HOW MUCH INDIAN HOUSEHOLDS SPEND IN HIGHER EDUCATION?
TOBIT ANALYSIS USING NATIONAL SAMPLE SURVEY DATA

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Abstract: *Higher education in India is undergoing massive expansion, with enrolment figures touching 38.5 million and Gross Enrolment Ratio attaining 27.1%. However, this expansion is brought about by extensive privatisation, catering around 70% of students enrolled in the sector. This shift also marks a departure in perceiving higher education as a public good – impacting its sources of funding – disproportionately straining the pockets of households. Drawing on National Sample Survey data (2017-18), the present study examines the pattern and quantum of household expenditure and estimates key determinants of household expenditure in higher education. Employing Tobit model, the study brings out the interplay of gender, caste and class in shaping households' decision to allocate resources in higher education.*

Keywords: *Household Expenditure, Higher Education, Tobit, India*

1. Background

Widening participation in higher education (HE, henceforth) is one of the most important policy concerns for every nation – since it is widely recognized as a potent tool for economic development, as well as achieves socially equitable outcomes. Existing literature has already established strong positive association between improved educational indicators and economic growth – translating to improved development outcomes (Nelson and Phelps, 1966; Romer, 1990; Hanushek and Woessmann, 2010). Significant examples of this are China and many East Asian countries – recording striking per capita income growth, at least, partially explained by improved educational indicators (Chakrabarty, 2009; Hanushek and Woessmann, 2010).

In this context, investment in education in general and HE in particular becomes crucial, which is incurred both by the state and non-state agents (private institutes/households). It may be argued that both these investments are interrelated and interdependent; such that, in absence of one component the probability of under-allocation of resources by the other agent increases (Panchamukhi, 1989). Magnitude of

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spending by households or individuals at any level of education is based on their expectations about future returns, in terms of both economic and non-economic benefits. Interestingly, this is only a necessary condition but not sufficient one. Indeed, under certain circumstances households may withhold education expenditure, even if the expected private rates of return – monetary and/or non-monetary – are high due to several other economic, social and cultural constraints (Tilak, 2002a). In fact, several studies show that household expenditure in education is influenced by myriad factors ranging from gender, caste, religion, location of residence, family background (such as parental education and occupation), household economic status, family size and cultural conditioning (Campbell and Siegel, 1967; Tierney, 1980; Houle and Ouellet, 1982; Mora, 1996; Tilak, 2001, 2002; Kingdon, et.al. 2005; Chakraborty, 2009; Kambhampati, 2008; Rena, 2010 etc.). These factors have enormous impact on the nature and quantum of educational expenditure incurred by households (Jayachandran, 2002; Tilak, 2002, Kambhampati, 2008). Many studies confirm that individuals with privileged socio-economic background are over-represented among students enrolled in tertiary institutions around the world and India is not an exception (Tilak, 2002; Hasan and Mehta, 2006; Deshpande, and Yadav, 2006; Azam and Blom, 2008; Chakrabarty, 2009; Basant and Sen, 2010, 2014). Since returns to HE are substantial, inequality in access to HE is likely to accentuate the social and economic divide between groups (Herbst and Rok, 2011). To counter this tendency, government spending on HE can play a critical role by providing access and creating equality of opportunity in favour of disadvantaged groups. However, in the neoliberal regime the policy focus has shifted from the framework of public financing in HE to greater reliance on private expenditure. This leads to exorbitant increase in out-of-pocket expenditure of households, having detrimental impact on marginalized sections. In this context, the current study aims to unpack the dynamics of household expenditure on HE, given the dearth of studies in India, using nationally representative data.

