

# Inequality of Opportunity in Educational Achievement in India

## Implications of Earning Distribution and Affirmative Action

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**Abstract.** The objective of this study is to provide a quantifiable measure of the distributional content of education and its implications on earnings distribution by gender across different groups of people by using survey data in India. We analyse educational disparities among the children with age up to 14 years by gender, and household specific characters with Indian data. The study observes that, in the rural economy, the girls have less access to full time education than

boys. In the urban region, on the other hand, the access to full time education at primary level is more for girls than for boys. The estimated coverage is less in the rural areas than in urban areas. The HOI is more among the urban children than among the rural children. Parent's education has the highest contribution to inequality of opportunity to full time education at primary or upper primary level.

**Keywords:** school, primary level, upper primary level, enrolment ratio, educational inequality, Human opportunity index, India, gender differences, social status, rural areas, India.

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### 1. Introduction

The distributional aspect of education has intertwined economic, social and political implications for its effect on income and wellbeing. As education is viewed as one of the fundamental inputs of a person's wellbeing and a powerful predictor of earnings, inequality in educational achievement translates into earnings inequality. It is observed that inequality in educational achievement and earnings inequality are highly correlated [Blau, Kahn 2005; Bedard, Ferrall 2003]. World Inequality Report [2018] pointed out that the income inequality is largely due to educational inequalities. Thus, disparities in education, and access to education for the vulnerable has been an area of concern in ensuring inclusive and equitable quality education and promoting learning opportunities for all as mentioned in the Sustainable Devel-

opment Goals (SDGs). The objective of this study is to provide a quantifiable measure of the distributional content of education by gender across different groups of people by using survey data in India.

The distributional content of quality education has significance in the context of rising trend in privatisation of education as observed in many developing countries including India. The explosion of private schools widens the choice of schooling by the parents and results in new dynamics to enhance competitiveness among the private providers. It is expected that the increase in competitiveness provides an incentive for quality education. There has been a debate on whether private schools are able to provide better environment for quality learning. Coleman et al. [1982] with US data observed that students in private Catholic schools performed better than those in public schools and the rate of drop out in the former type of schools was less than the rate in the latter type. In many developing countries also, students from private schools perform better on various measures of cognitive skills than those from public schools [Jimenez, Lockheed 1995]. Although some private schools do provide quality education, they are highly expensive and this is often out of reach of the poor. Thus, the effects of expansion of private schooling on quality and equity in education and the role of the government to provide quality education have become growing concerns for research.

This study cares about the distribution of education and the distribution of opportunities for acquiring quality education at primary level. As education at the primary level is the entry point of formal education, this study examines the extent of equal opportunity in access to primary education in India. Equality of opportunity ensures that gender, ethnicity, parent's education, parent's income and other circumstances have no influence in access to education of a child. But, a substantial inequality in educational attainment exists across caste, religion, and ethnic boundaries in India [Desai, Kulkarni 2008]. In most of the studies in the literature, educational inequality is measured on the basis of educational attainment. Our study focusses on the background factors that may have significant effect on educational attainment. If there exists inequality of opportunity in education at the primary level, its damaging impact persists in the distribution at higher education. For affirmative policy intervention in controlling the damaging effect, we need to estimate inequality of opportunity in education at the starting point, the primary level of education. This is the basic motivation of this study.

There are some studies focussing on the similar issue in the literature. For example, the study by Singh [2011] measures the extent of inequality of access to primary education by using National Family Health Surveys in India during 1992–1993 to 2005–2006, and observes that inequality of opportunity declined with greater degree of regional variations. Asadullah and Yalonetzky [2010] by applying Pearson—Cramer index, an overlap index and a special Gini index with Na-

tional Sample Survey (NSS) data on employment and unemployment in India documented the persistence of inequality of educational opportunity during the period 1983–2004. They observe that Kerala experienced the least unequal state in terms of educational opportunities. This study also observed that inequality of opportunity in getting education declined in West Bengal and Orissa.

In this study, we estimate the probability that a child has access to primary education by considering circumstance variables like gender, parent's education, parent's affluence, and social group by using 71st round survey data on social expenditure, education, by the National Sample Survey Office (NSSO) in 2014. The methodology used in this study is closely related to the study by Singh [2011] with the latest available survey data on education. The inferences drawn in Asadullah and Yalonetzky [2010] are based on employment and unemployment survey where detail information on education are not available. Our study fills the gap in the literature by providing quantitative measure of inequality of opportunity in primary education by using the latest available survey data on education in India.

