Rate of Return to Education in India: Some Insights

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Abstract

There is a general tendency in the literature to consider and analyse investment decisions on education, based upon the pecuniary rate of return, without focusing the 'intrinsic' advantages of education. Without engaging in the inadequacy of such an approach, this paper presents the relationships between wage and education levels among employed persons from different socio-religious and occupational groups. Based on an analysis of the NSS 68th round data, the results show that in India, there are insignificant relationships between wages and education level, in most cases. However, persons with higher education level are able to get regular salaried jobs. In fact, even for those who are part of the socio-economically deprived sections, higher educational attainments facilitate better jobs. Diversification and exclusion problems are common features of job markets in India, as reflected in different indicators. Further, the paper also finds that wage differences in 'formal' and 'informal' sectors, 'skill mismatch' and volatilities in job markets play important roles in job opportunities and returns to labour.

JEL Classification Codes: I26, J24, J01

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I. Introduction

It is widely acknowledged in the relevant literature that education has 'intrinsic' and 'instrumental' advantages and hence, limiting its worth to pecuniary rate of return is deeply flawed. However, often from the perspectives of common person, tangible return to investment on education with respect to job opportunity, average wage etc. play a central role. This kind of perception has become prominent in the recent decades, particularly in economic analysis, whether with respect to decision making of households or governments etc. and there has been a substantial literature on the so called 'human capital' approach to education. However, we need to note that impact of education on job opportunities and wages is not a new idea in economics. As Smith pointed out in his 'Wealth of Nations' (1776): "*A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital.*" (chapter X. page 119)

The recent debates on 'jobless growth' and 'skill deficit' among the job seekers and existing work force are pointing towards uncertain pecuniary return to education. It is indeed true, the job market in any economy (particularly in India) are full of different types of 'dual characteristics', for instance, wage difference across formal and informal sectors. It is seen that wage earned in formal sectors compared to informal sectors are substantially higher (Kijma, 2006; Mehta and Hasan, 2012; Dutta, 2005; Sarkar and Mehta, 2010; Abraham, 2007); however, it is always not the case that all employees in the formal sectors are organised and getting paid high amount of salaries (Papola and Kannan, 2017). Furthermore, the job searching period is quite lengthy in India and it increases with higher level of education. In this context getting the accurate wage is still a questionable issue, and investment decisions on education cannot be judged easily with pecuniary rate of return. However, wage earning capacity depends on many other factors, such as, location area, job opportunities, parent's education and upbringing patterns, interest and motivation towards job, individual's capacity, family occupation and socio-cultural aspects etcetera along with these different factors of overall economy. This paper aims to explore the relationships between wage and education levels and some of the possible reasons behind the relationships. This paper is structured as follows:

After the introductory part,section 2 has briefly presented the calculation methods of rate of return to education (RORE) and its criticism. Section 3 presents a brief review of data and methodologies adopted in this paper for the calculation of RORE in India. A calculation of RORE in India at different education level has been done in section 4 with the help of NSSO 68th round on employment-unemployment scenario in 2011-12. Section 5 provides a possible explanation on the basis of the job participation and education status, as well as evidences placed in other literatures about wage inequalities in Indian job market context in the recent periods. Section 6 concludes the discussions.

II. Methods to Calculate Rate of Return to Education and Criticism:

The concept of calculating pecuniary rate of return was much enhanced in the early 1960s along with the introduction of the concept of 'human capital' approach, as education is considered as another form of capital. As Psacharopholous (1996) gave some broad trend of research in economics of education and describes it with reference to the estimates of 'profitability of investment' in education in the late 1950s/early 1960s. In 1970s, the challenges to the social returns to education and in 1980s a revival of attempts to estimate the effect of education on economic growth by means of 'endogenous' models that allegedly catch much of education's positive externalities can be seen. The attempts to calculate rate of return were well-articulated with its various aspects in a special issue of the Journal of Human Resources in 1967. However, the attempt was tried to capturing the cost of education and private return as well as social return with its limited aspects. Initially the rate of return (r) was defined as the ratio of earning differentials with different educational level (E) and cost difference of those two different education level (C). This can be expressed as,

$$\text{Rate of return (r)} = \frac{E}{C} = \frac{\text{Earning differentials with different educational}}{\text{Cost difference of those two different education level}}$$

The major concern on this rate of return calculation method is the inherited factors under costs and earnings. The costs are broadly two types, direct costs and indirect costs. Direct costs are associated with education either paid by individual or subsidised by the government. Indirect costs are opportunity costs in both cases. For instance, the opportunity costs by the children or students are the forgone earning;and for the government, the opportunity cost is the possibilities of utilisation the money spends for the education sector, into any other sector. Similarly, the benefits are not only reduced in terms of wage earning; as the benefits are also spread over various other outcomes. In normal practices, the immediate effect of school education measured by the quality outcome, earnings/ productivity and chances of getting 'decent' job.

Tilak (1985) estimated the costs of education applied for children participated in subsidised school. This estimation considered the cost of education as (i) institutional costs and (ii) out of pocket expenditure by the households, which is commonly known as private cost. Both of these costs can also be divided into visible and opportunity costs. As 'visible' institutional costs are the recurring costs like salaries, scholarships, stipends etc. and non-recurring costs are buildings, furniture, equipment others; which are normally subsidised by government in public school, and funded by student as fees in private school. In government aided (fully and partially) schools, students pay some amount oftuition fees, hostel fees, uniforms'charges,purchase books and stationery etc., and may opt for private coaching, which are different form of visible costs.

Apart from these 'visible costs', there are high amounts of 'opportunity costs' are hidden in 'costs of education' for both service provider (in terms of other possible areas of investment) and students (in terms of forgone earnings). Both of these costs and especially

opportunity costs cannot be captured in a simpler method. This problem of calculating cost of education forced to improve the methodology to calculate RORE. Harbison and Hanushek (1992) have argued in favour of the 'cost effectiveness' calculation by the level of outcome as the output, and coefficients of other inputs, like teacher, infrastructure and others, considered as the cost. However, in the common practices, researchers use 'Mincerian equation' (1974) to calculate RORE. Mincerian equation had considered foregoing earning or opportunity cost as the major cost to calculate the same. In the equation, it is assumed that years of experiences play an important role upon earnings, apart from years of schooling. As Mincer (1974) has showed with some empirical examples, that years of experienceshave positive impacts on wage earnings and also the impact is concave in nature, as the rate of change in earning becomes negative after a certain point of age. Obviously, this point of diminishing rate of earning depends on the job sector, occupation type as well as the wage earners' tendencies to investment upon themselves to acquire new knowledges and skills.

To calculate RORE, Mincer's earning equations used as in the form of:

$$lnW_i = \alpha + \sum_k \beta_{ik} S_{ik} + \gamma E_i \ + \delta E_i^2 + \varepsilon L_i + u_i$$

Where, W is the wage rate,
S refers to schooling,
E stands for experience and
L denotes the location,
α, β, γ , δ and ε are the parameters to be estimated and
u is the random disturbance term,
k is different level of educations and
i is for different individuals

Criticism and Loopholes of Mincerian Equation Model:

Mincerian earning equation model was built upon few important assumptions and have its own limitations. First of all, the model argued about the post school investment in terms of formal/ informal training. One of the important assumptions was that, one can immediately enter into the labour force as soon as completion of schooling. However, entering into labour force is one of the toughest challenges in developing countries like India, even after getting high skilled training. Job searching period may be substantially longer in some cases. As Mincer had also pointed that earning not only depend upon skill, education, experiences, as in reality, earning depends on many other factors like individual's ability, parental education etc. Along with these, household assets, household occupation, location are obvious important factor to measure rate of return. Although, Mincer continuously argued that the model provides average rate of return, not individual, as other factors like ability etc. play a major role in earning.

