

Perceived Returns to Education and its Impact on Schooling Decisions

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Abstract

In this paper, we empirically calculate the perceived returns to education by surveying students from low and high-income families in Mumbai and Kolkata. These results are interpreted using insights from theoretical models that link education with wages. This allows us to understand how differences between real and perceived returns may affect schooling decisions. Following that, we discuss the reasons behind formation of perceived returns. Risk perceptions towards education are compared using an f-test. To understand the influence of age on perceived returns, a t-test is conducted. Here, we find that perceived returns are universally low for early education. Lower-income students also underestimate returns to tertiary schooling. Variability in future expected wages is higher among high-income students. Among low-income students, the youngest have the highest perceived returns while the opposite is true among students from a high-income background.

Keywords: Returns to education, Perceived returns to education, S-shaped model, Returns to education in India, Schooling decisions

JEL classification: I260, I220

Introduction

For any individual, whether to continue education beyond a certain point is an important investment decision. Under Becker's (1993) human capital theory, an individual would only continue schooling if expected future benefits (i.e., higher wages) exceed costs. Expected future benefits, or the returns to education, are therefore, an important variable which influences schooling decisions. Calculating returns to education is complicated, and while estimates of real returns exist, these results are confined to academic papers that use advanced econometric techniques, thereby making it inaccessible to typical families. Thus, it is the returns *perceived* by students and their parents that end up influencing actual educational decisions, and these are usually formed under uncertainty and limited information. Inaccurate perceptions about returns to education can distort the demand for schooling, affect future labour market outcomes, and keep average educational attainments low (Sequeira et al., 2016).

In India, the need to consider this possibility is especially high as educational levels are low even when measured real returns are high. As we see, the gross enrolment ratio (GER) at primary level is 99.2%, but it drops to 80% by 8th grade, and further to 56.2% and 23% for senior-secondary (10–12th grade) and tertiary education (MHRD, 2018). In comparison, tertiary education enrolment in the US and China are 87% and 39% respectively. Not only that, drop-out rates are above 20% at senior-secondary level even though the mean salary of Indian graduates is 66% higher than high-school pass-outs (NSSO, 2014). Of course, there are several plausible explanations for this such as poverty, credit constraints, accessibility, health, and discrimination. Yet, if underestimating the returns at any level is also a limiting factor for individuals, improving awareness about real returns may be the most cost-effective strategy in improving their educational attainment, and more generally, in raising the demand for schooling.

Review of Literature

As a developing nation, India is one of the youngest countries in the world. With 38.1 million children out of school (UNESCO, 2016) and dropout rates of 15% and 11% for girls and boys respectively, the need to consider various reasons for dropping out of school is essential. Here, we find that physical accessibility is not a deterrent: Close to 95% of all children have a school within half a mile of their residence (PROBE Team & Centre for Development Economics, 1999).

Studies in developed countries like Slovenia (Stanovnik, 1997) and Ireland (Barrett et. al, 2002) have shown that increased demand for skilled labour results in a higher rate of return to schooling and education. Further, several studies show that students of first world countries with good education systems have a better perception of the increase in income with the attainment of different levels of education. A handful of studies for the United States including Smith and Powell (1990); Betts (1996); Dominitz and Manski (1996); Avery and Kane (2004) and Rouse (2004) have proven this.

In India, there is extensive literature on returns to education, but hardly any on the perceived returns and its impact. Chaudhri and Rao (1970) concluded that when the investment into education is taken into account, rates of return reduce with consecutive higher levels of education, thereby forming a concave returns graph. Although, when just

the increase in income is considered for each year of schooling, the graph is more or less linear. For the sake of this paper, the most recent educational return numbers have been extracted from Singhari & Madheswaran (2016).

Evidence from field experiments suggests that perceived returns to education are typically lower than real returns in developing countries. Nguyen (2008) conducted a randomised controlled trial (RCT) in Madagascar where she observed that providing statistics about real returns to education raised the average attendance of students by 3.5%. In Jensen (2010), students at randomly selected schools in the urban Dominican Republic who were given information on higher returns completed on average 0.20–0.35 more years of school than students who were not. In India, the NSSO (71st round, 2014) data on drop-outs shows that the main reason cited for dropping out is “economic and domestic activities”. “Financial constraints” is ranked third in importance. Here, prioritising work over schooling may partly be a consequence of underestimating the returns to education.

This literature survey indicates that there exists a difference between perceived and real returns to education. This difference may explain why dropping out of school seems rational to many Indians, though in reality, their decision creates an education-based-poverty trap. Although estimates of the real returns to education exist, the results are confined to academic papers that use advanced econometric techniques, thereby making it inaccessible to typical students and parents. Thus, it is the returns perceived by students and/or their parents that end up influencing actual schooling decisions, and these are likely to be based on imperfect and incomplete information. Thereby, having little reason to believe that the level of education chosen by parents is either individually or socially efficient. Underestimating the returns to education may therefore be lowering the demand for schooling even when measured real returns are high.

Research Questions

1. What are the differences between real and perceived returns to education, and how might they impact schooling decisions?
2. What are the factors influencing the formation of perceived returns to education?
3. How do characteristics such as family income, age, parental education and gender influence one's perceptions of education?

Objectives

- To find empirically the perceived returns to education among lower and higher income households in Mumbai and Kolkata
- To understand the implications of the difference between real and perceived returns on schooling decisions
- To discuss the factors behind the formation of (distorted) perceived returns
- To analyse how perceived returns may vary along with variables such as age, gender, parental education, family income, etc.

Hypothesis

H₀ (1): There is no significant difference between real and perceived returns

H₀ (2): Family income does not affect perceived returns.

H₀ (3): Gender does not affect perceived returns.

H₀ (4): Age does not affect perceived returns.

H₀ (5): Parental education does not affect perceived returns.

Methodology

The following are some conceptual standardizations across the paper:

Levels of educational attainment – In order to divide the various years of education into classes, we've used the brackets followed by the Indian education system and the variable 'n' and 't' are used efficiently display the levels and the time period (in years) to complete the specific levels of education respectively. The values of the same are given as follows–

- Illiterate ($n = 0$) – Haven't attended any educational institute, zero years of education.
- Primary school ($n = 1, t = 5$) – Till 5th grade, with 7 years of schooling (2 years of kindergarten + 5 years from grade 1 to 5).
- Middle/Upper primary school ($n = 2, t = 3$) – Till 8th grade, with 10 years of schooling
- Secondary school ($n = 4, t = 2$) – Till 10th grade, with 12 years of schooling.
- Senior/Higher secondary school – Till 12th grade, with 14 years of schooling.

- College ($n = 5, t = 4$) – Till bachelors' degree graduation. Since the duration of courses varies from 3-5 years (with 3- and 4-year courses more prevalent and common), the study has taken the duration to achieve this level of education as 4 years. Another important point here is that for ease of regarding the year of the degree, the first year is frequently regarded as the 13th grade, second year as 14th and so on.

Defining low- and high-income families: The specific ranges for low- and high-income groups were defined retrospectively from the survey data (see Table 1).

Table 1: Defining low and high income categories

Monthly Family Income			
Location		Min	Max
Mumbai	Low Income	5,000	35,000
	High Income	60,000	6,00,000
Kolkata	Low Income	2,000	30,000
	High Income	50,000	5,00,000

Source: Survey data

Since it is difficult for respondents to think in terms of educational returns, our survey recorded answers in rupees for future expected income. Using this data, we calculate perceived returns for various educational levels and annualize them using the Compound Annual Growth Rate method.

