Gender and Allocation of Education Expenditure by parents: An Empirical Evidence from Ramnagar Village ,West Bengal.

Prepared by

UMMA RUMANA

A Student of Economics Honours of,

Maharajadhiraj Uday Chand Women's College, Burdwan

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Under the supervision of

DR. HIRANYA LAHIRI

Assistant Professor,

Department of Economics,

Maharajadhiraj Uday Chand Women's College, Burdwan

Contents:

ABSTRACT :

This paper examines whether the household's spending on education based on gender exhibits pro-boy bias or not. The study examines one potential mechanisms through which the gender-based difference in education spending can situate itself. Actually this study examines difference in expenditure on education of children . The study used three variable regression analysis and some statistical tools. The data for the study was collected through a structured interview schedule. The data for the study was collected at individual level. The results of the analysis reveal that, on the whole, gender has no association with the allocation of education expenditure by parents.

INTRODUCTION :

" Until we get equality in education, we won't have an equal society".

Sonia Sotomayor

Education is the primary key to economic growth and national competitiveness. Quality education is closely related to spending made by the government or households. Furthermore, the quality of education determines labour productivity and economic growth. Gender inequalities are not only reflected in the number of highly educated men and women. In the long term, they hinder efforts to develop the country in many aspects, such as inclusive economic growth and equal opportunities for both genders and equity. Education is one of the most important fields where women have been deprived traditionally. Gender based inequalities in education around the world, according to UNESCO, are mainly determined by "poverty, geographical isolation, minority status, disability, early marriage and pregnancy and

gender-based violence .According to the human development report published by the National Council of Applied Economic Research in 1999, gender differences in schooling outcomes are very common to India. The ever-enrolment rate (defined as the proportion of children aged 6-14 years that was ever enrolled in school, at any level, at the time of survey) was only 64.8 per cent for female children as compared to 77.2 per cent for male children. It has been observed that households across different states in rural and urban India prefer to incur more expenditure on education for male members than for females. Despite decades of legislation, the passing of laws, the implementation of a web of policies and programmes, and information campaigns, girls tend to encounter mediocre opportunities for education in several regions of the world, including India. Promotion of gender equality has become widely recognised as an integral part of a comprehensive sustainable human development plan. World Bank reported that the development communities have arrived at a joint agreement that "development policies and actions which fail to take gender inequality into account and fail to address disparities between males and females will have limited effectiveness and serious cost implications". However, according to the "Human Development Report", inequality in education has remained broadly constant. The issue of gender discrimination has evolved and morphed into more severe and discreet forms. One such form is gender discrimination or bias in the household's expenditure on health and education. It's a reality that the nutritional, educational and health outcomes for girls, in developing countries, are worse than for boys. While the focus of the government and policymakers has mainly rotated around reducing the gender gaps in literacy rates, reducing the drop-out rates among male and female students, increasing retention and completion rates, increasing the gross-enrolment and net enrolment rates but not much has been done to address the issue of unequal investment in human-capital or to mitigate the problems that arise out of gender-biased resource allocation within the households. The theory of human capital offers a good explanation of the gender-based disparity in spending on education. In many developing countries, resources are not distributed in a random manner within households. Parents may have a taste for differential investment in their children's education, and they are unwilling to split household resources on education equally across male and female children. The question of concern is whether there is a considerable reluctance, on the part of parents, to distribute resources equally between their sons and daughters, which contributes to a substantial difference in the distribution of available resources for the education of children. Households may be less motivated to spend on the education of their daughters . They may or may not enrol both of their children (sons and daughters) in schools, and if they do, they might spend differently on the education of their children based on gender. The difference in education

expenditure may come into force through various channels, e.g. sending sons to private schools which charge more fees and daughters to less fee-charging government schools or semi-government schools, by employing private tutors for sons and not for daughters or by not encouraging daughters to take up science / commerce subjects (which requires more investment) in higher secondary levels while as doing so in case of sons or vice versa. Also, it has been found that daughters are often engaged in agricultural activities and household chores while sons are encouraged and motivated to study. This phenomenon becomes even more profound when a household has limited resources to allocate. In that scenario, parents might opt to spend more on the education of their sons at the expense of the education of their daughters.

