Engel curve framework.	Estimated expr. elasticities have lower values for top- & the bottom-income quartiles while larger values for the middle-income quartiles. Results show - for all income groups expr. elasticity of education increases over time*.
11	Christophe J. Nordman and S. Sharma (2016) Objective is to assess the effect of female bargaining power on the share of education expr. in the HH budget in India Raise 3 questions viz., (i) Does the bargaining power of women affect the household's budget share devoted to education? (ii) Does the intra-household allocation of educational expenditure among sons and daughters depend on female bargaining power? (iii) Do these effects vary by caste of households?	By improving the collective HH model by endogenizing female bargaining power and use 3SLS approach; simultaneously estimate female bargaining power, per capita household expenditure and budget share of education. All regressions include district dummy variable.	$\theta = \theta(X1, TotExp) + \vartheta 1$, (1) $PCExp = PCExp(X2) + \vartheta 2$, (2) $bedu = (\theta, PCExp, X3) + \vartheta 3$ (3); where. X1, X2, and X3 are vectors of exog. determinants; & $\vartheta 1$, $\vartheta 2$, and $\vartheta 3$ are error terms. $X1$, in bargaining power Eq (1) includes education share of adult females in HH; its squared value, log HH size; dummies for caste, religion, & urban; & age of HH head. $X2$ -in log p/c expenditure Eq (2) includes age; years of education; a sex dummy of HH head; dummies for caste, religion, & urban; no. of adults in HH; & two HH wealth controls (electricity, homeown). $X3$ - set of exog. variables in budget share of edu. Expr. & includes log HH size, urban, & share of different sex–age class & formed into age groups: 0–4, 5–9, 10–14, 15–19, 20–55, & over 55 years. Females over 55 years - omitted category.	India Human Development Survey, 2011–12; system of equations; 3SLS	Find that: i female bargaining power has a positive effect on the HH budget share of education expr.; ii bargaining power is positively related to educ. spending in urban but negatively in rural areas; (iii) female bargaining power has positive effect on education expr. of girls in urban areas among all caste groups, but negative in rural areas in lower caste groups; and (iv) a pro-male bias exists in education spending for all age groups, differ across regions & caste

12.	Santiago Acerenza and andelman (2017) 12 Latin American and Caribbean countries and the US. Bahamas, Chile and Mexico have the highest household spending in education while Bolivia, Brazil and Paraguay have the lowest. *On average, education in LAC is a luxury good, while it may be a necessity in the US. No gender bias is found in primary education, but HHs invest more in females of secondary age than same-age males.	*Public-Private Spending and Its Impact on Inequality* Equation (1) expanded to include age-gender class $w_i = \alpha + \beta\ln(x_i / n_i) + \gamma \ln n_i + \Sigma\theta_k(nk_i/ni) + \psi z_i + \varepsilon_i$ (2)** Per capita expenditure (in logs); Age of the HH head; Female HH head ; HH head education =secondary incomplete ; HH head education =secondary complete; HH head education =tertiary ; Dummy for family with both parents; HH members (in logs)	$w_i = \alpha + \beta\ln(x_i / n_i) + \gamma \ln n_i + \psi z_i + \varepsilon_i$ (1), where w_i is the budget share of education of the ith household, x_i is the total expenditure of the HH, n_i is the household size Z_i a vector of other HH socio-demographic characteristics as education and gender of the household head and dummies for urban or rural residence. ε_i is the error term. The expenditure elasticity of educational spending is $= 1 + \beta/w_i$. This functional form allows the elasticity to vary by the share of educational expenditure but does not allow the good to be a necessity ($\beta < 0$) for some and a luxury ($\beta > 0$)for others.	Micro data from income and expenditure surveys in 12 LAC countries and the United States as a benchmark of comparison; The survey dates range from 2003-2004 (Bolivia) to 2014 (Mexico). Working-Leser framework	Tertiary education is the most important form of spending, and most educational spending is performed for individuals 18-23 years old. More educated and richer HH heads spend more in the education. HHs with both parents present & those with a female main income provider spend more than their counterparts. Urban HH also spend more than rural HH. *
13.	Ebaidalla Mahjoub Ebaidalla (2017)	Dep Var: HH Expenditure on Education In addition, the effect of household income is found to be positive and significant in the highest income quintile.	Income; HH Head Characters: Age, Gender of Head , Married , Education Level of HH Head i. Primary Secondary University ; Education Level of Spouse: Primary, Secondary University; No. of Children in HH Pre-school, Primary School, Secondary School, University Level; Profession of HH Head (agri. as ref.) Service Industry; HH Type of Dwelling (house as ref.) Apartment, Villa, Other HH Characters; HH Size, Room, Electricity, Urban, Region	National Baseline Household Survey data (NBHS, 2009) for national, urban and rural Levels of Sudan; Tobit model; 48,825 individuals of 7,913 households & covers 15 states	HH's income, head education, head age, HH size, number of school-age children and residence in urban are significant factors. Income elasticity of education in urban is greater than rural areas.
14.	Glenn P. Jenkins, Hope Amala Anyabolu and Pejman Bahramian (2019) .		$\ln w_i = \alpha_i + \beta \ln Y_i + \Sigma_k\gamma_k Z_k i + \xi i$; where W_i = HHX i for education, vector Z = HH's socio-demog. variables (gender HH head, education of HH head, major occupation of HH head, number of children, family size and location of the HH). αi, β and γ are the estimated parameters while ξ symbolizes the random error.	Nigerian General Household Survey, Panel 2012/2013, Wave 2; 4,986 households with 29,533 household members Hurdle Model	HH income, age, education, gender of the HH heads and urban versus rural impact on the decision to spend on education. Such expr. are income elastic, but vary in magnitude for low income compared to higher income families.

<div align="right">**Annexure 2**</div>

Table A1

Type of Skill levels as per ISCO-08

Skill Level	Definition	Examples
Level 1	Skills involving simple and routine physical or manual tasks	Hawker, Street vendor, Gardner, Cook, Household servant, Construction worker, Mason etc.
Level 2	Skills involving operation of machinery and electronic equipment	Plumber, Electrician, Artisan, Barber, Mechanic, Tailor etc.
Level 3	Skills involving written records of work, simple calculations, good personal communication skills in specialized fields	Clerical, Supervisory level etc.
Level 4	Skills involving decision making and creativity based on theoretical and factual knowledge	Doctor, Lawyer. Chartered Accountant, Engineer, Architect, Scientist, Actor, Author etc.

Source: based on Geetha Rani, et al (2019)

Table A2

Type of Skill levels as per NCO 2015 and ISCO-08

NCO 2015 Divisions	Title	Skill Level
1	Legislators, Senior Officials, and Managers *	IV
2	Professionals	IV
3	Associate Professionals	III
4	Clerks	II
5	Service Workers and Shop & Market Sales Workers	II
6	Skilled Agricultural and Fishery	II
7	Craft and Related Trades	II
8	Plant and Machine Operators and Assemblers II	II
9	Elementary Occupations	I

Source: NIC (2015), GoI, (2015b)
Note: * not defined as per the source.

Annexure 3

Descriptive Tables and Bar Graphs

Table 4A

Enrolled Ratio of Eligible Children and Household Expenditure on Education of Enrolled Children by Age, Gender, Class and Location by Expenditure groups in 1995-96

Enrolled Ratio (in %) 52nd round	Urban				Rural				All			
Age Group	Bottom	Middle	Top	Total	Bottom	Middle	Top	Total	Bottom	Middle	Top	Total
Female Age 5-9	62.6	80.3	91.9	81.4	50.4	66.7	78.9	59.5	52.6	71.2	87.2	66.9
Female Age 10-14	65.7	84.7	94.1	86.4	53.0	72.4	84.2	66.2	55.5	76.6	90.3	74.0
Female Age 15-19	22.6	44.9	69.5	56.3	16.8	30.3	45.6	29.1	18.0	35.5	60.5	40.6
Female Age 20-24	3.8	8.0	24.5	16.9	1.2	4.4	9.6	4.2	1.7	5.7	19.3	9.4
Male Age 5-9	66.2	82.8	93.5	84.2	61.4	73.5	84.2	68.7	62.2	76.7	90.0	74.0
Male Age 10-14	74.6	87.1	95.4	89.6	76.3	87.5	92.9	83.9	76.0	87.4	94.4	85.9
Male Age 15-19	33.9	49.4	72.7	61.6	44.1	53.8	67.4	53.9	42.3	52.4	70.6	56.9
Male Age 20-24	6.5	13.6	32.9	24.5	8.6	13.8	24.2	14.6	8.2	13.7	29.8	18.9
Total	50.0	61.5	73.9	66.4	47.1	57.5	65.1	54.5	47.6	58.8	70.5	59.0
Mean Expenditure in 1995-95 at 2011-12 prices (in Rs)												
Female Age 5-9	852	1617	4500	2945	420	783	1937	810	510	1090	3666	1683
Female Age 10-14	1315	2167	5064	3730	938	1478	2670	1593	1023	1737	4225	2552
Female Age 15-19	2258	3356	7242	6103	1945	2792	4952	3479	2026	3049	6595	5018
Female Age 20-24	3102	3947	9559	8615	2846	4300	8230	6173	2961	4115	9337	8014
Male Age 5-9	917	1758	4754	3140	452	917	1991	885	537	1227	3771	1756
Male Age 10-14	1400	2239	5427	3971	1005	1566	2766	1630	1072	1772	4345	2496
Male Age 15-19	2357	3415	7621	6339	2090	2945	5042	3391	2127	3086	6624	4644
Male Age 20-24	3677	4719	9738	8797	3164	4420	7691	5585	3239	4529	9136	7394
Total	1317	2344	6101	4500	946	1662	3439	1830	1015	1903	5160	2969

Source: Based on unit records of individuals of 52nd round

Table 4B

Enrolled Ratio of Eligible Children and Household Expenditure on Education of Enrolled Children by Age, Gender, Class and Location by Expenditure groups in 2007-08

Enrolled Ratio	64th Round	Urban			Rural				Full Sample			
Age Group	**Bottom**	**Middle**	**Top**	**Total**	**Bottom**	**Middle**	**Top**	**Total**	**Bottom**	**Middle**	**Top**	**Total**
Female Age 5-9	74.7	87.0	94.5	88.4	74.4	83.9	90.1	79.6	74.5	84.7	92.9	82.3
Female Age 10-14	72.7	84.3	95.4	88.2	72.9	83.2	91.6	79.7	72.9	83.5	93.9	82.4
Female Age 15-19	32.2	42.9	69.7	57.5	26.6	35.9	55.6	36.4	27.5	37.8	64.1	43.9
Female Age 20-29	1.8	3.9	12.3	9.0	1.3	2.6	6.9	3.0	1.4	2.9	10.3	5.2
Male Age 5-9	74.3	87.0	95.5	89.4	77.8	86.1	91.7	82.7	77.4	86.3	94.1	84.8
Male Age 10-14	73.0	85.4	95.4	89.1	79.5	88.0	95.0	85.3	78.6	87.3	95.3	86.5
Male Age 15-19	28.5	42.7	70.9	58.3	34.9	47.2	64.3	46.2	33.9	46.0	68.3	50.5
Male Age 20-29	3.6	6.0	14.2	11.0	2.9	5.0	10.1	5.5	3.0	5.3	12.6	7.6
Total	42.3	46.7	54.4	50.6	45.2	47.3	49.9	46.9	44.7	47.2	52.7	48.2
Mean Expenditure in 2007-08 at 2011-12 prices (in Rs)												
Female Age 5-9	1218	2256	7314	4810	583	1232	3463	1225	669	1517	5923	2368
Female Age 10-14	1528	2642	7960	5568	1045	1785	4054	1889	1115	2021	6450	3141
Female Age 15-19	3245	5346	13670	11278	2755	4118	8089	5033	2847	4492	11750	7929
Female Age 20-29	6116	7383	23871	21793	6867	8314	14273	11260	6714	7964	21455	18046
Male Age 5-9	1368	2547	7471	5180	656	1337	3772	1386	746	1659	6120	2601
Male Age 10-14	1684	2846	8486	6144	1177	1905	4120	2030	1243	2139	6738	3371
Male Age 15-19	4152	5416	14420	12091	3103	4694	8972	5581	3236	4878	12365	8262
Male Age 20-29	9689	8925	27463	24481	6709	8443	15439	11381	7257	8602	23847	18779
Total	1915	3345	11572	8446	1212	2309	6016	2623	1308	2589	9538	4728