Measuring inequality in educational outcomes, and inequality of opportunity to quality education has been a challenging job in empirical research, partly because of data constraint. In many studies, years of schooling is treated as educational attainment and Gini coefficient of year of schooling is used in measuring inequality in education [Castelló, Doménech 2002; Morrisson, Murtin 2007]. Interestingly enough, year of schooling as a measure of education is problematic for several reasons. The level of learning in a particular level of education may be different in different countries, even in different regions in a same country. The quality of learning of one year of schooling is different across different schools in a city. In some database, for example household survey data conducted by the NSSO in India, educational attainment of a person is provided in broader levels of education, such as primary, secondary, graduate, and post-graduate and above. This database is used in this study in looking into the distributional content of education.

We analyse educational disparities among the children with age up to 14 years by gender, and household specific characters with Indian data. We estimate Human Opportunity Index (HOI) to measure the distribution of opportunities in access to basic education. The HOI captures the degree of inequality in multiple indicators into a single measure. This paper seeks to measure the distribution of opportunities in school enrolment and attainment by type of circumstances by taking into account private and public schoolings. This study aims to provide quantitative estimates of how unequal is the distribution of opportunity among groups in different circumstances, the contribution of circumstances to total inequality in opportunities, and the extent of inequalities in access to good quality education. To capture the contribution

of each circumstance to inequality of opportunity, the Shapley decomposition method is used.

The paper is organised as follows. Section 2 describes the data set and variables constructed for empirical work in this study. Section 3 considers the conceptual issues and methods used in measuring inequality in educational achievement, and inequality in educational opportunity. Section 4 presents empirical results. Section 5 concludes.

## **2. Data description**

The empirical part of this study is based on 71st round household survey on Social Consumption: Education carried out by the NSSO in 2014 covering the whole of the Indian Union. The survey collects information on school participation of persons within the age group 5 to 29 years. As this study concentrates on education at primary and upper primary level, we have considered the sample of children with age group 5 to 14 years. Multi stage stratified random sampling is used in drawing the ultimate sample unit, households. At the first stage 4577 villages in the rural area and 3720 urban blocks in the urban area have been selected by following the sampling technique probability proportional to size with replacement (PPSWR) for the central sample at all India level. At the second stage stratification of the households is done on the basis of students having technical or general education. At the ultimate stage 8 households have been selected by using simple random sampling without replacement (SRSWOR) from each sample village and urban block selected at the first stage. The total number of sample households in this survey are 36479 and 29447 in rural and urban India respectively.

Information collected in this survey are household characteristics like household size, household type, religion, social group, along with household's monthly consumption expenditure, household's accessibility to computer and internet, household's distance from nearest school, and so on. Demographic and other characteristics of household members, current educational attendance and current enrolment status for children and youth, and other information relating to schools and the courses, private expenditure on education and other related information are incorporated in to the survey schedule.

For analysing inequality of opportunity in education, we focus on those covariates that are informative of the family background and other inherited circumstances of the child. The covariates used in this study are gender of the child, parent's education, social and ethnic status of the household, household's income (monthly consumption expenditure as a proxy), and location of the household. Parental education is measured by the highest education level completed and is expressed in terms of education dummy. The highest level of schooling of the parents is an indicator of parental human capital.

Access to education measured by school attended at primary and upper primary level by the children of age up to 14 years on full time

basis is used as a proxy for opportunity to be educated. The schools are categorised into government funded, private funded and government aided. Circumstance variables are child specific and household specific. Gender of a child is a dichotomous variable coded 1 if the student is girl and 0 if boy. Social status of a household is categorical variable that includes scheduled tribes (STs), scheduled castes (SCs), other backward castes (OBCs) and upper castes (UCs). To estimate the differential effect of social status we have used 3 dummy variables by taking upper castes as a reference group. Parents' education and income are also taken as circumstance variables.

### **3. Concepts and methods in measuring inequality of opportunity**

A large number of studies, both theory and application, exists in the literature on inequality of opportunity. The literature on the measurement of inequality of opportunity has focused primarily on opportunities for the acquisition of income or wealth. There are two main approaches in the empirical literature. In the ex-ante approach, associated with van de Gaer [1993], the opportunity set faced by each type is evaluated, and equality of opportunity is attained when there is perfect equality in mean across all groups. Since equality of opportunity would imply equality in means across groups, inequality of opportunity can be seen as some measure of between-group inequality. In the ex-post approach, associated with Roemer [1998], equality of opportunity obtains only when individuals exerting the same degree of effort, regardless of their circumstances, receive the same reward. Inequality of opportunity would, in this case, best be captured by the weighted sum of inequality within groups characterised by the same degree of effort.