This research paper considers the gender-based difference in spending on education as the main subject of its investigation. The extant literature has identified two channels by means of which gender bias in education manifests itself, i.e. through the parental decision of enrolling children in schools and through "differential expenditure on boys and girls" when enrolled in school . The literature shows that bias can either be pro-male or pro-female. However, the probability of the presence of discrimination favouring boys in education expenditure is more. As a result of the gender-based discriminatory investment in education, the discriminated group faces inferior educational outcomes, thus hampering their chances at a better and prosperous life.

The present study attempts to investigate whether household's allocation of education expenditure favours boys over girls.

MOTIVATION

The right to an education is a fundamental human right. Yet, women in the developing world are underrepresented at all levels of education. While progress has been made

globally in improving the net enrolment ratio at primary levels, a noticeable decline is observed in girls' participation at higher levels of education (Global Campaign for Education 2012). Inequality is not only observed in terms of ability to participate in schooling, but also in terms of quality of schooling. The participation of girls is also found to be lower in private schools compared with public schools in developing economies (Harma 2011; Maitra, Pal, and Sharma 2011; Woodhead, Frost, and James 2013; Sahoo 2014). one of the reasons behind the ineffective inclusion of girls in educational opportunities is the unequal investment made by parents in their male and female children's education. The prevalence of unequal returns to education in terms of wages and work opportunities in the labour market implies that parents are likely to invest more in boys' education than in girls. Every child deserves to reach her or his full potential, but gender inequalities in their lives and in the lives of those who care for them hinder this reality.

Wherever they live in India girls and boys see gender inequality in their homes and communities every day – in textbooks, in movies, in the media and among the men and women who provide their care and support.

Across India gender inequality results in unequal opportunities, and while it impacts on the lives of both genders, statistically it is girls that are the most disadvantaged.

Globally girls have higher survival rates at birth, are more likely to be developmentally on track, and just as likely to participate in preschool, but India is the only large country where more girls die than boys. Girls are also more likely to drop out of school.

In India girls and boys experience adolescence differently. While boys tend to experience greater freedom, girls tend to face extensive limitations on their ability to move freely and to make decisions affecting their work, education, marriage and social relationships.

As girls and boys age the gender barriers continue to expand and continue into adulthood where we see only a quarter of women in the formal workplace.

Some Indian women are global leaders and powerful voices in diverse fields but most women and girls in India do not fully enjoy many of their rights due to deeply entrenched patriarchal views, norms, traditions and structures.

India will not fully develop unless both girls and boys are equally supported to reach their full potential.

There are risks, violations and vulnerabilities girls face just because they are girls. Most of these risks are directly linked to the economic, political, social and cultural disadvantages girls deal with in their daily lives. This becomes acute during crisis and disasters.

With the prevalence of gender discrimination, and social norms and practices, girls become exposed to the possibility of child marriage, teenage pregnancy, child domestic work, poor education and health, sexual abuse, exploitation and violence. Many of these manifestations will not change unless girls are valued more. These all are the reasons behind my motivation to research on this topic, and make policy suggestions to fight against gender bias or gender discrimination.

This paper aims to study by looking at the education expenditure allocation decisions of West Bengal households. It focuses on the extent of discrimination practiced against girls in terms of expenditure patterns on education and examines the possible reasons behind such inequality. Using the Regression analysis method the study examines the extent of explained differences and unexplained differences in education expenditure for families across Ramnagar village, West Bengal.

LITERATURE REVIEW

We don`t have any study regarding gender discrimination in allocating education expenditure by household in Birbhum. So I have tried to fill this gap. Gender inequality in education has generated considerable research in the international field. The existence of broad gender

inequalities in India and recognition of the importance of female education has steered research to assess how the gender-based inequality situates itself in the budget allocated for education.

Deaton [17] using the extended form of Engel curve found that, in Thailand, the expenditure on adult goods decreased when an extra male child was added to the household as compared to the female child. However, the pro-male bias, thus found, was statistically insignificant.

Benavot [1989] analyses cross national data on 96 countries from 1960 to 1985 and finds clear evidence that in less developed countries, especially some of the poorest, education expansion among school age girls at primary level has a stronger effect on long term economic prosperity than does educational expansion among school age boys.

Salam, et al. (2021)examined the effect of gender on human capital investment in Indonesia by using Logistic regression method and data sourced from 315,672 households in Indonesia.This study identified two main problem formulations. Gender disparity in the allocation of education spending to Indonesian householdsis one of them .Result showed that gender of head of the household affects household education expenditure among girl and boys.

