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Abstract

Rising inequalities in the society are indeed becoming an important concern of all. Among inequalities in different spheres, inequalities in education, and inequalities in higher education in particular are seen as too serious to ignore any more. The available studies on inequality to access higher education in India have largely examined the issue from gender and social category of the students; too little is done by examining income as a determining factor. Using NSSO surveys, conducted in 2007-08 and 2013-14, an attempt is made here to examine the income inequality and access to higher education in India. The analysis shows that the inequality in access to higher education has increased substantially by household's economic status in the last seven years. Though the overall gender inequality has come down significantly, this is very high between the rich and the poor. The inequality in access to HE also varies considerably between rural and urban regions. The logit results lead us to conclude that rich income groups have a higher probability of attending higher education institutions than others. The difference in the probability of participation between men and women narrows down as one move from poorest to richest quintiles. Recent debates on higher education in India have raised a variety of interesting policy related issues and through this empirical study the author has highlighted a few of them, particularly the interaction between income inequality and access to higher education, with the aim to facilitate a more informed policy discourse on this.

Keywords: Income Inequality, Access, Higher Education, India

JEL Codes: I22, I23, I24, I25

The Problem

The role of higher education in national development is well recognised all over the world. It is seen as a lever of social transformation as it is about enhancing knowledge and skills of people. According to the human capital theory¹ investment in higher education makes a vital contribution to accelerate the process and the rate of economic growth through enhancing human skills and productivity. Subsequent research has shown that higher education critical for boosting economic growth, improving income distribution, reducing poverty and reducing social and economic inequalities, as it is regarded as the primary engine of upward mobility. It plays an important role in promoting many dimensions of development of nations with respect to social progress, human development, political stability and various other facets of development (Tilak, 2003; 2007; 2018). Further, in the globalised knowledge economy (a catalyst for the increased market demand for higher education) the types of skills and knowledge required are increasingly acquired in higher education institutions. Higher education has now become a necessary qualification to enter into and compete for a decent job in the knowledge economies (Varghese and Malik, 2016). From human development perspective, investment in higher education is not just a step towards improvement of productivity and better income distribution, but quite importantly, an action towards fostering higher autonomous citizens who will be able to decide more intelligently on the alternative lifestyle they could have (Comim, 2007: 96). In all, as the Task Force on Higher Education and Society (2002) observed, “Higher education is no longer a luxury; it is essential for survival. Higher education is the modern world’s ‘basic education.’” In short, there are both economic and non-economic incentives for expansion of higher education. Accordingly, many developing countries have been experiencing fast expansion of their higher education system and are fast entering a stage of massification. But much of the expansion in higher education is taking place in the private sector in most developing countries, while historically such an expansion took place in advanced countries in public sector and mainly through public efforts; there has been a virtual halt in the growth of public higher education, reducing the relative size of the public sector to a negligible level (Tilak, 2013: 41).

¹ See Theodore W. Schultz (1961) for an elaborate discussion on the fundamental aspects human capital theory.

Similar to the global trends, the higher education sector in India has seen a massive expansion during the seven decades following independence and particularly in the recent decades from early 1990s. There were only 0.26 million students in higher education enrolled in 750 colleges and 30 universities in India in 1950-51. This has increased to about 34.6 million students in 39,071 colleges and 11,923 ‘standalone institutions’ in 2015-16 (MHRD 2016). The gross enrolment ratio² (GER) in higher education, as estimated by the MHRD based on data collected from institutions of higher education through the *All-India Survey of Higher Education*, has gone up almost sixty times – 0.4 per cent in 1950-51 to 25 per cent in 2016-17 (UGC, 2015; MHRD 2017). With this, India has grown into one of the largest systems of higher education in the world; it is the second largest after China.

While the expansion of higher education sector has helped the country to reach a stage of massification (which is to be celebrated), it is equally important to analyse and identify the winners and losers in the process of expansion. Did the expansion of the system lead to the widening of access to higher education among under-represented groups and regions or has it widened inequalities? A major concern that is highlighted often in the studies and policy debates include unequal access to and participation in higher education among different socioeconomic groups of population. There are visible disparities between regions, widening inequalities between poor and non-poor and between social groups; and this is viewed as a growing social concern. The groups that lag behind include women, scheduled castes, scheduled tribes, ‘other’ backward classes, Muslim, and the poor from all groups, particularly from rural areas (Thorat, 2016: 33). The enrolment rates of these groups continue to be low, compared with their counter parts. For example, in 2016-17, as against the overall gross enrolment ratio 25 per cent, it is 21 per cent for scheduled castes and 15.4 for scheduled tribes. Similarly, the gross enrolment ratio is 26 per cent among men and 24.5 among women, showing, of course, no big difference between men and women. Between different states/union territories, the ratio ranges from 5.5 per cent in Daman & Diu and 56.1 per cent in Chandigarh; among the major states it

² Gross enrolment ratio in higher education is the ratio of students enrolled in higher education to total population in 18-23 age group. The enrolment ratio is called ‘gross’ as it does not adjust for students for age-group; it considers all students irrespective of age group in the numerator, while the denominator includes only population of the age-group 18-23. This is considered the most standard and widely used indicator of development of higher education.

varies between 14.4 per cent in Bihar and 46.9 per cent in Tamil Nadu (MHRD 2017).³

Like in many other developing countries of the world, higher education sector in India was accompanied by fast growth of the private higher education institutions, particularly during the last quarter century (Tilak 2009). Also, within the private sector, it is the “for-profit” higher education segment (which is largely market-driven) is growing fast and the philanthropy and charity based private higher education seems to be disappearing (Tilak, 2006; 2013; Varghese, 2015). The contribution of private sector in higher education has raised equity, quality and efficiency concerns, equity concerns being very serious, as students from lower income families hardly access these institutions as these institutions charge exorbitant levels tuition and other fees. Further, students from poor families face greater difficulty in accessing limited seats available in elite public institutions, such as the Indian Institutes of Technology, National Institutes of Technology, Indian Institutes of Management, etc., due to tough entry level all-India competition⁴. The representation of students in elite public higher education institutions is largely confined to economically well-off families. The rising income inequality⁵ has increased the challenges to access higher education (specifically quality higher education) in India for the students from poor households and as a result, they are persistently under-represented in institutions of higher learning.

In this context, this paper has been an attempt to unravel some specific inter-related dimensions of inequality in participation in higher education by economic status of the households. The importance of examining the linkages between economic status and participation in higher education also lies with the fact that a substantial proportion of the increase in economic inequality is linked with the increase in the returns to education and low level of intergenerational mobility. More

³ The state-wise statistics on gross enrolment ratio in higher education in 2015-16 and 2016-17 are given in Tables A1 and A2 in the Appendix.

⁴ The public higher education institutions in India follow certain affirmative action policies to admit students from some social groups such as scheduled castes, scheduled tribes, and other backward class. However, there is hardly any such policy for admitting the students based on their economic status.

⁵ The findings of the *World Inequality Report 2018* (as reported in *The Hindu*, 14 December, 2017) reveals that the income share of India’s top 1 per cent rose from approximately 6 per cent in 1982-1983 to around 23 per cent by 2014 and that of the top 10 per cent increased from 10 per cent to 56 per cent during this period.

clearly, a vicious circle is clear: the barriers to access to higher education among low-income students widen the income inequality, which in turn widens the inequality in access to higher education. Given these facts, it is important to examine how far students from poor households are able to access higher education in India. We look at the problem of unequal access to higher education by gender and region (rural-urban) in the backdrop of economic inequalities. Inequality in higher education is examined in terms of gross enrolment ratio⁶, gross attendance ratio⁷ (GAR) and higher education attainment (HEA).⁸

Examining issues relating to unequal access to higher education in India, many scholars (e.g., Chanana, 1993, 2016; Dhesi 2000; Sundaram, 2006; Hasan and Mehta, 2006; Raju, 2008; Salim 2008; Srivastava and Sinha, 2008; Sinha and Srivastava, 2008; Azam and Blom 2009; Ghuman, Singh and Brar 2009; Sundaram 2009; Chakrabarti 2009; Basant and Sen, 2010, 2014; Srinivasan 2010; Khan and Sabharwal, 2012; Tilak 2015; Thorat, 2016; Wankhede, 2016) have analysed the variations in participation and attendance in higher education across different social groups (caste and religion), gender, location of the households. These and several other studies have found that enrolment ratio significantly varies between boys and girls, and gender is an important factor in determining the access to higher education. There has been a phenomenal growth in the number of female students enrolled in higher education in India since independence. Currently women constitute 47 per cent of total enrolments in higher education in 2016-17 (MHRD 2017). But gender inequality persists in rural areas, among scheduled and non-scheduled population, and even among the poor and even rich families. This received attention of some scholars in recent years, who have studied gender inequality in higher education across social groups, location of the household, discipline of study, type of institution etc. (e.g., Rao 2007; Raju 2008; Srivastava and Sinha 2008; Salim 2008; Ghuman, and Singh

⁶ Gross enrolment ratio in higher education is the ratio of students *enrolled* in higher education to total population in 18-23 age groups.

⁷ Gross attendance ratio in higher education is the ratio of students *attending* higher education to total population in 18-23 age group. Similar to gross enrolment ratio, the numerator (number of students attending) does not make any adjustment for age group. As explained later, NSSO provides data on attendance rate, not on enrolment ratios; but the scholars who used NSSO database, use these two terms synonymously, of course, not very inappropriately.

⁸ HEA is defined as percentage of higher educated population in the total adult (normally 15+ age group) population.

and Brar 2009). The participation in higher education (measured in terms of gross enrolment ratio) of women in urban areas is four times higher than those in rural areas. Women in rural areas have remained doubly deprived; being women and living in rural areas (Raju 2008). The status of women belonging to different disadvantaged social groups such as scheduled castes and scheduled tribes in higher education appeared to be worse than that of those belonging to forward castes. For example, the gross enrolment ratio for scheduled tribe women is 12.9 per cent, as compared to the overall gross enrolment ratio among women of 23.5 per cent (MHRD 2016). Similarly, the participation of Muslim females in higher education was six per cent as compared to nine per cent for Hindu females, 13 per cent for Sikh females and 16 per cent for Christian females in 2005 (Thorat 2008; Srivastava and Sinha 2008).

As caste is a very important phenomenon in India, many studies have focused their attention on inequalities in higher education between by social groups – caste and religion (Chanana 1993; Kaul 1993; Hasan and Mehta 2006; Rao 2006; Dubey 2008; Srivastava and Sinha 2008; Thorat 2008; Sundaram 2009; Biswas *et al* 2010; Basant and Sen 2010, 2014). As many of these studies found, the participation of two disadvantaged caste groups namely scheduled castes and scheduled tribes in higher education have improved over time, but in absolute terms, the rates were only about half of the participation of non-scheduled population in 2004. The ‘other’ backward classes have higher participation rates than scheduled castes and scheduled tribes, but lower than that of general category students (Azam and Blom 2009). The study by Basant and Sen (2014) also using NSSO data concludes that Hindu upper castes have higher probability of participation in higher education and Muslims and ‘other’ backward classes have lowest chances. The study by Hasan and Mehta (2006) shows that enrolment ratio in higher education among scheduled castes and scheduled tribes in urban areas are slightly above their respective shares in total population, but it is not so in case of rural areas. After controlling for completion rate in higher secondary education, economic status is found to be a better predictor of college attendance than social identity in urban India, while for rural areas the group identity does matter. Wankhede (2016) has argued that the social backwardness of these groups results into social sufferings and economic exploitation with high degree of dependence on upper castes, which further leads toward educational backwardness. The discipline-wise distribution of students from different social groups reveals a few

important aspects. Apart from overall rates of participation, we note significant differences in the enrolment of students by discipline of study. Ghuman, Singh and Brar (2009) found, based on a primary survey in rural Punjab found that as high as three-fourth of total students from rural background studying in different professional education programmes belonged to forward castes, leaving only one-fourth of total space for the socially disadvantaged sections of the society. Differences exist in the enrolment of students by different religious groups such as Hinduism, Islam, Christianity, Sikhism, Jainism etc. The highest enrolment is among students belonging to Hindu religion followed by Christian, Sikh and Jain. Students of Muslim religion are least represented. Nivedita Sarkar (2016) also analysed, based on NSS data, similar differences in women's participation in higher education across disciplines.

Access to higher education differs considerably between the students residing in rural and urban areas. Regional – rural-urban disparities in higher education arise due to natural clustering of institutions of higher education in and around metropolitan and urban areas (Sinha, 2008; Agarwal, 2009). Students from rural areas do not have many options to choose, which affects their participation in higher education. On the other hand, people from urban areas are having a moderate access to a variety of educational institutions and hence, they seem to be able to access education according to their choice. Furthermore, it is not only the availability of opportunity that matters to participate in higher education, a number of socio-economic factors of the households are also important. The rate of participation of people in urban areas in higher education is three times higher than that of the rural population in 2004-05 (Raju 2008). Though the enrolments in rural areas increased faster than enrolments in urban areas during the last two decades, the students from rural areas still form only 30 per cent of the total enrolments in higher education in India (Azam and Blom 2009). Describing socio-economic profile of the students entering into higher education, Hasan and Mehta (2006) based on 55th round of National Sample Survey, reported that out of the total students enrolled in colleges, as high as 63 per cent were from urban areas and the rest 37 per cent are from rural areas. Using 50th, 55th and 61st rounds of National Sample Survey data, Dubey (2008) has shown that the probability enrolment in higher education was lower by three per cent for women in rural areas and 0.3 per cent lower for women in urban compared to men.

Besides examining the disparities in access to higher education by gender, social groups (caste and religion), and location, a few studies (e.g., Salim 2008; Raju, 2008; Basant and Sen 2010; and Srinivasan 2010; Khan and Sabharwal, 2012; Borooah, 2016) have examined the unequal access to higher education by some other important socio-economic and institutional characteristics such as occupation of the parents, economic status of the households, educational level of the parents, household size, type of institutions etc. However, survey of literature points out that although a few studies have mentioned that economic status of the household is a major barrier to access higher education, academic interest to examine it in detail has been relatively limited.