- Returns to education in grade brackets – One unique value for each level, which is interpreted as the percentage increase in income when a person passes an additional educational level.

$$Returns_n = \frac{Income_n - Income_{n-1}}{Income_{n-1}} \times 100\% ; n = 1, 2, 3, 4, 5$$

- Returns annualized (CAGR) – The rate of return to education per year, compounded annually.

$$Returns_n^{annual\%} = \left(\frac{Income_n}{Income_{n-1}} \right)^{1/t} - 1 ; n = 1, 2, 3, 4, 5$$

Where t = time period (in years) of education for level 'n'

Returns at level n ($Returns_n^{annual\%}$) would be interpreted as each year of additional schooling after level 'n-1' and before level 'n' would increase a person's income by provided the individual completes level 'n' of education.

Primary Data Sampling

Target population: Students from low- and high-income families, currently studying in 8th to 16th grade.

Target Area: Urban and sub-urban parts of Mumbai and Kolkata.

Survey instrument: Questionnaire

Survey Methods: Telephonic interview with participants from low-income families. Online survey via Google forms for participants from higher-income families.

Collection of samples: Randomisation method was used to recruit participants from low-income families. Convenience and snowballing methods were used to get participants from higher-income backgrounds.

Conducting the survey: The telephonic interviews, as well as the online questionnaire survey, was conducted between 1st to 10th October 2020. One of the researchers volunteered at an NGO named 'Youth Empowerment Foundation' that helps the underprivileged communities around the country. The contact details of participants from low-income backgrounds were extracted from the NGO's database after securing the required permissions. The participants from well-off backgrounds were sampled with the researchers' contacts.

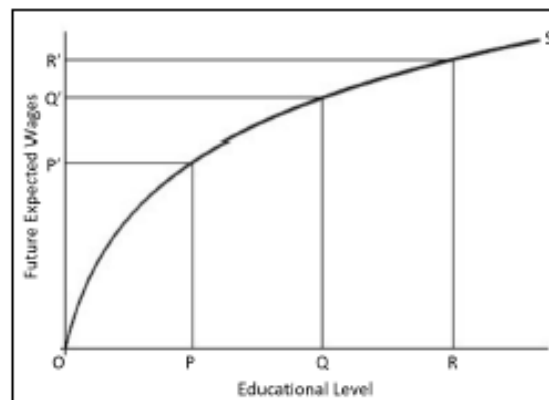
The questionnaire is attached as Appendix 1. The participants were told not to take inflation into account when thinking of future expected wages. Hence, all income figures are in the current rupee value.

Analysis

Linking Education with Wages

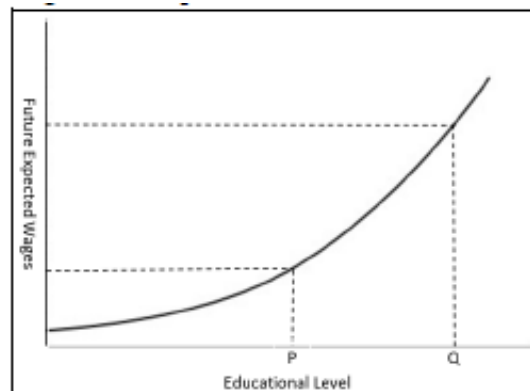
There are three main models for linking educational level with future expected wages: (a) Diminishing returns; (b) S-shaped curve; and (c) Exponential curve.

Figure 1.1: Diminishing returns to Education



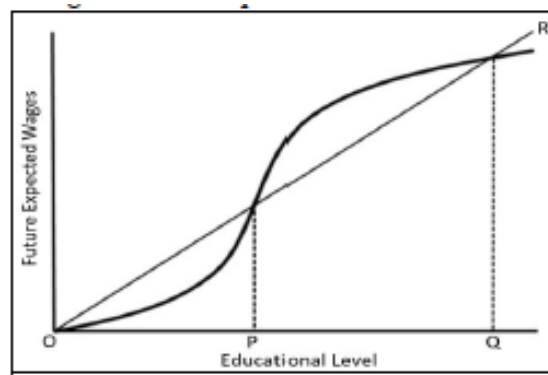
Source: Author's construction

Figure 1.2: Exponential Returns to Education



Source: Author's construction

Figure 1.3: S-shaped returns to Education



Source: Author's construction

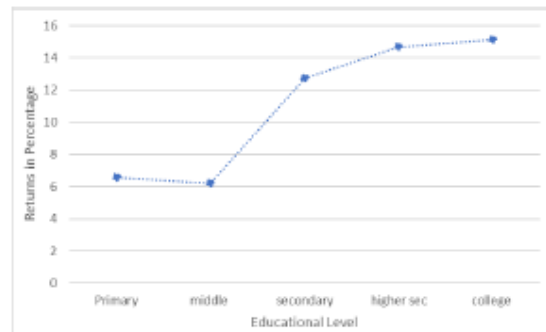
These models represent different conceptions of returns to education. In Fig 1.1 is true, then education exhibits diminishing returns i.e., returns are highest at earliest levels and reduce with an increase in qualification. There are good reasons behind this: the cost of primary schooling is low compared to higher levels; it is often a requirement for access to higher education; and the productivity differential between illiterate persons and primary graduates is significant (Psacharopoulos, 1994). Evidence from field experiments supports this view (Psacharopoulo and Patrinos, 2004).

However, if Fig 1.2 is true, then returns to early education are the lowest and wages rise rapidly with an increase in educational attainment. This model is premised on research that shows that tertiary/higher-education wage premiums have been increasing over time and are highest in comparison to other educational levels (Azam, 2009; Montenegro and Patrinos, 2014).

Finally, as in Fig 1.3, education may also yield S-shaped returns. Under this model, returns for early education are low; they rise sharply at higher levels before reducing again. Notably, it differs from the exponential model since the highest increase in wages is experienced after secondary or senior-secondary schooling, and not after tertiary education. This model is likely true in regions where there is a shortage of high-skilled jobs (Banerjee and Duflo, 2011). Here, a lack of demand for high-skilled labour reduces the value of tertiary education. This role of demand in determining the returns to education has been documented extensively in the literature (Foster and Rosenzweig, 1996; World Bank, 2000).