2. Existing Literature

According to the recent data of UNESCO (2022)[1] Indian households share 22% of total educational expenditure incurred by the nation. However, due to lack of disaggregated data and the general impression that household spending on education is negligible, researchers did not provide ample attention in scrutinizing the role played by Indian households. This has changed recently with some very important studies. These studies, investigating the determinants of household expenditure on education, found that gender, caste, parental education along with religion and location of the family play pivotal roles in determining the quantum of household expenditure (Panchamukhi 1990; Filmer and Pritchett 1998; Tilak 2002, 2009; Kambhampati, 2008; Choudhury, 2019; Duraisamy and Duraisamy (2016); Chandrasekhar et.al., 2019). Thus, it could be argued that household investment decisions regarding expenditure on HE depend on– (a) individual and household related economic and social factors; (b) individuals' psychological factors; (c) institutional factors and (d) government policies for the education sector along with labour market signals. The present study will only focus on

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[1] https://www.education-progress.org/en/articles/finance

individual (gender), household related social factors (caste, parental education, household size), household's economic factor and institutional factors i.e., type of institutions (government/private), broad disciplines (STEM/non-STEM subjects)[1] in determining household expenditure on HE.

Household Economic Factors: Participation in HE requires significant household investment; therefore, intuitively, economic condition of household has considerable impact on the magnitude of educational investment. The affluence level of a household could be measured through income of the household and household wealth. There are very few studies which have given emphasis on wealth effect to examine the determinants of participation in HE in India; Filmer and Pritchett (1998) formulated a wealth index for 14 major Indian states and analyzed the wealth effect on school enrolment across gender and social groups. The study reports a large amount of variation in the magnitude of wealth effect on educational attainment across various states. In case of HE studies by Chakrabarty 2009; Tilak and Choudhury 2019; Chandrasekhar et al 2019 highlight positive relationship between consumption expenditure and HE attainment. These studies further underscore that the impact varies drastically across gender, caste and location of residence. In this context some studies attempted to unpack the dynamics of household's economic condition and intra-household resource allocation by Engle Curve analysis (Kingdon 2005; Azam and Kingdon 2011; Kaul 2018). Along with this, resource devolution theory (Downey 2001) also has important contribution in capturing the intra-household dynamics of educational expenditure, which argues, with finite resources as number of children rises, allocation per child falls, resulting lower educational attainment for the later order children (Psacharopoulos and Mattson, 2000). The impact is more adverse if the child is a female (Azam & Kingdon 2013).

Individual and Household Social Factors: Literature has highlighted the existence of substantial gender divide in household expenditure and participation in HE (Chanana, 2007; Prakash, 2007). Differential social expectations from males and females, in addition to pledging dowry to marry off even educated girls (usually married to spouses with HE and better employment status) are cited as reasons for this discrimination. Though, for urban middle- and high-income families, the dynamics is different (Chanana, 2007), where demand for dowry is often inversely related to HE attainment, since potential earning capacity of female increases.

Several studies have attempted to estimate, whether there is significant difference in household expenditure on education, across caste groups. Exploring three rounds of NSS data of India, Rani (2021) reported that children belonging to marginalized SC/ST households have a lower propensity to spend in all levels of education. Along with caste, class and gender, educational background of parents also play decisive role in household investments on HE. Studies reveal that having parents with high educational attainment, increases the probability in getting better allocation for HE (Psachalopoulos and Mattson 2000; Chandrasekhar et al. 2019). Additionally, mother's education is

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[1] STEM courses comprise of Science, Medicine, Engineering, management, chartered accountancy, IT/computer courses. Non-STEM comprises of humanities, law, education, agriculture, courses from recognized ITI (Industrial Training Institutes)

more decisive than father's educational attainment in influencing the investment decisions particularly in rural areas (Tilak 2002). The study further shows that, in rural India it is not the most educated person in the family, rather head of the family decides expenditure on education. However, this kind of aggregate results fail to explain cultural aspects of communities and state level specificities influencing HE.

Literature further highlights, apart from various socio-economic factors, institutional factors (such as type of institution, discipline of study, accessibility) and availability of financial support like, student loans and scholarships have direct bearing on quantum of household spending. However, studies investigating their impact on household spending are limited in the Indian context, except for a few recent studies (Sarkar, 2017; Choudhury, 2019).

The current study – drawing on latest unit level National Sample Survey (NSS) would (i) examine the patterns of household expenditure on HE across various disaggregated level (gender, caste/social group, location, income groups, type of higher education institutes [HEI]) and (ii) determinants of household expenditure in HE in India.