Hannum , kong ,Zhang et .al (2009) investigate the gender gap in education in rural northwest China. They first discussed parental persceptions of abilities and appropriate roles for girls and boys; parental concerns about old-age support; and parental perceptions of different labor market outcomes for girls' and boys' education. then they investigate gender disparities in investments in children. Fieldwork confirmed that rural parental educational attitudes and practices toward boys and girls are more complicated and less uniformly negative for girls than commonly portrayed.

Delelegen (2008) studied to uncover if there is any intrahousehold gender-bias in the decision to enrollment and allocation of resources to child education in Ethiopia by using a panel data set from Ethiopian Rural Household Survey (ERHS), spanning from 1994-2004. He then used Hurdle Model to emphericallytest gender discrimination on education expenditure.He found statistically significant gender-bias during the initial decision to enrollment against girls, especially those corresponding to secondary school cycle.

Himaz [22] observed pro-female differential expenditure on education, in the age-group 8-9 in Sri-Lanka. Gender bias in education expenditure was discovered for children falling in the agegroup of 10-14 years. Further, the study observed that rural households seem to demonstrate a conscious inclination for spending more on education when an additional girl is added to the

household rather than a boy and reported that an approximately equal percentage of boys and girls were enrolled in private school.

Zimmermann [33] has documented clear evidence of discrimination against girls, increasing with age and girls in the age-group of 15-19 years. The bias in education expenditure establishes itself through the decision to spend less on them than boys when they are enrolled in school

Khajikhan (2021) also analyzes gender inequality in allocating education spending and the factors that influence it in Mongolia. The results show that the main factors that influence gender inequality are the residence and occupation of the head of the household. Households living in rural areas and the head of household in the agricultural sector allocate more education costs to girls than boys.

Velkoff (1998) provides further support of gender disparity in education and shows that three out of five girls attend school versus three out of four boys. Women's education is often not taken seriously and school is only considered a place one spends time until marriage (Dhruvarajan, 1989). Data on school attendance show that the proportion of girls attending school decreases with age, while for boys it remains stable (Velkoff, 1998)

Ogundari and Abdulai (2014) analyzed the pattern of household spending on education and health costs in Nigeria. Household spending on education and health costs is influenced by income, family size, and the education level of the head of the household. In addition, female household heads spend more on education and health than male household heads.

A r study in Bangladesh [Hossain and Tisdell, 2005] on the status of women in terms of key macro level indicators namely, women's labour force participation, educational attainments and earnings vis-à-vis men found remarkable improvement in women's 4 educational attainments.

Saha(2003)examined gender disparity in India at the level of the state by utilizing individual-level data on educational expenditure from the 64th round of the National Sample Survey, an attempt is made to assess the current scenario in gender inequality in household educational expenditure in India at both the national and state level. It is observed that significant gender disparity exists in intra-household educational expenses and that this discrimination is not confined to the "backward" or developing states in India.

Kaul's [32] analysis confirms the existence of bias favouring males and preference for the eldest son in India. The study suggests that parents, who expect old age assistance from their eldest sons, invest more in their education.

Subramaniam [18], using the household-level consumption expenditure data from India, finds parental inclination in allocating more resource towards boys as compared to girls.

Bhatkal [2012] finds clear evidence of male favouring bias in enrollment decisions for upper primary and secondary schooling in Andhra Pradesh. Further, the study also confirms a substantial dissimilarity in the conditional expenditure on education of males and females.

Majumder & Mitra(2016) examined to detect gender bias in education expenditure on "students", who are children and young adults, in a household in the rural and the urban sectors of West Bengal.

Only a few studies have analyzed the issue of gender inequality in the allocation of household education expenditures in West Bengal. This study aims to analyze the effect of gender on household decisions in a rural village named Ramnagar in West Bengal. to invest in human capital. Identifying gender differences in household allocation for education investment is necessary to understand appropriate policies to address gender inequality.

OBJECTIVE

Gender equality, besides being a fundamental human right, is essential to achieve peaceful societies, with full human potential and sustainable development. Moreover, it has been shown that empowering women spurs productivity and economic growth. Better use of the world's female population could increase economic growth, reduce poverty, enhance societal well-being, and help ensure sustainable development in all countries.

Our main objective is to detect gender bias or discrimination in West Bengal by taking Ramnagar village as sample**.** Purpose This paper aims to detect gender bias in education expenditure on "students", who are children and young adults, in a household in the rural and the urban sectors of West Bengal.