Comparing Real and Perceived Returns

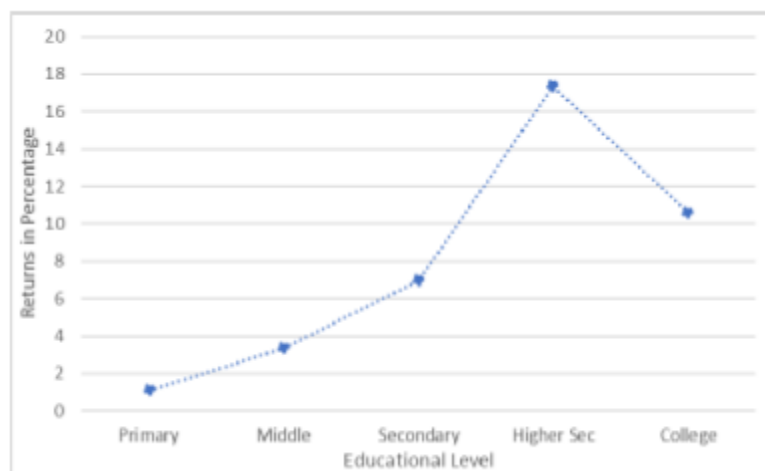
Figure 2: Real Returns to Education in India (Urban)



Source: Author's construction based on data from Agarwal (2011)

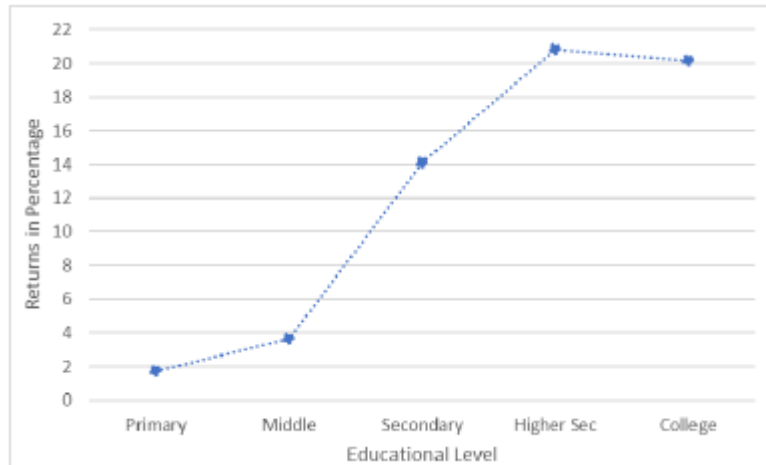
In Figure 2, we find that the real returns to education in India (urban) are increasing with every level of education (except middle-school, but only marginally). This is indicative of the exponential model (Fig 1.2) since wages are rising at an increasing rate with respect to educational qualification. Between middle and secondary level returns, there is a difference of 6.5% which suggests a sharp rise in returns after middle school. Here, as in our empirical results, the rate of return is annualised. The interpretation is: Each year of additional schooling after middle-school and before secondary completion would increase wages by 12.7% for an individual who completes secondary education.

Figure 3.1: Perceived Returns of Low-Income Students



Source: Survey results

Figure 3.2: Perceived Returns of High-Income Students



Source: Survey results

Fig 3.1 and 3.2 represent the perceived returns for students of low-income and high-income households respectively. Our results in Fig 3.1 show that for students of low-income households, returns for higher-secondary level are perceived to be highest (17.4%). Following that, there is a sharp decline in perceived returns for college education (10.6%). This is suggestive of the S-shaped model since returns are initially low, then rise rapidly at higher levels before falling again. For high-income students in Fig 3.2, perceived returns for higher-secondary and college levels are highest and roughly the same (20.9% and 20.1% respectively). Thus, their expectations resemble the exponential model since returns are greatest at highest levels of education.

Implications of Differences between Real and Perceived Returns

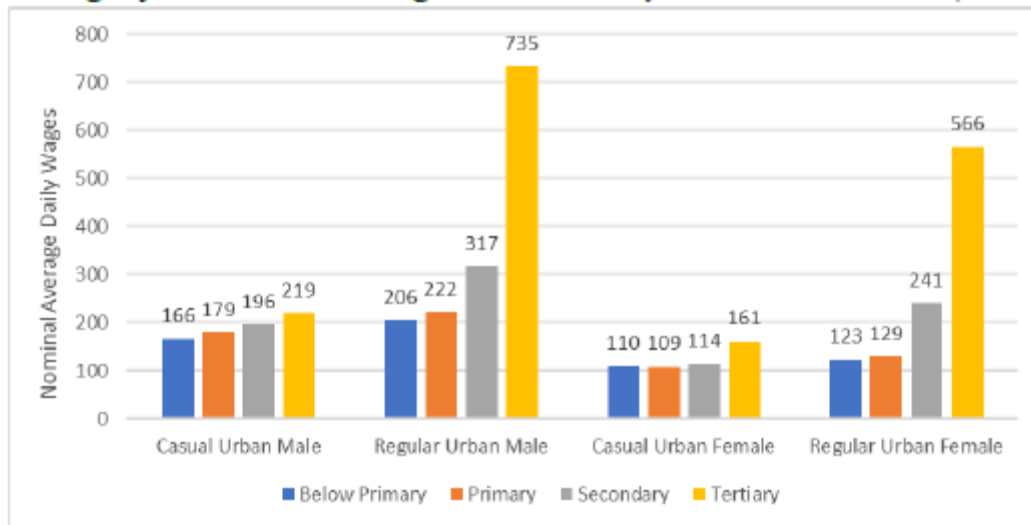
Upon comparing our empirical results with real returns, some differences stand out. First, as seen in Table 9 of Appendix 2, both samples have significantly underestimated returns to early education. At primary level, estimated real returns are 5.6 percent whereas our low-income and high-income samples have reported 1.1 and 1.7 percent respectively. In fact, these figures are likely an overestimation owing to the effect of outliers on our small sample size ($n=211$). 75 percent of low-income and 74 percent of high-income respondents reported the same future expected wages for illiterate and primary levels i.e., their perceived returns to primary education were zero (negative if foregone work experience is considered). This is in stark contrast to the diminishing returns model.

One factor behind this could be the low quality of primary education in India. Duraisamy (2002) argues that qualitative factors such as high pupil-teacher ratios, poorly qualified teachers, low financing of public schools, high teacher-absentee rates, etc. may be driving down returns to primary education. In fact, Singhari and Madheswaran (2016) show that returns to primary schooling have been declining in India since the 1990s. A report by Pratham (2012) found that only 46.5% students in Class V could read Class I textbooks in Indian government schools. This infrastructural lack of focus on the quality of early education may be why perceived returns were found to be so low viz-a-viz higher education. Here, knowledge about the increasing automation of low-skilled jobs may also be a factor.

Second, the samples peak at different qualifications. This is most evident at college level where the difference between perceived returns for the two samples is 9.5 percent. High-income students thus value tertiary education much more highly than low-income students. In part, this reflects the changing attitudes between job security and specialisation. Many of our low-income respondents suggested that they wanted to apply for government jobs after 12th graduation. In India, completing higher secondary (10+2) makes one eligible for most government jobs (railways, defence, admin staff, etc.). Given the payment standards and wage security, government jobs are extremely lucrative when compared to private-sector jobs, especially for lower-income classes. This is supported by a recent study conducted across 10 Indian cities which showed that demand for government jobs among 18- to 30-year-olds had increased during the Covid-19 pandemic, with 82.3 percent of respondents preparing to apply for government jobs (Mint, 2020). This drives up the perceived returns for higher-secondary as a host of jobs become available upon graduation.

Aside from job security, the nature of employment matters too. Low-income groups are overrepresented in the casual workforce while high-income individuals are more likely to be regular workers (ILO, 2018). As we see in Figure 4, differences in educational qualification matter more for regular workers. For both genders, the wage premium for casual workers is flat i.e., educational returns are very low. Among regular workers, however, the wage premium for tertiary education is large. The ratio of the wage-rate of the highest-educated to illiterates is only 1.3 for casual workers compared to 3.5 for regular workers.