Mincerian earning equation has both the merits and demerits; but with the available data base, is the feasible to analysis. This equation is mainly an earning equation, to check the earning differential with different level of education and trainings. Instead of largely practiced of Mincerian earning equation, substantial criticisms have been done both with respect totheories of econometrics as well as from policy perspectives. As the model is static by nature and the rate of return is calculated by average of wage rate of different individual, without looking at their life earning path or life history and also the 'endogeneity' nature of schooling with household characteristics (Griliches 1977). Card (1995, 1999) also pointed about the unobserved heterogeneity in the positive correlation between wages and education, due to the ability factor and household characteristics, which may reason of causal effects. Trostel (2005) pointed the non-linearity nature of return to education leads to a declining nature at the low end of education distribution after showing an incremental rate of return for others with medium and low levels of education. Some other literature also argued that 'education decision' and years of schooling are depends upon tastes, ability and other factors (Hungerford and Solon, 1987; Belman and Heywood, 1991; Kroch and Sjoblom, 1994; Groot and Oosterbeeck, 1994; Weiss, 1995; and Jaeger and Page, 1996), and hence wages may vary with these 'education decisions'. Glewwe (1996) criticised the 'accuracy and usefulness of estimated rates of return to schooling' as the ability of student and learning quality of the educational institution varies largely, may not define properly the relationship between wages and education level. Dickson and Harmon (2011) well-articulated the problem of the concept of return to education as the model do not consider the risk factor beyond the life time, and the return is obviously different among various strata of the society.

However, Mincerian equation has been used by researchers in more than thousand research papers and policy papers. George Psacharophoulous (1973, 1976, 1985, 1994, 2004) has worked on returns to education in his different studies for different years and for different countries. Various other authors like Heckman, Lochner, Todd and Petra (2005), Tsang (1988), Li, Liu and Zhang (2012) have calculated return to education by using Mincerian earning equation and / or modified earning equation for different countries. Harberger (1965), Gounden (1967), Husain (1967), Kothari (1967, 1970), Blaug (1972), Psacharopoulous (1973), Shortlidge (1974), Pandit (1976) calculated rate of returns to investment of education. Among all of these studies cited there, pecuniary rate of returns was in a range of 7to 25 per cent for primary school level, 10 to 19 per centfor lower and upper secondary level, and for post-secondary level the range was between 9 to 25 per cent. Addressing the low rate of return, most of these papers pointed about the problem of 'educated unemployment', late recruitment, and larger participation in low skilled jobs,as major reasons. Some other researchers also attempted to calculate rate of return in India. For instance, Gounden (1967), Tilak (1987), Duraisamy (2002), Kingdon (1998) (1995, 1997, 2001, 2008), Kingdon and Theopold (2006), Dutta, (2006), Madheswaran and Attewll (2007), Riboud and Tan (2009), Agarwal (2011, 2012), Geetha Rani (2014) have attempted to calculate return to education with different data base.

The criticism is stand on the question, that return in terms of production units or wages? First problem with the concept is that the relationship of wages not always increases

at a same proportion with the increment of output produced by workers after acquiring higher skills (Roy 1950, 1951). We can relate the answer with Marx's 'Theory of Value', as the value of product is mostly determined by demand and supply, not by the wages given to labour. Even if the skill development resulted to increase wages to the labour, the increased wages, do not assure better life and decent working conditions. For instance, own account worker supposed to produced output and profit on its own production system, but in reality the large number of self-employed workers and / or own account workers are largely in informal sectors and involved in more than 12 hours of working schedule with no assurance of social security and decency in job employment (Banerjee and Duflow, 2007). Apart from these, the variation in regional prices, geographical and seasonal variations are not captured by the normal practise of calculating rate of return by Mincerian earning equation (Tilak, 1994).

In addition to all these above mentioned studies, here we have attempted to see the relationships between education level and wages, and also recalculated the rate of pecuniary return to education, using Mincerian equation, with the help of NSSO 2011-12 employment-unemployment data. We have used different dummies for controlling the household characteristics like social groups, religion, gender and household type as well as the sectors (rural or urban) to get a better picture of this relationship at slightly disaggregated level. This is true that, one can acquire better job or decent working life with higher educational level. Although, considering wage as an important element, we are relating wage with educational level, along with different other variables which we can capture from the database. The important part is also the industry categories and / or job type (regular and casual); which are important aspects to determine the rate of return.

III. Data and Methodologies:

It is worthwhile to provide a brief explanation about the available variables and their modifications by grouping done for the analysis. In the NSSO survey data, wages are available only for the employed persons in regular salaried jobs or casual workers. Wages reported as 'received or receivable for the work done during the week (in Rs.)'. For our purpose, we are focusing on payment time and have assumed similar working days for entire year which may not be possible for casual workers in reality. However, wages paid in terms of cash and kind; and survey data reported in five methods of wage payment, (regular monthly salary, regular weekly payment, daily payment, piece rate payment, others) and mode of wage payment also reported as piece rate in cash, piece rate in kind, piece rate in both cash and kind, other (non-piece) rate in cash, other (non-piece) rate in kind, other (non-piece) rate in both cash and kind. In our analysis, we have calculated the reported wages with available data for actual working days reported in last week of survey. Actual working days reported as intensity of activity (full day as 1.0 and half-day as 0.5) during last seven days of survey.

In terms of employment status, we have considered three broad categories: 'regular salaried/ wage employee', 'casual wage labour' and 'self-employed in household enterprises'. The problems with the observations working as 'self-employed in household enterprises', only 20 percent among all observation have reported wages amount during the surveyed

week; as self-employed persons may consider the earning as profit, rather than wages. In terms of participating industries have grouped from the NIC 2008 code, such as primary (agriculture, forestry, fishing, mining, quarrying), secondary (manufacturing, electricity gas and water supply, construction) and tertiary (trade, hotels and restaurant, transport, storage and communication, financing, insurance, real estate, business services, community, social and personal services) sectors. Social group and religious group considered in our analysis is similar to the previous section, as four social groups reported in the data set as Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Categories (OBCs) and General; and we have considered the same. We have made four religious groups, such as Hindus, Muslims, Christians and others.

The NSS employment-unemployment survey data provides the completed level of education, instead of years of schooling, for any individual. NSSO (64th round) survey in 2007-08 has done for the participation and expenditure in education, provide years of schooling (as 'year of study') among the population covered in the survey between 5-29 years of age. This survey also provides the general levels of education in almost same way with the maximum level of education completed as provided by NSSO (68th round) employment-unemployment survey data. Table 1 has given the average, maximum and minimum years of schooling reported by the children between 5 to 29 years, who completed the previous stages of education level and were attending school at the surveyed period. As the current years of schooling reported in the data base for who has already completed the previous level of education, *we have considered years of schooling (S) dummy upon the average years of schooling at any particular education level. With this concept, values of 'S' have considered as,2.75, 6.77,9.48,11.49, 13.8, 14, 15.99 and 17.11for 'below primary', 'primary', 'upper primary/middle', 'secondary', 'higher secondary', 'graduate' and 'postgraduate and above' respectively* as reported in table 1. We have also considered *zero (0) year of schooling for persons literate through non-formal education.*

This is also quite similar with the concepts and definitions provided by NCERT (Sep 30, 2003) for its 7th All India Education Survey. According to NCERT (2003) 'Pre-Primary/ Pre-Basic School' stage includes 'Nursery/LKG/UKG/Kindergarten' classes, which means 1 to 2 years of schooling. Similarly, 'Primary School Stage' comprises classes I-IV/I-V, *i.e.,* 4 to 5 years; 'Upper Primary School Stage' with classes V-VII/VI-VII/VI-VIII or total 8 years; 'Secondary School Stage' considers classes VIII-X/IX-X or 10 years and 'Higher Secondary Stage' comprising classes XI-XII or 12 years of schooling. These years of schooling are almost similar or one year lesser than NSSO minimum years of schooling up to a certain level of education.