Along with individual and household characteristics, two important institutional factors (type of institution and discipline of study i.e. STEM or non-STEM courses) are included in examining the determinants of household spending on HE in India.

3. Database and Estimation Strategy

Data: The present study draws on latest round of NSS data [75th round] conducted by Government of India in 2017-18. This is a nationally representative data; hence, suitable for generalization. This particular survey, titled as Social Consumption: Education, covered 113757 Indian households (64519 rural households and 49238 urban households) across states. The survey comprised information on household characteristics, demographic particulars of every individual, educational detail of students in the age group of 3-35 years and particulars of educational expenditure of students attending various levels of education. Information is also furnished for students currently not attending school in the age group 3-35 years with the reasons for dropping out. The present study restricts the sample to those who were attending HEIs and belonging to the age-group 18-23 years[1].

Estimation Strategy: To find out the key determinants for household expenditure Tobit regression models are estimated. Expenditure on HE, the dependent variable, is zero for many households, thereby being censored at zero. In such case, Ordinary Least Square (OLS) regression model cannot be used. Thus, to furnish consistent estimates, maximum likelihood Tobit analysis is used, the specification of which is as follows:

$$Y_i^* = \beta^1 X + \varepsilon_i \tag{1}$$

The observed value of Y:

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[1] Most studies all over the world have considered 18-23 years age cohort as pursuing HE age cohort.

$$Y_i = 0 \quad \text{If } Y_i^* \leq 0 \tag{2}$$

$$Y_i = Y_i^* \quad \text{If } Y_i^* > 0 \tag{3}$$

where Y_i^* is the latent variable and Y_i is its observed counterpart, X is the vector of explanatory variables detailed out in table 1, β is the vector of parameters to be estimated and ε is the normally and independently distributed error term.

Table 1: Description of variables used

Dependent variable	
Ln_hhexp	Logarithm of household expenditure on HE
Explanatory variables	
Reference Category – Male	
Female	If individual is female =1, 0 otherwise
Reference Category – Others	
ST	If individual is ST = 1, 0 otherwise
SC	If individual is SC= 1, 0 otherwise
OBC	If individual is OBC = 1, 0 otherwise
Reference Category – Urban	
Rural	If individual is in rural sector = 1, 0 otherwise
Ln_mpce	Logarithm of monthly per capita consumption expenditure
Reference Category – Government Institutes	
private_aided	If individual goes to private_aided institute =1, 0 otherwise
private_unaided	If individual goes to private_aided institute =1, 0 otherwise
Reference Category – Eastern Region	
North	If individual is from Northern region =1, 0 otherwise
North_East	If individual is from North Eastern region =1, 0 otherwise
West	If individual is from western region =1, 0 otherwise
South	If individual is from southern region =1, 0 otherwise
Reference Category – HH_illiterate and below primary	
HH_ elementary	If household head has completed elementary level of education =1, 0 otherwise
HH_ secondary	If household head has completed secondary level of education =1, 0 otherwise
HH_highersecondary	If household head has completed higher secondary level of education =1, 0 otherwise
HH_ gradabove	If household head has completed graduate and above level of education =1, 0 otherwise
Reference Category – STEM	
Non STEM	If individuals have opted for Non STEM =1, 0 otherwise

4. Results and Discussions

Household Expenditure in Higher Education

HE in India is undergoing a stage of massive expansion, with enrolment figures touching 38.5 million and Gross Enrolment Ratio being 27.1% (AISHE 2020). However, the expansion of this sector results from expanding supply mainly by the private players; which caters to around 70% of total enrolment (AISHE 2020). This shift also marks a departure from the public good nature of HE – implicating the sources of funding HE, disproportionately straining the pockets of the households. Table 2 depicts that on an average households spend around Rs. 26533 for each ward enrolled in HE, which accounts for 17.3% of the total annual household consumption expenditure in 2017-2018. Data further highlights that a major share of expenditure (61%) goes in favour of spending towards fees.