Figure 4: Wages for Casual and Regular workers by Educational Level (2011-12 INR)



Source: Author's construction based on NSSO estimates

Given this data, we see that there is no incentive for a student to opt for higher education if s/he expects to join the casual labour force. On the other hand, individuals who expect to join the regular workforce have a strong incentive to acquire higher education. This may be why perceived returns for tertiary education fall for the low-income sample while remaining high for the high-income group. Interestingly, when asked to estimate wages for current thirty-year-olds, the perceived returns for college-level were calculated to be 12.7 and 15.8 percent for low-income and high-income samples respectively (see Table 10 of Appendix 2), compared to 10.6 and 20.1 percent for themselves. The low-income students thus believed that others would benefit more from tertiary education than themselves, while high-income students believed the opposite.

Finally, belief in the S-shaped or exponential model of returns to education implies that it makes sense for families to choose 'winners' and 'losers' among their children. In our sample, both income-groups undervalue early education while generally overvaluing higher levels of schooling. Under these beliefs, poor families who can only afford to educate their children till primary or middle-school levels will receive low returns while richer families who educate their children beyond secondary levels will face significantly higher returns. As a result, poor families are motivated to 'choose' a child who is most likely to reach higher levels of education and invest all their resources on him/her. Over time, this can lead to an increase in drop-out rates and greater inequality both within and among families (Schultz,

2004). Akresh et. al (2010) found that in Burkina Faso, teenagers were more likely to be enrolled in school if they scored high on a test, but *less* likely to be enrolled if their sibling had scored high. This kind of 'winner-picking' in education indicates that perceived returns play an important role in determining real schooling decisions.

Family Income and Perceived Returns

Table 2: t-Test results for low-income versus high-income perceived returns (for oneself)

	<i>Lower Income, own</i>	<i>Higher Income, own</i>
Mean	20.80857105	33.96469226
Variance	524.5951972	1408.807486
Observations	495	555
Hypothesized Mean Difference	0	
Df	931	
t Stat	-6.93563796	
P(T<=t) one-tail	3.78017E-12	
t Critical one-tail	1.646491968	
P(T<=t) two-tail	7.56034E-12	
t Critical two-tail	1.962515333	

Since t-stat lies outside the region of acceptance, we reject H0(2): Family income does not affect perceived returns. At $\alpha=0.05$, perceived returns of the high-income sample are significantly greater than the lower-income sample. Upon disaggregating the data, we find that for primary and middle levels, we are unable to reject H0(2), but for secondary, higher secondary, and college levels, perceived returns for both samples are significantly different.

Thus, family income seems to impact perceptions toward higher levels education more distinctly, while perceived returns for early education appear to be universally low.

Interestingly, looking at the t-Test results in Appendix 2, Tables 11 and 12, we find that the lower-income sample believes that they will lower educational returns than the population average, while the higher-income sample believes that they will face better educational returns than the population average². These results are consistent across every

educational level. This may be due to self-perceptions about one's ability to 'convert' education into higher wages, and is discussed in detail soon.

Parental Educational Level and Perceived Returns

Table 3: t-Test results summarised for parental educational levels

Parental Educational Level (Both x-and y-axis)	Illiterate	Primary	Middle	Secondary	Higher Secondary	College and Above
Illiterate (I)	*	*	*	*	*	*
Primary (P)	P>I	*	*	*	*	*
Middle (M)	I>M	P>M	*	*	*	*
Secondary (S)	S>I	S>P	S>M	*	*	*
Higher Secondary (HS)	HS>I	HS>P	HS>M	Fail to Reject	*	*
College and Above (C)	C>I	C>P	C>M	C>S	C>HS	*

Source: Author's analysis of survey data

In Table 3, we find that in general, children of parents with higher levels of education reported higher perceived returns. The only outlier is middle-school (M) which shows the opposite trend. Similarly, as seen in Figure 9 of Appendix 2, we find that for students of parents with lower levels of education (illiterate, primary and middle), expected wages for 'population average' is higher than 'oneself', while this trend is reversed for students of parents with higher levels of educational attainment (secondary, higher secondary, college and above). Simply put, students of parents with high educational attainment believe that will fare better than the population average, and vice versa. Some potential reasons for this are discussed below.

How May Family Income and Parental Education Be Affecting Perceived Returns?

In this section, we consider the influence of family income and parental education together since they are highly correlated both in our sample and in the population (ILO Wage Report, 2014). One reason why perceived returns are positively correlated with high-family income/greater-parental-education may be the complementarity between 'ability' and education (Harmon et al., 2003). Here, ability refers to the efficiency with which one can² 'convert' education into higher wages. Ability depends on non-quantifiable factors such as soft-skills, and here, students of high family income/greater parental education have a distinct advantage. For instance, consider the English language fluency. Chakraborty and Bakshi (2016) found that in India, a 10% lower probability of learning English in primary schools leads to a decline in weekly wages by 8%. Students from higher-family-income/greater parental-education are more likely to be fluent in English (among other soft-skills), and may thus be more confident about getting higher paid jobs that require competency in soft-skills. In fact, a major reason why students of low-income/lower-parental-education families think that they will fare worse than the population average (and vice-versa) may be their self perceptions about their 'ability' i.e., their soft-skills (Appendix 2: Figure 7, Tables 11 and 12). In other words, their belief that they don't possess the adequate tools to 'convert' education into higher wages may be lowering their perceived returns to education.

Other reasons may be that students from high-family-income/greater-parental-education grow up in a better learning environment and have access to higher quality education. The difference between the quality of private and public education in India is well documented (Pratham, 2012), and its impact on perceived returns have been discussed above. Brand and Xie (2010) have noted the effect of neighbourhood and peer influences on risk perceptions on education. The extent to which one's neighbourhood (including one's immediate friend circle) values education may, in fact, affect perceived returns. A student

² Although we fail to reject H0 for the higher-income sample (Appendix 2, Table 9), the mean of perceived returns for 'own' is greater at every educational level compared to 'population average'. Also, when a t-Test is conducted on expected wages rather than perceived returns of the high-income sample, we find that wages for 'own' are significantly greater than 'population average' at $\alpha=0.05$. These suggest that the high-income sample believes that they will face higher educational returns than the population average.

from a privileged background is also likely to have better contacts and information about employment, and therefore has a better chance of securing a high-paying job in the formal sector (Krishnan, 1996; Siphambe, 2000). Knowledge of these qualitative differences may be affecting our sample's perceived returns, especially for tertiary education. Finally, under financial market imperfections, differences in family backgrounds entail different marginal costs in attaining education. This affects children of poorer families adversely as they face higher costs, especially at the college level (Checchi, 2006). This may be either due to debt financing or due to nepotism in labour markets which reduce educational returns for the less privileged. Agnarsson and Carlin (2002) find that 13% of the marginal return to additional schooling in Sweden is due to family background. Lam and Schoeni (1993) show that returns to schooling drop by about one-third when parental schooling is controlled for in Brazil. Thus, beliefs about higher costs to education and nepotism in the labour market (both of which may be justified) may be driving down the perceived returns to education for students from less privileged families.

Analysis of Variance

Most papers in the literature have neglected the role of risk perceptions in schooling decisions. For poor families, risk perception may deter investment in education even when expected returns are high. Thus, a poor student may decide to not go to college if s/he is extremely unsure of their future earnings. Since we find that perceived returns for the lower income sample falls sharply for tertiary education, it is imperative to ask whether risk perceptions toward education are significantly different among both sampled groups. Here, we use a right-tailed F-test to compare the variances of both samples.