Source: Based on unit records of individuals of 64th round

Table 4C

Enrolled Ratio of Eligible Children and Household Expenditure on Education of Enrolled Children by Age, Gender, Class and Location by Expenditure groups in 2014

Enrolled Ratio	71st Round	Urban			Rural				Full Sample			
Age Group	**Bottom**	**Middle**	**Top**	**Total**	**Bottom**	**Middle**	**Top**	**Total**	**Bottom**	**Middle**	**Top**	**Total**
Female Age 5-9	76.9	83.6	89.0	83.9	76.2	84.0	86.9	79.8	76.4	83.8	88.4	81.4
Female Age 10-14	88.6	94.7	98.1	94.7	88.2	93.5	97.9	91.5	88.3	94.0	98.0	92.8
Female Age 15-19	54.8	73.1	90.9	79.2	54.5	69.4	84.0	66.9	54.6	70.8	88.3	72.2
Female Age 20-29	9.9	16.8	38.3	27.3	7.3	15.2	36.2	16.7	7.9	15.9	37.6	21.5
Male Age 5-9	76.3	83.6	88.3	83.7	77.7	83.6	86.5	80.8	77.4	83.6	87.7	81.9
Male Age 10-14	86.5	94.4	98.6	94.7	90.3	95.6	98.4	93.5	89.5	95.2	98.6	94.0
Male Age 15-19	51.2	74.0	91.9	80.4	59.9	76.1	89.8	73.7	57.9	75.4	91.1	76.4
Male Age 20-29	14.3	22.7	47.4	35.6	15.5	28.6	50.7	29.9	15.2	26.4	48.6	32.4
Total	53.5	61.2	72.1	65.2	56.8	62.3	71.3	61.7	56.0	61.9	71.8	63.2
Mean Expenditure in 2014 at 2011-12 prices (in Rs)												
Female Age 5-9	2545	5269	13519	7985	1185	2575	7159	2355	1505	3650	11600	4601
Female Age 10-14	2885	5366	15028	9168	1527	2827	7209	2882	1842	3822	12361	5428
Female Age 15-19	6386	10116	26996	19950	5005	8052	18987	10340	5358	8846	24132	14852
Female Age 20-29	16937	20181	43699	37909	16351	20619	38582	28640	16536	20435	42053	33970
Male Age 5-9	2917	5668	14228	8732	1343	2989	7664	2797	1690	4041	12024	5126
Male Age 10-14	3086	6037	15708	10232	1781	3428	8464	3447	2063	4372	13372	6174
Male Age 15-19	7886	13345	32121	24910	7012	10927	25341	14385	7193	11743	29436	18933
Male Age 20-29	21327	27560	53224	46874	18605	26895	46421	34357	19273	27107	50618	40516
Total	4983	9455	28479	19442	3426	7662	22604	9429	3783	8331	26404	13761

Table 5A

Enrolled Ratio of Eligible Children and Household Expenditure on Education of Enrolled Children by Age, Class and Management Type by Expenditure groups in 1995-96

Enrolled Ratio (in %)	52nd round	Poor		Middle			Rich			All		
Age Group	Govt_LB	PA	PUA	Govt_LB	PA	PUA	Govt_LB	PA	PUA	Govt_LB	PA	PUA
Age 5-9	88.1	5.8	6.2	76.8	11.5	11.7	49.6	23.9	26.4	72.5	13.3	14.2
Age 10-14	85.1	10.0	4.9	77.4	15.6	7.0	57.1	27.3	15.6	71.9	18.4	9.7
Age 15-19	78.7	17.7	3.6	73.7	21.8	4.5	59.4	31.1	9.4	67.0	26.0	7.0
Age 20-24	76.1	19.5	4.3	73.2	21.4	5.4	62.8	29.9	7.3	66.3	27.1	6.6
Total	85.3	9.5	5.2	76.4	15.7	7.9	56.5	27.8	15.8	70.8	18.8	10.3
Mean Expenditure in 1995-95 at 2011-12 prices (in Rs)												
Age 5-9	58	146	226	108	279	410	259	705	846	118	493	630
Age 10-14	131	220	280	208	339	458	400	758	1062	241	554	799
Age 15-19	273	369	381	395	511	630	742	1115	1443	533	876	1192
Age 20-24	437	479	523	579	697	860	1061	1488	2455	877	1281	2054
Total	123	247	267	222	385	462	525	915	1089	287	678	818

Source: Based on unit records of individuals of 52nd round

Table 5B

Enrolled Ratio of Eligible Children and Household Expenditure on Education of Enrolled Children by Age, Class and Management Type by Expenditure groups in 2007-08

Enrolled Ratio (in %)	64th round	Poor		Middle			Rich			All		
Age Group	Govt_LB	PA	PUA	Govt_LB	PA	PUA	Govt_LB	PA	PUA	Govt_LB	PA	PUA
Age 5-9	87.5	2.7	9.8	73.7	6.8	19.5	41.5	14.5	44.0	70.0	7.3	22.6
Age 10-14	85.5	6.0	8.5	76.0	9.9	14.0	49.2	17.8	33.0	70.4	11.2	18.4
Age 15-19	75.3	14.5	10.2	69.7	17.2	13.1	53.2	22.7	24.1	62.5	19.4	18.1
Age 20-24	68.6	21.7	9.7	67.7	19.1	13.1	57.9	22.2	19.8	60.9	21.6	17.6
All	84.8	5.9	9.3	73.8	10.4	15.9	49.1	18.7	32.2	68.2	12.0	19.8
Mean Expenditure in 2007-08 at 2011-12 prices (in Rs)												
Age 5-9	241	939	1260	398	1490	2122	1006	3739	4768	423	2654	3413
Age 10-14	481	1005	1524	748	1589	2356	1574	3771	5770	829	2620	4238
Age 15-19	1279	2204	2687	1885	2958	4315	3712	6920	10705	2526	5183	8442
Age 20-24	3001	3537	7833	3309	4559	8599	7023	12922	23343	5777	10568	20342
All	495	1507	1660	892	2155	2712	2706	5869	7471	1215	4167	5389

Source: Based on unit records of individuals of 64th round

Table 5C

Enrolled Ratio of Eligible Children and Household Expenditure on Education of Enrolled Children by Age, Class and Management Type by Expenditure groups in 2014

Enrolled Ratio (in %)	64th round	Poor		Middle			Rich			All		
Age Group	Govt_LB	PA	PUA	Govt_LB	PA	PUA	Govt_LB	PA	PUA	Govt_LB	PA	PUA
Age 5-9	76.4	5.5	18.0	56.4	9.8	33.8	24.7	16.5	58.8	56.9	9.7	33.4
Age 10-14	78.0	7.3	14.7	62.7	13.3	24.0	32.7	19.8	47.5	59.8	12.9	27.3
Age 15-19	65.0	16.8	18.2	54.5	20.1	25.4	35.7	24.0	40.2	48.3	21.1	30.5
Age 20-24	53.1	21.7	25.3	47.6	22.5	29.9	36.7	22.9	40.4	41.4	22.7	35.9
All	73.2	9.6	17.2	57.0	15.5	27.5	33.5	21.5	44.9	53.0	16.0	31.0
Mean Expenditure in 2014 at 2011-12 prices (in Rs)												
Age 5-9	963	5211	6693	1592	8562	10801	4063	18254	21240	1505	11833	14397
Age 10-14	1723	4665	7118	2802	8318	12033	6366	19096	25585	2837	12253	17788
Age 15-19	5608	12292	17341	8531	17264	25578	19072	39874	53436	11199	28064	41181
Age 20-24	14617	31012	43873	21890	36601	52902	38948	66526	90221	30244	54872	78390
All	2772	11245	12595	5966	16600	20524	19852	39813	48064	7946	27395	34240

Source: Based on unit records of individuals of 71st round

Figure 3

Bar Graph of Ratio of Enrolled Children to Eligible Children across Regions in the NSSO Rounds
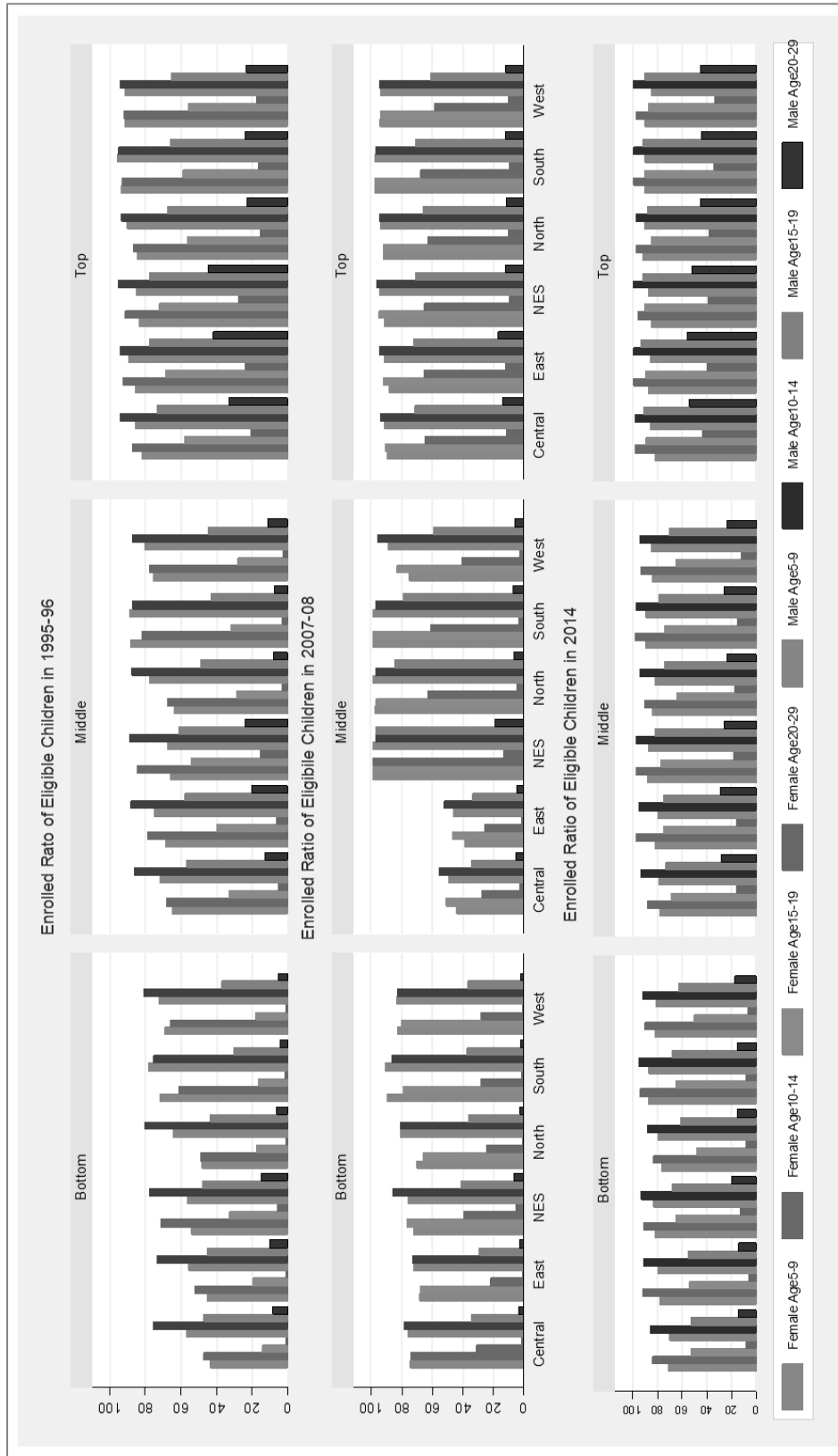
Source: Based on tables 6A, 6B and 6C

