Expansion in Education, and Its Impact on Income Inequality: Cross-Section Evidence from India

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INTRODUCTION:

- Generally societal inequalities viewed as undesirable and because income inequality may exercise negative influences upon the economic and political environments, many would agree that having a less skewed distribution of income is preferable to a highly unequal society.
- Education is often seen as a potentially powerful income equalizer.
- The policy of equal access to education is supported, when there is an interest in equalizing income distribution.
- However, theoretical studies suggest that the relation between the education and income inequality is not always clear.
- The human capital model of income distribution relates dispersion of earnings with level and dispersion of schooling and rate of returns to schooling.
- It predicts that if educational expansion reduces the returns to education; an increase in schooling can reduce the inequality in the distribution of income.
- If relation between the return to education and the level of education is positive improved access to education might increase inequality.
- India, too, has seen the enormous progress in the educational expansion in recent years
- However, it is still not known how expansion of educational opportunities in India impacted the inequality in income distribution.
- In this background, the present paper made an attempt to examine the association between educational expansion and income distribution using cross section data from India.

Educational Expansion and Income Distribution: A review of Literature

- Schultz (1963) argued that increasing human capital ‘measured in terms of schooling’ as one way to lower income inequality and increased support for public education might be one way to accomplish this.
- The human-capital theory of earnings, stemming from the work of Becker (1962), Becker and Chiswick (1966), Mincer (1970; 1974), consider education, one of the major factor to explaining differences in income.
- The human-capital model of earnings, generally relates the dispersion of earnings with the level and dispersion of schooling and rates of return to schooling.
- The model provide a partial positive relation between mean schooling level and earnings inequality, and also a positive relation between schooling inequality and earnings inequality.
- Since, in practice, there is usually a simultaneous change in level of schooling and schooling inequality, it is difficult to obtain a clear predication about the effect of educational expansion on earnings inequality.

- The main argument of Becker-Mincer-Chiswick (B-M-C) group, is that growth in the supply of workers changes the composition of labour force, as unskilled workers move into the skilled workers cohort.
- While this process may very well initially increase income inequality, in the long term it is expected to reduce income inequality as the size of skilled workers cohort continue to rise.
- Marin and Psacharopoulos (1976) predicted negative relationship between the levels of schooling and income inequality.
- The supply of more educated workers lowers the wage premium for skilled workers.
- Knight and Sabot (1983) argue that education expansion has two conflicting effects on income distribution due to “composition” and “wage compression” in a dual economy.
- The “composition” effect increases the relative size of the group with more education and tends initially to raise income inequality, but eventually to lower it.
- On the other hand, the “wage compression” effect decreases the premium on education as the relative supply of educated workers increases, thereby lowering income inequality.

- There has been the number of attempts to investigate the relation between the schooling and income distribution in the spirit of Human Capital Theory of earnings.
  - (a) these studies treat the education variables as a flow measure; like enrolment ratio
  - (b) those consider stock measure of schooling, like the educational attainment of the labour force.
- First group of studies includes; Chiswick (1971), Chiswick and Mincer (1972), Psacharopoulos (1977) , Winegarden (1979) .
  - Those developing countries with higher levels of education exhibit less income inequality.
  - Greater inequality in educational attainment is associated with greater income inequality.
- Ram (1981) extremely criticised these studies for using enrolment ratio as an educational variables for explaining income inequality.
- It is difficult to interpret the regression results reported in the study that use current enrolment rates as repressors.
- Many other scholars tried to analyse the impact of education on inequalities but not in the spirit of Human Capital Theory while in more general analysis of income inequalities.

- Many of them observed negative relationship between the enrolments at the secondary level and inequality in income distribution (Papanek & Kyn, 1986; Bourguignon & Morison, 1990; Nielsen & Alderson, 1995; Nielsen & Alderson, 1999; Alderson & Nielsen, 2002; Wells 2006).
- Simpson (1990) find an inverted U-shaped relationship between the income inequality and level of education.
- Crenshaw and Ameen (1994) find U-shaped relationship between the secondary school enrolment rate and income inequality.
- The second group of studies include; Ram (1984), Ram (1989), Park (1996), Checchi (2000), Gregorio & Lee (2002) and Mughal & Diwara (2011).
- Ram (1984), Ram (1989): did not find significant relationship between mean years of schooling and income inequality.
- Park (1996), Mughal & Diwara (2011): find negative relation between mean years of schooling and income distribution
- Checchi (2000) observed a U-shaped relationship between average years of schooling and income inequality.