Among the recent studies, Basant and Sen (2014), Tilak (2015), Thorat (2016), Wankhede (2016), Borooah (2018), Deshpande (2018), Kundu (2018), Sinha (2018), Thorat and Khan (2018) have examined several dimensions of inequalities in higher education (gender, caste, religion, region) and concluded that inequalities between the rich and the poor are the highest and moreover they are increasing even with the expansion of higher education sector in India.

Tilak (2015) has examined the growth and inequalities in higher education in India using data from several NSS rounds between 1983 and 2009–10. The study was primarily concerned with inequalities in higher education by gender, by social groups—caste and religion, by region—rural and urban and by economic groups of population classified by monthly per capita household consumption expenditure. Considering important indicators on higher education, such as the gross enrolment ratio, transition rate, and higher education attainment, Tilak examines whether inequalities in higher education have increased or declined overtime. The study also throws light on the groups that have improved most over the years in their higher education status and on the decline or increase of inequalities between groups. Tilak reports that gender inequalities in higher education have been reduced substantially; there was good improvement in inequalities between scheduled and non-scheduled population; but rural-urban inequalities are high and have not diminished much; and inequalities between the rich and the poor are highly striking, and they have widened over the years.

Hence it may be in order to focus on inequalities between the rich and the poor in their access to higher education. Tilak (2015), like many others, has, however, not

examined inequalities between sub-groups of population like between women among scheduled castes versus men among scheduled castes or between women among scheduled castes versus women among other groups. By considering various groups with reference to economic class, the present study attempts at deepening the understanding of the inequalities in participation in higher education in India. It aims to examine the heterogeneity in access to higher education by gender, social groups (caste and religion) and location of the household (rural/urban), considering economic class as the reference point. The relationship between economic status of the household and their attendance in higher education is analyzed by gender, social groups, and location of the household (rural/urban). In this study monthly per capita consumption expenditure of the household is used as proxy for their economic status. We note that in a few other studies (e.g., Dreze and Kingdon 1999; Duraisamy 2001; Nagarajan and Madheswaran 2001; Tilak and Sudarshan 2001; Chakraborty 2006; Srinivasan 2010), the economic condition of the households is measured not just in terms of family income; rather they take into consideration a number of other factors like the ownership of land, assets of the family, type of house the households live in (pucca or kuchha) etc. Average monthly per capita consumption expenditure of the households, data on which are regularly collected and provided by NSSO,⁹ are extensively used by researchers as well as policy makers while measuring the economic status of households.

Further, the study examines the variations in the household expenditure on higher education by socio-economic groups. It is argued that the quality of higher education accessed by the students of poor and non-poor households varies substantially and this is largely due to the differences in their spending on higher education. Even if some poor households send their wards to higher education, they spend significantly less on it, as compared to the non-poor households, which might affect quality, continuation, and performance of students in the studies. Similarly, literature on household spending on higher education also reports existence of gender bias in the household expenditure on higher education, more prominently among poor families. The present study uses disaggregated individual-specific observations available in the latest two education rounds database of the National Sample Survey

⁹ NSSO does not collect data on household or individual income.

Organization (NSSO) -- the 71st (January-June 2014¹⁰) and 64th (July 2007 – June 2008) rounds. Inequality in access to higher education by social and religious groups is equally important to examine but we do not look at those in detail though some references are made in the discussion. After all, it may be safely assumed that the lower quintiles include majority of the students belonging to scheduled caste and scheduled tribe students. Thus inequality in attending higher education and family expenditure on higher education by economic status of the household¹¹ is analysed here by gender, social groups, location of the household (rural/urban) and institution type.

The following section briefly discusses the data set used for the analysis. It also spells out the method used for the analysis. The inequality in access to higher education --measured in terms of the gross attendance ratio, and higher education attainment that is percentage of higher educated people in the total population -- by economic status of the households in India is analysed in detail in the subsequent sections. Taking economic status as cross-cutting reference for all dimensions, gender and rural-urban differences are analysed. The last section provides a summary of the major findings of the study along with some important policy implications.

Note on Data and Method

This paper uses the disaggregated individual specific unit level data available in the latest two education rounds the National Sample Survey Organization (NSSO) -- the 71st round conducted in January-June 2014, and the 64th round conducted in July 2007 – June 2008. The 64th round (*Participation and Expenditure in Education*) covers a sample of 1, 00,581 households (63,318 rural households and 37,263 urban households). The 71st round (*Education in India*) includes a sample of 65,926 households (36,479 rural households and 29,447 urban households) from all over India. Unlike the more ‘general’ or ‘normal’ rounds, the focus of these two rounds of data was to collect information on three important issues related to

¹⁰ We refer this to as 2013-14, as the survey conducted during January to June 2014 covers a major part of the academic year 2013-14.

¹¹ The economic status of the household is measured in terms of the quintiles based on the average monthly per capita consumption expenditure (MPCE) of the households. The first quintile includes bottom 20 per cent of the population, the second quintile includes 21-40 per cent of the population and so on. Quintile one is the poorest group, while quintile 5 covering 81-100 per cent of the population is the richest group.

education, in addition to many other household level characteristics in detail: (a) participation years in education, (b) family expenditure, often referred to as private expenditure, incurred by households on education, (c) incentives provided by the government and (d) the extent of educational wastage in terms of dropout and discontinuation along with causes of the same. The surveys also give information on number of adults who have acquired higher education (or completed level of higher education).

In this study, we have used the original unit level data, rather than confining to the published tables brought out by the NSSO in its reports. The availability of unit level data has allowed us to carry out the analysis in depth at a disaggregated level. Further, the NSSO data used for the study helps us to analyse by economic classes. Note that the data available from Ministry of Human Resource Development, Government of India, the University Grants Commission, and other government organisations, do not give us this information. Also, the National Sample Survey (NSS) data are considered better not only because they are highly reliable, but also in scope and detail than others, as they provide household level information on several parameters that help us to examine in depth some of the issues relating to inequality in participation in higher education. Inequalities in participation in higher education are analysed here using gross attendance ratio. While gross enrolment ratio is used more commonly to measure the participation, the NSSO survey, because of its household approach, considers current attendance. We believe that the gross attendance ratio is better than gross enrolment ratio, due to likely differences between enrolment and attendance. As no data are available on differences between enrolment and attendance, many scholars that we mentioned above have used gross attendance ratio to be synonymous with gross enrolment ratio. Higher education here includes graduation and higher levels of education. Diploma courses after graduation are included in higher education, but diploma courses after higher secondary level (but below degree level) are not considered.

The analysis covers three major dimensions: First, inequalities in access to higher education (measured in terms of the gross enrolment ratio and gross attendance ratio) and higher education attainment are analysed. The trend and pattern of attendance in higher education by different socio-economic and institutional factors

(gender, caste, location of the household, and type of institution) are discussed using descriptive statistics. In all the cases economic status of the household is taken as cross-cutting core category. Second, inequalities in household spending on higher education are analysed. The variations in the household spending on higher education are shown by gender, location (rural-urban), and type of institution for each consumption expenditure quintile. Third, using the unit level data of 2013-14, the predicted probabilities of attending higher education is analysed for persons aged 18-23 years using logit model. The dependent variable for the logit estimation is a dummy variable and takes value 1 for the persons who are in the age group of 18-23 and are currently attending higher education and, 0, if they (of the age group 18-23) are currently not attending higher education. The analysis considers gender, location of the household (rural/urban), social groups (caste and religion), income quintile and household size as explanatory variables. To examine the heterogeneity in the predicted probabilities of attending higher education, the statistical analysis is separately made by gender, location of the household and quintiles. However, as the NSS data are based on sample surveys and observations become fewer as one moves to smaller and smaller sub-groups, some of the results given here need to be interpreted with caution.

Trends and Pattern in Participation in Higher Education in India

Gross Enrolment Ratio

First, as per official statistics, the gross enrolment ratio in higher education in India is 24.5 per cent in 2015-16 (MHRD 2016). However it varies widely between states, gender and social category. In some of the states/union territories such as Chandigarh, Delhi, Kerala, Puducherry, Tamil Nadu, and Telangana, the gross enrolment ratio is higher than the national average while the corresponding ratio is below the national average in Bihar, Chhattisgarh, Jharkhand, and Odisha. Among the major states Bihar figures at the bottom with 14.3 per cent gross enrolment ratio while Tamil Nadu comes at the top with the gross enrolment ratio of 44.3 per cent (see Table A1, in appendix¹²). Table 1 shows that economically better-off states (with Net State Domestic Product per capita higher than national average) have achieved high gross enrolment ratio (higher than national average), while poor states (with low NSDP per

¹² Tables and figures are given in the end of the paper.

capita) are with the low gross enrolment ratio in higher education, with very few exceptions. This clearly reveals the positive relationship between economic conditions and participation in higher education in India at macro level.

The gross enrolment ratio for men in higher education is 25.4 per cent, while it is 23.5 for women in India in 2015-16 (Table A1), showing no significant difference. But in the states like Uttar Pradesh, Haryana, Himachal Pradesh, Jammu & Kashmir, and Punjab the participation rate of women is higher than that of men. Similarly, there are also variations in gross enrolment ratio in higher education by social categories. The representation of scheduled castes and scheduled tribes in higher education is quite low, as compared to ratio for all. The gross enrolment ratio among scheduled castes is 19.9 per cent and that among scheduled tribes is 14.2 per cent, while the average of all is 24.5 per cent in 2015-16. Female students belonging scheduled tribes are associated with the lowest gross enrolment ratio, which is 12.9 per cent (Table A1).

Based on NSSO data, estimates on gross enrolment ratio in higher education during the period 1983-84 to 2009-10 by gender, region, social groups (caste and religion) and household expenditure quintiles are presented in Table 2. While only 7.6 per cent of the 18–23 age group population attended higher education in 1983–84, in 2009-10, 23.1 per cent attended, i.e., in about 26 years, the ratio increased by three times. The gross enrolment ratio among men increased from 10.9 per cent in 1983–84 to 27 per cent in 2009–10: it increased by 2.5 times in about two decades and a half. In contrast, only 19 per cent of the female in the relevant age group were enrolled in higher education in 2009–10. But what is strikingly clear is: there has been a rapid progress in the enrolment ratio among women, compared to men. The gross enrolment ratio among women increased by more than four times. As a result, gender inequalities in gross enrolment ratio have come down very significantly during this period, indicating strong trends towards convergence. This may be due to different policies brought out by the Government of India to provide girls better access to education both in school and higher education level.

The enrolment ratios of scheduled castes and tribes have consistently been very much below those of non-scheduled population or the total population on average. But both scheduled castes and scheduled tribes have made significant advancement in participation in higher education, as the enrolment ratios of the

respective population groups increased by four to five times in about two decades and a half between 1983–84 and 2009–10. The growth was relatively faster in case of scheduled tribes, though in absolute terms their enrolment ratio is less than that of the scheduled castes; and as a result, the differences between scheduled castes and scheduled tribes have come down; and also the differences between the scheduled population and non-scheduled population declined. However, it must be added that: (a) the enrolment ratios among both the scheduled castes and scheduled tribes are low and (b) still significant inequalities persist between scheduled and non-scheduled population groups. The enrolment ratio in 2009–10 was nearly 12 per cent among the scheduled tribes and 15 per cent among the scheduled castes, compared to 23 per cent for all (Table 2).

Inequalities in gross enrolment ratio between various religious groups are much higher. Estimates on gross enrolment ratio are available for Hindus, Muslims, Christians and ‘others’. The enrolment ratio is the highest among the Christians and the least among the Muslims (Table 2). This is the same situation consistently throughout the period between 1983–84 and 2009–10. Enrolment ratio among Muslims was only 14 per cent in 2009–10, while it was 24.2 per cent among Hindus and 37 per cent among Christians. The enrolment ratio among ‘Others’ that includes Jains, Sikhs, etc., is also high — 28 per cent in 2009–10. While there has been improvement in case of all the four groups between 1983–84 and 2009–10, the inter-group inequalities by religion did not decline much. In fact, the gap seemed to have widened.

In contrast to inequalities by gender, caste and religion, rural–urban disparities seem to be very high in the enrolment ratios. While 39 per cent of the relevant age group population in urban areas attended colleges/universities in 2009–10, it is only 16.5 per cent population who attended in rural areas. The ratio in urban areas was nearly 4.5 times higher than the ratio in rural areas in 1983. In 2009–10, this came down to 2.3 times, suggesting narrowing down of rural–urban disparities.

Among the expenditure groups, the gross enrolment ratios are the lowest among the bottom (poorest) quintile and highest among the top (richest) quintile. One finds a very systematic pattern of increasing enrolment ratios by every increase in the expenditure level of the households, with no single exception. In other words, the enrolment ratio among the second quintile (from bottom) has been higher than the

bottom quintile; the ratio among the third (middle) quintile is consistently higher than the ratio among the second quintile; and so on. The population belonging to the top income quintile has the highest ratio. This pattern did not change at any point of time that we studied between 1993–94 and 2009–10. More importantly, inequalities in enrolment ratios between the poorest and the richest quintiles have increased over the years, as the enrolment ratio among the poorest quintile declined between 1993–94 and 2004–05, while the same has increased in case of all other quintiles, and at a disproportionate rate in case of the richest quintile. The ratio in case of the richest group increased from 26 per cent in 1993–94 to 37 per cent by 2004–05, while the ratio for the poorest declined from a bare 2 per cent to 1.8 per cent during this period.

Gross Attendance Ratio: 2007-08 and 2013-14

Now, based on the 64th and 71st rounds of NSS, we examine gross attendance ratio and inequality in the same between different groups. Table 3 presents the estimates of the same, namely, the gross attendance ratio (age group 18-23) in higher education by gender, location and type of institutions and by expenditure quintiles in 2007-08 and 2013-14. In 2007-08, the gross attendance ratio in higher education in India was 12.5 per cent which has gone up to 24 per cent in 2013-14.