Figure 4

Male Female Gap among the Enrolled Ratio of Eligible Children across Age, Class and Regions in 1995-96, 2007-08 and 2014
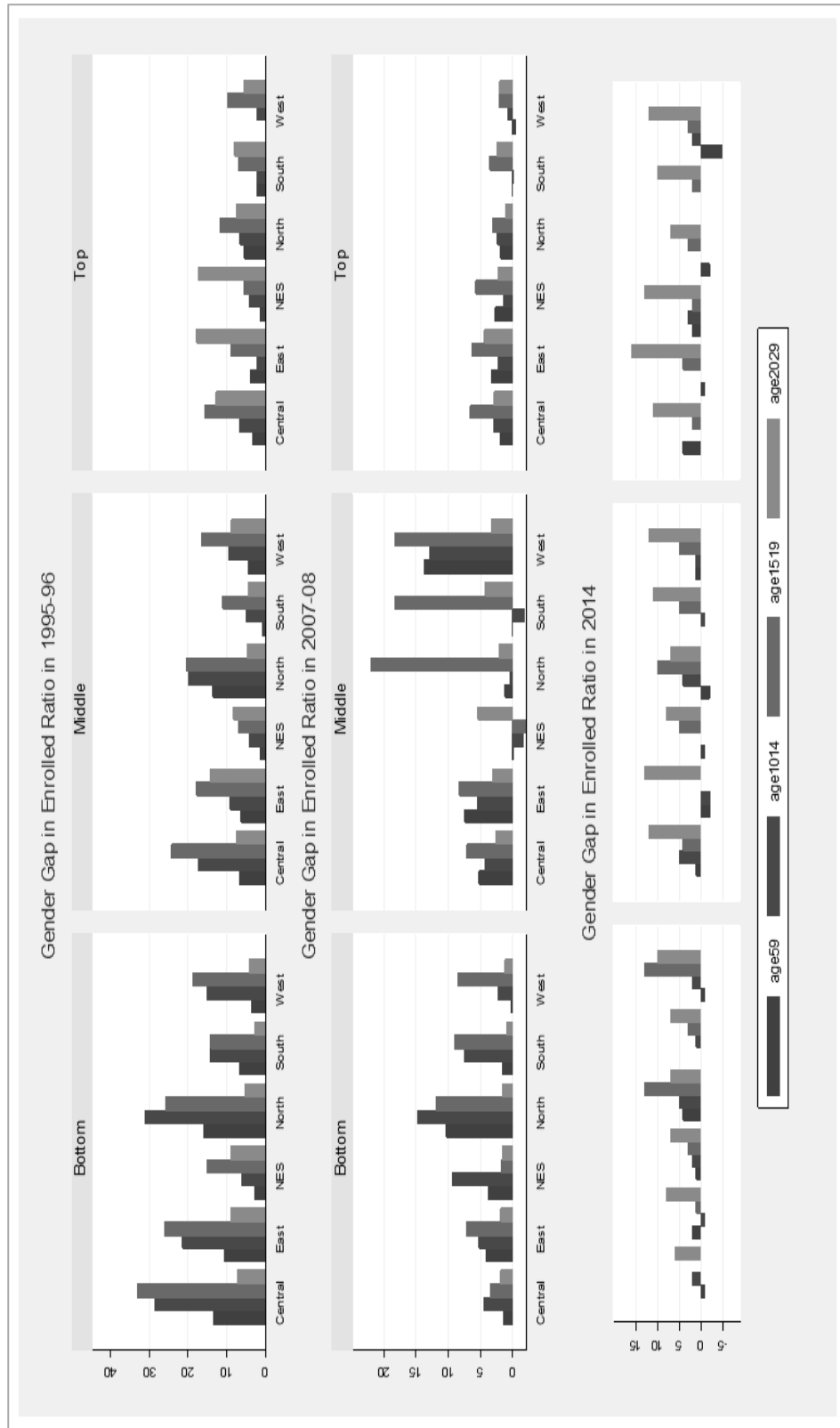
Source: based on Tables 6A, 6B and 6C

Table 6A

Enrolled Ratio of Eligible Children by Age, Gender, Class and Region by Expenditure Groups in 1995-96

52nd round		Bottom						Middle					
Age_Group)	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
Female Age 5-9	71.8	69.0	45.3	54.2	48.3	43.6	52.6	88.3	75.7	68.7	66.1	64.0	65.1	71.2
Female Age 10-14	61.4	66.1	52.3	71.4	49.2	47.1	55.5	82.1	77.8	79.1	85.0	67.8	68.5	76.6
Female Age 15-19	16.4	18.2	19.4	32.8	17.8	14.3	18.0	32.2	28.3	40.1	54.5	28.7	32.8	35.5
Female Age 20-24	1.7	1.4	1.4	6.1	1.0	1.1	1.7	3.0	2.7	6.3	15.7	3.4	5.5	5.7
Male Age 5-9	78.4	72.5	55.8	56.8	64.3	56.9	62.2	89.1	80.1	75.0	67.5	77.5	71.8	76.7
Male Age 10-14	75.5	81.1	73.8	77.6	80.3	75.7	76.0	87.0	87.3	88.2	89.1	87.7	85.9	87.4
Male Age 15-19	30.5	37.0	45.4	48.0	43.5	47.3	42.3	43.3	44.9	57.8	61.5	49.1	57.0	52.4
Male Age 20-24	4.6	5.6	10.4	15.1	6.3	8.3	8.2	7.5	11.5	20.4	24.0	8.1	13.1	13.7
Total	50.9	53.1	45.6	52.3	46.5	44.7	47.6	59.2	57.5	60.5	63.7	55.6	57.2	58.8
Age_Group)		Top						All						
Female Age 5-9	93.8	91.5	85.8	83.6	85.0	82.2	87.2	82.3	78.8	57.2	68.1	69.1	56.5	66.9
Female Age 10-14	93.1	91.9	92.3	91.2	86.9	87.4	90.3	78.4	80.4	69.8	84.6	75.2	62.9	74.0
Female Age 15-19	58.8	55.8	68.7	72.2	56.3	58.0	60.5	37.7	40.2	40.1	58.5	43.1	33.1	40.6
Female Age 20-24	16.5	17.8	24.0	27.5	15.6	20.6	19.3	7.5	9.9	8.2	18.5	9.5	7.5	9.4
Male Age 5-9	95.9	91.3	89.6	85.1	90.4	85.6	90.0	86.1	81.9	66.0	69.2	80.9	66.4	74.0
Male Age 10-14	95.3	94.1	94.4	95.3	93.5	94.0	94.4	85.8	88.8	82.7	88.8	89.6	83.4	85.9
Male Age 15-19	65.8	65.7	77.6	77.8	67.9	73.7	70.6	48.4	54.3	58.8	66.4	59.4	58.3	57.0
Male Age 20-24	24.4	23.5	41.8	44.9	23.1	33.2	29.8	13.8	16.9	23.0	31.4	16.5	17.4	18.9
Total	68.6	67.9	74.7	75.7	69.1	70.6	70.5	59.5	61.1	56.6	65.7	61.2	54.8	59.0

Source: Based on unit records of individuals of 52nd round

Table 6B

Enrolled Ratio of Eligible Children by Age, Gender, Class and Region by Expenditure Groups in 2007-08

64th Round		Bottom						Middle						
Age_Group)	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
Female Age 5-9	89.5	83.0	68.1	72.3	70.1	74.5	74.5	98.9	75.2	38.5	99.2	97.8	44.0	64.0
Female Age 10-14	79.1	80.1	68.0	76.6	66.3	74.2	72.9	99.0	83.1	46.9	98.9	96.8	50.9	74.5
Female Age 15-19	28.2	28.1	21.8	39.6	24.6	31.0	27.5	61.1	40.8	25.5	98.9	62.7	27.5	40.0
Female Age 20-29	1.3	1.0	0.9	5.0	1.0	1.5	1.4	2.9	2.8	1.7	13.4	4.4	2.7	3.2
Male Age 5-9	91.1	83.2	72.3	76.0	80.4	75.9	77.4	99.0	88.9	45.9	99.0	99.0	49.2	71.9
Male Age 10-14	86.5	82.4	73.2	85.9	81.0	78.6	78.6	97.3	95.9	52.3	97.3	97.3	55.2	79.0
Male Age 15-19	37.2	36.6	29.0	41.3	36.4	34.4	33.9	79.4	59.1	33.8	96.8	84.7	34.6	51.1
Male Age 20-29	2.3	2.2	2.7	6.6	2.6	3.3	3.0	7.2	6.1	4.8	18.8	6.5	5.3	6.4
Age 5-29	46.8	46.4	42.3	46.1	43.1	46.1	44.7	68.0	52.4	30.4	112.1	74.9	32.9	46.5
Age_Group)		Top						All						
Female Age 5-9	97.8	94.1	88.3	91.8	92.2	89.5	92.9	94.2	87.9	74.2	84.7	83.1	78.0	82.3
Female Age 10-14	97.5	93.5	92.2	94.8	92.3	91.0	93.9	89.8	85.1	76.4	88.6	82.2	78.3	82.4
Female Age 15-19	67.4	58.9	65.6	65.2	63.0	64.7	64.1	48.7	42.9	35.7	55.9	46.9	40.0	43.9
Female Age 20-29	9.7	9.8	12.2	9.4	10.3	11.1	10.3	5.0	5.5	3.8	7.6	6.3	4.3	5.2
Male Age 5-9	97.7	93.6	91.5	94.5	94.0	91.4	94.1	94.8	89.4	77.7	87.7	88.2	80.4	84.8
Male Age 10-14	97.2	94.3	94.5	96.2	94.7	94.0	95.3	92.4	88.2	81.1	92.2	89.6	82.8	86.5
Male Age 15-19	70.9	61.1	72.0	70.9	66.1	71.3	68.3	55.5	50.1	44.3	59.9	54.8	45.4	50.5
Male Age 20-29	12.2	11.9	16.6	11.7	11.4	14.0	12.6	7.6	7.8	7.2	9.6	7.8	6.8	7.6
Age 5-29	54.1	48.9	54.7	55.8	50.5	52.9	52.7	50.7	47.1	46.1	52.5	47.5	47.2	48.2

Source: Based on unit records of individuals of 64th round

Table 6C

Enrolled Ratio of Eligible Children by Age, Gender, Class and Region by Expenditure Groups in 2014