- There also has been some theoretical attempt to predict the relationship between public support for education and income inequality.
- Glomm and Ravikumar (1992) developed a model where income inequality declines under the public education system. Saint-Paul and Verdier (1992), Eckstein and Zilcha (1994) and Zhang (1996) also developed models where continued support for public education lowers the level of income inequality over time.
- One of the critical assumptions of these models is that attending public school is costless and so all agents participate in public education.
- This assumption is challenged by Sylwester (2002a).
- It is possible that the level of income inequality does not decline even in the presence of public education system.
- According to Sylwester (2002a) if some agents might be too poor to attend school, public education system might not be a silver bullet to eliminate income inequality.
- It is possible that in some countries poor families are hurt by the taxation used to support public education but do not receive benefits
- Sylwester (2002b) found that public education is associated with a subsequent decrease in the level of income inequality. This association is appears to be stronger in high income countries.

- Castelló-Climent & Doménech, (2014) find that most countries have experienced a very intense reduction in human capital inequality, mainly due to an unprecedented decrease in the share of illiterates, which has not been accompanied by a similar reduction in income inequality.
- Given these studies, it is not clear as to whether or not educational expansion actually lower the level of income inequality over time.
- A general lesson emerging from these evidence : the relation between the educational expansion and income inequality depends on two conditions
  - Initial level of educational attainment
  - The pace of educational expansion
- All the studies discussed here deals with cross-country analysis where results is difficult to interpret due to Non-comparability of data
- The above fact demands for a country specific analysis.
- In this background, the present paper made an attempt to examine the association between educational expansion and income distribution using cross section data from India

Framework For Analysis

- Drawing the idea from Mincerian (1974) earnings function, the earnings ratio of income differing by **S** years of schooling is given by the following expression;

$$\frac{Y_S}{Y_0} = e^{rS}$$

$$\ln Y_s = \ln Y_0 + rS$$

- Taking variances of both sides, explained income inequality associated with education can be expressed as a function of the level of schooling and the rate of return to it.

$$\sigma^2(\ln Y_s) = \bar{r}^2\sigma^2(S) + \bar{S}^2\sigma^2(r) + \sigma^2(S).\sigma^2(r) + 2\bar{r}.\bar{S}\,\mathrm{cov}(r,S)$$

- If ***r*** and ***S*** are independent random variables, then

$$\sigma^2(\ln Y_s) = \bar{r}^2\sigma^2(S) + \bar{S}^2\sigma^2(r) + \sigma^2(S).\sigma^2(r)$$

- For a fixed value of ***S***

$$\sigma^2(\ln Y_s) = \bar{S}^2\sigma^2(r)$$

- For fixed value of ***r***;

$$\sigma^2(\ln Y_s) = \bar{r}^2\sigma^2(S)$$

Data and Variable Estimation

- In the present analysis data are obtained from 66th round NSSO's employment-unemployment survey conducted during July 2009-June 2010.
- It is carried out for twenty major states of the country which is further divided into the 63 regions
- The analysis is performed separately for rural and urban sector
- The educational level of workers in India are divided into the eight categories;

Illiterate	0
Below Primary	2.5
Primary	5
Middle	8
Secondary	10
Higher Secondary	12
Graduation	15
Post Graduation and above	17

- Level of education measured by mean years of schooling
- The dispersion in education is measured by education Gini (EGINI) of mean years of schooling.
- Inequality in income is measured by Gini-coefficient.

Empirical Analysis:

- Income inequality on Level of income:

$$GINI_i = a_0 + a_1 . \ln Y_i + a_2 . \ln Y_i^{\,2} + \varepsilon_i$$

Regression of Income Inequality on Income

	Rural	**Urban(1)**	**Urban(2)**
Intercept	10.11093***(3.85)	-.3408501 (-0.08)	-.356476***(-2.02)
ln Y	-2.989541***(-3.91)	.0894124 (0.08)	.093683** (3.87)
ln Y^2	.2259874***(4.06)	.0002915 (0.00)	-
R^2	0.5133	0.1975	0.1975
N	63	63	63

- Income Inequality on Level of Education
- For Urban Sector:

$$GINI_i = .239^{***} + .457^{***} .SG_i$$

- For Rural Sector:

$$GINI_i = .200^{***} + 1.382^{***} .SG_i$$

Regression of Income Inequality on Income and Education

	Rural	Urban
Intercept	9.29736***(3.37)	-.3055285***(-1.79)
μ	-.0016113(-0.33)	-.0199036***(-2.78)
SG	.4185189(1.14)	.5278169***(4.16)
ln Y	-2.746015***(-3.41)	.094274**(3.57)
$\ln Y^2$	.2076325***(3.53)	-
R^2	0.5248	0.3828
N	63	63

CONCLUSIONS:

- The paper made an attempt to analyse the relation between the education and income inequality in India in a cross-sectional framework.
- In rural sector U-shaped relation between the mean and dispersion of income is observed.
- In urban sector it is positive and linear.
- Rural Sector: the analysis did not find any significant association between the levels of schooling and income inequality.
- In urban sector: inequality in the distribution of income is negatively associated with mean years of schooling and positively associated with the share of graduates in the population in urban sector.

Thanks