We note a very systematic pattern in the attendance ratios by expenditure quintiles: the ratios increase systematically by increasing economic status of the households, with no exception. Not only the richest quintile is at the top and the poorest quintile at the bottom in attendance ratios, the ratio of any quintile is higher than the ratio of the preceding (lower) quintile. This is true both in 2007-08 and 2009-10 (Figure 1). Gross attendance ratio in higher education by economic status of the households shows wide and increasing inequality between 2007-08 and 2013-14. In 2007-08, the difference in the gross attendance ratio between poorest and richest families is 29.5 per cent points and this gap has gone up to 43.5 per cent points in 2013-14 (Table 3). Between 2007-08 and 2013-14, the gross attendance ratio for the poorest families has increased by 5.3 per cent (2.9 per cent to 8.2 per cent) while for the richest households it has gone up by 19.3 per cent (32.3 per cent to 51.6 per cent). This shows that the inequality in access to higher education has increased

substantially by household's economic status in the last seven years, corroborating the findings of Tilak (2015) for earlier years.

Pattern of gender inequality in access to higher education by economic status of the households provides some interesting aspects. In both the years, 2007-08 and 2013-14, the gross attendance ratio in higher education among men is higher than among women. The difference in the ratio between men and women was 2.7 per cent points in 2007-08 which has marginally increased to three per cent points in 2013-14. The inequality between the poorest and the richest households has increased alarmingly both among men and women: the difference in the ratio among men increased from 27.8 per cent points in 2007-08 to 42.5 per cent points in 2013-14. Such a difference among women has gone up from 31.5 per cent points to 44.5 per cent points during the same period. It shows that the inequality in attending higher education between poor and rich households is very high, and it has increased during the last seven years in case of both men and women. The inequality and the increase in inequality – both are higher among women than among men. Further, gender inequality in the attendance ratio also varies by location of the households (rural/urban) and it is more so when the household's economic status is taken into consideration. For example, in both 2007-08 and 2013-14, the gross attendance ratio among women belonging to urban areas is higher than that among men. However, the attendance ratio is higher among men compared to women in rural areas though the difference between them has come down from 5.3 per cent points in 2007-08 to 4.3 per cent points in 2013-14.

Rural-urban¹³ inequalities in higher education are generally found to be very high. We note from Table 3 existence of significant levels of rural-urban disparity in gross attendance ratio in higher education in 2007-08 and 2013-14 as well. In urban areas 23 per cent of the relevant age group population attended higher education institutions, compared to 8.2 per cent in rural areas in 2007-08; the respective ratios increased to 35 percent and 19 per cent in 2013-14. The difference between rural and urban areas which was 14.7 per cent points in 2007-08 has increased marginally to 16 per cent points by 2013-14. Comparisons in the rural-urban variations in the gross

¹³ NSSO uses the location of the household, not location of educational institution, as the base to classify the sample into rural or urban. Therefore, in the entire analysis here the regional (rural-urban) classification is done according to the location of the households and not on the basis of the location of the higher education institutions attended by the students.

attendance ratio by economic status of the households highlight some more interesting aspects worth-noting. As one can expect, the gross attendance ratio in urban areas is higher than that in rural areas for all expenditure quintiles in both 2007-08 and 2013-14. The only exception is the third quintile in 2013-14. Interestingly, the extent of rural-urban disparity in access to higher education is found to be highest for the richest households and it is true in 2007-08 and 2013-14 as well. The rural-urban difference in the gross attendance ratio in the top quintile was 14.7 per cent points in 2007-8 and 11 per cent points in 2013-14. We do not find much disparity between rural and urban among the poorest – the bottom quintile. The attendance ratio in the bottom quintile in 2013-14 was 7.9 per cent in rural areas and 10.1 in urban areas. The rural-urban difference was 1.1 per cent points in favour of the urban population in 2007-08, which increased to 2.2 per cent points (Table 3). In case of both quintiles, the gross attendance ratio in urban areas is 25 to 29 per cent higher than that in rural areas. This shows that rural-urban disparities in access to higher education have widened between 2007-08 and 2013-14 and it is more so among rich households: inequalities between the richest and the poorest increased less in rural areas, and we note a high degree of increase in urban areas.

The attendance in higher education also varies by type of institution. The higher education institutions are classified into three broad categories in the NSSO data – government, private-aided, which we refer to as ‘government-aided private’, and private unaided, which can be referred to simply as ‘private’. Since government aided private institutions are generally found to be well funded by the government and also they follow government rules and regulations, often these two categories are clubbed in the literature into one category under the label of ‘government’. Besides analysing separately we also combine here these two and present attendance rates in higher education for all categories in Table 3 and later in Table 9. There is a significant difference in the gross attendance ratio in higher education between private and government higher education institutions in India in 2013-14. The gross attendance ratio in higher education for private institutions is 7.7 per cent while it is 16.2 per cent for government institutions. These figures are 2.6 per cent and 9.8 per cent respectively in 2007-08. Interestingly, while a higher proportion of students in all quintiles attends private institutions than government (including government-aided) institutions, attendance rate in private higher education institutions for the richest

households is ten times higher than the poorest households; it is only five times higher in government institutions in 2013-14. More or less similar trend is also visible in 2007-08. It is clear that private higher education is accessible more to rich households than the poor, partly reflecting the differences in costs of education (particularly tuition and other fees) between these two types of institutions. Private institutions not only charge higher levels of fees and other charges than government institutions, students in private institutions might incur higher levels of out of pocket expenses than those in the government institutions, as we see later. Also, a larger proportion of the poor attend government institutions, due to the reservation policies adopted in the government, and not in private higher education institutions.

Comparing across groups, we find the following order in access to higher education in the bottom and the top expenditure quintiles. The order given in Table 4 is based on ratios in 2013-14. The order and the figures in Table 4 highlight a few important aspects. In the bottom quintile, rural women are at the bottom in their participation in higher education; and in contrast, urban women fare much better, better than even urban males. This holds true in 2013-14 as well as in 2007-08. But the order with respect to other groups changes between 2007-08 and 2013-14. In 2007-08 urban males in the bottom expenditure quintile were at the top. In the richest quintile, men fare better than women in all groups, marking a big change between the two time periods in gender inequalities in the bottom quintile.

Interestingly, all the seven lowest (in order) estimates of gross attendance ratio in higher education listed in the table belongs to the poorest households that shows that economic status of the household is a major barrier in accessing higher education in India for all – men or women, rural or urban. The attendance ratio is the lowest in 2007-08 and 2013-14 in case of women who belong to the poorest households living in rural areas; they have multiple disadvantages of being women, poor and rural.

We sum up in Table 5, the extent of inequalities between different groups and the improvement or deterioration between 2007-08 and 2013-14 that has taken place. It can be easily noted that inequality between men and women in attendance in higher education is very low, while rural urban inequalities are high. Inequalities in access to government versus private schools are higher; but the highest degree of inequalities exist between the richest and poorest sections of the population. Despite some

improvement, the attendance ratio among the richest expenditure quintile is still above 6 times higher than the ratio among the bottom quintile.

For many students from disadvantaged socioeconomic backgrounds, the challenge is not getting into college, but getting out with a degree (Conlin et al, 2007). There exists persistent gap between the college attendance and graduation rates or rates of completion of higher education, and this gap is higher particularly for the students of low income families in India. Graduation or completion is a more serious issue for the students of the poor households attending higher education, than others, as their opportunity cost of attending colleges is higher than that of the students belonging to well-off families. Completion or graduation rates are normally calculated as a proportion of students enrolled at the beginning of the given course who successfully complete it within the stipulated/recommended years of the course, for example, completing B.Tech. course within four years. But the available data do not allow us to estimate completion or graduation rates. Instead we can look at higher education attainment -- percentage of adult population with higher education in the total population.

Higher Education Attainment

While attendance ratio is a flow variable, and since all those who attend higher education do not necessarily complete higher education – some may dropout, some may not succeed in the final examination, or there can be fallouts for other reasons, including mortality, this is not considered a highly reliable variable on the level of education development, though it is extensively used due to relatively easy availability of data on this. A better variable is ‘higher education attainment’, defined as percentage of higher educated population to the total population’. This is a stock variable that reflects cumulative growth in human capital formation through higher education that has taken place over a period; and it is considered as reflecting better the level of educational development.

Inequality in access to higher education finally gets reflected in the educational levels of population. Accordingly, we find again high degree of inequality in higher education attainment across different groups. Table 6 shows the percentage of adult population, who have acquired higher education, by gender,

region and consumption quintiles. In the country as a whole, around 9 per cent of the total adult population have higher education in 2013-14, which marks a small increase in absolute terms from 6.3 per cent in 2007-08, but 45 per cent increase in relative terms. This ratio in both time periods varies widely with the economic status of the households. This percentage ranges from 2 percent for bottom consumption quintile to 25 percent for the top consumption quintile in 2013-14. These corresponding figures are 0.9 per cent and 20 per cent respectively in 2007-08. Among the poor the ratio more than doubled, while the ratio increased by 25 per cent in the richest quintile. All this marks somewhat impressive improvement in reducing the gap, though there is still huge gap between the top and the bottom quintiles. The 25 per cent higher education attainment among the richest quintile in India is comparable to average rates in some of the advanced countries of the world.

Gender inequalities are also wide in the higher education attainment both in 2007-08 and 2013-14. In 2013-14 around 11 per cent of male adult population have attained higher education, while only 7.2 per cent among women have the same. These figures are 8 and 5 per cent respectively in 2007-08, meaning significant improvement in case of both men and women, the latter performing relatively better. The gender differences by consumption quintiles reveal some interesting picture. Although improvements are seen for both the genders among the poorest households, the improvement is higher among women compared to men between 2007-08 and 2013-14. The percentage of women in the bottom quintile who have completed level of higher education was 0.35 per cent in 2007-08 which increased to around 1.2 per cent in 2013-14, registering an increase of 3.5 times. Of the total, around 16 and 21 per cent of women belonging to highest consumption quintile have attained higher education in 2007-08 and 2013-14 respectively; these figures are lower than those relating to men, which are 22 and 28 per cent respectively in 2007-08 and 2013-14. All this shows that the gender inequality in terms of higher education attainment has decreased among the poorest groups (quintile) but increased among the richest (top quintile).

As in case of enrolment or attendance ratios, rural-urban disparities are higher than gender inequalities in higher education attainment. In 2013, the higher education attainment among the urban population was 4.5 times higher than among the population in rural areas; inequality by gender, as we have just noted, was only 1.5

times in favour of men. The improvements made by the rural population, and thereby in improvement in inequality between rural and urban population between 2007-08 and 2013-14 are also very small, compared to the relative improvement achieved in gender inequality during the same period. While 2.8 per cent of the rural population had higher education in 2007-08, the rate increased to 4.6 per cent by 2013-14 and in case of urban population it increased from 15.3 per cent to 19.2 per cent during the same period.

The higher education attainment among the adult population of the lowest consumption quintile is 1.8 per cent in rural areas and the percentage of students completed higher education in rural areas and 3.2 per cent in urban areas. These figures were 0.8 per cent and 2.3 per cent respectively in 2007-08. Thus, the higher education attainment among the adult population belonging to high-income families in urban region is higher than that in rural regions for all the consumption quintiles. The higher education attainment also varies by gender in both rural and urban regions in both 2007-08 and 2013-14.

To briefly note, between the three groups, we note that gender inequalities are low, but they have marginally increased between 2007-08 and 2013-13; rural-urban inequalities are very high, and they marginally declined; and inequalities between the richest and the poorest strata declined; but they continue to be the highest among all the three groups. The top quintile has 13 times higher education attainment than the bottom quintile in 2013-14, while the corresponding ratios are 4.4 between urban and rural population and 1.7 between men and women. (Table 6).

We also look at the unequal distribution of higher educated population across different quintiles. As shown in Table 8, the higher educated population is very unevenly distributed. Higher educated among the poorest households constitute just about two per cent of the total educated in the country and the richest households have 74 per cent in 2007-08 and these figures are 3.7 per cent and 62 per cent respectively in 2013-14. However, the gap in the same between the bottom quintile and the top quintile has come down from 72 per cent to 58 per cent between 2007-08 and 2013-14. The narrowing of the gap is a welcome feature; nevertheless, it should be noted that among the poorest groups the educated are very few. Secondly, the decline in the gap is not because of any big improvement among the poor, but because of decline in

the rate among the rich. For these two reasons, the situation should be regarded as highly unsatisfactory, requiring attention of all concerned.

The gender variations in these rates by expenditure quintiles reveal that between 2007-08 and 2013-14, the difference between the highest quintile and bottom expenditure quintiles has come down by 12.4 per cent (from 67.9 per cent in 2007-08 to 55.5 per cent in 2013-14) while it has come down by 15.9 per cent (79.1 per cent in 2007-08 to 63.2 per cent in 2013-14) among women. The gap between the rich and the poor has reduced in case of women as compared to men in the last seven years. There are more women who have higher education in the top quintile than their male counterparts in 2007-08 and also in 2013-14. Highest expenditure quintile among women accounted for 80 per cent of the higher educated in 2007-08, which came down to 66 per cent in 2013-14, and in both years, these figures are higher than the corresponding rates for men (71 per cent and 60 per cent respectively in 2007-08 and 2009-10).

Again, the estimates in Table 8 reveal that there exists a significant rural-urban disparity in the distribution of higher educated population by expenditure quintile. The gap has narrowed down between the richest and the poorest households between 2007-08 and 2013-14 in both rural and urban regions. In 2007-08, the gap between these two quintiles was 38.5 per cent and 85.4 per cent for rural and urban households respectively, which declined to 22.4 per cent (rural) and 77.1 per cent (urban) in 2013-14. Of the total number of people who completed higher education in urban areas, merely one per cent belongs to the poorest households, while the corresponding estimate is about nine per cent in rural areas in 2013-14.