Variable 1: Higher-income sample's perceived returns for college

Variable 2: Lower-income sample's perceived returns for college

$\alpha = 0.05$

$H_0: \sigma^2_1 = \sigma^2_2$

$H_a: \sigma^2_1 > \sigma^2_2$

Table 4: *f-test between the lower and higher income sample's perceived returns*

	Variable 1	Variable 2
Mean	73.36916351	35.54191
Variance	1823.274859	510.5985
Observations	1111	99
df	110	98
F	3.570858058	
P(T<=t) one-tail	2.98481E-10	
F Critical one-tail	1.385930401	

Source: Author's analysis of survey data

$F > F_{\text{critical}}$ so we reject H_0 .

Thus, our evidence suggests that the variance for high-income sample's perceived returns for college is higher. This is in contradiction to studies (Nguyen, 2008; Attanassio and Kaufmann, 2008) which show that risk perceptions (as understood through variance in future expected earnings) toward education are much higher among low-income groups. According to our data, variability in future earnings does *not* explain low perceived returns for college among lower-income students. Here, financial constraints, lack of high-skilled jobs, quality of education, etc. may play a greater role in determining perceived returns.

Gender and Perceived Returns

Table 5: *t-test for the expected future income - males v/s females*

	Whole sample, Male	Whole sample, Female
Mean	39171.09145	28620.9622
t Stat	7.619024693	
T Critical two-tail	1.96187278	

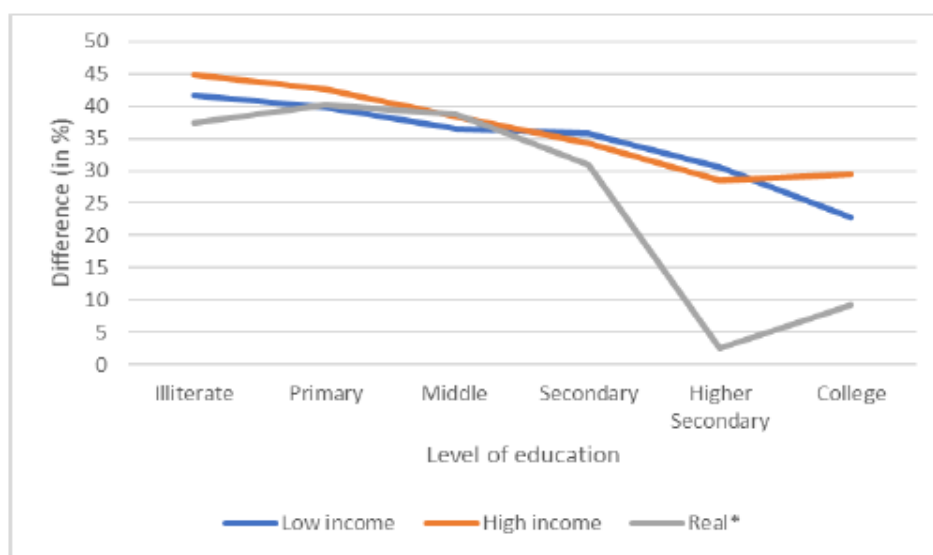
Source: Author's analysis of survey data

The t-test in Table 5 shows that there is a significant difference between the genders' perception of future wages. Tables 14 and 15 in Appendix 2 show that this

difference holds at both income levels. Across both income groups, males also reported a consistently higher future expected wage than females at all levels of education (See Appendix 2, Figure 8&9). Putting this into perspective, Figure 5 plots this gap in their expectation as a ratio of expectation of males. It is calculated as follows:

$$\text{Gap in expectation} = \frac{(\text{Males' perception} - \text{Females' perception})}{\text{Males' perception}} \times 100\%$$

Figure 5: Difference in perception of one's future wages (males v/s females, as a % of males' perception) along with the real wage gap



Source: Author's Construction based on survey results; Source*: IGIDR

The gap in expectation of future wages follows a decreasing linear trend. Here, a variety of social factors such as a belief in patriarchy (rather, belief that employers in the labour market are patriarchal) to women having an ingrained sense of lower self-worth may explain why women expect lower wages than men across the educational spectrum. Since we asked respondents to report expected wages at 30, women likely took motherhood into consideration. Other factors constant, 'motherhood penalty' accounts for up to 50% of the wage gap between genders (Waldfogel, 1998). Belief in the 'motherhood penalty' may be why women have lower expectations about future wages. Interestingly, the variables follow a similar pattern till secondary level. Following that, real wage-gap falls steeply for higher secondary and college while perceived differences remain roughly the same (Figure 5). Thus, in our sample, the difference in perception of future wages between males and

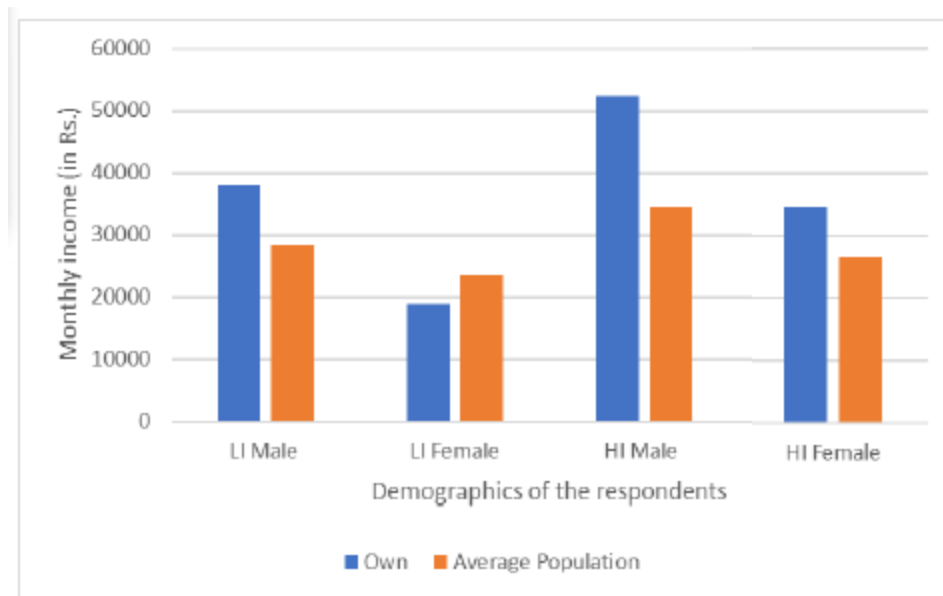
females is greater than in reality for higher educational levels. This may be one of the factors behind low tertiary educational attainment among females.

Table 6: *T-test results between expected income of oneself v/s the population at all levels of education*

	Male	Female
Lower Income	Oneself > Pop Avg	Oneself < Pop Avg
Higher Income	Oneself > Pop Avg	Oneself > Pop Avg

Source: Author's analysis of survey data

Figure 6: *Predicted monthly wages – oneself v/s others*



Source: Author's Construction based on survey results

Table 6 shows that the LI female sample's perceived future wages were significantly lower than the population average at every level of education. However, all other groups' perceived wages are higher than the population average. This indicates that the positive effect of belonging to higher income families on perceived wages is more significant than the negative effect of gender. This may be because jobs relating to domestic help, largely occupied by women, are paid lesser than traditional jobs occupied by men with the same academic attainment (Nandal, 2005). For LI females with high levels of educational

qualification, the supply of secure and well-paid jobs remains low, which either makes them opt out of the labour force or settle as an underemployed and underpaid worker (Das & Mehta, 2012). Formal sector jobs are very competitive and require connections, and here, low-income families (especially women) are likely to be at a disadvantage.