Opportunities in education that enable individuals to acquire knowledge and certain skills depends on efforts and circumstances. Inequality of opportunity in getting quality education by the children relates to circumstances, a set of personal, family or community characteristics inherited from their families and the location at birth which are beyond their control. Inherited circumstances are beyond the control of the children and is highly relevant from the point of view of social justice. In a world of equal opportunities, success in educational achievement depends only on efforts like free choice of schooling, talents, hardworking, not on circumstances.

A growing literature concerning educational inequality has emerged, but most of the studies are restricted to the OECD countries [Ramos, Van De Gaer 2016; Roemer, Trannoy 2016]. Thomas et al. [2001] calculated the Gini index of education of the population aged 15 and over, based on school attainment data for 146 countries. The Gini coefficient in education (GE) measures the relative distribution of education among the people. It is constructed on the basis of years of schooling ( $y$ ) associated with the various levels of schooling ( $i$  and  $j$ ), the percentage of the population with each level of educa-

tional attainment ( $p_i, p_j$ ), and the average educational attainment ( $\mu$ ) of the population:

$$(1) \quad G_E = \mu^{-1} \sum_{i=2}^n \sum_{j=1}^{i-1} p_i p_j |y_i - y_j|.$$

The GE ranges from 0 to 1, with a value of 0 indicating that all persons have equal level of schooling, and a value of 1 resulting from one person having attained the highest level of education and the rest attaining none.

Ferreira and Gignoux [2014] developed measures of educational opportunity in terms of variance of educational achievement as well as in terms of the share of the variance in test scores that is explained by pre-determined circumstances in a linear regression by using the OECD's Program of International Student Assessment (PISA) test scores.

Bourguignon et al. [2007] developed parametric measure of inequality of opportunity in ex-ante approach:

$$(2) \quad \theta_i = \frac{l(C_i' \hat{\beta})}{l(y)}.$$

Here,  $\hat{\beta}$  is the OLS estimate of the regression coefficients in a multiple linear regression of  $y$  on  $C$ :

$$(3) \quad y_i = C_i' \hat{\beta} + \varepsilon_i.$$

It is the reduced form of the model:

$$(4) \quad y = f(C, E, u);$$

$$(5) \quad E = g(C, v),$$

Here,  $y$  denotes achievement, and  $C$  denotes the vector of circumstances,  $E$  denotes a vector of efforts,  $u$  and  $v$  denote random shocks. Along with the student's own efforts, school characteristic variables are included in  $E$ . The coefficient,  $\beta$  is intended to capture the reduced form effect of circumstances – both directly and through efforts.

The variance estimates are used to measure an inequality index,

$$(6) \quad \theta_i = \frac{v(C_i' \hat{\beta})}{v(y)}.$$

It measures the share of the total variance in educational achievement that is accounted for by predetermined circumstances. This index is extremely simple to calculate and is simply the  $R^2$  of an OLS regression of the child's test score on a vector  $C$  of individual circumstances. This index is cardinal invariant in the standardisation of test scores. It is decomposable into components for each individual variable in the vector  $C$  as for Shapley—Shorrocks decomposition.

This measure is simply the share of the total variance in achievement that can be accounted for by pre-determined circumstance variables in a linear regression. The index is simple and intuitive, and provides a lower-bound estimate of the joint causal effect of all pre-determined circumstances on educational inequality. It is cardinally invariant to the standardisation of test scores, and exactly additively decomposable into the partial shares accounted for by individual circumstance variables. It is also closely related to the origin-independence concept of intergenerational educational mobility.

In this study, the index for inequality of opportunity is constructed in the following way: First, the conditional likelihood for access to quality education is estimated by using logit model with circumstance variables that affect the opportunities to education. We have estimated logistic model on whether a child had attended at primary level of education on full time basis separately for rural and urban areas. Logarithmic value for monthly consumption expenditure as a proxy for household income, age of the child, gender dummy of the child, parent's education, parent's occupation, medium of instruction, type of school and distance of the school from house of the child are taken as explanatory variables.

$$(7) \quad y_i^* = \beta_0 + \sum_{j=1}^k \beta_j x_j + e_i.$$

Here, the dependent variable  $y_i^*$  denotes the ability of a child had in getting full time education and is unobservable.