Household Expenditure on Higher Education by Quintiles

The above discussion of inequality in access to education reveals that the rate of participation in higher education varies widely with the socioeconomic characteristics of the households, particularly the economic status. This section examines inequality in educational expenditure by households by economic status. It is also argued that inequality in household expenditure can result to inequality in educational outcomes since those who are able to pay more can access better quality higher education. Therefore, it is quite important to look at the variations in the household expenditure on higher education, in addition to examining the inequality in accessing it. In early

1960s, public funding and philanthropic contributions for higher education were the major part of the resource to this sector in India and the contribution from private sources in terms of tuition fee and other payments from students were negligible (Tilak, 1983). With the introduction of new economic reform policies in the beginning of the 1990s, the trend shifted towards household funding of higher education, particularly households bearing a higher proportion of costs (Panchamukhi, 1990; Varghese, 2013). It is being increasingly realised that ignoring the importance of household expenditure on education proves costly for educational planning in the long run (Tilak 2000, 2002). It may be more the case in higher education; but there are very few studies on the subject and those few are in school education (Panchamukhi 1990; Tilak 2000, 2002). It is widely observed that the expenditure on education is positively related to the level of household income

We examine here the variations in household expenditure on higher education. Table 9 provides, in some detail, annual average expenditure on higher education by economic status of the households across different expenditure quintiles by gender, location and type of institution. At the very outset, we note that there is a significant increase in the annual household expenditure per student on higher education; it more than doubled from ₹14532 in 2007-08 to ₹30887 in 2013-14. High level of household expenditure on education represents high level of inequality in education; increasingly high levels of family expenditure suggest increasing trends in inequalities.

Evidently, the average expenditure is higher for each successive expenditure quintile in both years across all respondents; average total expenditure on higher education is the lowest for the poorest households and highest for the richest households. The extent of increase in the household expenditure on higher education between 2007-08 and 2013-14 is also highest among rich households (Rs. 27,376) and lowest for the poorest households (Rs. 6,176). Also, in both 2007-08 and 2013-14 the top quintile households (quintile 5) spends about 4.3 times higher on higher education as compared to the bottom quintile (quintile 1).

Looking at gender variations in the household spending on higher education by economic status of the households we note some interesting points. The expenditure is higher in case of male students than female students both in 2007-08 and 2013-14 as well. Furthermore, between 2007-08 and 2013-14, the expenditure of education on both men and women on higher education more than doubled between

2007-08 and 2013-14. (Table 9). Gender bias in favour of men in household spending on education has been documented in many studies conducted in different regions of India (Panchamukhi, 1990; Kingdon, 2005; Chaudhuri and Roy, 2006; Azam and Kingdon, 2013; Saha, 2013). In a recent study, Duraisamy and Duraisamy (2016) show that parents spend 11 percent more on the education of sons than daughters. Here we note that households spent nearly 10 per cent higher on men in 2007-08, which increased to 18 per cent in 2013-14. In other words the gap in the expenditure on higher education between expenditure on men and women increased over the years. More interestingly, it increases with the increase in the economic status of the households. However, the gap in expenditure on men between the top and the bottom quintile groups has remained more or less at 3 times in favour of the richest group; but in case of women it came down from 3.4 times to 2.6 times.

The rural-urban differences in household expenditure on different levels of education are highlighted by many scholars (e.g., Panchamukhi, 1990; Tilak, 2000). Annual average household expenditure on higher education by location of the households reveal that urban households spend more on higher education than their rural counterparts and this holds true for both time periods under study. This is understood. Similar findings were reported in a recent study by Duraisamy and Duraisamy (2016). In 2013-14, urban households have spent 1.93 times higher on higher education while this figure was 1.73 in 2007-08. This reveals that rural-urban gap in the household expenditure on higher education has increased between 2007-08 and 2013-14. The annual average household expenditure on higher education in rural areas has gone up from ₹10,420 to ₹21,728 (2.1 times) while in urban areas it increased from ₹18,071 to ₹41,979 (2.3 times) in this period.

In 2007-08, the average expenditure varied widely between the lowest to the highest quintile classes in both rural and urban areas. The differences in the average expenditure on higher education between top and bottom quintiles were 4.2 times in rural areas (₹4,343 to ₹18,488) and 2.5 times in urban areas (₹8,632 to ₹21,300). This shows that the inequality in household expenditure on higher education by economic status of the households is higher in rural areas than in urban areas in 2007-08. But in 2013-14, we note a change in the pattern: difference in the household expenditure on higher education between richest and poorest households is higher in urban areas than in rural areas. The richest households in rural and urban areas have spent 3.8 times in

2007-08 and 4.1 times higher than the poorest households on higher education in 2013-14, showing that between 2007-08 and 2013-14, the variations in household expenditure on higher education between rich and poor households have decreased in the rural areas whereas it increased in the urban areas.

The estimates for both 2007-08 and 2013-14 show, in cofirmity with widely known facts, that the average household expenditure on higher education is highest for the students attending private-unaided institutions and lowest for the government institutions. In 2007-08, the annual average household expenditure for the students attending private-unaided higher education institutions is Rs. 27,971 while it is Rs. 8,552 for the students who are attending government institutions. These figures are Rs. 52, 245 and Rs. 15,000 respectively in 2013-14, meaning a doubling of expenditures in both types of institutions during this period. In 2007-08, students attending private-unaided higher education institutions have spent 3.2 times higher as compared to the students attending government institutions while this was 3.5 times higher in 2013-14. This means that the difference in the household expenditure by type of institution has marginally increased between 2007-08 and 2013-14 which is largely due to the increasing costs of education in government aided private and private-unaided higher education institutions. This is quite apparent because the course fees charged in the private-unaided institutions is considerably higher than the government institutions. However, in both government and private institutions, the costs of higher education are increasing rapidly; and in the private institutions to unaffordable levels for a vast majority of the poor.

We note that in 2007-08 and also in 2013-14, the average household expenditure on higher education increases with the increase in the economic status of the households (successively quintile 1 to 5 for students attending different type of institutions), with the exception in private-aided institutions in 2007-08 where the bottom quintile population spent little higher than the second quintile. This variation was observed to be larger for those attending private higher education institutions (both aided and unaided) as compared to government institutions. In 2007-08, the difference in the expenditure between poorest and richest households was found to be highest for private (unaided) institutions (4.3 times) followed by government-aided private (3.9 times) and government institutions (2.9 times). In 2013-14, the corresponding figures are higher: by 4.4 times, 3.4 times and 2.9 times respectively.

In absolute terms, the household expenditure on higher education increases with the increase in the income level, and this is true across all socio-economic categories of students – men and women, rural and urban, attending government or private institutions.

It is obvious that bottom quintiles spend high proportions of their incomes (or total household expenditure on all items, as measure here) on higher education than non-poor and rich groups. The proportion ranged from 30 per cent among the poorest to 16 per cent among the richest in 2007-08. In 2013-14 the corresponding proportions were 27 and 20 per cent. Table 10 gives further details by rural-urban and male-female categories. As shown in Figure 6, there is a clear and consistent pattern: the proportion steadily declining by increasing expenditure quintiles in every group. The absence of intersection of lines in 2013-14 further highlight the hierarchical pattern between different groups: in all expenditure quintiles uniformly a high proportion of household expenditure is accounted for the education of men, followed by urban households; then come rural households and finally education of women. In 2007-08, the pattern was not so clear.

The information available from NSSO on household expenditure on higher education includes the expenses under five separate heads: (i) course fees (including tuition fee, examination fee, development fee and other compulsory payments), (ii) books, stationary and uniform, (iii) transport, (iv) private coaching and (v) other expenditure. We note that a major part – about 60 per cent of the expenditure of any quintile is accounted by tuition and other fee paid to the institutions (Table 11). As higher income groups tend to go to high fee charging private institutions, they also spend a higher proportion of the total expenditure on fees, 63 per cent by the richest quintile, compared to be 48 per cent by the bottom quintile. Quite interestingly, items such as uniform, transport and private coaching account for small proportions of total expenditure of the higher quintiles than that of low expenditure quintiles. Top quintile spends a higher proportion on ‘other’ expenditure, while the bottom quintiles spend the least on ‘other’ expenditure.

Barriers to Educational Attendance: Empirical Estimates

Students from all groups, particularly the weaker sections face several problems in

accessing higher education. The problems are more in rural areas, women face more problems and the poor face different kinds of problems. We make an attempt here to estimate the probability of people belonging to different social and economic groups attending higher education.

The predicted probabilities of attending higher education is analysed for persons aged 18-23 years using logit model. The dependent variable for the logit estimation is:

HE_ATTENDANCE = 1, if the person in the age group of 18-23 is currently attending higher education;
 = 0, otherwise, i.e., if the person (of the age group 18-23) is currently not attending higher education

The probability of attending higher education is estimated as follows:

$$P / 1-P = e^{(\alpha + \beta_i X_i)}$$

where,

P = probability of attending higher education

1 - P = probability of not attending higher education.

$P / 1-P$ = odds ratio in favour of attending higher education *versus* not attending higher education.

X_i = set of explanatory variables.

The analysis considers gender, region (rural/urban), social groups (caste and religion), expenditure quintile and household size as explanatory variables. To examine the heterogeneity in the predicted probabilities of attending higher education, the regression estimates are made separately for each expenditure quintiles. They are made considering the characteristics of individuals such as gender, social group – caste and religion, and location of the household. Household size is also considered as a control variable. Such equations are also estimated separately by gender, and region (rural and urban). The variables chosen for the logit model, their notation and definitions are given in Table A3 in Appendix.

The results in Tables 12 and 13 give the estimates for six major factors that cause an effect on the probabilities of higher education of 18-23 year olds: sex,

regional (rural-urban), and religion, economic status of the household and household size. The logit results for the entire sample (equation 1 of the Table 12) show that the probability of an individual participating in higher education is statistically significantly associated with majority of the predictors. Looking at the results of equation 1, we find that the chances of attending higher education are significantly higher for men as compared to women. This supports the findings of several other studies conducted on Indian higher education (Dubey 2008; Raju 2008; Srivastava and Sinha 2008; and Sundaram 2006, 2009). The location of the household (rural/urban) matters significantly in attending higher education in India. The value of the marginal effect associated with the variable *region* reveals that the individuals residing in urban area have 4.2 per cent higher chances of attending higher education as compared to those who belong to rural areas. The study by Raju (2008) shows similar results as it finds that the rate of participation in higher education in urban areas is three times higher than that of the rural areas in 2004-05. Using earlier NSSO rounds data, Dubey (2008) has shown that the probability of female enrolment in higher education was lower by three per cent in the rural region and 0.3 per cent in the urban region compared to males.

The social group variable is categorized here into four different castes/classes (scheduled caste, scheduled tribe, 'other' backward classes and others), and in the regression analysis scheduled tribe category is considered as the base (reference) category. The results show that there is a clear hierarchy among the people, with the predicted probability of attending higher education in terms of the social group. The chances of attending higher education are 7.3 per cent and 11.1 per cent higher for 'other' backward classes and general category respectively, as compared to scheduled tribes. There is no statistically significant difference between the probability of scheduled castes and scheduled tribes in attending higher education. In case of religion, we considered only three variables, HINDU, MUSLIM and 'Others'. There is statistically significant difference in predicted probabilities between Hindus, Muslims and others, in the chances of participating in higher education. It is highest for Hindus and lowest for Muslims. More clearly, Muslims have 10 per cent less probability in attending higher education as compared to Hindus. There is a significant difference in the probability of persons in different quintile groups in attending higher education. The results show that the predicted probability of higher

education attainment increases with the increase in the economic status of the household. For example, the probability of attending higher education (marginal effect in Table 12) is 41.4 per cent higher for 5th quintile individuals as compared to the poorest (first) quintile group individuals; it is 21.5 per cent for the fourth quintile, 12.3 per cent for the third quintile and 5.5 per cent higher for the second quintile. The association between economic status of the household and participation in higher education is positive and strong and corroborates with the findings of other studies in India (Chakrabarti, 2009; Azam and Blom 2009; Tilak 2015).

The results of the predicted probabilities of attending higher education by gender are more or less consistent with the overall results with some differences. The results show that urban males have 2.7 per cent higher chances to attend higher education as compared to rural males, while urban females have 5.9 per cent higher chances as compared to rural females. Interestingly, there is no statistically significant difference between the scheduled caste and scheduled tribe categories for male sample, but the scheduled caste females have significantly higher chances for attending higher education as compared to scheduled tribe females. Also, there are large differences between the predicted probabilities of participation in higher education for women as compared to men in case of all religious groups. For instance, Muslim women have 11 per cent less probability of participating in higher education while it is 10 per cent for Muslim men. The predicted probabilities of attending higher education for different quintile groups differ by gender. The estimates of marginal effect show that the probability of attending a higher education institution is higher for men as compared to women in each quintile.

Regression equation 4 and 5 (Table 13) provides the results for rural and urban youth respectively. The results show that there is no statistically significant difference between the men and women in urban areas, but in rural areas women have significantly lower chances of attending higher education than men. Similarly, there is no significant difference in the probability of attending higher education between scheduled castes and scheduled tribes in urban areas, while scheduled castes that belong to rural areas have significantly higher chances of attending higher education as compared to scheduled tribes in rural area. Although economic status of the household matters in attending higher education for both rural and urban youth, higher quintile groups have higher predicted probabilities of attending higher

education in urban areas than in rural areas.

Economic status of the households is generally found to have a significant influence on the participation of students in higher education. Due to continuous increase in the costs of education, poor students are facing difficulty to participate in education and higher is the intensity in case of technical and professional education. Further, the effect of the family income on the participation of education differs by gender, social category, religion, location of the household (rural or urban) etc. Therefore, an attempt is made here to examine the effect of individual and household factors on the probability of participation in higher education separately for each consumption expenditure quintile. The economic status of the household came out to be statistically significant for all the logit results (equations 1 to 5 of Table 12) and hence, it is important to analyse it in detail to get a better picture on the predicted probabilities of attending higher education.