Table 1: Education Level and Average Years of Schooling for Currently Enrolled

Educational level	Average Years of Schooling	Maximum Years of Schooling	Minimum Years of Schooling
Below primary	2.75	5	1
Primary	6.77	8	5
Upper primary/middle	9.48	10	9
Secondary	11.49	12	11
Higher secondary	13.80	15	13
Diploma/certificate course	14.00	17	12
Graduate	15.99	18	13
Postgraduate and above	17.11	20	15

Source: Calculated by author from Unit Level Data of NSSO 64th Round, Schedule 25.2.

These assumptions of school years dummies are also largely similar to other literature such as Duraisamy (2002) and Dutta (2006). These assumptions may have limitations, as Psacharophoulous (1987) suggested considering 2 years of forgone earning for the completion of primary education as children could not be able to enter job market before age 10. However, according to 'the Child Labour (Prohibition and Regulation) Act, 1986' children below 14 and 15 years are certainly prohibited to join workforce. Also the Right to Education Act, 2009 suggests not allowing child in job market before age 15 years and enacted compulsory education for children between 6 to 14 years. This may lead to no forgone years of earning up to primary level. In reality, children from poor background may need to join paid or unpaid workforce (most of the time seasonally) to help household activities. In this current paper, we have considered the years of schooling to calculate the rate of return. It is worthwhile to mention, due to the lack of data availability, this analysis unable to capture the type of institutions from where the wage earners were educated. In reality, the type of institutions may have significant impact upon the wage earning level of any individual. Also the study has not considered technical education or any other professional education separately. This analysis has limited only upon general education, and the given years of schooling are for general education of the samples.

Another important variable needed in Mincerian equation is '*experiences' (e)*. In our analysis, experiences have been calculated only for the person reported employed. We have calculated experience on the basis of two assumptions. One is minimum age of working is 15 years and another is the entry age at school is 5 years. Believing upon these two assumptions we have calculated *experience (e) = age of the person – [average years of schooling(S) + 5]* for the people having education upper primary and above. Also, for the people having education up to primary level or below primary level or only literate through non-formal education or illiterate persons experience (e) have calculated as e = *age of the person –15*.

IV. Results from the Calculation of RORE in India and Analysis:

The overall discussions in the above sections lead us to calculate RORE by Mincerian semi-logarithm earnings equation to test the effect of education, experience and other control variables upon the wage earning. Mincerian earnings equation is specified as follows:

$$lnW_i = \alpha + \beta_i S_i + \gamma E_i \ + \delta E_i^2 + \varepsilon L_i + u_i$$

Where, *W* is the wage rate; *S* refers to schooling; *E* stands for experience and *L* denotes the location (as rural: 1 and urban: 2); α, β, γ, δ and ε are the parameters to be estimated and *u* is the random disturbance term and *i* is for different individuals

To check the relationship of education level (or average years of schooling) upon wages, we have considered only employed persons in our model. As the survey design methodologies is different in NSS 68th round data on employment participation; the selection of only employed person, may have the selection bias. To avoid the selection bias, we have used 'Heckman Selection model' to calculate inverse Mills ratio. According to Heckman (1979) two stage estimation method, we have done 'Probit' regression at first stage for the explanatory variable, to check the probability of participation (selection). At second stage, we have done the Mincerian equation or wage equation.

First Step Probit Model

The participation equation is:

$$d_i = y'_i \emptyset + u_i \ ;$$

Where, the dependent variable *d=1* if employed, and *d=0* if not employed; *y* is a set of explanatory variables from the available variables in NSS 68th round, which are household size, number of dependent, land size owned and $u \sim N\ (0, \sigma_u^2)$.

From this estimation, we have calculated '*inverse Mill's ratio' (λ)* as the ratio of ratio of the probability density function and the cumulative density function for every observation. The inverse mills ratio (λ) of every observation is included as another explanatory variable in the earning equation in the second step.

Second Step Model

In this step, we have used Mincerian earning equation to check the relation between wage and average years of schooling. Along with average years of schooling (S), experience (E) and location (L) as rural is 1 and urban is 2; α, β, γ, δ and ε are the parameters to be estimated and *u* is the random disturbance term; *k* is different level of educations and *i* is for different individuals. We have also used inverse mills ratio (λ) in the Mincerian semi-logarithm earnings equation to test the effect of education, experience and other control

variables upon the wage earning and θ is the parameter of inverse mills ratio. This equation is now as follows:

$$lnW_i = \alpha + \beta_i S_i + \gamma E_i \ + \delta E_i^2 + \varepsilon L_i + \theta \lambda_i + u_i$$

And, we have attempted to calculate average rate of return by using the formula:

$$\text{Average rate of return } (r_k) = (\frac{\beta_k - \beta_{k-1}}{S_k - S_{k-1}})$$

Where, k is different level of educations, β_k is the coefficient between daily wage and schooling years in the model at the k and S_k is the year of schooling for the level of educations k. The calculated average rate of return (AROR) has been plotted in graphs for better visualisation and discussions.

Results

At a very first stage, considering all employed person, without any other controls, we can clearly see a significant positive relationship among daily wages and schooling years; although the R-squared is only 0.0364. Also, the equation has presented an inverse relationship between wage and experience (E^2); depicts the stagnancy in the Indian labour market. Considering the coefficients the equation becomes as follows:

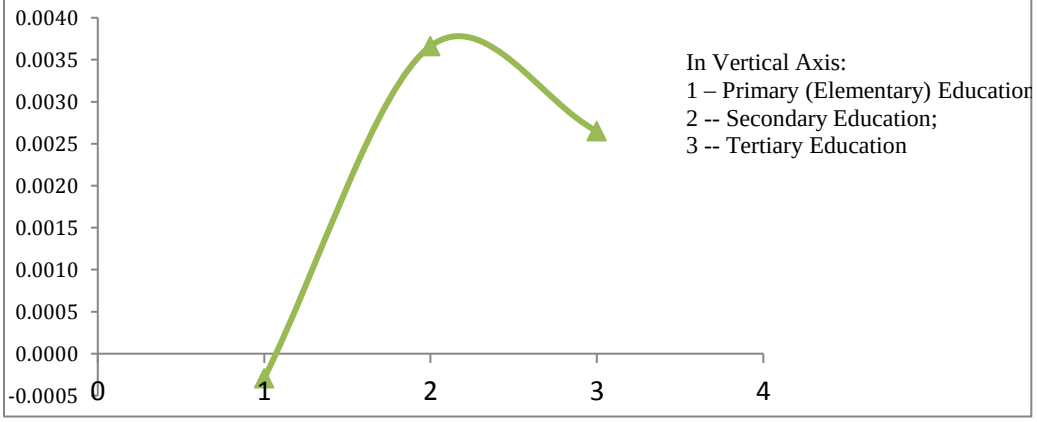
$$\boldsymbol{lnW_i = 5.238348 + .0151135 \ S_i + .0088498 E_i - .0001229 E_i^2 + .2347721 L_i - .1441495 \lambda_i + u_i}$$
$$\boldsymbol{(.0392523) \quad (.0010082) \quad (.0013412) \quad (.0000255) \quad (.0115356) \quad (.0213274)}$$

However, if we look at the coefficients separately among employed people with different level of education in table 2, it can be seen that significant relationship at 99 percent level between wages and years of education can be seen only among the people with secondary education. This relationship also significant at 95 percent level among people with higher education level. However, the coefficients are very small.