Age and Perceived Returns

Table 7: Optimism level of the sample by t-tests

Demographics	Optimism level about the job market High -> Low			
Lower income background	8-10 th	>	11-13 th	= 14-16 th
Higher income background	14-16 th	>	8-10 th	> 11-13 th
Combined	14-16 th	=	8-10 th	> 11-13 th

Source: Author's analysis of survey data

Table 8: Gross Enrollment Rates (GER) in India for 2015-16

Level	Primary	Middle	Secondary	Senior secondary	College
GER	99.20%	92.80%	83.90%	55.80%	20.80%

Source: MHRD, 2018

Table 7 indicates that the students currently pursuing senior secondary education and their first year in degree college have less incentive to complete their education compared to the ones in their final 3 years of degree college and secondary school. There is a sense of uncertainty about the future in senior secondary school since the shift in educational institutes depends on entrances and board exam scores, which might make an individual pessimistic about the future. Additionally, infamously tough entrances and the coaching 'shadow education' industry built around it puts students under considerable pressure (Bray, 2003). A study by Smith & Wertlieb (2005) shows that the academic and social expectation of first year college students do not align with their expectations, thereby making it a little tough for them to adjust and cope.

The Gross Enrolment Rates (Table 8) support the findings from Table 7. As students transition from senior secondary to college, there is a steep fall of 35% in

enrolment rates. There are various reasons that students prefer to not continue their education. 'Education Quality Upgradation and Inclusion Programme' report by the HRD ministry states "empirical evidence points towards the persistence of economic, social, locational, and regional disparities in access to higher education. The higher education system and institutions have to recognise and adapt to meet the demand from diverse communities of students". The sample data collected also shows the additional factor of optimism of income that may make them lose interest in pursuing their further education.

Policy Review

Having analysed how perceived and real returns vary along characteristic variables, it may now be instructive to discuss various methods of intervention that can make perceptions about education more attuned to reality. Here are three possible methods:

1. **Role Models** (Nguyen, 2008) – Role models serve as a direct 'witness' of educational success to students and parents. By appealing to their common background, this method can raise perceived returns through a direct emotional connection with the target group.
2. **Financial recognition** (Sequeira et.al, 2014) – Rewarding educational achievement with fellowships/scholarships makes schooling profitable in the short run. It reduces uncertainty about the future, thereby incentivising educational investment.
3. **Flyers and awareness campaigns** – Providing information about real schooling outcomes is a cost-effective way to change perceptions. Likely effective in situations with great information uncertainty.

Role models can be effective among lower-income families. Since the models share similar backgrounds with the students, it is easier to relate to them and build a level of trust. Financial recognition will likely be more effective in raising perceptions of students pursuing higher education since it is difficult to discern talent during early education. This would effective especially be for low-income students since apart from the reassurance of education being a good investment, it would also support poorer families that require immediate financial gains. Flyers and campaigns are the most cost-effective and can be used with any target group.

Conclusion

In this paper, we empirically calculate the perceived returns to education in India and discuss how perceptions vary along characteristic variables. Perceived returns to primary education are found to be low universally. Low-income families underestimate returns at college level. There is low optimism about future expected wages in the 11th–13th grade age bracket, and there is a significant difference in educational perceptions between males and females. Low income females perceive their income to be lower than population average. Volatility in perceived returns to college education is higher for students hailing from well-to-do families, which is contradictory to most findings in other developing nations. Based on our results, we also recommend various interventions to attune perceptions about education with reality.

References

1. Agrawal, T. (2011), "Returns to Education in India: Some Recent Evidence", Indira Gandhi Institute of Development Research Working Paper 2011-017, September 2011.
2. Attanasio, O., & Kaufmann, K. (2008). School Choices, Subjective Expectations and Credit Constraints. Bocconi University and University College London Working Paper.
3. Mehtabul, A. (2009). India's Increasing Skill Premium: Role of Demand and Supply. IZA Discussion Paper No. 3968, Available at SSRN: <https://ssrn.com/abstract=1336085>
4. Banerjee, A. V., & Duflo, E. (2011). Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty. *PublicAffairs*. <https://doi.org/10.1002/jid.2936>
5. Barrett, A., FitzGerald, J., & Nolan, B. (2002). Earnings inequality, returns to education and immigration into Ireland. *Labour Economics*, 9(5), 665–680. [https://doi.org/10.1016/S0927-5371\(02\)00073-8](https://doi.org/10.1016/S0927-5371(02)00073-8)
6. Chaudhri, D., & Rao, P. (1970). Private and Social Returns to Higher Education: A Case Study of Delhi Graduates. *Economic and Political Weekly*, 5(14), 605–608. Retrieved November 7, 2020, from <http://www.jstor.org/stable/4359824>
7. Duraisamy, P. 2002. "Changes in Returns to Education in India, 1983–94: By Gender, Age-Cohort and Location." *Economics of Education Review*, 21:6, pp. 609–22.

8. Gouda, S., & Sekhar, T. V. (2014). Factors Leading to School Dropouts in India: An Analysis of National Family Health Survey-3 Data. *IOSR Journal of Research & Method in Education*. 4(6):
https://www.researchgate.net/publication/269932850_Factors_Leading_to_School_Dropouts_in_India_An_Analysis_of_National_Family_Health_Survey-3_Data
9. Gouda, S., & Sekhar, T. (2014). Factors Leading to School Dropouts in India: An Analysis of National Family Health Survey-3 Data. *International Journal of Research & Method in Education*. doi: [10.9790/7388-04637583](https://doi.org/10.9790/7388-04637583)
10. Halvorsen, T. (2016). Higher Education in Developing Countries: Peril and Promise, a Decade and a Half Later: Development Lost?. *International Journal of African Higher Education*. 3. Doi: [10.6017/ijahe.v3i1.9638](https://doi.org/10.6017/ijahe.v3i1.9638)
11. International Labour Organisation. (2020). Retrieved 25 December 2020, from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/publication/wcms_638305.pdf
12. Jensen, R. (2010). The (Perceived) Returns To Education And The Demand For Schooling. *The Quarterly Journal of Economics*.
https://cega.berkeley.edu/assets/cega_research_projects/58/The_Perceived_Returns_to_Educato_n_and_the_Demand_for_Schooling.pdf
13. Montenegro, Claudio E. & Patrinos, Harry Anthony, (2014). "Comparable estimates of returns to schooling around the world," Policy Research Working Paper Series 7020, The World Bank.
14. National Sample Survey Office (NSSO). (2014). Employment and Unemployment Situation in India, NSS Report No. 554(68/10/1), NSS 68th Round, July 2011–June 2012 (Ministry of Statistics & Programme Implementation, Government of India).
15. Nguyen, T. (2008). Information, Role Models and Perceived Returns to Education: Experimental Evidence from Madagascar. *Massachusetts Institute of Technology*.
<https://www.povertyactionlab.org/sites/default/files/documents/Nguyen%202008.pdf>
- Pratham (2012). Annual Status of Education Report (Rural) 2011. Pratham, New Delhi.
16. PROBE Team, Centre for Development Economics (1999). Public Report on Basic Education in India. *Oxford University Press*.
https://www.undp.org/content/dam/india/docs/public_report_basic_education_in_india.pdf