The present study attempts to explore the motivation of parents with regard to education for female children in terms of t Patriarchal norms hold back many girls from striving for their

dreams by receiving a quality education, medical facilities and overall awareness for their well-being. We, have been working towards bridging the gap and ensuring that young girls across India receive essential resources that help improve their mental, physical, and emotional development. Discrimination issues in India are deep-rooted and practiced for generations, and that is why it requires long-term intervention, which we have been providing to underserved communities across India.

Our aims to create a world where the girl child is celebrated and has access to equal opportunities to study, to grow, and to prosper as her male counterpart.

My effort to bring about a change in this situation include:

- Education that helps create attitudinal shifts towards gender bias, and activities to spread awareness.
- Continuous efforts toward breaking myths and stereotypes around gender.
- Ensuring accountability of the State to implement various schemes, policies, laws, constitutional guarantees, and international commitments.
- Institutionalizing gender-sensitive processes within various systems such as law and programs.
- Encouraging community ownership in preventing violations based on gender discrimination.

METHODOLOGY

To arrive at robust results, it is essential to use quality data in the analysis. The household-level data generally tends to mute out the presence of gender-bias due to aggregation, even in places where it is expected to exist .

For this study I had collected individual-level data from each household. The data used in this analysis was collected through a structured interview schedule from District Birbhum of the state of West Bengal . According to the 2011 census Birbhum district has a population of 3,502,387 roughly equal to the nation of Lithuania or the US state Connecticut. This gives it

a ranking of 84th in India. The district has a population density of 771 inhabitants per square km. The data was collected through sampling method. Administratively, district Birbhum is divided into eight community development blocks. Out of these eight blocks, one block viz Ilambazar was selected randomly. And Ramnagar village was selected for sampling.

Ramnagar village is located in Illambazar subdivision of Birbhum district in West Bengal, India. It is situated 9.4km away from sub-district headquarter Illambazar (tehsildar office) and 38.8km away from district headquarter Suri. As per 2009 stats, Illambazar is the gram panchayat of Ramnagar village.

The total geographical area of village is 303.45 hectares. Ramnagar has a total population of 1,023 peoples, out of which male population is 510 while female population is 513. There are about 248 houses in ramnagar village. Pincode of ramnagar village locality is 731236.

Bolpur is nearest town to ramnagar for all major economic activities, which is approximately 10km away.

Ramnagar 731236

Ramnagar Pincode – 731236

Village/Locality Name	Ramnagar
Office Name	Daranda
Office Type	B.O
Pincode	731236
Post Office/Sub-Office	Sriniketan
Sub-District/Taluka	Illambazar

District	Birbhum
State/Circle Name	West Bengal
Delivery Status	Delivery
Division Name	Birbhum
Region Name	Calcutta
Head Office	Suri
Phone/Mobile/Telephone	NA

MAP OF RAMNAGAR

To examine the household's education expenditure on education, the present study used two variable regression analysis. Besides two variable regression analysis, some other statistical tests were also used, and percentages were also worked out. using the two variable regression analysis, annual expenditure on education on an individual child education expenditure was taken as the dependent variable, and two variables like total annual household income , male/ female education expenditure were selected as independent variables. In this study we have analysed comparative regression. The data for different variables were tabulated based on gender, area and age-group, and t-test test also used to determine if there is a significant

difference between female education expenditure and male education expenditure. The tests were referred for their p value for checking their significance. The two variable regression equation of the following form was estimated:

$Y= \alpha_{0+} \alpha_1 X_1+\alpha_2 X_2+u_i$

RESULT

For this survey we have selected Ramnagar village as a sample village. Ramnagar village is located in Illambazar subdivision of Birbhum district in West Bengal, India. It is situated 9.4km away from sub-district headquarter Illambazar (tehsildar office) and 38.8km away from district headquarter Suri. As per 2009 stats, Illambazar is the gram panchayat of Ramnagar village. Anyway we have selected this village for a unique reason. This village locates near Chowpahari Forest. Villagers of Ramnagar village are completely depended on this forest. So there can have a different expenditure structure . We have interacted with 30 families. The maximum number of family size is 8 and minimum is 3 among the respondent.