Table 2: Results from Mincerian Earning Equation Model by Different Education Level

	R-squared	Variables	Coefficient	S.E.	t-value	P>|t|
All Education Level	0.0364	Average Years of Schooling	0.015114	0.001008	14.99	0.000
		Years of Experience	0.008850	0.001341	6.60	0.000
		Square of Experience Years	-0.000123	0.000026	-4.82	0.000
		Location	0.234772	0.011536	20.35	0.000
Primary Education Level	0.0323	Average Years of Schooling	-0.001397	0.005445	-0.26	0.798
		Years of Experience	0.001086	0.002620	0.41	0.678
		Square of Experience Years	0.000000	0.000048	-0.01	0.994
		Location	0.303246	0.024578	12.34	0.000
Secondary Education Level	0.0344	Average Years of Schooling	0.023617	0.004807	4.91	0.000
		Years of Experience	0.011125	0.002212	5.03	0.000
		Square of Experience Years	-0.000132	0.000046	-2.86	0.004
		Location	0.248636	0.017091	14.55	0.000
Higher Education Level	0.0091	Average Years of Schooling	0.034504	0.017366	1.99	0.047
		Years of Experience	0.015907	0.004643	3.43	0.001
		Square of Experience Years	-0.000246	0.000105	-2.34	0.020
		Location	-0.043353	0.031325	-1.38	0.166

Figure 1: AROR among All Employed Person



Also, we can see that the AROR curve in figure 1 looks like inverse-U shaped, while considering all employed person from the dataset. This reflects that we have higher AROR at secondary level of education in India and this slightly decline in case of higher education, but still remain positive. For further test, we have applied the model by different subgroups. We have separated the observations by their usual principal activity status (UPAS) of their economic activities. These are, 'regular salaried/ wage employee', 'casual wage labour in non-public works', 'own account worker in household enterprises' and 'employer/self-employed

in household enterprises'. Table 3 presents the relationship of average years of schooling upon wages.

Table 3: Results from Mincerian Earning Equation Model by Different Education Level among Different UPAS Groups

UPAS groups	Education level	R-squared	Coefficient		S.E.	t-value	P>|t|
Regular salaried/ wage employee	All	0.0314	0.02634	***	0.0024	11.08	0.000
	Primary	0.0545	0.00153	#	0.0160	0.10	0.924
	Secondary	0.0378	0.04248	***	0.0090	4.73	0.000
	Higher	0.0227	0.03271	#	0.0213	1.54	0.124
Casual wage labour in non-public works	All	0.0329	0.00357	#	0.0022	1.61	0.106
	Primary	0.0247	0.00790	#	0.0089	0.89	0.375
	Secondary	0.0424	-0.00067	#	0.0121	-0.06	0.956
	Higher	0.0604	0.17568	*	0.0966	1.82	0.073
Own account worker in household enterprises	All	0.0462	0.00311	*	0.0019	1.68	0.094
	Primary	0.0417	-0.01508	#	0.0093	-1.62	0.106
	Secondary	0.0474	0.00608	#	0.0085	0.71	0.476
	Higher	0.0362	-0.03956	#	0.0373	-1.06	0.289
Employer/self-employed in household enterprises	All	0.0643	0.00799	#	0.0103	0.78	0.439
	Primary	0.1029	0.05001	#	0.0671	0.74	0.459
	Secondary	0.0661	0.02704	#	0.0384	0.70	0.482
	Higher	0.1011	-0.06588	#	0.1084	-0.61	0.545

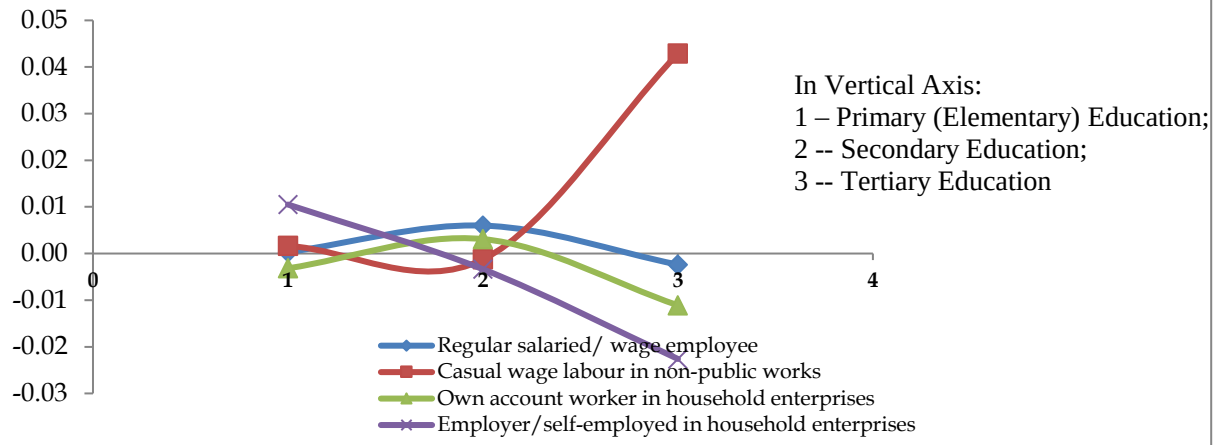
Note: *:** significant at 1% level, **: significant at 5% level, *: significant at 10% level and #: insignificant

It is clearly evident that significant relationship can be visible only in case of employed persons engaged in regular salaried job. People associated with other casual job, household enterprises; do not have significant relationship between wage and education. However, employed person in regular salaried jobs with only primary level of education have reported about insignificant relationship; and casual wage labour in non-public works with higher education level reported significant relationship between wages and average years of schooling. This is also indicating the diversification of Indian job market, as casual wage labour in non-public works may be involved in informal service sector and earning consolidated higher wages.

Among employed person among different UPAS in figure 2, have different types of AROR can be seen. For instance, among the employed person working as casual labour in non-government works have a much higher AROR compared to other UPAS among the person having tertiary level of education, although the relationships between education and years of schoolings are insignificant. As we have already seen in table 3, that the relationships between wage and years of education are mostly insignificant across different UPAS, except the regular salaried workers and having higher education level. Figure 2 reflects that the regular salaried workers with secondary education only, have higher AROR compared to

employed person with elementary education or tertiary level of education. In fact, with tertiary level of education, we can see a negative AROR for person engaged in regular jobs; whereas the ARORs are completely opposite in case of casual workers. This may be due to people with specific skills and work as freelancer, are considered as casual workers with tertiary level of education. However, the less number of observations with this kind of results have made the relationship insignificant.

Figure 2: AROR among Different Usual Principal Activity Status (UPAS)



In case of employer/self-employed in household enterprises, we can see diminishing AROR. It is worthwhile to mention, that the engagement under this particular UPAS are much smaller among employed person in India, and the years of education hardly play any role upon earning. Although, we have seen a significant impact in case of employed person on earning with secondary education level, but the AROR is negative. Latest Economic Census of India (2012-13) reported that out of 58.5 million establishments, nearly 59.9 per cent belong to rural areas and about 20.5 per cent (11.98 million) operate from outside household without fixed structure and 38.39 per cent operate from inside household. Most of the employees and employer needs to work for more than 10 hours a day and do not have access for social securities. The share of population 'self-employed in household enterprises' among employed reduced with higher educational level and lower for women compared to men. In fact, less than 11 per cent among employed women are working as self-employed in household enterprises with higher educational achievement; whereas 30.7 percent men in rural and 23.42 percent men in urban among employed are working in this category with higher educational achievement.

Insignificant relationship between wage and education can also be seen among employed people associated in primary sector, such as agriculture, forestry, fishing, mining and quarrying. However, among people associated in secondary (manufacturing, electricity gas, water supply and construction) and tertiary (trade, hotels and restaurant, transport, storage and communication, financing, insurance, real estate and business services, community, social and personal services) sector; significant relationship can be seen between wages and years of schooling, while considering all education level. In table 4, we have

presented the relationship of average years of schooling upon wages among employed persons in different economic sectors. In case of primary sector, only the employed people with primary education level have shown significant impact of years of education upon wages. However, no significance of these can be seen among people employed in the sector and having secondary or higher education level. Also, in case of employed person in secondary sector, insignificant impact of years of education upon wages can be seen among person with primary education only, and lower significant impact among persons with higher education level. Significant impact of average years of schooling on wages across all these three different levels of education can be seen only in case of tertiary sector.