17. Psacharopoulos, G., & Patrions, H. (2004). "Returns to Investment in Education: A Further Update." *Education Economics*, 12:2, pp. 111-34.
18. Psacharopoulos, G. (1994). "Returns to Investment in Education: A Global Update." *World Development*, 22:9, pp. 1325-43.
19. Radhika (2020). Dropout rates increasing in Classes 9 and 10 in some states: MHRD. *Career 360*. <https://news.careers360.com/dropout-rates-increasing-in-classes-9-and-10-in-some-states-mhrd>
20. Akresh, R., Bagby, E., Walque, D., & Kazianga, H.,. (2012). "Child Ability and Household Human Capital Investment Decisions in Burkina Faso," *Economic Development and Cultural Change*, University of Chicago Press, vol. 61(1), pages 157-186.
21. Schultz, T. (2004). "Evidence of Returns to Schooling in Africa from Household Surveys: Monitoring and Restructuring the Market for Education." *Journal of African Economies*, 13, pp. ii95-ii148.
22. Sequeira, Sandra & Spinnewijn, Johannes & Xu, Guo. (2016). "Rewarding schooling success and perceived returns to education: Evidence from India," *Journal of Economic Behavior & Organization*, Elsevier, vol. 131(PA), pages 373-392.
23. Sharp increase seen in preference for government jobs. (2020). Retrieved 25 December 2020, from <https://www.livemint.com/news/india/sharp-increase-seen-in-preference-for-government-jobs-11594526931270.html>
24. Singhari, S., & Madheswaran, S. (2016). The Changing Rates of Return to Education in India: Evidence from NSS Data. *The Institute for Social and Economic Change*. <http://www.isec.ac.in/WP%20358%2020Smritirekha%20Singhari%20and%20S%20Madheswaran%20-%20Final.pdf>
25. Smith, H., & Powell, B. (1990). Great Expectations: Variations in Income Expectations Among College Seniors. *Sociology of Education*, 63(3), 194-207. doi:10.2307/2112837
26. Stanovnik, T. (1997). The returns to education in Slovenia. *Economics of Education Review*, 16(4), 443-449. [https://doi.org/10.1016/S0272-7757\(97\)00006-X](https://doi.org/10.1016/S0272-7757(97)00006-X)
27. World Bank, 2011, 'Gender Differences in Employment and Why They Matter', in *World Development Report 2012: Gender Equality and Development*, World Bank, Washington DC, Ch. 5.
28. Das, M. & Mehta, S. (2012). *Issue Brief: Poverty and social exclusion in India*. World Bank <https://openknowledge.worldbank.org/bitstream/handle/10986/26338/114156-BRI India-PSE-women-Brief-PUBLIC.pdf?sequence=1&isAllowed=y>

29. Tejani, S. (2016). Jobless growth in India: an investigation. Cambridge Journal of Economics, 843–870. doi:[10.1093/cje/bev025](https://doi.org/10.1093/cje/bev025)
30. Nandal, S. (2005). Extent and Causes of Gender and Poverty in India: A Case Study of Rural Haryana. Journal of International Women's Studies. 7(2), 182–190
<https://vc.bridgew.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1442&context=jiws>
31. Nichols, C. (2016) Time Ni Hota Hai: time poverty and food security in the Kumaon hills, India, Gender, Place & Culture, 23:10, 1404– 1419, DOI: [10.1080/0966369X.2016.1160871](https://doi.org/10.1080/0966369X.2016.1160871)
32. Dommaraju, P. (2009). Timing of First Birth in India. Genus, 65(1), 81–101. doi:[10.4402/genus-53](https://doi.org/10.4402/genus-53)
33. Bray, M. (2003). Adverse effects of private supplementary tutoring: Dimensions, implications and government responses. Paris: UNESCO IIEP.
https://www.researchgate.net/publication/308412747_Adverse_Effects_of_Supplementary_Private_Tutoring_Dimensions_Implications_and_Government_Responses
34. Smith, J. & Wertlieb, E. (2005) Do First-Year College Students' Expectations Align with their First-Year Experiences?, NASPA Journal, 42:2, 153–174, DOI: [10.2202/1949-6605.1470](https://doi.org/10.2202/1949-6605.1470)

Appendix 1

The Questionnaire

Section 1: Demographic questions

- 1 (a). Age
- 1 (b). Sex
- 1 (c). What standard are you studying in? (Note for college students: if you're in the First year, enter '13'. Second year students enter '14' and so on)
- 1 (d). Family income (monthly) _____
- 1 (e). What is the educational level of your parents?

Section 2: Expected income when you are 30

The next 5 questions all relate to the same hypothetical scenario mentioned below.

Question: Suppose you were to complete **x-level of education**, stop attending school, and immediately start working afterward. Think about what kinds of jobs you might get. How much do you think you will earn when you are 30 years old? Enter answer as **monthly** salary.

In the questions below, different values for the '**x level of education**' are mentioned. Answer in today's money value. **Do not** take inflation into account.

- 2 (a). x = No educational qualification i.e., never attended school (illiterate)
- 2 (b). x = primary school education (5th grade)
- 2 (c). x=middle school education (8th grade)
- 2 (d). x=secondary school education (10th grade)
- 2 (e). x=senior secondary school education (12th grade)
- 2 (f). x= college education (bachelor's degree)

Section 3: Guessing income of current 30-year-olds

In this section, we are asking you to guess the average **monthly** salary of people who are currently 30 years old who have completed **x level of education**. This is different from the previous section in that we are asking you to guess the average salary of others (not just about the people you know personally, but people across the country), not yourself. Once again, think about the kind of jobs they will be qualified for in each scenario, and then write down the average monthly salary that a current 30-year-old with that level of education receives.

There are no wrong answers. Just write down what you think an average 30-year-old receives.

Please enter only numeric values. The answer should be the **monthly** salary.

- 3 (a). x = No educational qualification i.e. never attended school (illiterate)
- 3 (b). x = primary school education (5th grade)
- 3 (c). x=middle school education (8th grade)
- 3 (d). x=secondary school education (10th grade)
- 3 (e).

x=senior secondary school education (12th grade) 3 (f).

x= college education (bachelor's degree)

Appendix 2

Table 9: Comparing Real and Perceived Returns

Educational Level	Real Returns	Low-Income Sample	High-Income Sample
Primary	5.6	1.1	1.7
Middle	6.2	3.3	3.6
Secondary	11.4	7.0	14.0
Higher Secondary	12.2	17.4	20.9
College	15.9	10.6	20.1

Table 10: Perceived Returns for Current 30-year-olds

Educational Level	Low-Income Sample	High-Income Sample
Primary	3.0	2.0
Middle	3.1	5.2
Secondary	4.8	10.1
Higher Sec	11.3	13.7
College	12.7	15.8

Table 11: t-Test results for low-income versus high-income perceived returns (for oneself)

	<i>LI own</i>	<i>HI own</i>
Mean	20.80857105	33.96469226
Variance	524.5951972	1408.807486
Observations	495	555