Table 2: Annual per-student household expenditure on higher education

Items of expenditure	average annual spending per student (in Rs)	share of total educational spending (%)	share to annual household consumption expenditure (%)
Tuition Fee	17,935	61.2	11.7
Books and Uniform	3,176	10.8	2.1
Transport	3,500	12.0	2.3
Private tuition	3,007	10.3	2
Other items	1,664	5.7	1.1
Total expenditure (Average)	26,553	100	17.3

Source: Author's computation using NSS 75ᵗʰ round unit level records

Role of Caste, Location and Type Institutions: Looking through the lens of Class: In India along with class, caste is one of the most pervasive and enduring factor of inequality in every sphere of life. Further, class and caste are highly intertwined in this country and economic class has huge impact on the affordability to pay for higher education. Thus, a system which is highly privatised in nature and heterogeneous in terms of quality – has huge potential to create barriers to marginalised communities to access HE without state interventions. This further impacts the choice of courses (STEM/non-STEM) and type of institutions (government and private), thereby impacting the average expenditure patterns across upper caste and backward caste households. In case of expenditure incurred by the households in HE one can easily locate a stark difference across various caste groups affecting their enrolment. Table 3 depicts households from the backward castes (STs, SCs and OBCs) spend significantly lower than that of the upper caste (UC) households (Others). However, it is not only about class (proxied by MPCE quintiles)as one can observe that even within the same income quintile, disparity persists in HE spending between marginalized vis-à-vis upper caste households. This divergence becomes maximum in the highest income quintile, wherein it is seen that STs spend Rs. 26215 and others spend Rs. 53500 on an average

in HE annually. This may be due the reason that in India the income range of the top most income quintile is quite vast and the large chunk of people from the marginalized caste group are actually bunched at the bottom layer of this income group, which affect their spending decisions.

Table 3: Average household expenditure on higher education
across social groups and quintiles

MPCE Quintiles	Social Groups			
	ST	SC	OBC	Others
Quintile 1	9162	10350	11034	12939
Quintile 2	9887	11199	12606	12509
Quintile 3	10572	12320	15831	14413
Quintile 4	16416	18179	20971	22214
Quintile 5	26215	31432	41103	53500
Total	16457	17501	24350	35420

Source: Author's computation using NSS 75th round unit level records

Table 4 provides an intersectional picture of gender, class and location in context of household expenditure on HE. It shows that urban households incur a higher spending than their rural counterparts. Gender wise disparities in allocation of resources are quite prominent. Except for poorest income category in rural area, across all economic classes females receive lower allocations for HE than that of males. The disparity is maximum within the highest income category of the urban areas. One can further notice that at the aggregate level gender gap in resource allocation for HE doesn't improve, rather broadens with improving economic status. Probably a patriarchal society and heavily privatized heterogeneous HE system produces this pattern.

Table 4: Average annual household expenditure on higher education across gender,
location and expenditure quintiles

MPCE Quintiles	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Quintile 1	9541	10105	9746	23303	18298	20575	10768	11466	11043
Quintile 2	11906	11247	11646	14929	14514	14728	12263	11778	12066
Quintile 3	14247	13654	14016	16691	14998	15843	14711	14016	14423
Quintile 4	20866	18559	19895	22241	21365	21837	21352	19658	20614
Quintile 5	31447	28900	30377	55496	40444	48889	50399	38141	45066
Total	16465			39124			26553		

Source: Author's computation using NSS 75th round unit level records

From table 5, it emerges that at all India level and across rural and urban areas, average spending of individuals studying in private unaided institutes is more than double when compared to their counterparts in government institutes. At aggregate level, an

individual in government institute spends Rs.14097, vis-à-vis Rs. 41280 who are enrolled in private unaided institutes. Also, inter-class disparities with respect to spending on HE are the least in case of government institutes and most in case of private institutes.This is mainly due to the fact that the fee structure in government HEIs are regulated, homogeneous and much lesser than private HEIs.