If we compare, all these results by different groups of employed persons, according to their level of education, we can see the overall picture of the relationships quite prominently. If we consider employed people, with primary level of education, (*i.e.*, below primary or primary only), there is no significant impact of years of schooling upon wages among any of these groups, except for people associated in primary sector (agriculture, forestry, fishing, mining and quarrying).Similarly, for people were enrolled in school and completed school education (considered here as secondary education), *i.e.*, upper primary/middle, secondary and higher secondary. However, insignificant relationship between daily wage and schooling years can be seen among wage-earners working as casual wage labour, own account worker in household enterprises and employer/self-employed in household enterprises.

Table 4: Results from Mincerian Earning Equation Model by Different Education Level among Participants in Different Economic Sectors

	Education Level	R-squared	Coefficient		S.E.	t-value	P>|t|
Primary sector	All	0.0480	0.00106	#	0.00164	0.65	0.517
	Primary	0.0544	0.01821	**	0.00874	2.08	0.038
	Secondary	0.0626	-0.00371	#	0.00815	-0.46	0.649
	Higher	0.0617	-0.00968	#	0.03705	-0.26	0.794
Secondary sector	All	0.0203	0.00318	**	0.00124	2.55	0.011
	Primary	0.0139	0.00278	#	0.00633	0.44	0.661
	Secondary	0.0271	0.01406	***	0.00602	2.33	0.020
	Higher	0.0067	-0.03628	*	0.02317	-1.57	0.118
Tertiary sector	All	0.0117	0.01686	***	0.00174	9.67	0.000
	Primary	0.0084	-0.02227	**	0.01024	-2.17	0.030
	Secondary	0.0120	0.02473	***	0.00807	3.06	0.002
	Higher	0.0383	0.04034	*	0.02398	1.68	0.093

Note: *:** significant at 1% level, **: significant at 5% level, *: significant at 10% level and #: insignificant

Figure 3 reflects the ARORs by different economic sectors for different levels of education. In case the secondary sector, negative AROR can be seen for secondary level of education, but it increases sharply for persons with higher level of education. In case of

tertiary sector, high AROR can be seen for both the secondary and tertiary levels of education. Although, the AROR is relatively lower than secondary level in this sector. However, in case of primary sector, negative AROR can be seen both in case of elementary education or higher level of education. Although, high AROR can be seen for the employed person engaged in primary sector, only with secondary education, instead of having insignificant relations between years of schooling and daily wage among the available samples.

Figure 3: AROR among Different Economic Sectors

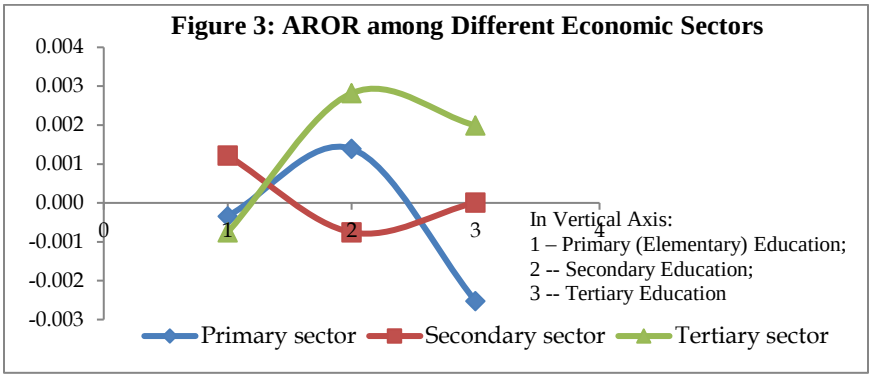


Table 4 presents the relationship of average years of schooling upon wages among men and women. Significant relationship of these can be seen for both employed men and women, while considering all education levels together. However, women with secondary and higher education reflected insignificant relationship between wages and average years of schooling. The insignificant relationships also reflect the problem of 'Gender Pay Gap'.

Table 4: Results from Mincerian Earning Equation Model by Different Education Level among Different Gender

	Education Level	R-squared	Coefficient		S.E.	t-value	P>|t|
Men	All	0.0316	0.0148	***	0.0012	12.81	0.000
	Primary	0.0281	0.0036	#	0.0060	0.60	0.548
	Secondary	0.0331	0.0267	***	0.0051	5.21	0.000
	Higher	0.0119	0.0427	**	0.0194	2.21	0.027
Women	All	0.0588	0.0096	***	0.0023	4.19	0.000
	Primary	0.0568	-0.0227	*	0.0125	-1.81	0.070
	Secondary	0.0593	-0.0020	#	0.0138	-0.14	0.887
	Higher	0.0073	-0.0046	#	0.0397	-0.12	0.908

Note: ***: significant at 1% level, **: significant at 5% level, *: significant at 10% level and #: insignificant

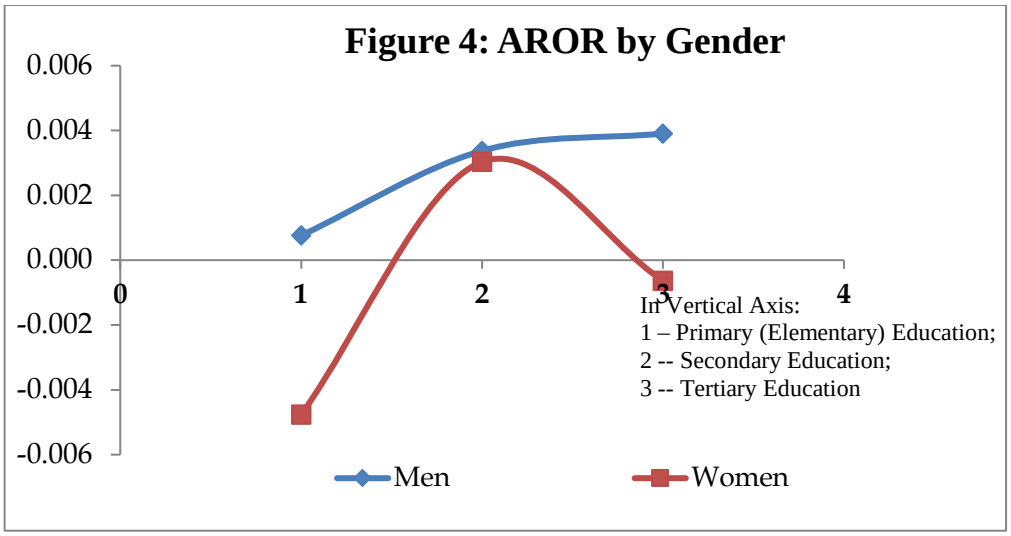


Figure 4 reflects clear gender disparities with respect to AROR. Positive AROR can be seen in case of employed men with all the three levels of education we have considered here. Among the employed women, positive AROR can be seen only for women having secondary education only, however, the significant relationships between wage and years of education can be seen only for those having only elementary level of education. For employed men the relationship between years of education and earning are significant at secondary and higher education level. The AROR at different level of education are increasing with education level in case of men, but in case of women ARORs increased at secondary level, but decreased for higher education level.

In table 5, we have focused about the relationship of average years of schooling upon wages among employed people belongs to different social groups. As it appears a significant relationship in the case of all these four groups while considering all education level. However, except employed person from general category, none of the other three groups have shown any significant impact of higher education level upon wages. In case of employed persons with secondary education level a significant impact of average years of education can be seen except people belongs to SCs. Also it is mentionable, that the significance is very low in case of STs. In case of employed persons with primary education level, none of these social groups reflected significant impact of years of schooling upon wages.