What is observable is the outcome that a child had attended a school for full time course having the following decision rule:

$$(8) \quad y_i = \begin{cases} 1, & \forall y_i^* > 0; \\ 0, & \text{в ином случае.} \end{cases}$$

The ability in getting full time education ( $y^*$ ) has two components:

$$\beta_0 + \sum_{j=1}^k \beta_j x_j \text{ и } \varepsilon_i.$$

The first part is deterministic and depends on the circumstance variables, while the second part is purely stochastic and unobserved.

In the logistic model, the log odds ratio is linear in the parameters.

$$(9) \quad \ln \left( \frac{p_i}{1-p_i} \right) = \beta_0 + \sum_{j=1}^k b_j x_j.$$

From the estimation of this logistic regression, we can obtain coefficient estimates and the predicted probability of access to quality education,  $\hat{p}_i$ .

$$(10) \quad \hat{p}_i = \frac{1}{1 + \text{exr}(\hat{\beta}_0 + \sum_{j=1}^k \hat{\beta}_j)}.$$

Weighted average of the estimated probability of access to education is estimated as

$$(11) \quad \bar{p} = \sum_{j=1}^n w_j \hat{p}_i,$$

Here,  $n$  is the number of circumstance groups,  $w_i$  is the share of group  $i$  in the total population. The weighted average shown in (11)  $\bar{p}$  measures the overall coverage rate.

The index of inequality of opportunity is measured by

$$(12) \quad I_{io} = \frac{1}{2\bar{p}} \sum_{j=1}^n w_j |\hat{p}_i - \bar{p}|.$$

The measure of inequality of opportunity is popularly known as the dissimilarity index in the literature [Barros et al. 2009]. This measure highlights on the fraction of available opportunities that could be re-allocated from better-off groups to worse-off groups to make the distribution equitable. The index, IIO measures the dissimilarity between access of education for groups defined by circumstance characteristics and the access for the same for the population as a whole, and sometimes it is called the dissimilarity index. The value of IIO ranges from 0 to 1. For perfect equality of opportunity, IIO will be 0. The index, IIO will be 0 if the access to opportunity is independent of circumstances and in this case the human opportunity index will be equal to the probability of access to education for the population as a whole. The higher the value towards 1, the higher will be the inequality.

We also construct index of human opportunity from the index of inequality of opportunity to measure the adjusted coverage in the access of education in the following way:

$$(13) \quad I_{Ho} = \bar{p}(1 - I_{io}).$$

It measures the coverage rate of an opportunity, discounted by inequality in the distribution across circumstance groups. The Human Opportunity Index combines the measure of inequality with the average access to opportunities. It focuses on coverage, measuring how many opportunities are available, and inequality of opportunities, measuring how the distribution of opportunities is equitable, among children. It increases with overall coverage and decreases with the differences in coverage among circumstance groups.

The Shapley decomposition method is used to measure the contribution of each circumstance to inequality of opportunity. The Shapley decomposition of the Human Opportunity Index (HOI), includes the estimation of the basic statistics like Coverage of Basic Opportunities ( $\bar{p}$ ), the dissimilarity Index (IIO), and the Human Opportunity Index (IHO). The decomposition allows the identification of the marginal contribution of each circumstance to inequality in access to opportunities.



**Table 1. Status of current educational attendance at age 5–14 years (%)**

Status of school attendance	Rural			Urban		
	Total	Girls	Boys	Total	Girls	Boys
Never attended	8.0	8.8	7.2	5.1	5.6	4.6
Ever attended but currently not attended	2.9	3.1	2.7	2.3	2.1	2.5
Currently attending non formal education	0.6	0.7	0.5	0.3	0.3	0.3
Currently attending in pre-primary	3.5	3.2	3.7	4.4	4.3	4.5
Currently attending in primary and above	85.1	84.2	85.9	87.9	87.8	88.1

Source: Author's estimation with 71st round survey data

**Table 2. Share of students attended at primary and upper primary level on full time basis**

School type	Rural			Urban		
	Total	Girls	Boys	Total	Girls	Boys
Government	74.5	76.4	72.9	34.7	35.7	33.8
Private aided	6.5	6.4	6.7	19.4	19.0	19.7
Private un-aided	18.8	17.1	20.4	45.7	45.0	46.4
Others	0.1	0.1	0.1	0.3	0.3	0.2