71st Round		Bottom						Middle						
Age_Group)	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
Female Age 5-9	86.9	81.6	78.2	81.6	75.6	70.5	76.4	89.4	83.8	81.8	87.5	84.2	77.6	83.8
Female Age 10-14	94.0	90.3	92.0	91.4	83.5	83.9	88.3	97.9	93.0	96.7	97.2	90.4	88.1	94.0
Female Age 15-19	65.1	50.2	54.4	65.0	48.1	52.5	54.6	74.4	64.7	74.9	76.9	63.9	68.6	70.8
Female Age 20-29	7.7	6.5	6.0	13.3	8.2	7.9	7.9	15.3	11.5	16.3	17.8	17.3	16.5	15.9
Male Age 5-9	86.6	80.8	80.0	82.9	79.7	70.2	77.4	89.0	85.4	79.8	87.2	82.3	78.6	83.6
Male Age 10-14	95.3	92.0	90.8	92.9	87.8	86.1	89.5	97.4	93.6	95.2	97.4	94.3	93.3	95.2
Male Age 15-19	67.8	62.5	55.3	67.6	61.2	53.1	57.9	78.6	70.4	75.4	82.0	74.1	72.6	75.4
Male Age 20-29	15.2	17.0	14.2	20.4	15.0	13.8	15.2	26.0	24.2	28.8	26.0	24.2	28.0	26.4
Age 5-29	59.7	56.3	57.4	58.4	55.2	53.5	56.0	65.1	59.4	62.4	64.5	59.6	60.0	61.9
Age_Group)		Top						All						
Female Age 5-9	90.2	89.7	86.9	85.0	91.6	81.7	88.4	89.1	84.8	80.1	84.8	83.7	73.5	81.4
Female Age 10-14	99.4	97.2	99.0	95.5	97.4	98.0	98.0	97.7	93.7	94.5	95.0	90.9	87.1	92.8
Female Age 15-19	90.3	86.7	89.3	89.8	84.7	89.3	88.3	80.9	71.1	69.5	78.9	70.6	65.8	72.2
Female Age 20-29	34.3	32.8	40.4	38.8	37.9	43.3	37.6	22.0	20.2	18.1	24.0	26.3	19.9	21.5
Male Age 5-9	89.7	85.2	85.8	87.1	89.8	85.6	87.7	88.7	84.0	80.7	85.6	84.4	74.5	81.9
Male Age 10-14	99.1	98.6	99.5	98.7	97.5	98.1	98.6	97.7	95.1	93.6	96.4	93.9	90.2	94.0
Male Age 15-19	92.3	90.1	93.5	92.3	88.3	91.1	91.1	83.8	78.9	71.6	82.0	79.6	68.6	76.5
Male Age 20-29	43.7	44.8	56.4	52.3	44.8	53.8	48.6	33.2	32.9	32.1	34.5	34.0	29.8	32.5
Age 5-29	73.9	69.7	73.5	71.9	69.4	72.7	71.8	68.0	63.0	62.4	65.1	63.2	59.4	63.2

Source: Based on unit records of individuals of 71st round

Figure 5

Bar Graph of Household Expenditure on Education in 2011-12 prices across Regions in the NSSO Rounds

Table 7A

Household Expenditure on Education by Age, Gender, Class and Region by Expenditure Groups of Enrolled Children in 1995-96 (in 2011-12 prices, in Rs)

52nd round	Bottom							Middle						
	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
FE_Age 5-9	463	480	404	554	840	579	511	987	840	986	1101	1523	1147	1090
FE_Age 10-14	1013	964	912	1153	1348	1076	1024	1594	1470	1890	1793	2048	1664	1737
FE_Age 15-19	1962	1898	1907	2345	2558	1953	2026	3006	2713	3289	2864	3518	2846	3050
FE_Age 20-24	3672	2658	1777	3365	5371	2468	2960	5200	3267	4128	3866	4584	3928	4115
MA_Age 5-9	473	505	429	628	763	620	536	1114	893	1098	1254	1590	1327	1226
MA_Age 10-14	986	976	1016	1118	1364	1135	1071	1612	1393	1914	1781	2008	1811	1772
MA_Age 15-19	1875	2030	2211	2064	2420	2132	2128	3039	2646	3426	2878	3238	2976	3086
MA_Age 20-24	3296	2511	3444	3292	4407	2928	3240	5029	3295	4681	4448	5447	4233	4529
Age 5-24	878	882	991	1158	1327	1092	1016	1721	1457	2099	1994	2158	1897	1902
	Top							All						
FE_Age 5-9	3413	3271	3315	3447	4295	3930	3666	1427	1686	1196	1862	2797	1522	1684
FE_Age 10-14	3975	3682	4563	3867	4795	4313	4224	2329	2399	2337	2565	3660	2244	2552
FE_Age 15-19	6648	6471	6760	5877	7510	5648	6595	5007	5292	4698	4480	6466	4106	5019
FE_Age 20-24	11067	10353	9460	7745	9142	7605	9336	9969	9608	7654	6175	8544	6456	8009
MA_Age 5-9	3853	3174	3505	3326	4342	3891	3771	1589	1708	1257	1804	2836	1547	1756
MA_Age 10-14	4258	3707	4629	3918	4850	4413	4346	2347	2392	2191	2508	3451	2239	2495
MA_Age 15-19	6991	6982	7285	5544	7015	5481	6623	4893	5308	4524	4173	5683	3643	4645
MA_Age 20-24	13012	9982	8361	7305	9261	6759	9137	10792	8261	6450	6172	8469	5450	7394
Age 5-24	5301	4777	5511	4635	5584	4804	5160	2835	2986	2686	3013	4070	2467	2970

Source: Based on unit records of individuals of 52nd round

Table 7B

Household Expenditure on Education by Age, Gender, Class and Region by Expenditure Groups of Enrolled Children in in 2007-08 (in 2011-12 prices, in Rs)

64th Round	Bottom							Middle						
	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
FE_Age 5-9	680	511	567	1315	1153	606	669	1617	1006	1179	2037	2119	1343	1516
FE_Age 10-14	1000	950	1128	1763	1582	991	1115	1674	1770	2067	2721	2467	1759	2022
FE_Age 15-19	3267	2927	2774	4072	2653	2478	2847	5308	4450	4406	4625	4802	3577	4493
FE_Age 20-29	9345	4299	5143	8832	4838	5801	6715	13178	4468	6825	8271	9374	5699	7964
MA_Age 5-9	839	592	570	1143	1216	752	746	1749	1301	1235	1967	2320	1623	1659
MA_Age 10-14	1059	1154	1190	1927	1763	1148	1243	1949	1783	1947	2636	2620	2085	2140
MA_Age 15-19	3737	3455	2996	3970	4317	2721	3237	5549	4675	4565	5105	5469	4229	4879
MA_Age 20-29	13293	5640	6332	10903	7339	5037	7257	10279	9816	7937	8429	9596	7326	8602
Age 5-29	1358	1190	1130	2349	1797	1192	1308	2668	2245	2310	3165	3082	2330	2589
	Top							Full Sample						
	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
FE_Age 5-9	6070	5896	5615	4430	7920	5202	5924	2815	2465	1458	3090	4149	1459	2368
FE_Age 10-14	5798	6805	6901	5433	8106	5639	6451	3054	3496	2516	3958	4910	2055	3140
FE_Age 15-19	14500	12208	11928	8642	12676	8877	11751	10412	8867	6847	6938	9821	4992	7929
FE_Age 20-29	30536	26915	18334	11268	21487	15968	21455	26935	23616	15008	10300	19795	11957	18045
MA_Age 5-9	6508	5716	5943	4444	8222	5174	6120	3074	2834	1581	3020	4624	1741	2601
MA_Age 10-14	6127	6856	6846	5398	8559	6281	6739	3280	3729	2607	3948	5318	2420	3371
MA_Age 15-19	14832	13270	12820	8817	13990	8877	12365	10296	9328	7164	7127	10898	5329	8263
MA_Age 20-29	33660	29082	22151	11028	25715	15301	23848	27421	24711	15910	10356	22944	11007	18779
Age 5-29	10846	10384	9701	6400	11289	7665	9537	5776	5658	3434	4757	7120	2952	4728

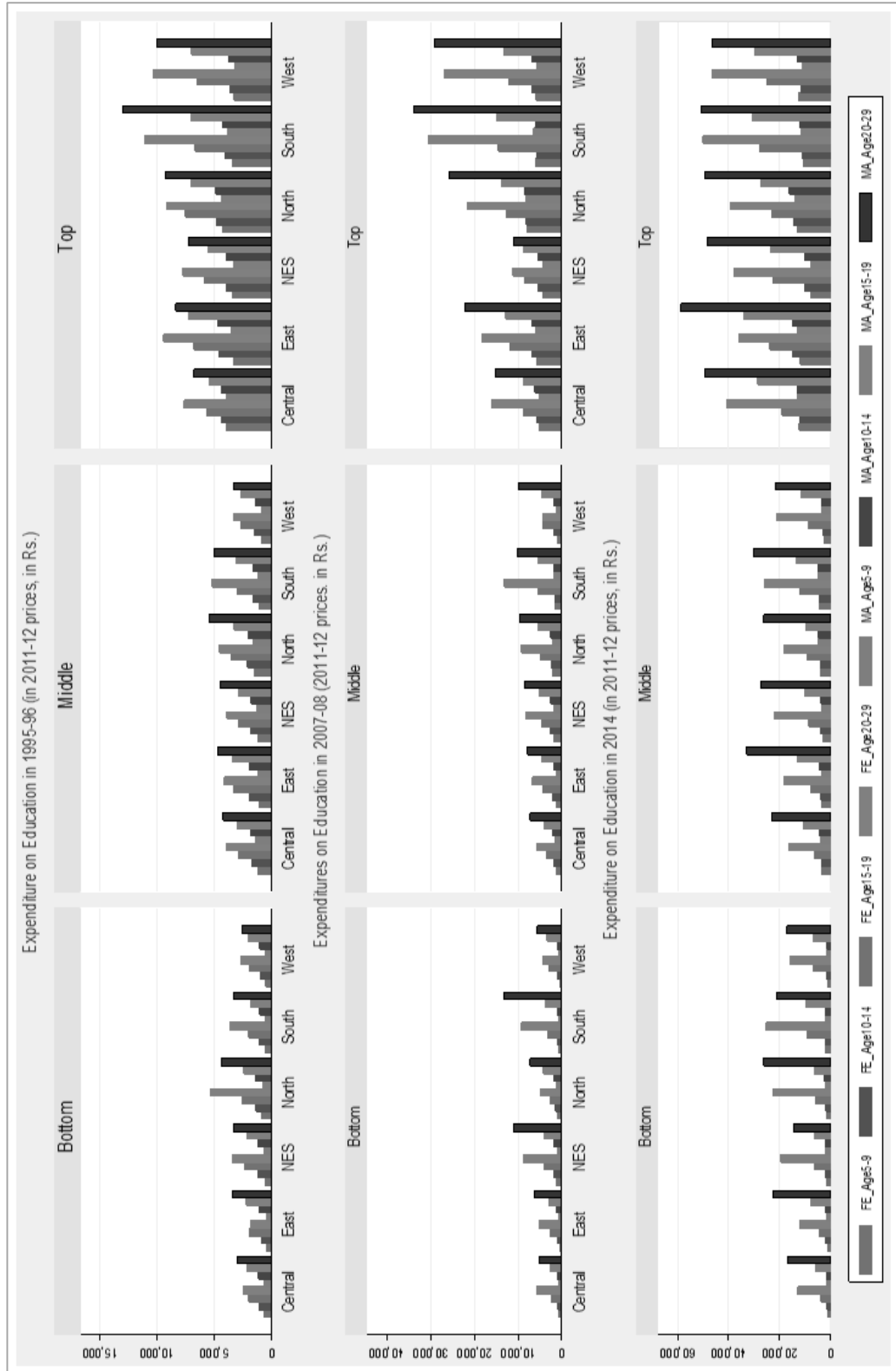*Source:* Based on unit records of individuals of 64th round

Table 7C

Household Expenditure on Education by Age, Gender, Class and Region by Expenditure Groups of Enrolled Children in 2014 (in 2011-12 prices, in Rs)