According to Raju (2008), the gap in gross enrolment ratio in higher education between the 'poorest of the poor' and the 'richest' is 20 times and it is much higher in case of women, (28 times) as compared to 16 times for men. Similarly, Tilak (2015) found that the gross enrolment ratios are the lowest among the bottom (poorest) quintile and highest among the top (richest) quintile; and inequalities in enrolment ratios between the poorest and the richest quintiles have increased over the years. Gender differences in the probability of attending higher education are found here to be statistically significant only in case of first three expenditure quintiles which reveal that poor households differentiate between male and female children in sending their wards to higher education while gender does not seem to matter among rich households. Further, the difference in the probability of attending higher education between men and women narrows as we move from poorest to richest households.

The results show that the variable REGION (rural-urban) is statistically significant for the top four quintiles and in all the cases the probability of attending higher education is higher for urban households than rural households. The chances of participation of individuals in urban areas in higher education increases as compared to those in rural areas, when we move from 3rd to 5th quintiles. The results reveal that for poor households, location hardly matters in sending their children to access higher education. The study on participation of rural and urban youth in higher education in India by Chakrabarti (2009) also arrives at a similar conclusion: children

belonging to higher income households in urban areas had 16 per cent higher chance of attending higher education than those belonging to lower income households while this difference is marginal for rural households.

Regression results across all expenditure quintiles show that probability of attending higher education is significantly higher for scheduled castes, 'other' backward classes and forward castes as compared to scheduled tribes (taken as the reference category). Again, the effect of social category varies widely by quintiles. For example, the scheduled caste population of the bottom expenditure quintile has significantly higher chances of participation in higher education as compared to scheduled tribes belonging to the same bottom quintile; the coefficients are statistically insignificant for other quintiles. Non-poor or rich households (3rd, 4th, and 5th quintiles) belonging to others (*Socialgrp_Other*) have significantly higher chances of participation in higher education as compared to other social groups. Similarly, the predicted probabilities of participation in higher education vary by religion and consumption expenditure quintiles. Muslim youth who belong to these non-poor quintiles have significantly low probability in attending higher education as compared to Hindus. Economic status, particularly belonging to 3rd to 5th quintiles does not seem to matter for Muslims in declining to go for higher education or not. However, among the bottom 1st and 2nd expenditure quintile groups, individuals belonging to 'other' religions have higher chances of attending higher education than Hindus, while it is opposite for rich households.

Conclusions

Rising inequalities in the society are indeed becoming an important concern of all. Among inequalities in different spheres, inequalities in education, and inequalities in higher education in particular are seen as too serious to ignore any more. Higher education, which is an important instrument for reducing inequalities in the society, the higher education system is characterised with increasing inequalities by gender, social groups, regional (rural and urban) and by economic status. Using unit level data available from the 68th and 71st rounds of NSSO surveys, conducted in 2007-08 and 2013-14, an attempt is made here to examine a few dimensions of inequality in higher education between different social groups (scheduled castes, scheduled tribes,

other backward class, others), religions (Hindus, Muslims, Others), regional (rural and urban), and by economic classes (expenditure quintiles, particular the poorest and the richest). We have estimated gross attendance ratio in higher education (which is generally considered as close to gross enrolment ratio), and higher education attainment – percentage of adult population with higher education in the total population. These two – the flow and stock indicators of development are considered to be together capturing the status of higher education somewhat comprehensively. A comparative picture on the inequalities in access to higher education is presented by analysing the status in 2007-08 and 2013-14, the reference years of the NSSO surveys.

In terms of both the indicators, we note that there has been significant improvement in higher education in India. The gross attendance ratio increased between 2007-08 and 2013-14 from 12.6 per cent to 24 per cent. While only 63 in every 1000 adults had higher education in 2007-08, this figure has increased to 93 by 2013-14 – an increase by 48 per cent in 6-7 years. While there has been improvement in the status in higher education of every group, the growth has not been even across various social, regional and economic groups of population.

According to our analysis, gross attendance ratio in higher education by economic status of the households shows wide variations. In 2007-08, the difference in the gross attendance ratio between poorest and richest families is 29.5 per cent and this gap has gone up to 43.5 per cent in 2013-14. This shows that the inequality in access to higher education has increased substantially by household's economic status in the last seven years.

There exist significant rural-urban disparities in gross attendance ratios in 2007-08 and 2013-14. Also, the extent of rural-urban disparity in access to higher education is found to be highest among the richest households. Further, merely two per cent of the higher educated belong to the poorest households and 74 per cent the richest households in 2007-08 and these figures are 3.7 per cent and 62 per cent respectively in 2013-14.

Inequalities between men and women have come down significantly, but at the same time gap between men in the top expenditure quintile in urban areas and the women belonging to the bottom quintile in rural areas is very high – the enrolment

ratio being 56 and 7 per cent respectively in 2013-14. We have analysed gender inequalities and rural and urban inequalities – both across different expenditure quintiles. Both with respect to enrollment ratio and higher education attainment, the gap between men and women is very small: the difference between two is to the extent of 3-4 points. In contrast, the gap between rural and urban areas is quite high, with a difference of 15-16 points. Of all, the gap between the richest quintile and the bottom quintile is maximum: 44 per cent points in gross attendance ratio and 23 per cent points in their education attainment (Table 14). It is also important to note that the gap has widened particularly between the poorest and the richest sections of population. Earlier data also showed similar trends, as Tilak (2015) in a recent study found similar widening of inequality in accessing higher education by economic class in India.

Participation in higher education is also related to the household expenditure on higher education. There is a significant increase in the annual average household expenditure on higher education (more than two times) between 2007-08 and 2013-14. The difference between expenditure incurred on higher education by rural and urban households is quite high: urban households spend almost doubled the expenditure that the rural households spend. In case of education of women and men, men spend 17 per cent than women on higher education (2013-14). Urban households spend, on average Rs. 42 thousand per annum per student. Evidently, the average expenditure is found to be increasing by each successive expenditure quintile in both time periods. The bottom quintile spends Rs. 11000 per student, while the top quintile spends nearly four times higher. Further, the estimates for both 2007-08 and 2013-14 show that the average household expenditure on higher education is highest for the students enrolled in private-unaided institutions and lowest for the government institutions. In 2013-14, students enrolled in private-unaided higher education have spent 3.5 times higher as compared to those in government institutions. High level of household expenditure on education reflects high level of inequality in higher education.

Thirdly, the econometric analysis attempted here lead us to conclude that the probability of an individual participating in higher education is statistically significantly associated with majority of the predictors chosen. Men have a higher probability of attending higher education compared to women; ‘others’ (other than

scheduled population and backward classes), and Muslims have a lower probability, compared to their respective counterparts. Similarly rich income groups have a higher probability of attending higher education institutions than others. When we estimated regression equations by each quintile, results are similar with some important exceptions. The gender differences in the probability of attending higher education are statistically significant only among the first three expenditure quintiles which mean that poor households differentiate between male and female children in access to higher education, while the rich do not. The difference in the probability of participation between men and women narrows down as one move from poorest to richest quintiles. Similarly, the effect of other individual and household factors (caste, location of the household, religion) varies widely for different quintile classes. The analysis on the barriers to access higher education in this study has largely considered the demand side factors and does not include supply side variables due to the limitations of the NSSO data used in this study. Therefore, an extended study, with the inclusion of supply side determinants to access higher education, may reveal the picture better. Recent debates on higher education in India have raised a variety of interesting policy related issues and through this empirical study the authors have highlighted a few of them, particularly the interaction between income inequality and access to higher education, with the aim to facilitate a more informed policy discourse on this.

To conclude, this study has analysed the trend and pattern of the inequality in access to higher education among different economic classes in India and the barriers they face in their participation in higher education. Some factors have been examined here. Further research should unravel the factors in more detail. However, it may be tentatively concluded that since it is not women in general, but women in the bottom economic strata, it is not the people in rural areas, but people belong to the bottom expenditure quintile in rural areas, who suffered most, it may be necessary to focus on economic criteria, rather than gender, region (or even caste) in policy discourse that aim at improvement of educational status of the population and reduction in inequalities in higher education. Development programmes based on economic criteria, may be difficult to implement to some extent due to relatively less reliable data on economic/income levels of the households, but have an advantage of committing less ‘errors of commissions and omissions.’

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Main Tables

Table 1: States/Union Territories grouped by Gross Enrolment Ratio and per capita Net State Domestic Product, 2015-16

		Gross Enrolment Ratio (GER)	
		High	Low
Net State Domestic Product (NSDP) per capita	High	Goa, Delhi, Sikkim, Chandigarh, Haryana, Puducherry, Maharashtra, Kerala, Uttarakhand, Karnataka, Telangana, Tamil Nadu, Andhra Pradesh, Arunachal Pradesh, Punjab, Himachal Pradesh	Gujarat, Andaman & Nicobar Isles, Mizoram, West Bengal
	Low	Jammu & Kashmir	Chhattisgarh, Nagaland, Rajasthan, Meghalaya, Odisha, Madhya Pradesh, Assam, Jharkhand, Manipur, Uttarakhand, Bihar, Tripura

Source: constructed by the authors, based on

Per Capita NSDP at current prices: *Handbook of Statistics on Indian Economy 2016-17*, Reserve Bank of India; Gross Enrolment Ratio: MHRD (2016)

Notes: (a) NSDP per capita data was not available for the states such as West Bengal and Tripura in 2015-16 in the *Handbook of Statistics on Indian Economy 2016-17*, and the NSDP per capita for preceding year is considered.

Table 2: Gross Enrolment Ratio in Higher Education, by Gender, Region, Social Groups (caste and religion) and Household Consumption Expenditure Quintiles: 1983-84 to 2009-10

Year	Gender		Region		Caste				Religion				Household Expenditure Quintiles					All Population
	Male	Female	Rural	Urban	SC	ST	OBC	Non-SC/T	Muslims	Hindus	Christians	Others	Q1	Q2	Q3	Q4	Q5	
1983-84	10.87	14.49	3.95	17.68	3.7	2.4	-	9.0	4.1	7.5	20.0	10.6	-	-	-	-	-	7.67
1987-88	11.82	5.37	4.77	19.56	4.0	3.0	-	10.2	4.4	8.8	17.0	11.4	-	-	-	-	-	18.57
1993-94	11.7	5.9	4.66	20.17	3.8	3.4	-	10.6	4.6	9.1	16.2	10.5	2.03	3.03	4.83	9.21	25.93	18.85
1999-2000	12.1	8.0	5.38	20.44	5.1	6.4	7.0	11.9	5.2	10.4	18.6	14.0	1.25	3.31	4.73	10.06	30.96	10.05
2004-05	14.8	10.4	7.51	23.79	7.9	7.3	10.1	14.6	7.6	13.2	20.8	14.7	1.80	4.10	6.11	11.87	36.75	12.59
2009-10	27.0	18.7	16.52	38.48	14.8	11.8	22.1	-	13.8	24.2	36.9	28.0	5.22	8.05	15.64	24.92	61.71	23.05

Source: Tilak (2015).

Table 3: Gross attendance ratio in Higher Education by Income Quintile, in Rural and Urban Areas and by Type of Education Institution, 2007-08 and 2013-14

Quintile	Rural			Urban			Total			Institution Type			
	Male	Female	Total	Male	Female	Total	Male	Female	Person	Government	Private-Aided	Private-Unaided	Government & Private-Aided
<i>2013-14</i>													
1	8.95	6.79	7.87	9.71	10.55	10.09	9.06	7.23	8.15	4.24	1.78	2.06	6.02
2	12.72	10.42	11.57	11.06	13.20	12.08	12.42	10.88	11.66	5.96	3.04	2.51	8.99
3	22.44	15.91	19.39	17.29	15.24	16.30	21.24	15.74	18.65	9.69	4.08	4.81	13.77
4	29.27	24.32	27.04	26.79	30.90	28.77	28.42	26.76	27.66	12.58	7.35	7.58	19.93
5	43.90	45.67	44.67	56.25	55.17	55.74	51.52	51.81	51.65	17.49	13.56	20.38	31.05
All	21.14	16.81	19.08	35.01	35.09	35.04	25.45	22.45	24.03	10.15	6.06	7.68	16.22
<i>(2007-08)</i>													
1	3.86	1.85	2.81	4.56	3.24	3.91	3.91	1.94	2.89	1.65	0.95	0.20	2.60
2	5.64	2.99	4.34	4.83	5.85	5.33	5.55	3.31	4.45	2.28	1.33	0.73	3.61
3	7.48	4.63	6.08	9.89	8.84	9.41	7.97	5.42	6.74	3.67	1.95	1.03	5.62
4	12.99	8.93	11.05	15.12	13.36	14.27	13.72	10.47	12.16	6.92	3.36	1.64	10.28
5	29.45	22.15	26.22	32.98	39.06	35.66	31.75	33.11	32.35	13.72	9.94	8.31	23.66
All	10.14	6.24	8.23	22.31	23.73	22.96	13.87	11.15	12.56	6.04	3.75	2.58	9.79

Source: Estimated by the authors based on unit level of data available from NSSO.

Table 4: **Order of Groups by Gross Enrolment Ratio among the Bottom the Top Expenditure Quintiles**

Category	Gross Attendance Ratio (%)	
	2007-08	2013-14
<i>Bottom Quintile</i>		
1 Rural Female	1.85	6.79
2 All Female	1.94	7.23
3 Rural All	2.81	7.87
4 All persons	2.89	8.15
5 Rural Male	3.86	8.95
6 All Male	3.91	9.06
7 Urban male	4.56	9.71
8 Urban all	3.91	10.09
9 Urban female	3.24	10.55
<i>Top Quintile</i>		
1 Rural Male	29.45	43.90
2 Rural All	26.22	44.67
3 Rural Female	22.15	45.67
4 All Male	31.75	51.52
5 All persons	32.35	51.65
6 All Female	33.11	51.81
7 Urban Female	39.06	55.17
8 Urban All	35.66	55.74
9 Urban Male	32.98	56.25

Source: Table 3.