Figure-1 represents total number of members in the family. The highest number of family members is 8 and lowest number of family members is 3. Most of the families consists of 2 to 4 members. More than 90% families consist of 2 to 4 members. 10% families consist of 6 to 8 members.

Figure -1

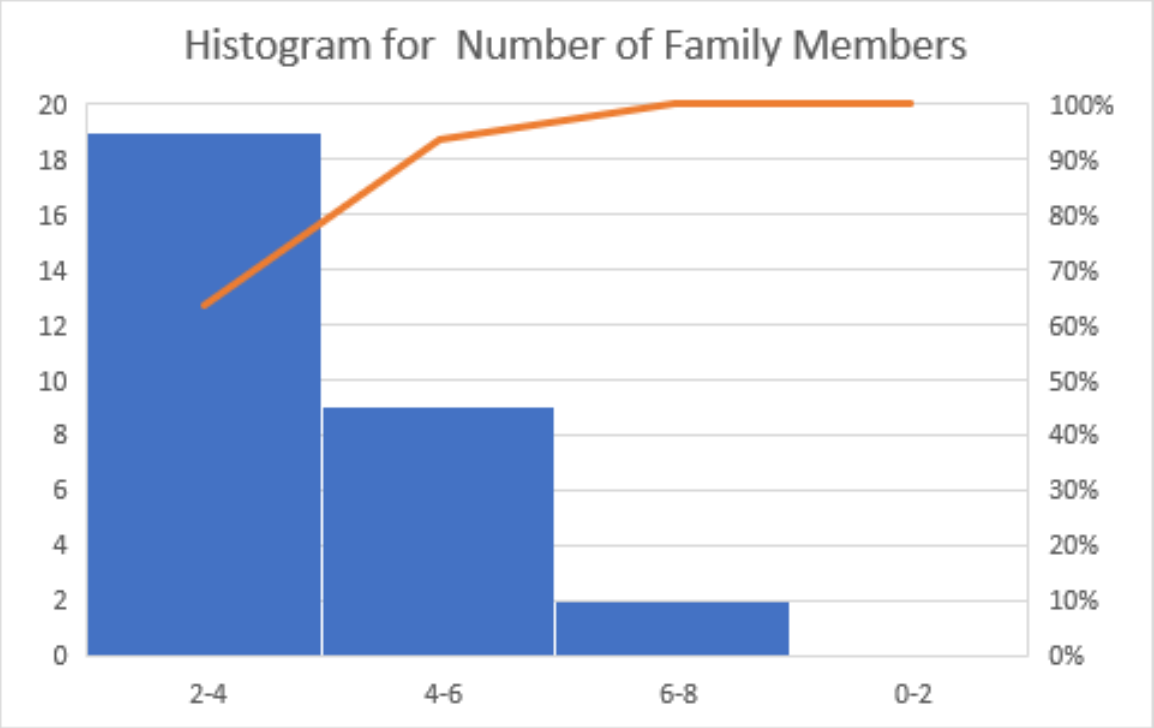


Figure-2 represents household income structure of the villagers lives in Ramnagar village.

90% villagers belong to 4000-5000 / month income level. 40% villagers belong to 8000- 9000 Rs / month income group. 20% villagers belong to 5000-6000 Rs/ month income group. And last but not the least 10% villagers belong to 9000-10000 income group.

But according to this era villager`s income structure is nothing but subsistence level of income.