71st Round	Bottom							Middle						
Age_Group)	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
Female Age 5-9	2075	1406	1333	1757	1920	1322	1505	4663	2767	3434	3150	3990	3443	3650
Female Age 10-14	2054	1554	1959	2325	2042	1566	1842	4236	3135	3797	3892	4043	3639	3822
Female Age 15-19	9467	6855	4625	6448	6163	3722	5358	12095	9011	7757	8607	9283	6454	8846
Female Age 20-29	25289	15855	12297	19474	22433	12809	16536	26060	21404	18521	22395	18571	16225	20435
Male Age 5-9	2029	1434	1472	1933	2359	1565	1690	5178	3211	3386	3352	4951	3843	4041
Male Age 10-14	2313	1505	2228	2228	2484	1832	2063	4774	3655	4406	3907	4882	4447	4372
Male Age 15-19	9880	7123	7791	6722	6651	6138	7193	13585	11548	13267	10070	9966	10850	11743
Male Age 20-29	21340	17312	22500	14642	26315	16740	19273	30142	21660	32997	27464	26282	23226	27107
Total	5179	3671	3600	4524	4520	3120	3783	9574	7213	8987	7875	8275	7585	8331
	Top							Full Sample						
Age_Group)	South	West	East	NES	North	Central	Total	South	West	East	NES	North	Central	Total
Female Age 5-9	11020	12570	11864	7627	13080	12510	11600	6520	5413	3169	3665	6558	3233	4601
Female Age 10-14	11240	11428	14922	10184	14591	12101	12361	6609	5668	4645	5258	7586	3879	5428
Female Age 15-19	27817	25046	23743	22632	23416	19220	24132	20599	17137	11810	14138	17007	9471	14852
Female Age 20-29	50150	46574	35904	37956	39469	40738	42053	42271	39618	27566	30900	34315	29883	33956
Male Age 5-9	11661	11129	13128	7802	14099	12814	12024	6895	5194	3592	3894	7927	3919	5128
Male Age 10-14	12205	12986	14912	10059	16202	13156	13372	7375	6740	5172	5100	9138	4679	6175
Male Age 15-19	30878	29814	34119	23678	27738	28670	29436	22526	21336	18641	14864	20147	15341	18927
Male Age 20-29	50777	46465	58829	48287	49165	49327	50618	43053	37639	45766	37463	42832	35882	40546
Total	25530	25908	30667	23361	26465	26741	26404	16555	15159	12241	12516	16890	10567	13766

Source: Based on unit records of individuals of 71st round.

Annexure 4

Table 8

Summary Statistics

Variable	52nd Round				64th Round				71st Round			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
LEdEx	6.274191	1.408571	0	11.11245	7.054697	1.495916	0	13.33505	5.351362	4.31002	0	14.88469
LPCHHX	8.420036	.4767396	5.703783	11.27617	9.043889	.5645066	5.480639	12.37328	9.792473	.6020543	6.733402	13.52783
lhhsize	1.789862	.3991453	0	3.871201	1.708612	.3481012	0	3.401197	1.679767	.3989001	0	3.465736
Head_years~l	5.644431	4.872162	0	18	5.919259	4.949662	0	18	7.024769	4.519257	0	16
Head_Age	45.00041	11.32143	0	99	44.94877	11.18847	1	100	47.0993	12.10657	10	105
D_Head_Gen~r	.9279631	.2585504	0	1	.93303	.2499714	0	1	.902683	.29639	0	1
hhtype					2.813965	1.931558			.1379672	.3448667	0	1
D_Skill2					.5915234	.4915548	0	1	.5796716	.4936133	0	1
D_Skill3					.0418702	.2002935	0	1	.0476853	.2131003	0	1
D_Skill4					.1116724	.3149647	0	1	.144834	.351934	0	1
D_Caste	.2663042	.4420276	0	1	.3086461	.4619373	0	1	.3108873	.4628583	0	1
D_sector	.5735933	.494557	0	1	.6461274	.4781729	0	1	.5809218	.4934099	0	1
D_West	.1288991	.33509	0	1	.128242	.3343609	0	1	.1277556	.3338186	0	1
D_East	.1971207	.3978264	0	1	.209585	.4070147	0	1	.1939042	.395356	0	1
D_NES	.1108385	.3139337	0	1	.1183404	.3230125	0	1	.1152193	.3192875	0	1
D_North	.1596485	.3662817	0	1	.1460494	.3531577	0	1	.1485436	.3556392	0	1
D_Central	.1968505	.3976205	0	1	.2192302	.4137272	0	1	.2404204	.4273402	0	1
D_Female1~14	.1829403	.3866196	0	1	.1805268	.3846277	0	1	.1019328	.302561	0	1
D_Female1~19	.0759063	.2648495	0	1	.0864611	.2810452	0	1	.1086707	.3112266	0	1
D_Female2~24	.0130996	.1137019	0	1	.0178854	.1325358	0	1	.1691492	.3748849	0	1
D_Male5_9	.1643393	.3705852	0	1	.1919226	.3938147	0	1	.0977969	.2970408	0	1
D_Male10_14	.264456	.4410455	0	1	.2197319	.4140673	0	1	.1186862	.32342	0	1
D_Male15_19	.1348544	.3415698	0	1	.1131554	.3167844	0	1	.1321484	.3386532	0	1
D_Male20_24	.0288904	.1674995	0	1	.0263487	.1601708	0	1	.1864094	.389438	0	1
D_Mgt_GovtLB	.7046216	.4562151	0	1	.6865257	.4639079	0	1	.3351152	.4720323	0	1
D_MDM	.1488835	.3559755	0	1	.3917843	.4881516	0	1				
D_Scholars~p	.0719937	.2584789	0	1	.1163333	.3206259	0	1				
D_textbook	.2246925	.4173819	0	1	3.620325	2.496134	0	1				
D_stationery	.0435788	.2041572	0	1	5.615898	1.33194	0	1				
N	161,222		69,522	91,700	201,036		106,837	94,199	148,013		54,568	93,445

Table 9A

Determinants of Log of Expenditure on Education of Children between the Ages 5-24 in 1995-96

	52nd Round	CO1_All		CO1_Bot			CO1_Mid			CO1_Top		
	Probit	Condin	Uncond	Probit	Condin	Uncond	Probit	Condin	Uncond	Probit	Condin	Uncond
LPCHHX	0.945***	0.984***	1.446***	0.872***	0.803***	0.911***	1.195***	1.126***	1.743***	0.699***	0.944***	1.501***
	(0.014)	(0.008)	(0.013)	(0.050)	(0.030)	(0.035)	(0.080)	(0.041)	(0.077)	(0.029)	(0.013)	(0.036)
lhhsize	0.127***	0.094***	0.172***	0.183***	0.032	0.129***	0.066*	0.120***	0.129***	0.074**	0.085***	0.149***
	(0.015)	(0.008)	(0.014)	(0.029)	(0.017)	(0.020)	(0.026)	(0.014)	(0.026)	(0.022)	(0.011)	(0.029)
Head_yearsschool	0.076***	0.020***	0.082***	0.076***	0.022***	0.058***	0.079***	0.019***	0.083***	0.072***	0.019***	0.101***
	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Head_Age	0.009***	0.004***	0.011***	0.008***	0.005***	0.007***	0.010***	0.004***	0.011***	0.010***	0.003***	0.014***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
D_Head_Gender	-0.224***	-0.065***	-0.248***	-0.142***	-0.080**	-0.125***	-0.238***	-0.086***	-0.268***	-0.256***	-0.039**	-0.341***
	(0.020)	(0.011)	(0.019)	(0.041)	(0.024)	(0.028)	(0.034)	(0.019)	(0.033)	(0.030)	(0.014)	(0.038)
D_Caste	-0.116***	-0.071***	-0.150***	-0.122***	-0.094***	-0.119***	-0.119***	-0.030**	-0.127***	-0.103***	-0.111***	-0.202***
	(0.012)	(0.006)	(0.012)	(0.021)	(0.012)	(0.014)	(0.021)	(0.011)	(0.020)	(0.023)	(0.011)	(0.030)
D_sector	-0.317***	-0.292***	-0.463***	-0.302***	-0.311***	-0.330***	-0.301***	-0.282***	-0.438***	-0.328***	-0.279***	-0.592***
	(0.012)	(0.006)	(0.011)	(0.024)	(0.015)	(0.016)	(0.019)	(0.010)	(0.018)	(0.019)	(0.009)	(0.023)
D_West	-0.004	-0.044***	-0.028	0.140***	0.207***	0.182***	0.057	-0.090***	0.002	-0.094***	-0.141***	-0.212***
	(0.018)	(0.010)	(0.018)	(0.024)	(0.015)	(0.016)	(0.019)	(0.010)	(0.018)	(0.019)	(0.009)	(0.023)
D_East	-0.112***	0.118***	-0.039*	-0.143***	0.057***	-0.064**	-0.032	0.132***	0.045	-0.091**	0.217***	0.036
	(0.016)	(0.009)	(0.016)	(0.030)	(0.017)	(0.021)	(0.029)	(0.015)	(0.028)	(0.026)	(0.013)	(0.037)
D_NES	-0.320***	0.405***	-0.071**	-0.338***	0.474***	0.004	-0.380***	0.348***	-0.155***	-0.280***	0.374***	-0.088
	(0.023)	(0.010)	(0.022)	(0.050)	(0.025)	(0.033)	(0.038)	(0.017)	(0.036)	(0.036)	(0.015)	(0.045)
D_North	-0.271***	0.436***	-0.007	-0.411***	0.696***	0.059	-0.240***	0.445***	0.030	-0.299***	0.316***	-0.151***
	(0.018)	(0.009)	(0.018)	(0.049)	(0.026)	(0.033)	(0.032)	(0.017)	(0.031)	(0.025)	(0.012)	(0.032)
D_Central	0.077***	0.060***	0.107***	0.172***	0.211***	0.203***	0.117***	0.002	0.109***	-0.032	-0.017	-0.051
	(0.016)	(0.009)	(0.016)	(0.029)	(0.018)	(0.020)	(0.027)	(0.015)	(0.026)	(0.027)	(0.013)	(0.035)
Female Age10-14	0.330***	0.611***	0.657***	0.251***	0.822***	0.530***	0.345***	0.667***	0.696***	0.416***	0.324***	0.731***
	(0.019)	(0.010)	(0.019)	(0.034)	(0.019)	(0.023)	(0.034)	(0.016)	(0.032)	(0.036)	(0.014)	(0.045)
Female Age15-19	-0.581***	1.038***	0.043*	-0.455***	1.456***	0.375***	-0.601***	1.175***	0.108**	-0.688***	0.670***	-0.388***
	(0.020)	(0.012)	(0.020)	(0.041)	(0.034)	(0.030)	(0.035)	(0.022)	(0.034)	(0.033)	(0.016)	(0.041)