Table 5 Inequalities in Gross Attendance Ratio

	2007-08	2013-14	Change
Urban/Rural	2.79	1.84	0.95
Male/Female	1.24	1.13	0.11
Govt/Private	3.79	2.11	1.68
Q5/Q1	11.21	6.34	4.87

Note: Inequalities are measured as a simple ratio

Govt includes Govt and Govt aided private

Source: Based on Table 3

Table 6 Higher Education Attainment (Percentage of adult population (above 15 years of age) who acquired higher education, by Consumption Quintile, Region and Gender, 2007-08 and 2013-14

Quintile	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Person
<i>2013-14</i>									
1	2.53	1.05	1.79	3.76	2.56	3.17	2.67	1.22	1.95
2	3.75	1.86	2.81	5.19	3.63	4.43	3.98	2.13	3.06
3	5.40	2.45	3.94	8.07	5.67	6.89	6.03	3.21	4.64
4	8.90	4.28	6.60	14.27	9.53	11.93	10.83	6.16	8.51
5	15.86	9.11	12.54	35.20	27.84	31.64	28.64	21.33	25.09
All	6.19	3.07	4.64	21.80	16.50	19.21	11.21	7.28	9.27
<i>2007-08</i>									
1	1.29	0.26	0.77	3.02	1.64	2.33	1.40	0.35	0.87
2	1.92	0.54	1.23	2.45	1.47	1.96	1.97	0.64	1.31
3	3.15	1.15	2.15	5.06	2.99	4.05	3.49	1.46	2.48
4	5.57	2.04	3.82	9.15	5.35	7.31	6.77	3.12	4.97
5	11.84	7.26	9.61	28.07	21.46	24.96	22.39	16.28	19.48
All	3.95	1.65	2.80	17.75	12.68	15.32	7.95	4.67	6.33

Source: Estimated by the authors based on unit level of data available from NSSO.

Table 7: Inequalities in Higher Education Attainment

	2007-08	2013-14	Change
Urban/Rural	5.47	4.14	1.33
Male/Female	1.54	1.70	-0.16
Q5/Q1	22.39	12.87	9.52

Note: Inequalities are measured as a simple ratio.

Source: Based on Table 5.

Table 8: Distribution of Population (5+) having who Acquired Completed level of Higher Education, by Monthly Per Capita Consumption Expenditure Quintile

Quintile	Male	Female	Rural	Urban	Total
<i>2013-14</i>					
1	4.16	2.96	8.88	1.02	3.70
2	6.47	5.44	13.80	2.07	6.07
3	12.35	10.15	21.89	6.12	11.50
4	17.35	15.34	24.16	12.64	16.57
5	59.66	66.11	31.26	78.15	62.16
Total	100.00	100.00	100.00	100.00	100.00
<i>2007-08</i>					
1	2.72	1.20	6.16	0.57	2.15
2	3.17	1.82	7.57	0.72	2.66
3	6.63	4.17	13.21	2.74	5.70
4	16.82	12.51	28.38	9.99	15.2
5	70.66	80.3	44.68	86.00	74.28
Total	100.00	100.00	100.00	100.00	100.00

Source: Estimated by the authors based on unit level of data available from NSSO.

Table 9: Annual Average Household Expenditure on Higher Education by Monthly Per Capita Consumption Expenditure Quintiles (Rs.)

Quintile	Male	Female	Rural	Urban	Government	Government- Aided Private	Pre-Unaided	Government & -Aided Private	Total
<i>2013-14</i>									
1	11147	10634	10629	12501	7715	12637	16241	9171	10922
2	13532	10085	11535	13833	8469	12958	18871	9984	11944
3	16993	12831	15068	16374	10231	14966	25914	11635	15341
4	23399	18795	18571	26065	12382	21563	34465	15766	21345
5	51680	43379	40335	51417	22928	43526	71460	31925	47876
All	33116	28094	21728	41979	15000	29677	52245	20486	30887
<i>2007-08</i>									
1	5096	4096	4343	8632	4007	5343	7853	4495	4746
2	5198	4903	5129	4848	4219	5061	7970	4530	5091
3	6121	4691	5564	5562	4223	6079	8984	4867	5564
4	8643	7345	7308	9289	6163	7590	17590	6629	8109
5	21797	18926	18488	21300	11884	21125	34072	15767	20500
All	15080	13795	10420	18071	8552	15061	27971	11048	14532

Source: Author's calculations based on NSS unit level data 2007-08 and 2013-14, applying sample weights.

Table 10 Household Expenditure on Higher Education as % of Total Household Expenditure

Quintiles	Male	Female	Rural	Urban	Total
2013-14					
Bottom Quintile	29.72	23.02	24.10	28.79	26.86
2	25.58	19.54	21.23	24.67	22.97
3	23.61	17.58	18.16	22.62	20.89
4	22.31	17.31	18.04	21.62	19.98
Top Quintile	21.83	18.49	17.46	22.35	20.21
All Quintiles	23.54	18.56	18.80	23.13	21.24
2007-08					
Bottom Quintile	32.65	27.40	29.56	31.16	30.62
2	30.06	20.28	28.99	23.39	25.74
3	23.03	18.91	15.29	24.09	21.33
4	17.22	15.66	12.89	18.15	16.48
Top Quintile	17.92	14.59	15.89	16.42	16.21
All Quintiles	21.90	17.25	18.18	20.63	19.74

Source: Author's calculations based on NSS unit level data 2007-08 and 2013-14.

Table 11. Household Expenditure on Higher Education, by items (%), 2013-14

Items	Consumption Quintiles					
	Q1	Q2	Q3	Q4	Q5	All
Course Fee	48.17	49.43	51.87	56.52	63.25	60.41
Books, Stationery & Uniform	15.19	15.18	14.87	13.13	9.82	11.08
Transport	14.39	13.76	12.40	11.48	8.01	9.23
Private Coaching	14.71	12.15	11.65	11.05	8.89	9.64
Other Expenditure	7.54	9.48	9.21	7.81	10.04	9.64
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source: Author's calculations based on NSS unit level data 2007-08 and 2013-14.

Table 12: Predicted probabilities of attending higher education by persons aged between 18-23 years by gender and location

Variable	All		Male		Female		Rural		Urban	
	Coefficient	Marginal Effect	Coefficient.	Marginal Effect	Coefficient.	Marginal Effect	Coefficient.	Marginal Effect	Coefficient	Marginal Effect
Gender	-0.086*** (0.023)	-0.016*** (0.004)	...	...	...	...	-0.198*** (0.032)	-0.035*** (0.006)	0.028 (0.033)	0.006 (0.007)
REGION	0.216*** (0.024)	0.042*** (0.005)	0.135*** (0.031)	0.027*** (0.006)	0.319*** (0.036)	0.059*** (0.007)	...	...	...	...
Socialgrp_SC	0.072 (0.048)	0.013 (0.009)	0.009 (0.063)	0.002 (0.012)	0.155** (0.073)	0.026** (0.012)	0.168*** (0.061)	0.027*** (0.009)	-0.058 (0.078)	-0.012 (0.016)
Socialgrp_OBC	0.392*** (0.043)	0.073*** (0.008)	0.338*** (0.056)	0.066*** (0.010)	0.463*** (0.065)	0.081*** (0.010)	0.443*** (0.055)	0.075*** (0.009)	0.327*** (0.069)	0.068*** (0.014)
Socialgrp_OTHER	0.583*** (0.043)	0.111*** (0.008)	0.481*** (0.057)	0.095*** (0.011)	0.719*** (0.065)	0.131*** (0.011)	0.599*** (0.056)	0.104*** (0.009)	0.537*** (0.068)	0.113*** (0.014)
Religion_MUSLIM	-0.568*** (0.035)	-0.104*** (0.006)	-0.516*** (0.046)	-0.098*** (0.008)	-0.638*** (0.054)	-0.110*** (0.008)	-0.578*** (0.053)	-0.094*** (0.008)	-0.548*** (0.047)	-0.114*** (0.009)
Religion_OTHER	-0.083** (0.042)	-0.016** (0.008)	-0.162*** (0.057)	-0.032*** (0.011)	0.006 (0.063)	0.001 (0.011)	-0.049 (0.057)	-0.009 (0.010)	-0.119* (0.063)	-0.025* (0.013)
2 nd _Quintile	0.436*** (0.057)	0.055*** (0.007)	0.448*** (0.077)	0.058*** (0.009)	0.419*** (0.087)	0.050*** (0.010)	0.426*** (0.067)	0.049*** (0.008)	0.477*** (0.113)	0.064*** (0.015)
3 rd _Quintile	0.852*** (0.053)	0.123*** (0.007)	0.891*** (0.070)	0.134*** (0.009)	0.795*** (0.080)	0.109*** (0.009)	0.885*** (0.062)	0.121*** (0.008)	0.819*** (0.103)	0.123*** (0.013)
4 th _Quintile	1.307*** (0.052)	0.215*** (0.007)	1.298*** (0.070)	0.218*** (0.009)	1.317*** (0.078)	0.211*** (0.010)	1.309*** (0.062)	0.205*** (0.009)	1.343*** (0.099)	0.233*** (0.013)
5 th _Quintile	2.143*** (0.051)	0.414*** (0.007)	2.147*** (0.068)	0.422*** (0.009)	2.138*** (0.077)	0.403*** (0.010)	2.062*** (0.062)	0.381*** (0.009)	2.234*** (0.097)	0.448*** (0.012)
HH_SIZE	-0.001 (0.005)	-0.001 (0.001)	0.013** (0.006)	0.002** (0.001)	-0.019** (0.0075)	-0.003** (0.001)	0.003 (0.006)	0.001 (0.001)	-0.004 (0.007)	-0.001 (0.002)
Constant	-2.298*** (0.067)		-2.275*** (0.089)		-2.408*** (0.102)		-2.301*** (0.083)		-2.113*** (0.124)	
Log-Likelihood	-23258.89		-13203.19		-10027.83		-12221.39		-11013.18	
Pseudo-R ²	0.122		0.111		0.138		0.097		0.114	
Observations	41,240	41,240	22,794	22,794	18,446	18,446	23,035	23,035	18,205	18,205

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 13: Predicted probabilities of attending higher education by persons aged between 18-23 years, by Consumption Expenditure Quintiles

Variable	Poorest (1 st) Quintile		2 nd Quintile		3 rd Quintile		4 th Quintile		Top (5 th) Quintile	
	Coefficient	Marginal Effect	Coefficient	Marginal Effect	Coefficient	Marginal Effect	Coefficient	Marginal Effect	Coefficient	Marginal Effect
GENDER	-0.212** (0.092)	-0.020** (0.009)	-0.187*** (0.071)	-0.025*** (0.009)	-0.211*** (0.053)	-0.037*** (0.009)	-0.064 (0.048)	-0.014 (0.010)	0.003 (0.035)	0.001 (0.009)
REGION	0.148 (0.109)	0.014 (0.011)	0.193** (0.079)	0.026** (0.011)	0.093* (0.056)	0.017* (0.009)	0.173*** (0.048)	0.038*** (0.010)	0.304*** (0.037)	0.074*** (0.008)
Socialgrp_SC	0.351** (0.162)	0.025** (0.011)	0.192 (0.136)	0.020 (0.014)	0.123 (0.107)	0.018 (0.015)	0.057 (0.105)	0.011 (0.021)	-0.021 (0.081)	-0.005 (0.020)
Socialgrp_OBC	0.614*** (0.150)	0.050*** (0.011)	0.544*** (0.125)	0.066*** (0.014)	0.489*** (0.097)	0.078*** (0.015)	0.403*** (0.096)	0.085*** (0.019)	0.262*** (0.069)	0.064*** (0.017)
Socialgrp_OTHER	1.039*** (0.166)	0.101*** (0.016)	0.768*** (0.135)	0.100*** (0.017)	0.725*** (0.101)	0.125*** (0.016)	0.579*** (0.097)	0.126*** (0.019)	0.432*** (0.067)	0.105*** (0.016)
Religion_MUSLIM	-0.775*** (0.140)	-0.060*** (0.009)	-0.742*** (0.107)	-0.086*** (0.010)	-0.786*** (0.079)	-0.120*** (0.010)	-0.525*** (0.073)	-0.109*** (0.014)	-0.379*** (0.058)	-0.092*** (0.014)
Religion_OTHER	0.847*** (0.212)	0.118*** (0.037)	-0.069 (0.158)	-0.009 (0.022)	0.090 (0.107)	0.0174 (0.021)	-0.126 (0.095)	-0.028 (0.021)	-0.168*** (0.058)	-0.041*** (0.014)
HH_SIZE	0.010 (0.015)	0.001 (0.001)	0.006 (0.013)	0.001 (0.002)	0.015 (0.010)	0.003 (0.002)	0.016 (0.010)	0.004* (0.002)	-0.032*** (0.009)	-0.008*** (0.002)
Constant	-2.561*** (0.168)		-1.965*** (0.143)		-1.511*** (0.111)		-1.080*** (0.107)		0.0129 (0.083)	
Log-Likelihood	-1703.35		-2583.61		-4463.46		-5112.47		-9345.20	
Pseudo-R ²	0.0214		0.0178		0.0189		0.0127		0.0135	
Observations	5,069	5,069	5,910	5,910	8,335	8,335	8,068	8,068	13,858	13,858

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 14: Gap in Participation in Higher Education

	Gross Attendance Ratio	Higher Education Attainment
Gender (Male-Female)		
2007-08	2.72	3.28
2013-14	3.00	3.93
Regional (Urban-rural)		
2007-08	14.73	12.52
2013-14	15.96	14.57
Economic (Q5-Q1)		
2007-08	29.46	18.61
2013-14	43.50	23.14

Source: Based on Table 3 and 6.