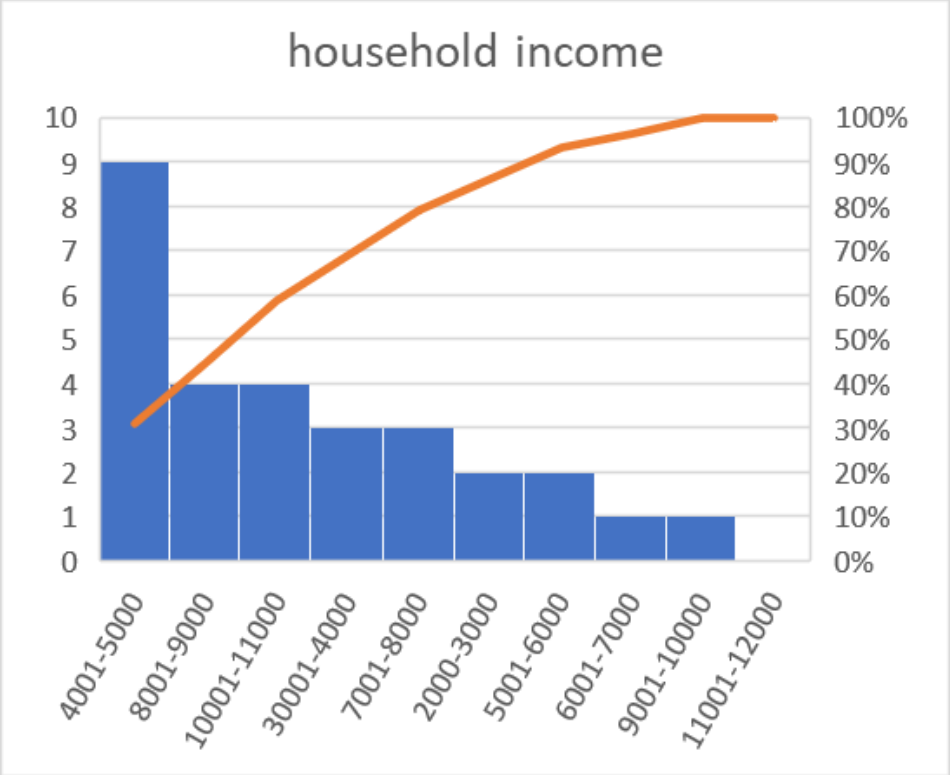


Figure -3 represents monthly expenditure on education of male child by household. From figure-3 we can see that 80% households spends 600-800 Rs monthly on education of their male children. 70% household allocates 0-200 Rs monthly on education of their male children. 40% households spends 200-400 on education of their male children. And last but not the least 10% people spends Rs 1800-2000 monthly on education of male children. From this histogram we can see that households from Ramnagar village spends 200-2000 Rs monthly on education of their male children.

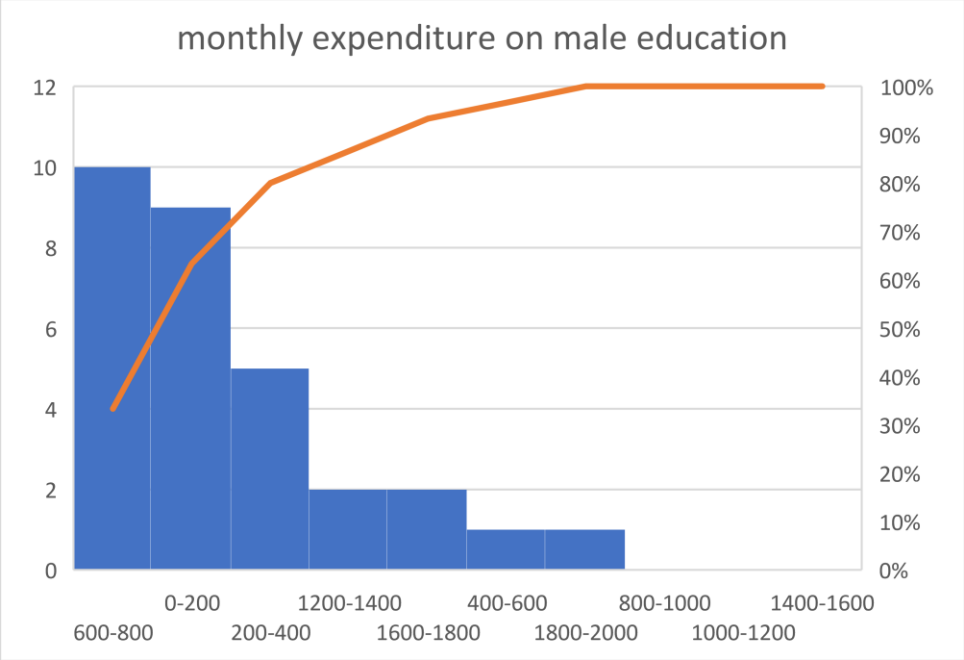
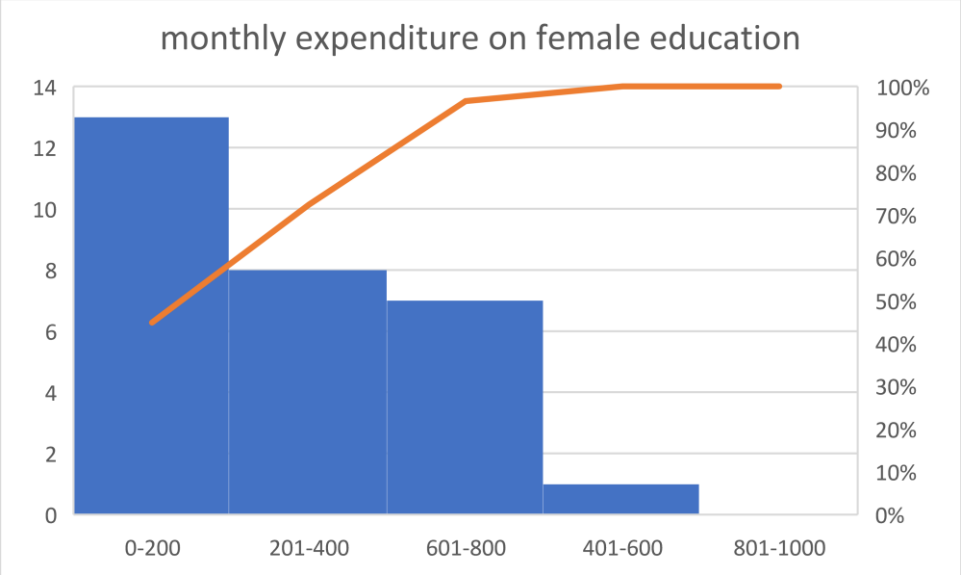