Female Age20-24	-1.791***	1.133****	-1.040***	-1.498****	1.666****	-0.182*	-1.701***	1.377****	-0.795****	-1.928****	0.785****	-1.832***
	(0.029)	(0.025)	(0.029)	(0.085)	(0.120)	(0.076)	(0.054)	(0.054)	(0.057)	(0.039)	(0.027)	(0.047)
Male Age5-9	0.199****	0.060****	0.221****	0.227****	0.052**	0.166****	0.217****	0.110****	0.262****	0.147****	0.025	0.197****
	(0.019)	(0.010)	(0.019)	(0.033)	(0.018)	(0.022)	(0.033)	(0.017)	(0.032)	(0.035)	(0.016)	(0.044)
Male Age10-14	0.762****	0.672****	1.097****	0.775****	0.912****	0.900****	0.793****	0.723****	1.142****	0.736****	0.367****	1.154***
	(0.019)	(0.009)	(0.019)	(0.033)	(0.017)	(0.023)	(0.034)	(0.015)	(0.032)	(0.036)	(0.014)	(0.045)
Male Age15-19	-0.175***	1.162****	0.494****	0.163****	1.594****	0.825***	-0.195****	1.272****	0.539***	-0.408****	0.752****	0.012
	(0.019)	(0.011)	(0.019)	(0.035)	(0.023)	(0.025)	(0.032)	(0.018)	(0.032)	(0.032)	(0.015)	(0.040)
Male Age20-24	-1.338****	1.333****	-0.501****	-0.816****	1.983****	0.389****	-1.210****	1.551****	-0.242****	-1.586****	0.906****	-1.328****
	(0.024)	(0.018)	(0.023)	(0.052)	(0.054)	(0.040)	(0.042)	(0.035)	(0.042)	(0.035)	(0.021)	(0.043)
Mgt_type_Govt	3.171****	-0.655****	2.607****	3.441****	-0.674****	1.850****	3.142****	-0.670***	2.529****	2.786****	-0.588****	3.019****
	(0.019)	(0.006)	(0.013)	(0.031)	(0.017)	(0.017)	(0.032)	(0.011)	(0.022)	(0.036)	(0.008)	(0.038)
D_MDM	0.933***	-0.321****	0.695****	1.055****	-0.187****	0.576***	1.146****	-0.298****	0.892****	0.417****	-0.486****	0.181*
	(0.037)	(0.008)	(0.035)	(0.058)	(0.015)	(0.037)	(0.067)	(0.013)	(0.062)	(0.072)	(0.014)	(0.090)
cons	-8.915***	-2.382****		-8.678****	-1.121****		-10.942****	-3.628****		-6.421****	-1.694***	
	(0.129)	(0.070)		(0.405)	(0.245)		(0.671)	(0.348)		(0.266)	(0.123)	
Adjusted r2	0.6473	0.6043		0.4171	0.4171			0.4166			0.4945	
N	161135	91652	161,135	53696	53,696	53,696	53715	30478	53,715	53708	36692	53,708
Probit LR chi2(24)	142622			53993.97			47614.3			36291.63		
Pseudo R2	0.6473			0.7295			0.6479			0.5411		
chi2 (Female=Male)												
Age10-14	250.7***	26.41***	579.7***	250.7****	26.41****	277.8****	190.8****	16.67****	210.7****	80.51****	13.97****	90.52****
Age15-19	223.5****	14.95****	591.3****	223.5****	14.95****	217.0****	165.1****	19.33****	185.3****	108.13****	32.06****	135.2****
Age 20-24	54.28****	5.98****	278.9****	54.28****	5.98****	47.74****	73.10****	8.05****	76.02****	88.48****	17.44****	106.5****

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$; within brackets indicate SE; Average marginal effects derived using delta-method

Table 9B

Determinants of Log of Expenditure on Education of Children between the Ages 5-29 in 2007-08

64th round	CO2_All			CO2_Bot			CO2_Mid			CO2_Top		
	Probit	Condin	Uncond	Probit	Condin	Uncond	Probit	Condin	Uncond	Probit	Condin	Uncond
LPCHHX	0.189***	0.668***	0.316***	0.374***	0.342***	0.163***	0.796**	0.760***	0.371***	0.047	0.752***	0.380***
	(0.048)	(0.007)	(0.004)	(0.119)	(0.023)	(0.011)	(0.297)	(0.038)	(0.020)	(0.121)	(0.014)	(0.009)
lhhsize	0.038	-0.086***	-0.038***	0.203	-0.122***	-0.045***	-0.049	-0.054***	-0.026**	-0.030	-0.053***	-0.028**
	(0.061)	(0.010)	(0.005)	(0.106)	(0.018)	(0.009)	(0.116)	(0.016)	(0.008)	(0.110)	(0.016)	(0.009)
Head_yearsschool	0.024***	0.025***	0.013***	0.033***	0.025***	0.012***	0.028**	0.023***	0.011***	0.016	0.023***	0.012***
	(0.005)	(0.001)	(0.000)	(0.009)	(0.001)	(0.001)	(0.009)	(0.001)	(0.001)	(0.009)	(0.001)	(0.001)
Head_Age	0.001	0.007***	0.003***	-0.001	0.007***	0.003***	0.015***	0.006***	0.003***	-0.006	0.008***	0.004***
	(0.002)	(0.000)	(0.000)	(0.003)	(0.001)	(0.000)	(0.004)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)
D_Head_Gender	-0.051	-0.011	-0.007	-0.104	0.014	0.002	0.195	-0.030	-0.008	-0.236	-0.020	-0.019
	(0.075)	(0.012)	(0.006)	(0.124)	(0.022)	(0.011)	(0.137)	(0.020)	(0.010)	(0.135)	(0.019)	(0.011)
Skill_2	0.247***	0.060***	0.037***	0.226**	0.070***	0.039***	0.208*	0.051***	0.030***	0.058	0.090***	0.048***
	(0.050)	(0.007)	(0.004)	(0.074)	(0.012)	(0.006)	(0.090)	(0.012)	(0.006)	(0.127)	(0.016)	(0.009)
Skill_3	0.195	0.082***	0.045***	-0.364	0.201***	0.072**	0.754**	0.081*	0.061***	0.022	0.076**	0.039**
	(0.116)	(0.016)	(0.009)	(0.288)	(0.056)	(0.027)	(0.234)	(0.034)	(0.017)	(0.185)	(0.023)	(0.013)
Skill_4	0.292***	0.174***	0.092***	0.518**	0.116***	0.071***	0.159	0.176***	0.085***	0.117	0.171***	0.091***
	(0.081)	(0.012)	(0.006)	(0.165)	(0.030)	(0.015)	(0.163)	(0.021)	(0.011)	(0.155)	(0.019)	(0.011)
D_Caste	-0.220***	-0.093***	-0.051***	-0.222**	-0.088***	-0.047***	-0.112	-0.085***	-0.042***	-0.234*	-0.118***	-0.068***
	(0.046)	(0.007)	(0.004)	(0.069)	(0.011)	(0.006)	(0.084)	(0.011)	(0.006)	(0.103)	(0.012)	(0.007)
D_sector	-0.031	-0.159***	-0.075***	-0.189*	-0.167***	-0.080***	0.090	-0.127***	-0.055***	0.093	-0.163***	-0.079***
	(0.051)	(0.008)	(0.004)	(0.095)	(0.016)	(0.008)	(0.088)	(0.012)	(0.006)	(0.100)	(0.012)	(0.007)
D_West	-0.105	-0.086***	-0.044***	-0.185	0.031	0.006	-0.154	-0.130***	-0.064***	-0.000	-0.137***	-0.069***
	(0.072)	(0.010)	(0.006)	(0.135)	(0.022)	(0.011)	(0.134)	(0.018)	(0.009)	(0.124)	(0.015)	(0.009)
D_East	-0.067	0.066***	0.028***	-0.058	0.039*	0.014	0.006	0.122***	0.056***	-0.001	0.149***	0.075***
	(0.068)	(0.009)	(0.005)	(0.114)	(0.017)	(0.009)	(0.127)	(0.016)	(0.008)	(0.142)	(0.017)	(0.010)
D_NES	0.235**	0.371***	0.181***	0.877***	0.579***	0.286***	0.103	0.419***	0.193***	-0.266	0.253***	0.118***
	(0.075)	(0.011)	(0.006)	(0.140)	(0.028)	(0.013)	(0.140)	(0.018)	(0.010)	(0.143)	(0.017)	(0.010)
D_North	-0.256***	0.339***	0.147***	-0.155	0.550***	0.232***	-0.245	0.362***	0.157***	-0.355**	0.208***	0.092***
	(0.075)	(0.010)	(0.006)	(0.158)	(0.024)	(0.012)	(0.135)	(0.017)	(0.009)	(0.130)	(0.015)	(0.009)

D_Central	-0.270***	-0.110***	-0.061***	-0.397***	-0.005	-0.018*	-0.116	-0.155***	-0.074***	-0.014	-0.176***	-0.089***
	(0.067)	(0.010)	(0.005)	(0.113)	(0.018)	(0.009)	(0.123)	(0.016)	(0.008)	(0.136)	(0.017)	(0.010)
Female Age10-14	0.173*	0.293***	0.142***	0.234*	0.426***	0.194***	0.030	0.318***	0.145***	0.361	0.120***	0.073***
	(0.075)	(0.010)	(0.005)	(0.111)	(0.017)	(0.009)	(0.132)	(0.016)	(0.009)	(0.184)	(0.017)	(0.011)
Female Age15-19	-0.203*	0.777***	0.352***	-0.187	1.043***	0.443***	-0.163	0.813***	0.364***	-0.292	0.547***	0.265***
	(0.080)	(0.013)	(0.007)	(0.135)	(0.027)	(0.013)	(0.150)	(0.022)	(0.011)	(0.166)	(0.019)	(0.011)
Female Age20-29	-0.872***	1.129***	0.488***	-0.898***	1.643***	0.673***	-0.866***	1.261***	0.545***	-0.898***	0.859***	0.400***
	(0.093)	(0.023)	(0.011)	(0.211)	(0.080)	(0.036)	(0.192)	(0.049)	(0.023)	(0.165)	(0.028)	(0.015)
Male Age5-9	0.013	0.060***	0.028***	-0.040	0.067***	0.027***	0.125	0.067***	0.034***	0.003	0.038*	0.019
	(0.066)	(0.009)	(0.005)	(0.092)	(0.016)	(0.008)	(0.126)	(0.016)	(0.008)	(0.165)	(0.017)	(0.011)
Male Age10-14	0.310***	0.342***	0.170***	0.309**	0.513***	0.234***	0.408***	0.356***	0.175***	0.249	0.147***	0.083***
	(0.075)	(0.009)	(0.005)	(0.110)	(0.016)	(0.008)	(0.143)	(0.016)	(0.009)	(0.182)	(0.017)	(0.011)
Male Age15-19	-0.129	0.860***	0.393***	0.064	1.157***	0.502***	-0.245	0.926***	0.413***	-0.256	0.598***	0.292***
	(0.076)	(0.012)	(0.006)	(0.127)	(0.025)	(0.012)	(0.140)	(0.020)	(0.010)	(0.161)	(0.018)	(0.011)
Male Age20-29	-0.743***	1.230***	0.540***	-0.646***	1.688***	0.703***	-0.704***	1.339***	0.585***	-0.857***	0.950***	0.447***
	(0.086)	(0.019)	(0.010)	(0.172)	(0.056)	(0.025)	(0.167)	(0.037)	(0.018)	(0.162)	(0.026)	(0.014)
D_Mgt_type_G	1.016***	-0.818***	-0.339***	1.166***	-0.821***	-0.308***	0.696***	-0.813***	-0.347***	1.319***	-0.778***	-0.344***
	(0.058)	(0.007)	(0.004)	(0.093)	(0.017)	(0.009)	(0.102)	(0.013)	(0.007)	(0.135)	(0.011)	(0.008)
D_MDM	-0.528***	-0.761***	-0.372***	-0.633***	-0.624***	-0.295***	-0.253*	-0.738***	-0.343***	-0.171	-0.906***	-0.463***
	(0.067)	(0.008)	(0.004)	(0.105)	(0.014)	(0.007)	(0.117)	(0.013)	(0.007)	(0.201)	(0.014)	(0.010)
	(0.072)	(0.050)	(0.024)	(0.128)	(0.084)	(0.037)	(0.131)	(0.098)	(0.045)	(0.138)	(0.081)	(0.042)
cons	-4.659***	1.340***		-6.358***	4.057***		-11.125***	0.369		-2.428*	0.572***	
	(0.470)	(0.090)		(1.073)	(0.219)		(2.707)	(0.366)		(1.186)	(0.167)	
Adjusted r2		0.6726			0.4736			0.5355			0.5897	
N	193881	89801	193,881	65999	28553	65,999	64798	28431	64,798	63084	31813	63,084
Probit LR chi2(24)	263647			88690			88129.7			86356.8		
Pseudo R2	0.9848			0.9823			0.9870			0.9875		
chi2 (Female=Male)												
Age10-14	2.98	30.34***	29.62***	0.39	28.62***	22.50***	6.93***	6.42***	12.63***	0.37	3.36	0.95
Age15-19	0.90	42.58***	38.96***	3.11	15.06***	18.12***	0.33	25.51***	19.18***	0.07	8.77***	7.33***
Age 20-29	1.90	13.98***	15.80***	1.09	0.23	0.50	0.66	1.83	2.26	0.10	8.4***	8.29**