Table 5: Results from Mincerian Earning Equation Model by Different Education Level among Different Social Groups

	Education level	R-squared	Coefficient		S.E.	t-value	P>|t|
ST	All	0.0176	0.0102	***	0.0026	3.93	0.000
	Primary	0.0185	-0.0102	#	0.0130	-0.79	0.430
	Secondary	0.0208	0.0254	*	0.0116	2.19	0.029
	Higher	0.0244	-0.0558	#	0.0606	-0.92	0.358
SC	All	0.0478	0.0145	***	0.0023	6.33	0.000
	Primary	0.0235	0.0031	#	0.0113	0.28	0.781
	Secondary	0.0616	0.0081	#	0.0120	0.68	0.499
	Higher	0.0320	0.0032	#	0.0529	0.06	0.951
OBC	All	0.0364	0.0099	***	0.0017	5.72	0.000
	Primary	0.0468	-0.0068	#	0.0090	-0.76	0.449
	Secondary	0.0367	0.0217	***	0.0082	2.65	0.008
	Higher	0.0089	0.0093	#	0.0284	0.33	0.743
General	All	0.0318	0.0196	***	0.0019	10.14	0.000
	Primary	0.0364	0.0072	#	0.0117	0.62	0.536
	Secondary	0.0275	0.0262	***	0.0085	3.08	0.002
	Higher	0.0152	0.0656	**	0.0265	2.48	0.013

Note: ***: significant at 1% level, **: significant at 5% level, *: significant at 10% level and #: insignificant.

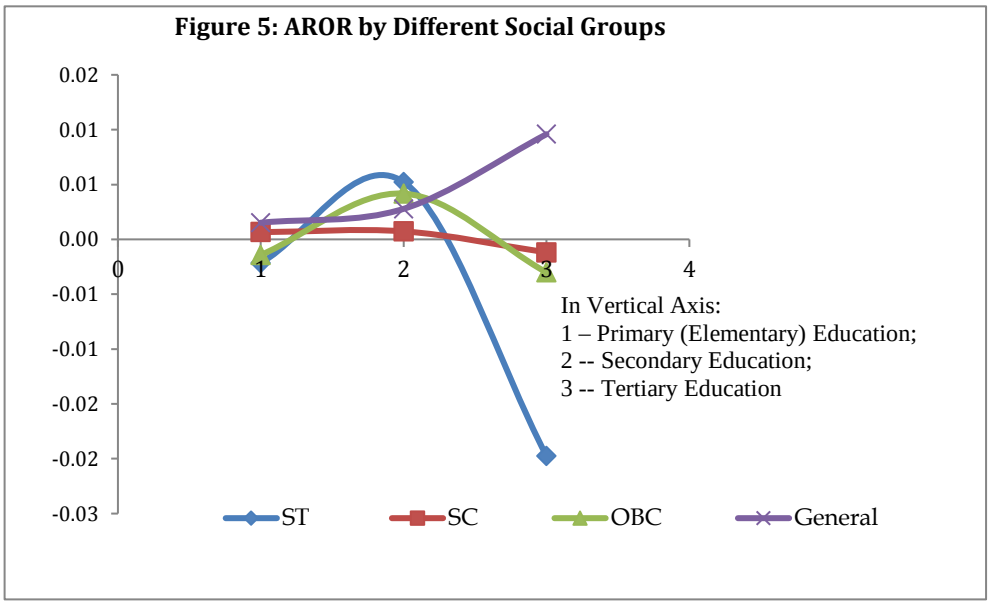


Figure 5 shows anincreasing AROR with better level of education among employed person belongs to general categories, whereas employed person belong to ST showed high

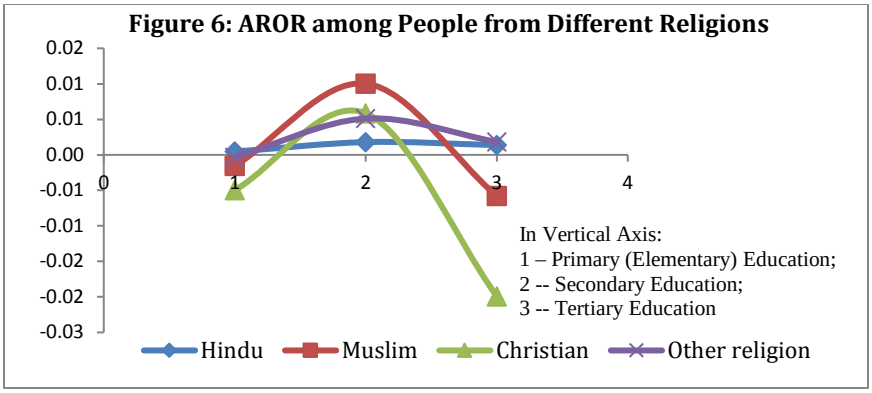
negative AROR with higher education levels, in fact negative at tertiary level of education.As mentioned, employed person belong to SCs, have insignificant relationship between, years of education and earnings. This is also reflected in the AROR curve for the employed person from SC category. However, in case of employed person from OBC categories, AROR is negative at elementary and tertiary levels of education, but significantly positive in case of secondary education level.

We have also checked the same among employed persons belong to different religious groups in table 6. Here also, we can see a significant relationship of average years of schooling upon wages while considering all education level, except among people belong to Christian religion. Apart from this, only significant relationship between these two variables can be seen among people with secondary education and belong to Hindu and Muslim, and also significant at 10 percent level for employed people belongs to other religion. These differentiating groups according to religions are showing insignificant relationships of average years of schooling upon wages both in the case of primary education and higher education level. Also, it is worthwhile to mention, that among the employed people belong to Christian religion have not shown significant relationship between wages and years of schooling with any of these three different levels of education.

Table 6: Results from Mincerian Earning Equation Model by Different Education Level among Different Religious Groups

	Education level	R-squared	Coefficient		S.E.	t-value	P>|t|
Hindu	All	0.0434	0.0142	***	0.0012	11.83	0.000
	Primary	0.0342	0.0022	#	0.0065	0.33	0.738
	Secondary	0.0425	0.0145	**	0.0057	2.52	0.012
	Higher	0.0082	0.0201	#	0.0199	1.01	0.312
Muslim	All	0.0317	0.0229	***	0.0025	9.04	0.000
	Primary	0.0299	-0.0074	#	0.0136	-0.55	0.584
	Secondary	0.0417	0.0610	***	0.0130	4.69	0.000
	Higher	0.1144	0.0372	#	0.0502	0.74	0.459
Christian	All	0.0103	-0.0031	#	0.0045	-0.68	0.494
	Primary	0.028	-0.0238	#	0.0210	-1.13	0.258
	Secondary	0.0071	0.0161	#	0.0160	1.01	0.312
	Higher	0.0298	-0.0657	#	0.0608	-1.08	0.280
Other religion	All	0.0694	0.0235	***	0.0035	6.69	0.000
	Primary	0.051	-0.0016	#	0.0188	-0.08	0.932
	Secondary	0.0451	0.0333	*	0.0175	1.91	0.057
	Higher	0.0611	0.0408	#	0.0803	0.51	0.612

Note: ***: significant at 1% level, **: significant at 5% level, *: significant at 10% level and #: insignificant



In case of different religious groups of employed person in India, we can see from figure 6, that apart from Hindus, AROR at different level of education for all other broad religious groups are following inverted-U shape curves. In case of employed person belong to Hindu religion, have positive ARORs for all the three levels of education, and these increase with higher education levels. For non-Hindu workers ARORs increase for secondary education level, but reduced for higher education levels. In fact, for employed person from Muslim and Christian religion in India, ARORs are negative for higher education levels.