Appendix Tables

Table A1: Gross Enrolment Ratio in Higher Education (18-23 years), by States, 2015-16

State and UTs	All			Scheduled Castes			Scheduled Tribes		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
A & N Islands	22.3	2.7	23.5	–	–	–	11	13.6	12.3
Andhra Pradesh	34.7	26.9	30.8	28.6	22.4	25.5	27.4	19.8	23.4
Arunachal Pradesh	28.8	26.9	28.7	–	–	–	34.4	33.2	33.8
Assam	16.2	14.7	15.4	17.5	16	16.8	20.8	18	19.3
Bihar	15.8	12.6	14.3	11.4	7.1	9.3	13.4	11.2	12.3
Chandigarh	48.4	70.4	57.6	28.6	37.8	32.7	–	–	–
Chhattisgarh	15.7	14.6	15.1	15.6	13.8	14.7	14.7	9.1	9.3
Dadra & N. Haveli	7.8	11.3	9.1	17.3	30.4	22.9	7.6	5.7	6.6
Daman & Diu	4.6	9.2	5.7	23.1	27.7	25.1	15.2	12.6	14
Delhi	43	48.2	45.4	30.2	28.6	29.5	–	–	–
Goa	25	30.9	27.6	27.7	26.7	27.2	17.3	24.1	20.6
Gujarat	22.9	18.3	20.7	27.7	23.1	25.5	13.4	13	13.2
Haryana	25.9	26.4	26.1	17.3	16.7	17	–	–	–
Himachal Pradesh	29.6	35.5	32.5	20	22.3	30.8	30.8	32.7	31.8
Jammu & Kashmir	23.5	26.2	24.8	13.6	17.9	15.7	10.2	8.8	9.5
Jharkhand	16.2	14.8	15.5	13.1	10.6	11.9	10.2	10.8	10.5
Karnataka	26.3	25.9	26.1	19.3	18.0	18.7	16.9	15.1	16.1
Kerala	26.6	35.0	30.8	16.4	28.5	22.4	13.6	19.2	16.5
Lakshadweep	4.1	10.2	7.1	–	–	–	2.2	4.7	3.4
Madhya Pradesh	21.1	17.9	19.6	17	13.8	15.5	9.8	7.4	8.6
Maharashtra	31.9	27.6	29.9	31.9	27	29.6	18.1	11.4	14.7
Manipur	35.3	33.1	34.2	57.8	47.8	52.8	20.9	18.5	19.7
Meghalaya	20.4	21.1	20.8	55.3	44.3	50.1	15.7	18.4	17.1
Mizoram	25.2	23.0	24.1	192.6	96.7	158	25.6	23.5	24.5
Nagaland	14.2	15.6	14.9	–	–	–	13.5	14.8	14.1
Odisha	21.5	17.8	19.6	16.5	12.9	14.7	10.7	8.2	9.4
Puducherry	44.2	42.1	43.2	33.2	31.7	32.5	–	–	–
Punjab	25.8	28.5	27.0	17.7	18.4	18.0	–	–	–
Rajasthan	21.8	18.5	20.2	16.7	13.4	15.2	16.9	13.5	15.2
Sikkim	36.7	38.5	37.6	36.2	22.5	29.1	20	28.8	24.5
Tamil Nadu	46.3	42.4	44.3	34.6	34.2	34.4	36.4	27.3	31.8
Telangana	39.3	33.4	36.3	38.1	34.2	36.1	39.2	28.7	33.9
Tripura	19.9	14.0	16.9	18	11.3	14.6	12.9	9.1	10.9
Uttar Pradesh	24.2	24.9	24.5	20.3	20.7	20.5	33.5	27.7	30.6
Uttarakhand	33.6	32.9	33.3	23.8	23.2	23.5	40.3	36.8	38.6
West Bengal	19.1	16.2	17.7	14.2	11.5	12.8	10.6	8.4	9.5
All India	25.4	23.5	24.5	20.8	19	19.9	15.6	12.9	14.2

Source: MHRD (2016)

Table A2. **Gross Enrolment Ratio in Higher Education** (18-23 Years) 2016-17

Sl. No.	State/UTs	All			Scheduled Castes			Scheduled Tribes		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Andaman & Nicobar Islands	21.5	24.2	22.8	-	-	-	11.5	15.7	13.6
2	Andhra Pradesh	36.5	28.4	32.4	32.8	25.9	29.3	29.0	21.3	24.9
3	Arunachal Pradesh	29.3	28.5	28.9	-	-	-	31.8	30.6	31.2
4	Assam	17.9	16.6	17.2	19.5	18.5	19.0	23.9	21.2	22.5
5	Bihar	16.0	12.8	14.4	11.9	7.4	9.6	16.2	11.2	13.7
6	Chandigarh	47.3	68.8	56.1	29.7	38.4	33.5	-	-	-
7	Chhattisgarh	16.4	15.8	16.1	16.1	14.6	15.3	9.9	9.9	9.9
8	Dadra & Nagar Haveli	7.6	11.9	9.2	14.9	30.4	21.5	6.5	5.3	5.9
9	Daman & Diu	4.5	8.5	5.5	19.5	29.8	24.1	12.2	11.9	12.0
10	Delhi	42.8	48.4	45.3	28.9	30.7	29.7	-	-	-
11	Goa	25.0	31.9	28.1	23.6	26.0	24.7	19.5	25.7	22.5
12	Gujarat	22.9	17.3	20.2	31.6	21.8	26.9	14.9	12.6	13.8
13	Haryana	28.5	29.7	29.0	18.3	18.2	18.3	-	-	-
14	Himachal Pradesh	33.0	40.7	36.7	22.7	26.7	24.7	33.7	38.3	36.0
15	Jammu and Kashmir	23.6	27.7	25.6	13.7	18.8	16.1	11.0	10.0	10.5
16	Jharkhand	18.4	17.0	17.7	14.6	12.1	13.4	11.7	13.3	12.6
17	Karnataka	26.4	26.6	26.5	19.1	18.4	18.8	17.0	16.1	16.5
18	Kerala	28.3	40.1	34.2	17.0	30.2	23.6	15.4	21.0	18.3
19	Lakshadweep	4.1	10.6	7.3	-	-	-	2.1	5.3	3.7
20	Madhya Pradesh	20.9	19.0	20.0	18.3	16.1	17.3	10.4	8.9	9.7
21	Maharashtra	32.0	28.2	30.2	31.9	28.1	30.1	17.9	11.7	14.8
22	Manipur	35.3	34.7	35.0	60.9	54.1	57.5	21.0	19.4	20.2
23	Meghalaya	23.1	23.8	23.5	51.4	44.5	48.1	17.2	21.2	19.3
24	Mizoram	25.3	23.7	24.5	116.8	95.1	108.9	25.1	23.5	24.3
25	Nagaland	16.1	17.0	16.6	-	-	-	15.1	16.8	16.0
26	Odisha	23.0	18.9	21.0	20.1	14.7	17.4	13.1	9.7	11.3
27	Puducherry	41.8	44.5	43.1	30.9	33.0	31.9	-	-	-
28	Punjab	27.0	30.6	28.6	19.4	21.7	20.4	-	-	-
29	Rajasthan	21.6	19.3	20.5	17.4	14.5	16.1	19.5	16.2	17.9
30	Sikkim	33.9	40.8	37.3	27.7	24.9	26.3	21.4	32.7	27.1
31	Tamil Nadu	48.2	45.6	46.9	38.6	38.0	38.3	44.7	27.6	36.0
32	Telangana	38.0	33.6	35.8	34.9	33.3	34.1	37.2	28.3	32.7
33	Tripura	21.5	16.8	19.1	20.5	15.3	17.9	15.2	12.3	13.7
34	Uttar Pradesh	24.6	25.3	24.9	20.9	21.3	21.1	37.9	28.7	33.3
35	Uttarakhand	33.8	33.0	33.4	24.1	23.7	23.9	39.9	40.4	40.2
36	West Bengal	19.8	17.2	18.5	14.8	12.2	13.5	11.5	8.9	10.1
All India		26.0	24.5	25.2	21.8	20.2	21.1	16.7	14.2	15.4

Source: MHRD (2017).

Table A3: Notation and Definition of Variables

Notation of the variable	Name of the variable	Definition of the variable
HE_ATTENDANCE	Attendance in Higher Education	1, if the person in the age group of 18-23 is currently attending higher education 0, otherwise
GENDER	Sex of the students (dummy variable)	1, if the individual is Female 0, if the individual is Male
REGION	Region	1, if the Individual's Residence is Urban 0, if the Individual's Residence is Rural
<u>CASTE</u>	Caste of the students (dummy variables)	
Socialgrp_ST	Scheduled Tribe (Reference)	= 1, if the student belongs to Scheduled Tribes = 0, otherwise
Socialgrp_SC	Scheduled Caste	= 1, if the student belongs to Scheduled Castes = 0, otherwise
Socialgrp_OBC	Other Backward Class	= 1, if the student belongs to Other Backward Classes = 0, otherwise
Socialgrp_OTHER	Unreserved category	= 1, if the student belongs to non-Scheduled Castes, non-Scheduled Tribes and non-Other Backward Classes = 0, otherwise
<u>RELIGION</u>	Religion of the students (dummy variables)	
Religion_HINDU	Hindu (Reference)	= 1, if the student is Hindu = 0, otherwise
Religion_MUSLIM	Muslim	= 1, if the student is Muslim = 0, otherwise
Religion_OTHER	Jain, Buddhist, Christian	= 1, if the student is from other religion = 0, otherwise
<u>Expenditure QUINTILES</u>	Economic status of the household (dummy variables)	
Poorest (1 st) Quintile	1 st Quintile	1, if the Individual belongs to 1 st Quintile =0, otherwise
2 nd Quintile	2 nd Quintile	1, if the Individual belongs to 2 nd Quintile =0, otherwise

3 rd _Quintile	3 rd Quintile	1, if the Individual belongs to 3 rd Quintile =0, otherwise
4 th Quintile	4 th Quintile	1, if the Individual belongs to 4 th Quintile =0, otherwise
Richest (5 th) Quintile	5 th Quintile	1, if the Individual belongs to 5 th Quintile =0, otherwise
HH_SIZE	Household size	Total number family members of the household

Figures

Figure 1: **Gross Enrolment Ratio in Higher Education, 2016-17**

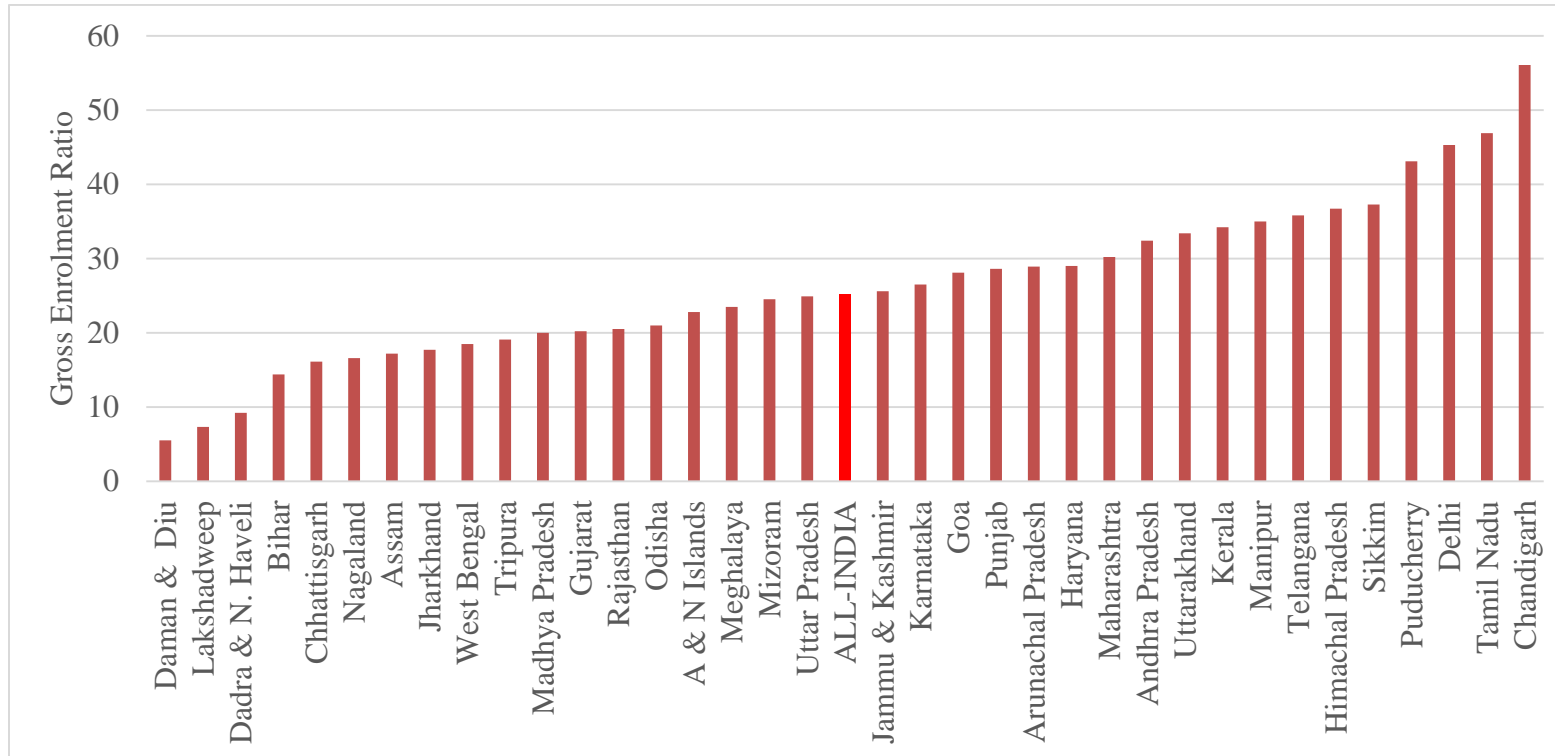


Figure 2: **Gross Attendance Ratio in Higher Education by Monthly Per Capita Consumption Expenditure (MPCE) Quintiles (2007-08 and 2013-14)**