Table 5: Average annual household expenditure on higher education across sectors, type of institutes and expenditure quintiles

MPCE Quintiles	Rural			Urban			Total		
	Govern-ment	Private Aided	Private Unaided	Govern-ment	Private Aided	Private Unaided	Govern-ment	Private Aided	Private Unaided
Quintile 1	7520	12098	13011	10490	12257	25100	7820	15120	14627
Quintile 2	9002	12602	17604	9734	16207	20567	9083	13113	18175
Quintile 3	10219	17774	19175	9668	20998	24347	10094	18414	20392
Quintile 4	12262	22526	28150	12871	24809	31291	12485	23415	29289
Quintile 5	15880	29981	49074	24670	59886	66329	22823	52666	63268
Total	10495	19072	25677	19609	48144	55696	14097	32115	41280

Source: Author's computation using NSS 75th round unit level records

Further, choice of subjects (STEM vis a vis non-STEM courses) also plays an important role in shaping a household spending on education[1]. On an average, the per student spending on STEM courses is more than three times higher than their non-STEM counterparts (per student spending on STEM courses is Rs. 45487 vis-à-vis Rs. 14564 for non-STEM courses).It implies that affordability and choice of course are in a way intertwined which hints at the prevalence of an exclusionary trend, making it disadvantageous for a substantial portion of the eligible population who comes from the lower income households, mostly the students from marginalized caste groups.

4. Factors influencing expenditure on Higher Education: An Econometric Analysis

This section attempts to discuss the results from the Tobit models estimated for various controlling factors.

Tobit estimates reveal that household's economic status is not only important in deciding the quantum of expenditure, but also extremely significant in shaping decisions regarding selection of the stream of education as well as type of institute. At all India level, it emerges that with unit increase MPCE (proxy for economic status), expenditure on HE increases by 60%. The impact of economic class on educational spending is relatively higher in urban India. Data shows (table 6: Models 4 & 5) in urban India an unit increase in MPCE increases the HE spending around 63% as against 52% in case of rural India.

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[1] A detailed analysis of NSS 75th round data reveals within STEM – 54.4 percent individuals are from the highest income quintile and a meagre around 5 percent are from the lowest income quintile.

As expected in a patriarchal society, between males and females, impact of a higher economic status on HE spending is more prominent (positive) in case of males. Table 6 (Models 2 & 3) shows, at all India level, household expenditure on females' HE is 6% lower than that of males. Similar trend has been corroborated by various other studies (Tilak 2002; Kingdon 2005; Aslam and Kingdon 2008; Azam and Kingdon 2011; Saha, 2013; Duraisamy and Duraisamy, 2016; Nordman and Sharma 2016; Tilak and Choudhury, 2019; Rani, 2021). Interestingly, the estimates (Table 7: Models 6 & 7) further reveal that females belonging to the richest expenditure quintile experience higher level of discrimination wherein the household spending is 12% lower than the male counterparts (for poorest income groups households incur 2% lower expenditure for females compared males). Studies by Chanana (1993) and Jayachandran (2015) highlight that several cultural attributes such as patrilocality, patrilineality, dowry system, reliance on sons for support during old age influences household level decision making which eventually contributes in deepening gender inequality in India.

Being from the UC certainly puts an individual at an advantageous position which is reflected in the spending patterns. SC/ST/OBC households incur significantly lower expenditure on their wards' HE when compared to the UCs across all subgroups. Model 1 shows at all India level, STs, SCs and OBCs spend 27%, 18% and 9% lower than UCs, respectively. Similar trends have been corroborated by previous studies (Tilak, 2002; Rani, 2021). What emerges as an area of concern is that if we further disaggregate the data on economic lines, one sees that even within the richest income groups STs and SCs incur to the tune of 34% and 30% lower expenditure than UCs (Model 7). This aspect of greater divergence within upper class Indian households is also corroborated by Madan (2020).

Importance of having a higher educated household head in determining the quantum of expenditure on HE is quite evident in many studies (Huston 1995; Kingdon 2005; Tilak 2002, Rani 2021). The present study shows (Model 1) that at aggregate level individuals with higher educated (graduate and above) household heads spend 19% more than those households which are headed by someone who either illiterate or have below primary education. The tobit coefficients further show between males and females, higher educated household heads have a higher impact on HE spending in case of males than females. Further, in the lowest income quintile, higher educated household head emerges as a significant factor influencing spending in HE (Model 6 depicts an increase of 38% in HE spending).