In case of employed people with higher education, insignificant relationship of schooling years upon wages can be seen among 13 out of 18 created control groups. The significance at 5 percent level can be realised among employed with higher education among the group of men, and group of general categories. Also the significance relationship at 10 percent level reported among persons with higher education if employed in secondary or tertiary sector. This is true that, there is an increasing trend of higher average wages along with better education, except casual workers and self-employed. However, the dispersion of wages in each groups are not properly captured in this analysis.

V. Possible Explanation:

The current exercise clearly concludes that wage earning is not only depends on education and experiences; as it is determined through many others micro and macro-economic factors. At micro level, individual's education, skills, managerial capabilities, job participation locations, their own choices and preferences may influence their earning levels. But at macro levels, job opportunities and earnings depends upon the availabilities of job and labour supplies, wage characteristics across different sectors, skill demanded in different industries and the available skill sets of the job seeker and employed person etc. Apart from these, there are many other national, sub-national and international political factors influence job markets in any economy.

If we look at the job participation patterns and job opportunities, with the NSS 68th round, persons with primary education or less aremostly work as casual wage earners, and in rural India, this happens also among employed person with secondary education level. However, relatively higher engagementas 'regular salaried workers' can be seen among person with higher education level. Among employed women, with higher education levels,

the share of regular salaried workers are significantly higher, both in rural and urban India.Among the social groups, NSS 68th round reflects that 30 percent of employed persons from general categories were working as regular salaried and the respective figures were only 9.92 percent among STs, 17.35 percent among SCs and 17.94 percent for OBCs.It is also observed that employed people from STs, after having higher education are able to get engaged in regular salaried jobs (48.55 percent in rural and 85.91 percent in urban).

It is indeed true, substantially low numbers of people from STs are able to achieve higher education. For instances, among total employed population from ST only 4.12 percent are able to completed higher education, whereas the respective figure for general categories are 21.03 percent according to NSSO 2011-12 data. Similar disparities can also be seen among SCs (with only 5.34% employed persons with higher education) and OBCs (with 9.27% employed persons with higher education).This situation is worst in rural India, as the respective share of employed with higher educationare 2.38 percent for STs, 2.98 percent for SCs, 5.11 percent for OBCs and 10.22 percent for general categories.In urban India, the share in regular jobs is 85.91percent for STs and 80.19percent for SCs among the employed with higher education level.

It is often assumed that regular salaried jobs are better paid jobs, and also have some amount of social securities and decent working time. However, in Indian job market prominent existence of 'wage duality' plays an important reason for different wage return to education. For instances, the job participation in formal and informal sector have visible differences in wages, social securities and working hours. However, wage differences in 'formal' and 'informal' sectors are not following any similar pattern for all jobs across different sectors and places. In general, in India, wages in formal jobs have much higher wages compared to informal jobs. However, in some cases, informal jobs have much higher wage returns than that particular job in formal sector. Also, informal employment exists in formal or organised sector with larger variation of wages. (Papola and Kannan, 2017).

Also, the 'skill mismatch' influences the relationship between wage and education. Some recent literature considered 'skill mismatch' as the 'shortage of education' or 'surplus of education' due to 'under education' or 'over education' (Kukreja 2018, Sloane 2014, OECD 2014). Both these 'shortage' and 'surplus' of education with a creation of 'skill mismatch' is a severe problem for any economy. Skill mismatch often blamed towards quality of education, training and skill developments. This paper does not highlighted the issues in technical education in India, however, it is worth mentioning that, some literature on technical education and skill development, also pointed about the poor quality and inappropriate system of delivering technical education. This creates gap between the require skills in the modern globalised economy and available training in most of the technical education institutes (FICCI and Konrad Adenauer Stiftung, 2015).Various Acts and policies were launched by Indian Government to develop technical skills among various job seekers according to the requirement in the job market, for instances, 'the Apprenticeship Act' 1961; 'the Apprenticeship Rules', 1992; 'the National Policy on Skill Development', 2009; 'National

Policy on Skill Development and Entrepreneurship', 2015 etc. However, the technical institutes at diploma levels are far behind the require amount of teachers and equipment[2].

The major problem of wage inequalities and dissimilar patterns of RORE is decreasing number of job opportunities in Indian economy, which is predominantly a labour surplus economy.According to Ministry of Skill Development and Entrepreneurship, it was projected an incremental requirement of 109.73 million skill workers from 2013-2022 in India across 24 different kind of activities (*e.g.*, retail, building construction, auto, beauty and wellness etc.). These projected job requirements numbers are completely depend with the volatilities of global economy, as well as changes in technologies. This is always true, that petty or dirty and low paid jobs can be switched with modern technologies; however, one has to ensure better paid jobs for those workers engaged with those particular petty jobs. It is indeed true, that in recent years, we have seen very low expansions of manufacturing sectors, which resulted for low employment. Also, agrarian crisis has been continuing in India for long periods, resulted with low wage return in agriculture sectors. Thus, it can be said that in any diversified economy, one needs to consider all these factors while discussing about rates of wage return to education.

VI. Conclusion:

The whole exercise and discussions lead us to conclude that the decision on investment on education in general and school education in particular, cannot be limited only with the pecuniary rate of return. India is a multifarious economy in terms of its diversified socio-economic conditions. In the analysis, we have seen about the disparities in job participation among men and women. Diversified job structure and job opportunities in primary and secondary sector, are creating the job seeker to choose non-preferred jobs with low wages and without any kind of social securities.

It is observed that regular salaried job can be availed with higher education level; and the chances are higher among the people from socio-economically deprived section. However, acquiring higher education level remains a big challenge for the children of deprived sections, as most of them are first generation learner and may not be able to purchase education from the market, if the government does not provide affordable education to them. The casual workers in India work without any kind of guarantees of job availabilities, social securities, and any fixed pay structure, which results an insignificant relationship between education levels and wages.

The concept of 'human capital theory' and 'rate of return' considered skill improvement to produce higher and better output. However, many literature pointed that the person with higher skill may not be able to acquire higher wages. As the capitalist society consider human as capital and try to increase the 'marginal' productivity in terms of higher

[2]"For instance, corresponding to the current seating capacity of about 1.7 million trainees at ITIs, there is a need of almost 85,000 trainers (considering 20:1 student/faculty ratio). As against this, the seating capacity for various trainers' programme of DGET is just 4,438, which is far from adequate to meet the requirement.", Skill Development in India, 2015 by FICCI and Konrad Adenauer Stiftung, 2015, page 24.

output. However, the prices and profit with the increasing 'marginal productivity' concentrate in the hand of capitalist and may lead to higher growth, but do not assure to spread properly among the workers, even after improvement of skills.

The problems of earning equation model are with limitations and the capturing capacities of the diversifications mentioned in the literature. Most of the assumptions inherited in the rate of return concepts easily overlooked the basic problem in the economy like India. For instance, the diversification of quality of education among different types of schools spread in India with different geographical and topographical problems. Similar diversification and exclusion problems are also happen in job markets in India starting from the job opportunities, to changing job market structures. The household factors and their cultural aspects also lead to produce wrong relationships between earnings and education. Moreover, it is the standard of living which may not be related always with the amount of wages. Education is to provide better knowledge apart from better skill. Skills may produce higher output, but better society and better life can produce the required output, decent working atmosphere along with sustainable development.

References

Abraham, V. (2007), 'Growth and Inequality of Wages in India: Recent trends and patterns', *Indian Journal of Labour Economics*, 50(4), 927-41.

Agrawal, Tushar. (2011), "Returns to Education in India: Some Recent Evidence", Indira Gandhi Institute of Development Research Working Paper 2011-017, September 2011.

Agrawal, Tushar (2012), "Returns to Education in India: Some Recent Evidence", *Journal of Quantitative Economics*, 10(2), July.