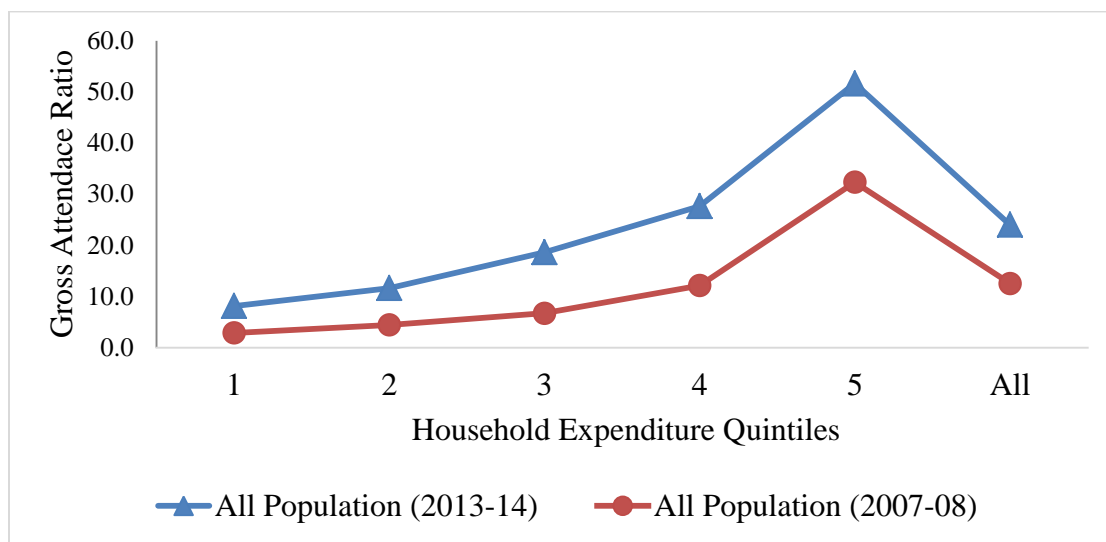
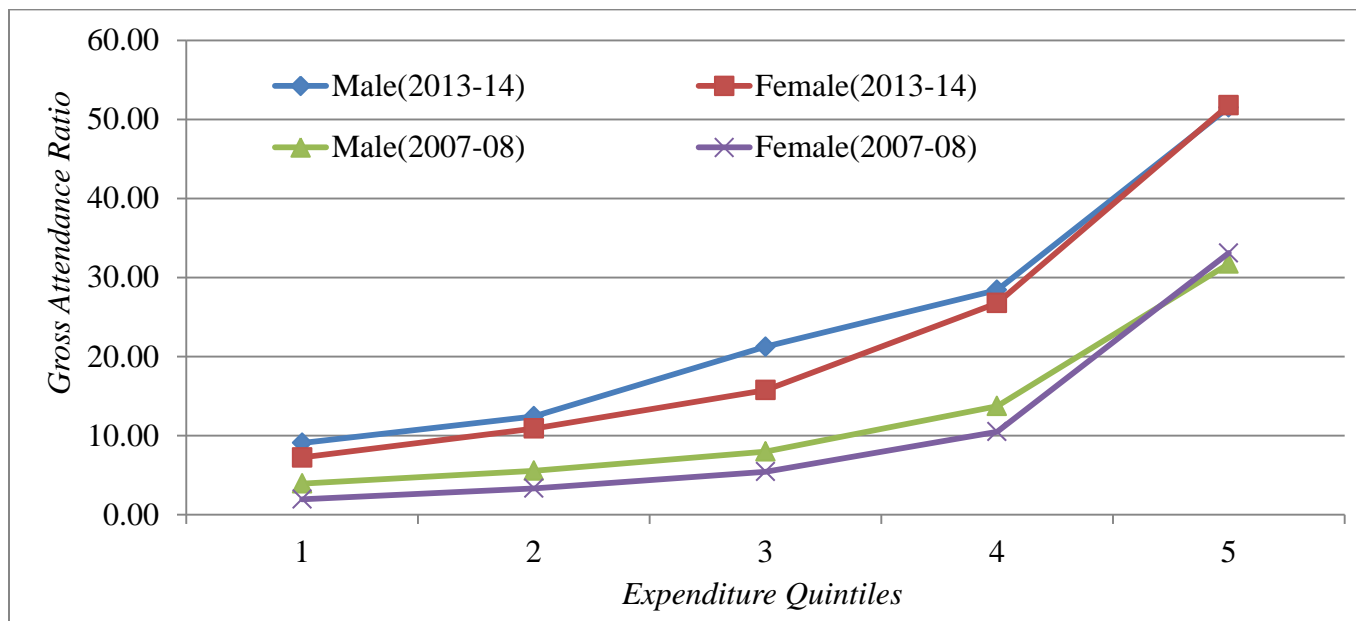
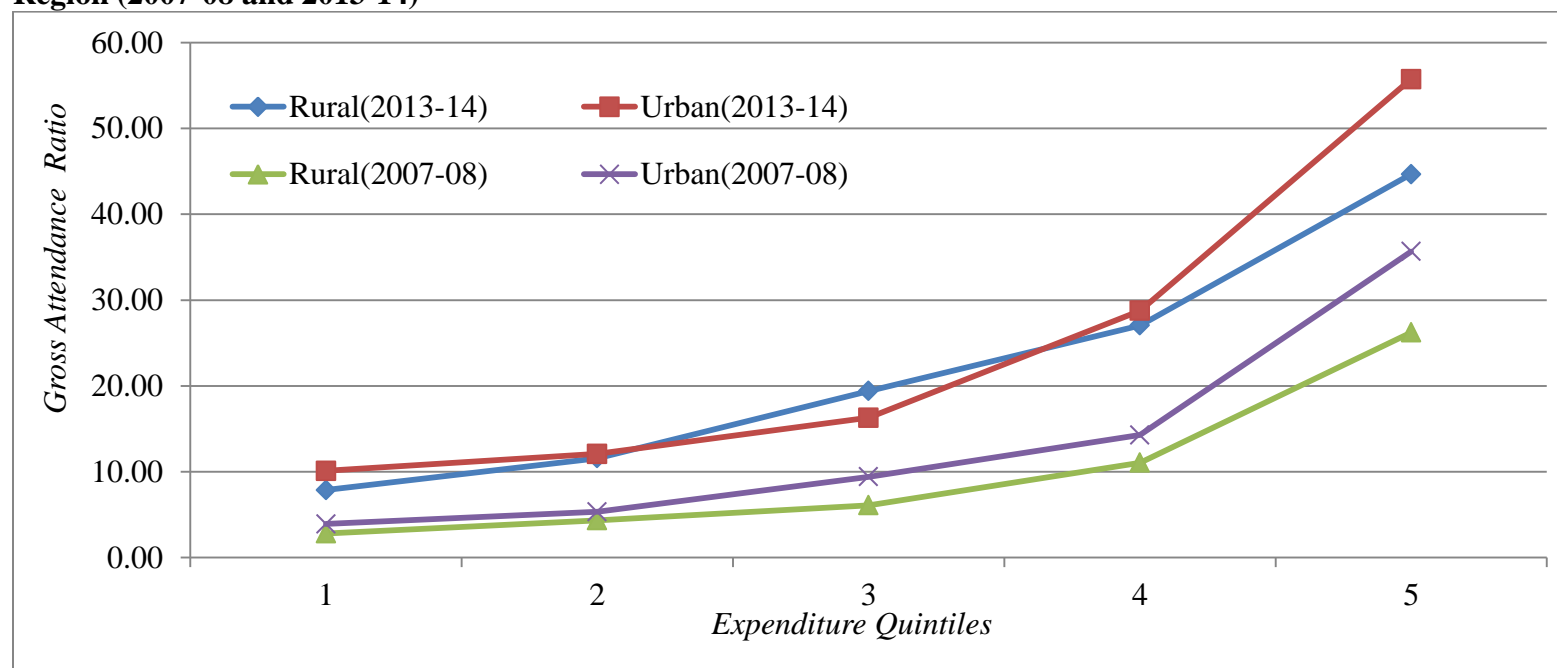


Figure 3: Gross attendance ratio in Higher Education by Monthly Per Capita Consumption Expenditure (MPCE) Quintiles and Gender (2007-08 and 2013-14)



Source: Estimated by the authors based on unit level of data available from NSSO.

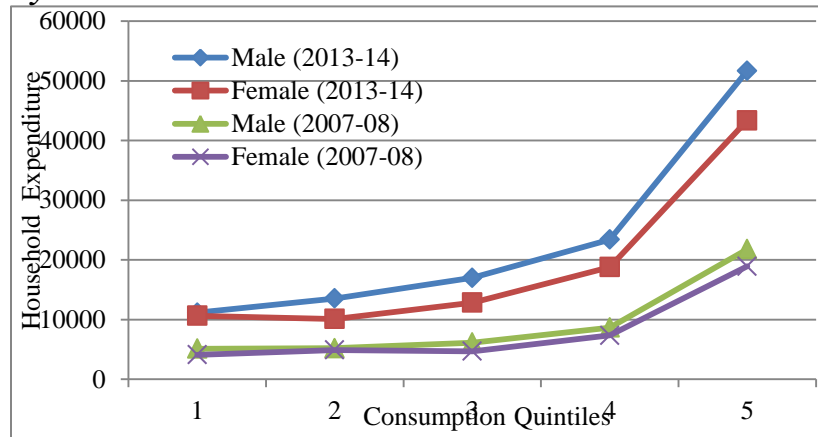
Figure 4: Gross attendance ratio in Higher Education by Monthly Per Capita Consumption Expenditure Quintiles and by Region (2007-08 and 2013-14)



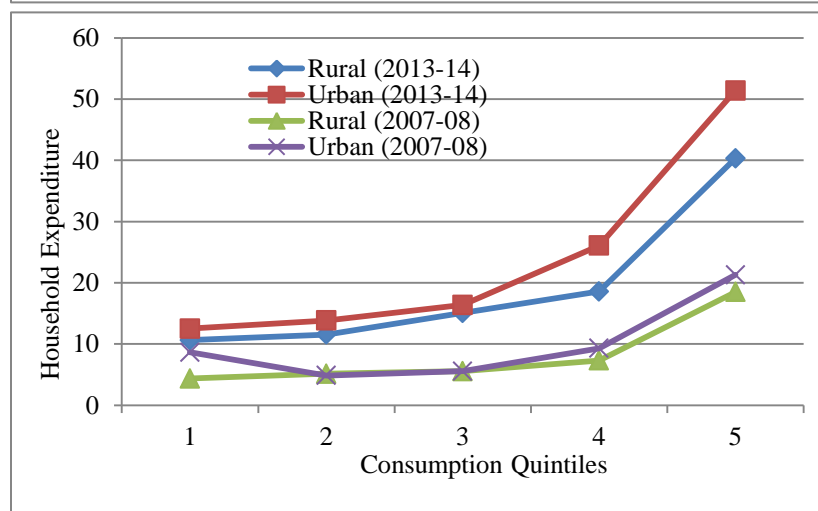
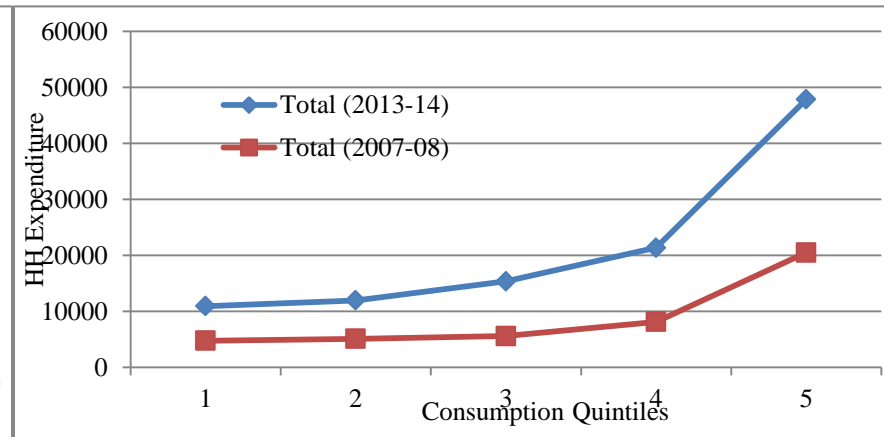
Source: Estimated by the authors based on unit level of data available from NSSO.

Figure 5: Annual Average Household Expenditure on Higher Education by Monthly Per Capita Consumption Expenditure Quintiles

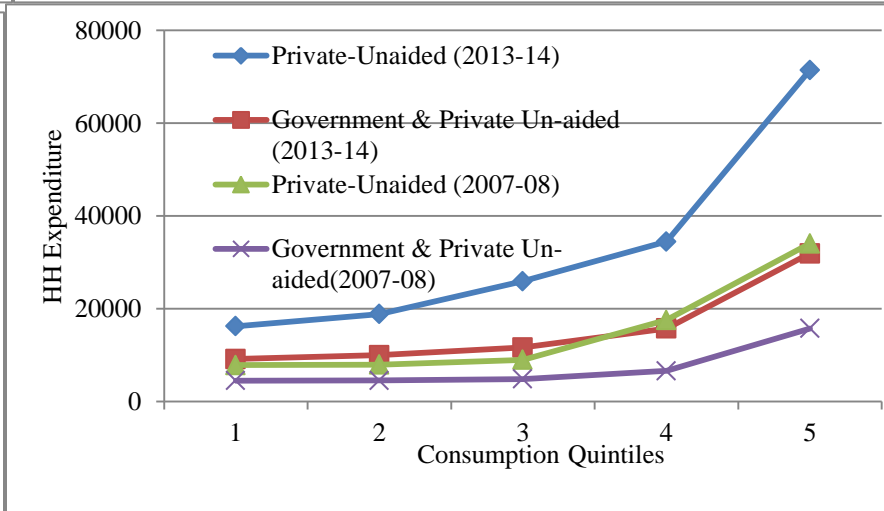
By Gender



All



By Region



by Type of Institution

Figure 6. Household Expenditure on Higher Education as % of Total Household Expenditure