The study of Agarwal (2009) argues, disparities at the regional level are mostly due to clustering of HE institutions in and around urban areas. Though participation is growing in rural sectors, it is still far lower than urban counterparts (Azam and Blom, 2009).Table 6 suggests that females are in disadvantageous position both in urban and rural areas. However, the females are at a greater disadvantage in terms of lower spending in the urban sector, as the urban females incur around 8% of lower expenditure for their HE than their male counterpart; for rural households the coefficient is insignificant.

A region wise analysis reveals that the spending on HE varies widely across regions and economic class. For example, at the highest income quintile, we see HE spending is

higher by 37% and 28% in north-eastern and northern regions, respectively, if compared with their eastern counterparts (Model 7). It could be argued that the north eastern regions generally face the cost differential due to its hilly landscape (Rani 2021), and migration to other states for HE – which might get reflected in the household expenditure. However, the region wise pattern of household expenditure is quite erratic. Rani (2021) documents, while according to the 56th (1995-96) and 71st (2014) rounds of NSS data southern states incurred higher expenditure on HE, 64th round (2007-08) data depicts that northeastern states spend higher. Similar trend is evident in the current data of 75th round (2017-18).

Type of educational institute where the students are enrolled in, has critical role in determining the quantum of household expenditure. Along with common wisdom, both the descriptive statistics and Tobit regression results suggest that non-government institutes (both private aided and unaided) entail significantly higher expenditure across all subgroups under examination. At all India level (Model 1), individuals enrolled in private unaided HEIs spend 69% more than those who are studying in government HEIs. The maximum divergence between government and private unaided institutes is seen within highest income quintile, where individuals enrolled in private unaided institutes spend on an average 94% more than those are enrolled in government institutes (Model 7).

Along with type of institutes, type of courses also plays important role for determining expenditure. Given the patterns of expansion of HE in India – particularly in domain of STEM courses which is mostly in private sectors – it could be easily understood that individuals enrolled in STEM courses need to spend much higher than those who are enrolled in general (non-science/non-technical/professional) courses. As can be seen from the data, in Government and private unaided institutes the spending in Non-STEM courses is lower by 37% and 56%, respectively (Models 8 & 9). Again, the maximum divergence is observed within the highest income quintile, wherein, spending in Non-STEM courses is 65% lower as compared to their STEM counterparts (Model 7).

Table 6: Tobit maximum likelihood estimations for regression results by gender and location

	All India (Model 1)		Female (Model 2)		Male (Model 3)		Rural (Model 4)		Urban (Model 5)	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Female	-0.06***	0.02					-0.03	0.03	-0.08***	0.03
ST	-0.27***	0.07	-0.17***	0.06	-0.34***	0.1	-0.26***	0.08	-0.25***	0.09
SC	-0.18***	0.04	-0.15***	0.05	-0.2***	0.05	-0.17	0.05	-0.16***	0.06
OBC	-0.09***	0.02	-0.11***	0.04	-0.08**	0.03	-0.06	0.03	-0.13***	0.03
Rural	-0.02	0.03	-0.03	0.04	-0.01	0.04				
Ln_Mpce	0.6***	0.02	0.56***	0.03	0.62***	0.03	0.52***	0.03	0.63***	0.03
private_aided	0.48***	0.03	0.48***	0.04	0.48***	0.05	0.38***	0.05	0.64***	0.04
private_unaided	0.69***	0.03	0.65***	0.04	0.71***	0.04	0.6***	0.04	0.8***	0.04
North	-0.02	0.04	-0.07	0.05	0.01	0.06	-0.04	0.06	0.08	0.05
South	-0.02	0.05	-0.03	0.06	-0.02	0.07	0.07	0.07	-0.08	0.05
West	-0.09**	0.04	-0.12**	0.05	-0.07	0.06	-0.01	0.07	-0.15***	0.05
North_east	0.13***	0.05	0.16**	0.07	0.1	0.08	0.09	0.07	0.18***	0.06
HH_elementary	0.03	0.03	0.08*	0.04	0.01	0.04	0.01	0.04	0.11**	0.04
HH_secondary	0.01	0.03	0.05	0.05	-0.001	0.04	0.01	0.05	0.07	0.05
HH_highersecondary	0.004	0.04	0.02	0.05	0.001	0.05	-0.04	0.05	0.09**	0.05
HH_grad_above	0.19***	0.03	0.19***	0.05	0.21***	0.05	0.04	0.06	0.28***	0.04
NonSTEM	-0.49***	0.03	-0.48***	0.03	-0.48***	0.04	-0.39***	0.04	-0.58***	0.03
_cons	5.03***	0.19	5.29***	0.25	4.82***	0.27	5.56***	0.25	4.76***	0.24
R2		0.22		0.19		0.24		0.15		0.24
N		26921		11441		15479		11408		15513