Hypothesized Mean	0	
df	931	
t Stat	-6.93563796	
P(T<=t) one-tail	3.78017E-12	
t Critical one-tail	1.646491968	
P(T<=t) two-tail	7.56034E-12	
t Critical two-tail	1.962515333	

Table 12: t-Test results for perceived returns of low-income (oneself) versus low-income (population average)

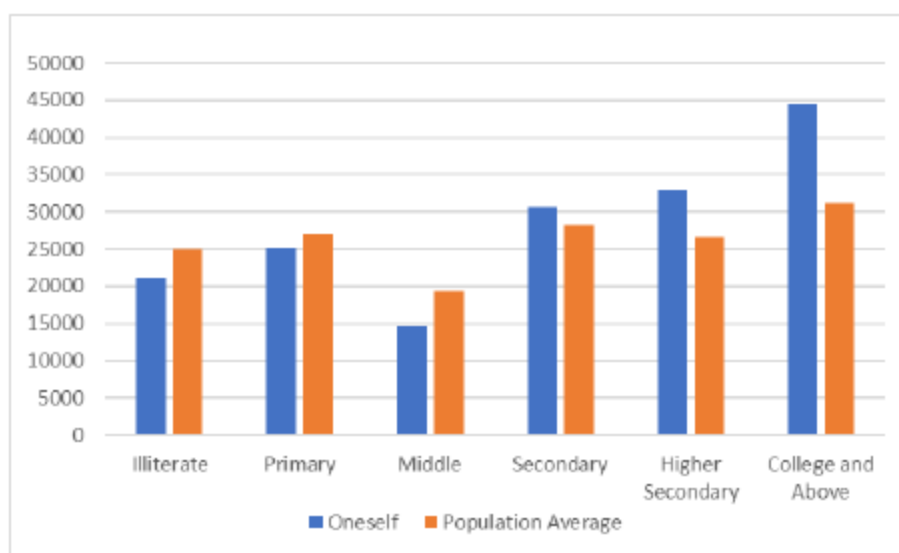
	<i>LI own</i>	<i>LI popln.</i>
Mean	20.80857105	22.96670436
Variance	524.5951972	624.9863933
Observations	495	495
Pearson Correlation	0.57304348	
Hypothesized Mean	0	
Df	494	
t Stat	-2.161765286	
P(T<=t) one-tail	0.015557908	
t Critical one-tail	1.647944008	
P(T<=t) two-tail	0.031115815	
t Critical two-tail	1.96477774	

Table 13: t-Test results for perceived returns of high-income (oneself) versus high-income (population average)

	<i>HI popln</i>	<i>HI own</i>
Mean	31.65503121	33.96469226

Variance	1067.913776	1408.807486
Observations	555	555
Pearson Correlation	0.645155459	
Hypothesized Mean Difference	0	
Df	554	
t Stat	-1.819749854	
P(T<=t) one-tail	0.034668323	
t Critical one-tail	1.647608746	
P(T<=t) two-tail	0.069336646	
t Critical two-tail	1.964255274	

Figure 7: Average Future Expected Wages by Parent's Education Level



Source: Author's Construction based on survey results

Table 14: t-test for the expected future income – HI males v/s HI females

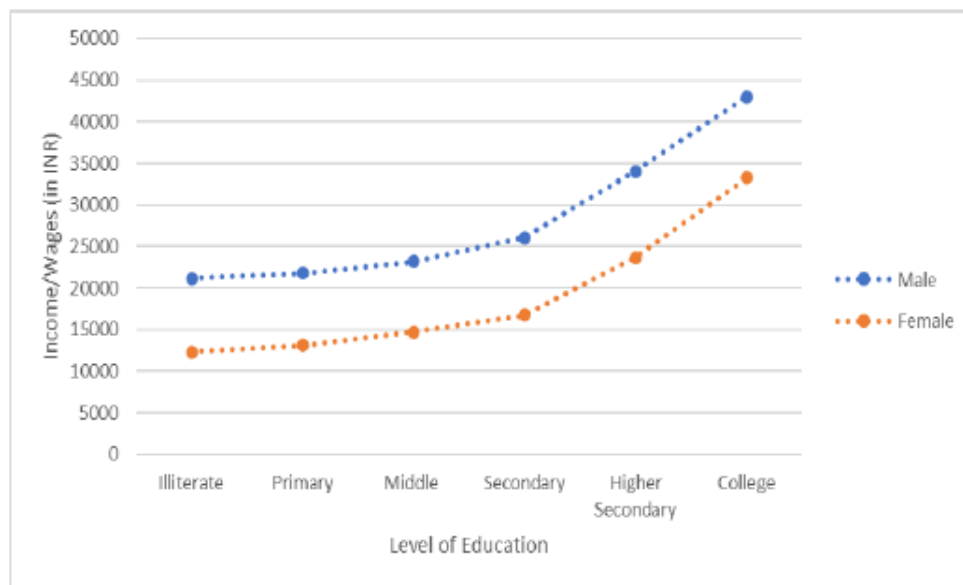
	HI Male	HI Female
Mean	52495.09804	34682.91782

t Stat	7.724186413	
t Critical two-tail	1.964424727	

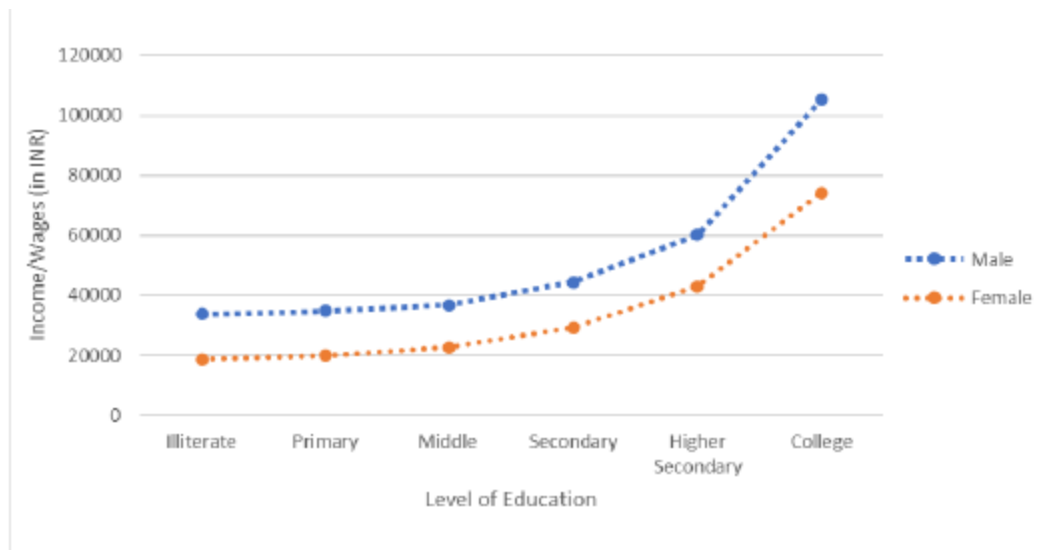
Table 15: t-test for the expected future income – LI males v/s LI females

	LI Male	LI Female
Mean	28211.02151	18968.46847
t Stat	8.698949335	
t Critical two-tail	1.964475628	

Figure 8: Lower-income sample's perceived incomes



Source: Author's Construction based on survey results



Source: Author's Construction based on survey results