Banerjee Abhijit V. and Esther Duflo. (2007), 'What is Middle Class about the Middle Classes around the World?' MIT Department of Economics Working Paper No. 07-29.

Belman, Dale, and John S. Heywood. (1991), 'Sheepskin Effects in the Returns to Education: An Examination of Women and Minorities,' *Review of Economics and Statistics*, 73(4): 720-724.

Blaug, M. (1972), The correlation between education and earnings: What does it signify? *Higher Education,* 1(1), 53-76.

Card, David. (1999), 'The Causal Effect of Education on Earnings', in O. Ashenfelter and D. Card, eds., *Handbook of Labor Economics,* 3A, Amsterdam, Elsevier Science.

_____, (1995), 'Earnings, Schooling, and Ability Revisited', Research in *Labor Economics*, 14: 23-48.

Dickson, Matt and Harmon Colm (2011), 'Economic returns to education: What We Know, What We Don't Know, and Where We are Going - Some Brief Pointers', *Economics of Education Review*, 30(6): 1118–1122, December.

Duraisamy, P. (2002), 'Changes in Returns to Education in India, 1983–94: by Gender, Age-cohort and Location', *Economics of Education Review*, 21: 609–622.

Dutta, Puja Vasudeva, (2005), 'Accounting for Wage Inequality in India', *The Indian Journal of Labour Economics,* 48(2).

FICCI and Konrad Adenauer Stiftung. (2015), Skill Development in India 2015, FICCI and Konrad Adenauer Stiftung.

Geetha Rani P. (2014), 'Disparities in Earnings and Education in India', Cogent Economics & Finance, August.

Glewwe, Paul. (1996), 'The Relevance of Standard Estimates of Rates of Return to Schooling for Education Policy: A Critical Assessment', *Journal of Development Economics,* 51: 267-290.

Gounden, A. M. Nalla. (1967), 'Investment in Education in India', *The Journal of Human Resources,* 2(3): 347-358 (Summer).

Griliches Zvi (1977), 'Estimating the Returns to Schooling: Some Econometric Problems', *Econometrica*, 45(1): 1-22, January.

Groot, Wim, and Hessel Oosterbeek (1994), 'Earnings Effects of Different Components of Schooling; Human Capital versus Screening', *Review of Economics and Statistics*, 76: 317-321.

Harberger, A.C. (1965), 'Investment in Men versus Investment in Machines: The Case in India', in C.A. Anderson and M.J. Bowmen (eds.), Education and Economic Development, Aldine Publishing Co.

Heckman, James Joseph; Lochner, Lance J.; Todd, Petra E. (2005), 'Earnings Functions, Rates of Return and Treatment Effects: the Mincer Equation and Beyond', IZA Discussion Papers, No. 1700.

Hungerford, Thomas, and Gary Solon (1987), 'Sheepskin Effects in the Return to Education', *Review of Economic and Statistics*, 69: 175-177.

Husain, Ishrat Z. (1967), 'Returns to Education in India', in Singh Baljit (ed.), Education as Investment, Meenakshi Prakashan, Meerat.

Jaeger, David A., and Marianne E. Page (1996), 'Degrees Matter: New Evidence on Sheepskin Effects in the Returns to Education', *Review of Economics and Statistics,* 78: 733-740.

Kijima, Y (2006), 'Why Did Wage Inequality Increase? Evidence from Urban India 1983–99', *Journal of Development Economics*, 81(1), 97-117.

Kingdon, G.G. (1997), 'Does the Labour Market Explain Lower Female Schooling in India?', London School of Economics Discussion Paper, DEDPS/1, January.

_____, (1996). 'Private Schooling in India: Size, Nature and Equity Effects', *Economic and Political Weekly,* 31(51): 3306-14.

Kingdon, Geeta G. and Vandana Sipahimalani-Rao (2010), 'Para-Teachers in India: Status and Impact', *Economic & Political Weekly*, 45(12), March.

Kingdon, G.G. and N. Theopold (2008), 'Do Returns to Education Matter to Schooling Participation? Evidence from India', *Education Economics*, 16(4): 329-350.

Kroch, Eugene A., and Kriss Sjoblom (1994), 'Schooling as Human Capital or a Signal', *Journal of Human Resources*, 29: 156-180.

Kukreja, Prateek (2018), 'Skill Mismatch and Returns to Education in Manufacturing: A Case of India's Textile and Clothing Industry', Indian Council for Research on International Economic Relations (ICRIER), Working Paper 364, September.

Li, Hongbin; Liu, Pak Wai; Zhang, Junsen (2012), 'Estimating returns to education using twins in urban China', *Journal of Development Economics*, 97: 494–504.

Madheswaran, S. and P. Attewell (2007), 'Caste Discrimination in the Indian Urban Labour Market: Evidence from the National Sample Survey', *Economic and Political Weekly,* 42(41): 4146-4153.

Mehta, Aashish and Hasan, Rana. (2012), 'The Effects of Trade and Services Liberalization on Wage Inequality in India, *International Review of Economics and Finance,* 23: 75–90.

Mincer, Jacob (1974), 'Schooling, Experience, and Earnings', Columbia University Press, New York.

OECD (2014), OECD Employment Outlook 2014.Organisation for Economic Co-operation and Development (OECD) Publishing.

Papola T.S. and Kannan K. P. (2017), 'Towards an India Wage Report', ILO Asia-Pacific Working Paper Series, DWT for South Asia and Country Office for India.

Psacharopoulos, G. (1994) 'Returns to Investment in Education: a Global Update', *World Development,* 22 (9): 1325–1343.

_____, (1987) 'Time Trends of the Returns to Education Cross-National Evidence', the World Bank Discussion Paper, Education and Training Series, Report No. EDT94, June.

_____, (1985) 'Returns to Education: A Further International Update and Implications', *Journal of Human Resources,* 20(4): 583–604.

_____, (1973) 'Returns to Education: An International Comparison', Amsterdam, Elsevier.

Psacharopoulos, G. and Harry Anthony Patrinos (2004) 'Returns to Investment in Education: A Further Update', *Education Economics,* 12(2), August.

Riboud Michelle and Hong Tan (2009), 'Improving Skills for Competitiveness', in Ejaj Ghani and Sadiq Ahmed (eds). Accelerating Growth and Job Creation in South Asia, Oxford University Press.

Sarkar, Sandip and Mehta, Balwant Singh. (2010) Income Inequality in India: Pre- and Post-Reform Periods, *Economic and Political Weekly*, 45(37): 45-55.

Shortlidge, Richard L. (1974), 'The Labor Market for Agricultural Graduates in India: A Benefit Cost Case Study of G. B Pant University of Agriculture and Technology', Occasional Paper No. 69, Department of Agricultural Economics, Cornell University, Ithaca, New York.

Sloane, Peter J. (2014), 'Over education, Skill Mismatches, and Labor Market Outcomes for College Graduates.' IZA World of Labor.

Smith Adam (1776), 'An Inquiry into the Nature and Causes of the Wealth of Nations' (S.M Sores ed.), Metalibri Digital Library, 2007.

Tilak, J.B.G. (1994), 'Education for Development in Asia', Sage Publications, New Delhi.

_____, (1985), 'Analysis of Costs of Education in India', National Institute of Educational Planning and Administration.

_____, (1987), 'The Economics of Inequality in Education', Sage Publications, New Delhi.

Trostel Philip A. (2005), 'Nonlinearity in the Return to Education', *Journal of Applied Economics*, 8(1): 191-202, May.

Tsang, Mun C. (1988), 'Cost Analysis for Educational Policymaking: A Review of Cost Studies in Education in Developing Countries', BRIDGES Research Report Series, No. 3, October.

Weiss, Andrew (1995), 'Human Capital vs. Signalling Explanations of Wages', *Journal of Economic Perspectives,* 9: 133-154.

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