Source: Author's computation using NSS 75th round unit level record
Note: *** implies significance at 1% level; ** implies significance at 5% level; * implies significance at 10% level; Coeff.:Coefficient; SE: Standard error

Table 7: Tobit maximum likelihood estimations for regression results by type of institution and household economic condition

	Lowest Economic Quintile (Model 6)		Highest Economic Quintile (Model 7)		Government (Model 8)		Private Unaided (Model 9)	
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Female	-0.02	0.07	-0.12***	0.04	-0.03	0.03	-0.11***	0.03
ST	-0.13	0.13	-0.34***	0.06	-0.22***	0.06	-0.17**	0.08
SC	-0.14	0.11	-0.30***	0.06	-0.17***	0.05	-0.14**	0.07
OBC	-0.06	0.1	-0.16***	0.04	-0.09**	0.04	-0.09**	0.04
Rural	-0.25***	0.09	-0.19***	0.05	0.05	0.04	-0.04	0.04
Ln_Mpce					0.52***	0.04	0.64***	0.03
private_aided	0.44***	0.12	0.74***	0.05				
private_unaided	0.52***	0.12	0.94***	0.05				
North	-0.15	0.13	0.28***	0.07	0.17***	0.04	-0.3***	0.06
South	0.19	0.14	0.02	0.07	-0.2***	0.06	-0.18***	0.06
West	0.03	0.09	-0.02	0.07	-0.11***	0.04	-0.29***	0.07
North_east	-0.04	0.13	0.37***	0.09	0.09*	0.05	-0.04	0.13
HH_elementary	0.01	0.09	-0.15***	0.06	0.002	0.04	0.002	0.06
HH_secondary	0.11	0.09	-0.13**	0.06	0.07	0.05	-0.06	0.05
HH_highersecondary	0.25*	0.14	-0.12**	0.06	-0.08	0.05	0.07	0.06
HH_grad_above	0.38***	0.1	0.16***	0.05	0.17***	0.05	0.14***	0.05
NonSTEM	-0.32***	0.12	-0.65***	0.04	-0.37***	0.04	-0.56***	0.04
_cons	9.27***	0.15	10.1***	0.08	5.5***	0.32	5.68***	0.31
R2	0.09		0.17		0.13		0.23	
N	1434		14386		9686		10613	

Source: Author's computation using NSS 75th round unit level record

Note: *** implies significance at 1% level; ** implies significance at 5% level; * implies significance at 10% level; Coeff.:Coefficient; SE: Standard error

6. Conclusions

The objective of this paper was to capture the patterns and the determinants of household expenditure on HE across various levels of disaggregation, using the latest nationally representative data (NSS 2017-18) in Indian context. The study further made an attempt to throw light upon the persisting inequalities in the domain of HE – as educational inequality has huge repercussions on other facets of life and contributes in deepening social and economic inequalities.