Figure-3

Figure-4 represents monthly education expenditure on education of girl child by households from Ramnagar village. From figure-4 we can see that 90% households spends Rs 0-200 monthly on education of girl child. 60% households 201-400 Rs monthly on education purpose of girl child. 45% household spends Rs 601-800 monthly on education of girl child. And last but not the least 5% people spends Rs 401-600 monthly on education of girl child. From these data we can see that monthly education expenditure on girl child is below 1000 Rs monthly.



DESCRIPTIVE STATISTICS:

For this study we have randomly drawn a sample of 30 villagers from Ramnagar village. Then we have calculated descriptive statistics (mean, median, mode, standard deviation , kurtosis ,skewness etc.) individually for dependent and all independent variables.

educational expenditure on male Children(monthly)

Mean	372.4138
Standard Error	38.00653
Median	400
Mode	500
Standard Deviation	204.6714
Sample Variance	41890.39
Kurtosis	-0.563
Skewness	0.250231
Range	800
Minimum	0
Maximum	800
Sum	10800
Count	29
Confidence Level(95.0%)	77.85285

educational expenditure on female Children(monthly)

Mean	162.069
Standard Error	29.42963
Median	200
Mode	200
Standard Deviation	158.4834
Sample Variance	25117
Kurtosis	0.774602
Skewness	0.890044

Range	600
Minimum	0
Maximum	600
Sum	4700
Count	29
Confidence Level(95.0%)	60.28387

Family Income of household(monthly)

Mean	7620.69
Standard Error	514.958
Median	7000
Mode	6000
Standard Deviation	2773.134
Sample Variance	7690271
Kurtosis	-0.79921
Skewness	0.108122
Range	10000
Minimum	2000
Maximum	12000
Sum	221000
Count	29
Confidence Level(95.0%)	1054.844

From the Descriptive Statistics data tables we see that mean of male education expenditure is 372.4138 and mean of female education expenditure by household is 162.069. Therefore, we find that the mean of male education expenditure is greater than mean of female education expenditure.

Median is the middle value of the given list of data. We see that the Median of Total education expenditure on female child is 200 and the median of total education expenditure on male is 400. Median of total household income is 7000.

The Mode refers to the most frequent, repeated, or common number in the data. From the above table we see that the mode of male education expenditure is 400 and mode of female education is 200 .

The Standard Deviation is the Square Root of the Variance. It indicates how close the data is to the Mean. From the above table we see that the Standard Deviation of male education expenditure (204.6714) is greater than female education expenditure.

Median is the middle value of the given list of data. We see that the Median of Total education expenditure on female child is 200 and the median of total education expenditure on male is 400. Median of total household income is 7000.

The Mode refers to the most frequent, repeated, or common number in the data. From the above table we see that the mode of male education expenditure is 400 and mode of female education is 200 .

The Standard Deviation is the Square Root of the Variance. It indicates how close the data is to the Mean. From the above table we see that the Standard Deviation of male education expenditure (204.6714) is greater than female education expenditure (158.4834) . Hence it conclude that male education expenditure is diversified.