#### 4. Empirical findings

##### 4.1. Summary statistics

The data set contains the profile of boys and girls of the sample households in education. Whether a person is attending school or not is recorded in the survey schedule in the form of the current status of educational attendance. Table 1 exhibits the status of access to education in terms of attendance in school separately for boys and girls in rural and urban areas. To make the estimate population representative from the sample, we have used sampling weight constructed from the multiplier given in the data set. Roughly 8 percent of the children in age group 5 to 14 years have never attended school of any type in the rural economy. The incidence of never attending in school among the children is less in urban areas than those in the rural economy. The share of never school attended is higher among girls both in rural and urban areas as compared to boys. Around 85 percent of the rural children and 88 percent of the urban children of this age group are in schooling at primary level and upper primary level.

Table 2 displays the distribution of children of age group 5-14 years who are currently attending primary or upper primary schools across different types of schools. In the dataset used in this study schools types are categorised into government, private with government aid, private without government aid and other schools. Roughly three-fourth of the children are attending government schools at the primary and upper primary level in rural areas, but the respective share in urban location is remarkably less (around one third). The incidence of purely public schooling is high among the girls as compared to boys both in rural and urban areas, but it is significantly high in the rural areas. In the urban areas, the incidence of schooling in purely private owned institutions is more than 45 percent.

#### 4.2. Estimating logit model

We have estimated a logistic model to find out how a child's access to education at primary level depends on circumstances separately for rural and urban children. All children having the same set of circumstances are said to be of the same group type. Here, the dependent variable is binary with its value equal to 1 if a child is attended in a school at primary or upper primary level on full time basis and 0 otherwise. Therefore, the estimated coefficients measure the effects of circumstances on log odds ratio for attending school on full time basis. We have taken gender dummy (Dgirls) to capture gender differences in attending full time schooling. Household income is supposed to affect whether a child had access to quality education. Logarithmic values of monthly per capita consumption expenditure ( $\ln(\text{mpce})$ ) is used as a proxy for household income. Families in the social groups Scheduled Tribe (DST), Scheduled Castes (DSC) and Other Backward Castes (DOBC) are normally treated as vulnerable as compared to general castes. In our estimation the household in general castes is treated as the reference group. Education of head of the household (DEHH) is an important circumstance variable which is considered into our estimated model.

We have disaggregated the sample data into circumstance groups by gender, and ethnicity. The objective is to understand how much children's circumstances like gender, ethnicity, and other socioeconomic and demographic factors are responsible in getting access to basic education of good quality. We utilise information on family background and other predetermined personal and household specific characteristics that determine a person's educational outcomes.

The data set used in this study contains 82296 sample children with age group 5 to 14 years of which 50454 have been taken from the rural and 31842 from urban areas. The distribution of the sample children by their status of education at primary level are shown in Table 3. Over 50 percent of the children who get access to full time education are boys both in rural and urban areas. Thus, girls are lagging behind boys, although not at a greater rate, in getting education. Nearly 70 percent of the children getting access to full time education in urban

Table 3. **Distribution of children by status of education at primary level**

Обстоятельства	Rural				Urban			
	Not attend fulltime		Attend fulltime		Not attend fulltime		Attend fulltime	
Gender								
Boys	11951	(55.5)	14803	(51.2)	7986	(55.7)	9016	(51.5)
Girls	9563	(44.5)	14137	(48.8)	6352	(44.3)	8488	(48.5)
Household head								
Educated	11453	(53.2)	14579	(50.4)	10361	(72.3)	12235	(69.9)
Not educated	10061	(46.8)	14361	(49.6)	3977	(27.7)	5269	(30.1)
Ethnicity								
ST	3723	(17.3)	5816	(20.1)	1120	(7.8)	1508	(8.6)
SC	4236	(19.7)	5513	(19.0)	2128	(14.8)	2525	(14.4)
OBC	8768	(40.8)	11417	(39.5)	6042	(42.1)	7688	(43.9)
General	4787	(22.3)	6194	(21.4)	5048	(35.2)	5783	(33.0)

Note: Figures in parentheses indicate percentage share in a particular circumstance group  
Source: As for Table 1

location come from the families where head of the household is educated. The share of children with full time education is the highest in other backward castes followed by the upper castes.

The estimated results of the logit model are shown in Table 4. In the rural economy, the girls have less access to full time education than boys. In the urban region, on the other hand, the access to full time education at primary level is more for girls than for boys. The household income has positive effect on probability in getting full time education. Among the children from households in different social groups, the tribes and other vulnerable groups have less access to full time education than the children from upper castes households. If the parent of a child is educated, the access to full time education of the child is more. The marginal effects of household income and parents' education are more than the other circumstance variables. The lower panel of the Tables exhibits the overall significance of the model.