Over the years, due to privatization, there has been a massive increase household expenditure on HE. Data reveals, from Rs. 14532 in 2007-18 it has touched Rs.26553 in 2017-18. This increased shift of burden on households has several implications, one being, differences in the quality of education accessed by various sub-groups. This in turn impacts the learning of students, eventually impacting their labour market opportunities and outcomes. Further, substantial gender bias in educational spending – wherein females are at a much-disadvantaged position, would have huge impact on their labour market outcomes. This would further impact the intra-household allocation of resources favouring the sons in a patriarchal society, eventually perpetuating the gender inequality even more.

The disparities in spending among the marginalized groups (ST, SC, OBCs) vis-à-vis UC (Others) households portray a worrisome picture. The rapid erosion of publicness of HE, implying a growing domination of the private sector, has been continuously burdening marginalized households to the extreme, thereby accentuating the inter-caste inequalities. Thus, the dwindling proportional representation marginalized students in HE should draw attention of policymakers and must be remedied by strengthening public funding of HE.

Appendix

Table 13: Descriptive statistics

	All India	Female	Male	Rural	Urban	Lowest Quintile	Highest Quintile	Govern-ment	Private Unaided
Male	57.8%			60.2%	54.7%	61.6%	56.5%	57.7%	57.7%
Female	42.2%			39.8%	45.3%	38.3%	43.5%	42.2%	42.3%
ST	6.1%	5.5%	6.6%	7.9%	3.9%	9.1%	5.6%	6.9%	4.1%
SC	15.8%	15.0%	16.4%	19.5%	11.2%	21.9%	9.5%	16.9%	14.6%
OBC	44.0%	43.5%	44.4%	45.5%	42.2%	51.7%	38.9%	41.3%	49.4%
Others	34.0%	36.1%	32.6%	27.1%	42.7%	17.3%	46.0%	34.9%	32.0%
Rural	55.5%	52.3%	57.8%	N/A	N/A	88.0%	20.7%	60.5%	48.0%
Urban	44.5%	47.7%	42.2%	N/A	N/A	12.0%	79.3%	39.5%	52.0%
Govern-ment	45.7%	45.7%	45.7%	49.8%	40.6%	54.3%	37.8%		
private_aided	24.8%	24.8%	24.8%	24.7%	25.0%	24.1%	26.3%		
private_unaided	29.2%	29.3%	29.2%	25.3%	34.1%	21.4%	35.5%		
North	27.4%	29.4%	26.0%	30.3%	23.9%	35.1%	23.9%	26.6%	26.0%
South	24.9%	26.5%	23.7%	21.0%	29.7%	6.7%	31.9%	12.4%	44.2%
West	28.7%	26.1%	30.5%	27.0%	30.7%	23.7%	31.1%	26.0%	25.5%
East	15.9%	15.0%	16.6%	18.0%	13.3%	29.9%	11.1%	29.5%	3.5%

	All India	Female	Male	Rural	Urban	Lowest Quintile	Highest Quintile	Govern-ment	Private Unaided
North_east	3.1%	3.0%	3.1%	3.7%	2.3%	4.5%	2.0%	5.6%	.8%
HH_illiterate_below_primary	17.0%	15.0%	18.5%	23.8%	8.5%	26.1%	6.2%	18.8%	16.4%
HH_elementary	23.3%	22.9%	23.6%	29.0%	16.1%	27.7%	15.5%	25.6%	20.0%
HH_secondary	15.1%	15.5%	14.9%	14.8%	15.6%	15.5%	15.3%	13.5%	16.7%
HH_higher-secondary	11.1%	12.2%	10.2%	8.9%	13.7%	6.0%	13.3%	10.7%	10.8%
HH_grad_above	12.4%	13.8%	11.3%	6.4%	19.8%	5.2%	21.5%	10.0%	15.1%
STEM	36.6%	33.0%	39.3%	27.2%	48.3%	19.4%	52.9%	24.3%	53.5%
NonSTEM	61.2%	64.3%	59.0%	70.7%	49.4%	78.8%	44.2%	74.0%	44.3%
N	26923	11443	15480	11409	15515	1434	14388	9687	10613

Source: Author's computation using NSS 75ᵗʰ round unit level records

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