Note: * p<0.05, ** p<0.01, *** p<0.001; within brackets indicate SE; Average marginal effects derived using delta-method

Table 9C

Determinants of Log of Expenditure on Education of Children between the Ages 5-29 in 2014

71st round	CO3_All			CO3_Bot			CO3_Mid			CO3_Top		
	Probit	Condin	Uncond	Probit	Condin	Uncond	Probit	Condin	Uncond	Probit	Condin	Uncond
LPCHHX	0.677***	0.739***	1.514***	0.506***	0.553***	0.892***	0.987***	0.678***	1.900***	0.597***	0.751***	1.683***
	(0.011)	(0.007)	(0.017)	(0.036)	(0.022)	(0.043)	(0.068)	(0.042)	(0.105)	(0.023)	(0.014)	(0.045)
lhhsize	-0.11***	-0.011	-0.18***	-0.13***	-0.057**	-0.19***	-0.131***	-0.010	-0.20***	-0.091***	-0.009	-0.182***
	(0.015)	(0.011)	(0.024)	(0.028)	(0.019)	(0.034)	(0.026)	(0.018)	(0.041)	(0.024)	(0.016)	(0.048)
Head_yearsschool	0.070***	0.040***	0.133***	0.088***	0.028***	0.117***	0.077***	0.033***	0.135***	0.046***	0.033***	0.113***
	(0.001)	(0.001)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)	(0.004)
Head_age	0.017***	0.009***	0.032***	0.017***	0.006***	0.023***	0.018***	0.007***	0.031***	0.015***	0.009***	0.036***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
D_Head_sex	-0.06***	-0.05***	-0.13***	-0.072*	0.019	-0.073	-0.068*	-0.037	-0.124**	0.007	-0.038*	-0.013
	(0.017)	(0.012)	(0.027)	(0.034)	(0.021)	(0.041)	(0.030)	(0.019)	(0.047)	(0.027)	(0.017)	(0.053)
Skill_2	0.141***	0.067***	0.261***	0.165***	-0.013	0.182***	0.150***	0.071***	0.270***	-0.020	0.086***	0.023
	(0.013)	(0.008)	(0.021)	(0.022)	(0.013)	(0.026)	(0.023)	(0.014)	(0.035)	(0.025)	(0.016)	(0.049)
Skill_3	0.111***	0.157***	0.271***	0.344***	0.216***	0.516***	0.247***	0.188***	0.488***	-0.079*	0.122***	-0.063
	(0.026)	(0.016)	(0.041)	(0.074)	(0.048)	(0.090)	(0.050)	(0.031)	(0.078)	(0.036)	(0.021)	(0.070)
Skill_4	0.142***	0.158***	0.319***	0.189***	0.044	0.242***	0.292***	0.162***	0.538***	-0.026	0.168***	0.071
	(0.018)	(0.012)	(0.029)	(0.041)	(0.026)	(0.049)	(0.033)	(0.020)	(0.050)	(0.028)	(0.017)	(0.056)
D_Caste	-0.11***	-0.174***	-0.27***	-0.16***	-0.18***	-0.28***	-0.10***	-0.10***	-0.21***	-0.058**	-0.136***	-0.210***
	(0.012)	(0.007)	(0.019)	(0.021)	(0.012)	(0.025)	(0.020)	(0.012)	(0.031)	(0.021)	(0.013)	(0.042)
D_sector	0.008	-0.184***	-0.11***	-0.13***	-0.18***	-0.25***	0.011	-0.13***	-0.067	0.127***	-0.075***	0.189***
	(0.011)	(0.007)	(0.017)	(0.022)	(0.015)	(0.026)	(0.018)	(0.011)	(0.028)	(0.018)	(0.011)	(0.036)
D_West	-0.234***	-0.149***	-0.457***	-0.290***	-0.180***	-0.435***	-0.313***	-0.223***	-0.608***	-0.151***	-0.129***	-0.383***
	(0.020)	(0.012)	(0.028)	(0.045)	(0.027)	(0.053)	(0.030)	(0.019)	(0.046)	(0.025)	(0.016)	(0.050)
D_East	-0.498***	0.327***	-0.564***	-0.607***	0.237***	-0.567***	-0.491***	0.244***	-0.586***	-0.219***	0.164***	-0.302***
	(0.017)	(0.011)	(0.028)	(0.038)	(0.021)	(0.045)	(0.030)	(0.018)	(0.047)	(0.029)	(0.013)	(0.057)
D_NES	-0.394***	0.277***	-0.435***	-0.345***	0.253***	-0.255***	-0.417***	0.143***	-0.537***	-0.344***	0.094***	-0.592***
	(0.020)	(0.012)	(0.032)	(0.045)	(0.026)	(0.054)	(0.034)	(0.019)	(0.052)	(0.033)	(0.019)	(0.064)
D_North	-0.321***	0.151***	-0.401***	-0.290***	0.077**	-0.290***	-0.261***	-0.028	-0.409***	-0.282***	-0.024	-0.557***
	(0.017)	(0.011)	(0.027)	(0.043)	(0.026)	(0.052)	(0.030)	(0.019)	(0.046)	(0.024)	(0.015)	(0.047)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
D_Central	-0.156***	-0.278***	-0.417***	-0.073*	-0.526***	-0.379***	-0.120***	-0.444***	-0.455***	-0.075***	-0.248***	-0.321***
	(0.015)	(0.010)	(0.025)	(0.034)	(0.021)	(0.041)	(0.026)	(0.017)	(0.041)	(0.026)	(0.016)	(0.051)
Female Age10-14	0.554***	0.338***	1.071***	0.449***	0.344***	0.710***	0.458***	0.270***	0.854***	0.827***	0.155***	1.695***
	(0.027)	(0.013)	(0.042)	(0.043)	(0.020)	(0.050)	(0.048)	(0.021)	(0.072)	(0.061)	(0.023)	(0.119)
Female Age15-19	-0.38***	1.101***	0.099***	-0.40***	0.781***	-0.020	-0.488***	0.636***	-0.34***	-0.156***	0.548***	0.095
	(0.022)	(0.013)	(0.035)	(0.038)	(0.025)	(0.045)	(0.038)	(0.023)	(0.059)	(0.042)	(0.023)	(0.083)
Female Age20-29	-1.88***	1.563***	-1.92***	-1.72***	1.411***	-1.19***	-1.950***	1.156***	-2.21***	-1.776***	0.935***	-2.732***
	(0.021)	(0.017)	(0.031)	(0.041)	(0.043)	(0.050)	(0.038)	(0.032)	(0.053)	(0.038)	(0.025)	(0.069)
Male Age5_9	0.038	0.073***	0.105***	0.092*	0.031	0.123***	0.024	0.071***	0.080	-0.008	0.071**	0.036
	(0.023)	(0.013)	(0.037)	(0.038)	(0.020)	(0.045)	(0.040)	(0.021)	(0.062)	(0.045)	(0.024)	(0.088)
Male Age10_14	0.714***	0.405***	1.361***	0.595***	0.383***	0.899***	0.704***	0.337***	1.265***	0.939***	0.207***	1.948***
	(0.026)	(0.012)	(0.041)	(0.041)	(0.019)	(0.048)	(0.046)	(0.020)	(0.070)	(0.059)	(0.022)	(0.114)
Male Age15_19	-0.17***	1.272***	0.544***	-0.19***	0.959***	0.314***	-0.249***	0.809***	0.127*	0.065	0.726***	0.645***
	(0.021)	(0.013)	(0.034)	(0.036)	(0.024)	(0.044)	(0.037)	(0.022)	(0.058)	(0.041)	(0.022)	(0.081)
Male Age20_29	-1.51***	1.844***	-1.17***	-1.30***	1.636***	-0.58***	-1.540***	1.470***	-1.40***	-1.467***	1.216***	-1.937***
	(0.020)	(0.015)	(0.031)	(0.037)	(0.034)	(0.044)	(0.036)	(0.026)	(0.051)	(0.038)	(0.023)	(0.070)
D_Mgt_type_Govt	3.442***	-1.354***	4.471***	3.37***	-0.95***	3.348***	3.268***	-0.95***	4.317***	3.055***	-0.905***	5.204***
	(0.041)	(0.007)	(0.060)	(0.061)	(0.017)	(0.063)	(0.069)	(0.014)	(0.097)	(0.083)	(0.012)	(0.154)
D_MDM				1.313***	-1.01***	0.945***	1.153***	-0.97***	1.130***	0.771***	-0.948***	0.797***
				(0.073)	(0.017)	(0.084)	(0.084)	(0.016)	(0.127)	(0.101)	(0.018)	(0.195)
cons	-7.01***	0.549***		-5.54***	2.990***		-10.08***	1.628***		-6.037***	0.893***	
	(0.117)	(0.078)		(0.348)	(0.216)		(0.671)	(0.418)		(0.249)	(0.151)	
Adjusted r2		0.6766			0.5957			0.5956			0.5520	
N	147970	93420	147970	50251	28122	50251	48737	30142	48737	48982	35156	48,982
Probit LR chi2(24)	109446			45623.40			37221.84			25740.17		
Pseudo R2	0.5618			0.6617			0.5744			0.4415		
chi2 (Female=Male)												
Age10-14	30.92***	35.63***	41.38***	10.73***	4.60**	13.19***	23.39***	14.07***	28.41***	2.55	7.35***	3.48*
Age15-19	136.3***	200.54***	223.2***	36.49***	51.49***	65.96***	57.07***	73.53***	90.4***	42.78***	117.19***	70.27***
Age 20-29	591.2***	277.25***	851.8***	133.8***	21.70***	150.7***	221.41***	98.12***	315.6***	221.57***	210.79***	360.52***

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$; within brackets indicate SE; Average marginal effects derived using delta-method

Annexure

Table A1

Correlation coefficient Matrix of Selected Variables 52nd Round

	LEdEx	LPCHHX	lhhsize	Head_y~l	Head_Age	D_Head~r	D_Caste	D_sector	Region	Age_all	D_Gender	Age_Ge~p	Mgt_type	D_MDM	D_Scho~p	D_text~k	D_stat~y
LEdEx	1																
LPCHHX	0.3361*	1															
lhhsize	-0.0568*	-0.3117*	1														
Head_years-l	0.3187*	0.4685*	=-0.1176*	1													
Head_Age	-0.0052*	0.0001	0.3770*	-0.1323*	1												
D_Head_Gen~r	-0.002	-0.0414*	0.1495*	0.1289*	-0.0007	1											
D_Caste	-0.1055*	-0.2039*	-0.0358*	-0.2117*	-0.0757*	0.0067*	1										
D_sector	-0.1955*	-0.3999*	0.0942*	-0.3762*	0.0353*	0.0172*	0.1628*	1									
Region	-0.0027	-0.0274*	0.1597*	-0.0291*	0.0121*	0.0564*	0.0505*	0.0971*	1								
Age_all	-0.2513*	0.1591*	-0.1002*	0.0533*	0.1577*	-0.0317*	-0.0405*	-0.0677*	-0.0431*	1							
D_Gender	0.1201*	0.0198*	-0.0424*	-0.0169*	0.0055*	0.0142*	0.0012	0.0114*	0.0250*	0.0063*	1						
Age_Gender~p	-0.0175*	0.0864*	=-0.0813*	0.0066*	0.0758*	-0.0012	-0.0168*	-0.0189*	0.0044	0.4523*	0.8862*	1					
Mgt_type	0.8336*	0.2944*	=-0.0386*	0.2978*	-0.0203*	-0.002	-0.1202*	-0.2210*	-0.0159*	-0.2891*	0.0949*	-0.0554*	1				
D_MDM	0.1559*	-0.0744*	=-0.0211*	-0.0445*	-0.0573*	-0.0002	0.0420*	0.0647*	-0.1469*	-0.2336*	0.0060*	-0.1041*	0.1098*	1			
D_Scholars~p	0.1667*	-0.0133*	=-0.0267*	-0.0323*	-0.0126*	-0.0031	0.2175*	0.0358*	0.0376*	0.0033	0.0416*	0.0355*	0.0919*	0.0657*	1		
D_textbook	-0.3787*	-0.2282*	-0.0163*	-0.1997*	-0.0848*	0.0172*	0.1922*	0.1612*	-0.1899*	-0.2167*	-0.0279*	-0.1034*	-0.2414*	0.3127*	0.0728*	1	
D_stationary	-0.1604*	-0.0806*	-0.0057	-0.0772*	-0.0276*	-0.0093*	0.1000*	0.0564*	-0.0840*	-0.0607*	-0.0121*	-0.0323*	-0.0838*	0.1431*	0.0106*	0.3324*	1

Note: * statistically significant at 95 % level.