#### 4.3. Estimating HOI

In the second step we have calculated the predicted probability of access to full time education for each child on the basis of the predicted relationship as shown in Table 4 and the vector of their circumstances. The estimated probability of access to education is calculated by taking the weighted average of the predicted probabilities and it captures the coverage. The estimated coverage is less in the rural areas than in urban areas (Table 5). In the next step we have computed the

Таблица 4. **Логистическая оценка систематического посещения школы**

	Rural		Urban	
	Odds Ratio	Marginal effect	Odds Ratio	Marginal effect
Intercept	0.01***		0.001***	
$D_{girls}$	0.90**	-0.02	1.02	0.003
$\ln(mpce)$	1.06**	0.01	1.25***	0.03
$D_{ST}$	0.79***	-0.05	0.96	-0.01
$D_{SC}$	0.87***	-0.03	0.89**	-0.02
$D_{OBC}$	0.86***	-0.03	0.89***	-0.02
$D_{EHH}$	1.74***	0.10	1.99***	0.10
Number of observation	50448		31833	
$LR \chi^2 (7)$	34531.49		23112.77	
Prob > $\chi^2$	0.00		0.00	
Pseudo $R^2$	0.52		0.57	
Predicted Probability of full time education	0.76		0.83	

\*\*\* $p > 1\%$ ; \*\* $p > 5\%$ ; the rest are insignificant.

Source: As for  
Table 1

Table 5. **Estimation of HOI**

Variable	Rural	Urban
Coverage ( $\bar{p}$ )	62.46	65.95
Dissimilarity ( $I_{ip}$ )	2.74	2.76
HOI	60.75	64.13
Pseudo $R^2$	0.00	0.01
Observation	50448.00	31833.00
Vulnerable Pop	23724.00	11876.00
Vulnerable (%)	47.03	37.31

dissimilarity index or index for inequality of opportunity. The estimated value of this index is roughly the same both in rural and urban children. The last step is the computation of the HOI by discounting a penalty for improperly allocated opportunities from the overall coverage rate. The HOI is more among the urban children than among the rural children. In terms of our estimation the share of vulnerable children is more in rural areas than in urban areas.

Table 6. **Shapley decomposition of the  $I_{OP}$**

	Rural	Urban
HOI	0,61	0,64
$D$ -index	0,03	0,03
Penalty	0,02	0,02
Coverage	0,62	0,66
$\ln(\text{mpce})$	5,9	26,22
$D_{girls}$	12,7	1,48
$D_{ST}$	2,55	1,75
$D_{SC}$	2,92	6
$D_{OBC}$	4,93	6,39
$D_{EHH}$	70,99	58,16

Source: As for Table 1

#### 4.4 Shapley decomposition

To find out the contribution of each circumstance to inequality of opportunity, the Shapley decomposition method is used. Parent's education has contributed the most to inequality of opportunity to full time education at primary or upper primary level both in rural and urban areas. Gender gap contributes significantly more in educational inequality in rural areas than in urban areas. Economic condition of the households plays an important role both in rural and urban areas (Table 6).

#### 5. Conclusions

Education is viewed as one of the fundamental inputs of a person's wellbeing and a powerful predictor of earnings. The objective of this study is to provide a quantifiable measure of the distributional content of education by gender across different groups of people by using survey data in India. We analyse educational disparities among the children with age up to 14 years by gender, and household specific characters with Indian data.

Around 85 percent of the rural children and 88 percent of the urban children of this age group are in schooling at primary level and upper primary level. The incidence of purely public schooling is high among the girls as compared to boys both in rural and urban areas, but it is significantly high in the rural areas.

We have estimated a logistic model to find out how a child's access to education at primary or upper primary level depends on circumstances separately for rural and urban children. In the second step we have calculated the predicted probability of access to full time education to find out the estimated probability of access to edu-

cation. We have computed the dissimilarity index or index for inequality of opportunity and finally we compute the human opportunity index.

In the rural economy, the girls have less access to full time education than boys. In the urban region, on the other hand, the access to full time education at primary level is more for girls than for boys. The estimated coverage is less in the rural areas than in urban areas. The HOI is more among the urban children than among the rural children. Parent's education has the highest contribution to inequality of opportunity to full time education at primary or upper primary level.

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