Table A2

Correlation coefficient Matrix of Selected Variables 64th Round

|	LEdEx	LPCHHX	lhhsize	Head_y~l	Head_Age	D_Head~r	HhType	Skill_~O	D_Caste	D_sector	Region	Age_all	D_Gender	Age_Ge~p	Mgt_type	D_MDM	D_Scho~p	D_text~k	D_stat~y
LEdEx	1																		
LPCHHX	0.1946*	1																	
lhhsize	0.0203*	-0.3242*	1																
Head_years-l	0.2320*	0.4845*	-0.1667*	1															
Head_Age	0.0021	0.0144*	0.4443*	-0.1420*	1														
D_Head_Gen-r	0.0103*	-0.0353*	0.1397*	0.1464*	-0.0515*	1													
HhType	0.0491*	0.0057*	-0.0621*	0.0447*	0.0146*	-0.1378*	1												
Skill_ISO	0.1462*	0.4102*	0.0161*	0.3989*	0.1078*	0.0194*	-0.0135*	1											
D_Caste	-0.0599*	-0.1504*	-0.0170*	-0.1515*	-0.0736*	-0.0090*	0.0330*	-0.1839*	1										
D_sector	-0.1072*	-0.4517*	0.0917*	-0.3128*	0.0065*	0.0238*	0.2921*	-0.2787*	0.1380*	1									
Region	-0.013*	-0.100*	0.163*	-0.027*	0.011*	0.049*	0.058*	0.006*	0.053*	0.068*	1								
Age_all	-0.5504*	0.1396*	-0.1510*	0.0490*	0.0766*	-0.0186*	-0.0038	0.0447*	-0.0171*	-0.0670*	-0.0305*	1							
D_Gender	0.0645*	0.0279*	-0.0474*	-0.0108*	0.0155*	0.0186*	-0.0055*	-0.0063*	-0.0019	-0.0092*	0.0183*	-0.0290*	1						
Age_Gen_Gp	-0.2164*	0.0956*	-0.1164*	0.0083*	0.0633*	0.0047*	-0.0052*	0.0142*	-0.0107*	-0.0406*	0.0039	0.4609*	0.8606*	1					
Mgt_type	0.5231*	0.3571*	-0.0490*	0.2859*	0.0482*	-0.0176*	-0.0292*	0.2521*	-0.1533*	-0.2911*	0.0064*	0.0323*	0.0314*	0.0412*	1				
D_MDM	-0.6204*	-0.3501*	0.0781*	-0.2753*	-0.1325*	0.0155*	-0.0142*	-0.2294*	0.1247*	0.2601*	-0.0865*	-0.4872*	-0.0371*	-0.2185*	-0.4506*	1			
D_Scholars-p	-0.1339*	-0.1460*	0.0512*	-0.1115*	-0.0129*	-0.0039	0.0266*	-0.1006*	0.1986*	0.1202*	0.1893*	0.0543*	-0.0314*	-0.0084*	-0.1604*	0.095*	1		
D_textbook	0.6283*	0.3828*	-0.0598*	0.3159*	0.1277*	-0.0109*	0.0099*	0.2616*	-0.1851*	-0.2738*	0.0590*	0.3608*	0.0682*	0.1998*	0.5194*	-0.641*	-0.168*	1	
D_stationary	0.2308*	0.0798*	0.0198*	0.0883*	0.0540*	-0.0026	-0.0140*	0.0670*	-0.1234*	-0.0665*	0.0578*	0.1067*	0.0149*	0.0545*	0.1548*	-0.221*	-0.023*	0.286*	1

Note: * statistically significant at 95 % level.

Table A3

Correlation coefficient Matrix of Selected Variables 71st Round

	LEdEx	LPCHHX	lhhsize	Head_y~l	Head_Age	D_Head-r	hhtype	Skill_~O	D_Caste	D_sector	Region	Age_all	D_Gender	Age_Ge~p	Mgt_type	D_MDM	D_Scho~p	D_text~k	D_stat~y
LEdEx	1																		
LPCHHX	0.2957*	1																	
lhhsize	-0.0788**	-0.3381*	1																
Head_years-l	0.2650*	0.4820*	-0.1897*	1															
Head_Age	0.0424*	0.0482*	0.4107*	-0.1004*	1														
D_Head_Gen~r	0.0135*	-0.0252*	0.1168*	0.1659*	-0.0736*	1													
hhtype	-0.0211*	-0.0448*	-0.1473*	-0.0649*	-0.0756*	-0.2150*	1												
Skill_ISO	0.1791*	0.3923*	-0.0145*	0.4071*	0.1152*	0.0186*	-0.3471*	1											
D_Caste	-0.0847*	-0.1730*	0.0096*	-0.1499*	-0.0583*	-0.0098*	0.0817*	-0.1514*	1										
D_sector	-0.1161*	-0.3616*	0.0987*	-0.2693*	-0.0117*	0.0316*	0.1216*	-0.2642*	0.1544*	1									
Region	-0.0662*	-0.1558*	0.1753*	-0.0123*	0.0058*	0.0455*	-0.0322*	-0.0524*	0.0319*	0.0573*	1								
Age_all	-0.4031*	0.1503*	-0.0889*	0.0681*	0.1426*	-0.0177*	-0.0153*	0.0614*	-0.0114*	-0.0529*	-0.0193*	1							
D_Gender	0.0811*	0.0361*	-0.0589*	0.0027	0.0147*	0.0099*	-0.0068*	-0.0006	-0.0105*	0.0064*	0.0083*	-0.0158*	1						
Age_Gen_Gp	-0.0972*	0.1128*	-0.0956*	0.0365*	0.0922*	0.0001	-0.0139*	0.0315*	-0.0163*	-0.0194*	-0.0007	0.4526*	0.8711*	1					
Mgt_type	0.5435*	0.3255*	0.0291*	0.2512*	0.0735*	-0.0100*	-0.0605*	0.2161*	-0.1868*	-0.2415*	0.0391*	0.0753*	0.0567*	0.0822*	1				
D_MDM	-0.6837*	-0.3872*	0.0688*	-0.3162*	-0.1738*	0.0074*	0.0648*	-0.2496*	0.1603*	0.2477*	-0.0948*	-0.4883*	-0.0520*	-0.2570*	-0.5529*	1			
D_Scholars~p	-0.1810*	-0.1510*	0.0327*	-0.1478*	-0.0334*	0.0037	0.0379*	-0.1285*	0.2278*	0.1206*	0.0436*	0.0324*	-0.0346*	-0.0165*	-0.2136*	0.1632*	1		
D_textbook	-0.6631*	-0.3839*	0.0675*	-0.3125*	-0.1569*	0.0084*	0.0608*	-0.2479*	0.1755*	0.2521*	-0.0585*	-0.4096*	-0.0528*	-0.2239*	-0.5640*	0.8066*	0.1946*	1	
D_stationery	-0.2968*	-0.1177*	-0.0018	-0.1111*	-0.0584*	-0.0003	0.0221*	-0.0822*	0.1047*	0.0813*	-0.1198*	-0.1595*	-0.0177*	-0.0852*	-0.2146*	0.3226*	0.0248*	0.3758*	1

Note: * statistically significant at 95 % level.

Figure A1

Histogram of LEdEx in Individual data of 52nd, 64th and 71st Rounds of NSSO Surveys
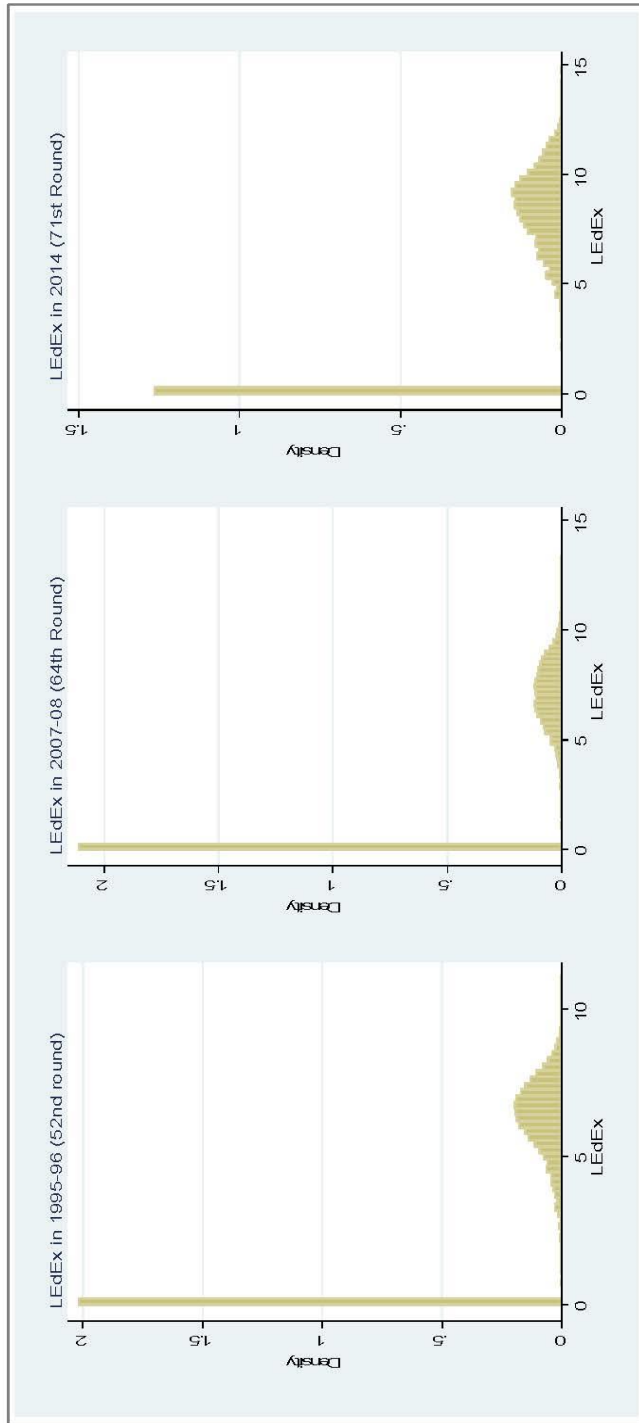
Source: Based on unit records of individuals of 52nd, 64th and 71st rounds

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