Skewness is the extent to which the data is not symmetrical. From the above table we find

that the Skewness of male education expenditure is 0.250231. So here we

conclude that the male education expenditure is positively skewed and it is greater than 0 which implies that the tail of the distribution points to the longer or fatter tail on the right . The Skewness of the female education expenditure is 0.890044 , which is also positively skewed and greater than 0 and which also implies that the tail of the distribution points to the right. The Skewness of the household income is 0.108122 which is positively skewed and greater than 0 and implies that the tail of the distribution points to the right.

Kurtosis is defined as a " peakiness " is measured relative normal distribution. In other words, showing a sharper peak in the frequency curve. From the above table we find that the Kurtosis of female education expenditure is 0.774602 , which implies a mesokurtic distribution. The Kurtosis of male education expenditure is -0.563 , which defines a platykurtic distribution. which implies that the frequency curve has low peak. The Kurtosis of total family income is -0.79921 , which defines a platykurtic distribution and that the frequency curve has low peak.

REGRESSION ANALYSIS

To examine the household's education expenditure on education, the present study used three variable regression analysis. Besides two variable regression analysis, some other statistical tests were also used, and percentages were also worked out. using the two variable regression analysis, annual expenditure on education on an individual child education expenditure was taken as the dependent variable, and two variables like total annual household income , male/ female education expenditure were selected as independent variables. In this study we have analysed comparative regression. The data for different variables were tabulated based on gender, area and age-group, and t-test test also used to determine if there is a significant difference between female education expenditure and male education expenditure. The tests were referred for their p value for checking their significance. The two variable regression equation of the following form was estimated:

$Y= \alpha_{0+} \alpha_1 X_1+\alpha_2 X_2+u_i$

Where Y is our dependent variable which represents Male/ Female education expenditure by family and X1 and X2 are our explanatory/dependent variables which represents Male/ Female education expenditure and Household income respectively.

Here in this study we used comparative regression. Here I had took male education expenditure and female education expenditure differently as dependent variable.

Where α_0 is the intercept, and α_1 , α_2 are regression coefficients to be estimated . And u_i is the error term.

1^{St} regression, $Y_i= \alpha_{0+} \alpha_{1i} X_{1i}+\alpha_2 X_{2i}+u_{i.....(1)}$

Here,

Y- Expenditure on female education
X1i- Expenditure on male education
X2i- Household income

To obtain the OLS estimates of parameters of this regression we have to write above regression model as

$$\hat{Y}_i = \hat{\alpha_0}+X_{1i.}\hat{\alpha_{1i}}+X_{2i}.\hat{\alpha_{2i}}+e_i$$

$\hat{\alpha_0}$, $\hat{\alpha_1}$and $\hat{\alpha_1}$ are the numerical estimates of α, α_1 and α_2 respectively.

$\hat{Y}_i$ gives the estimated values of Y_i for different values of X_1 and X_2 and obtained the estimated residual $e_i = u_i$

$e_i = Y_i - \hat{Y}_i = Y_i - \hat{\alpha_0} - \hat{\alpha_{1i}}.X_{1i} - \hat{\alpha_{2i}}.X_{2i}$ ---------- (3)

Here,

$\bar{Y} = 503.333$

$\bar{X}1 = 733.333$

$\bar{X}2 = 7800$

Estimated value of slope coefficients:

$\hat{\alpha_0} = 49.53$, $\hat{\alpha_1} = 0.162$, $\hat{\alpha_2} = 0.162$

Now we will check the significance of our model as well as significance of the slope parameters.

For testing the significance of $\hat{\alpha_1}$ and $\hat{\alpha_2}$ we have to test the validity of the Null Hypothesis that the value of $\hat{\alpha_1}$ and $\hat{\alpha_2}$ is equal to zero against the alternative hypothesis which is not equal to zero.

$H_N: \alpha_1 = 0$

$H_A: \alpha_1 \neq 0$

Now under Null hypothesis we have to compute the t- value denoted by t*. The formula for computing t*

$|t^*| = \hat{\alpha} 1 / SE (\hat{\alpha}_1)$

Here coefficient of $\hat{\alpha}1 = 0.1628$ and Standard Error = 0.1439

$|t^*| = \hat{\alpha}1 / SE(\hat{\alpha}1) = 0.1628 / 0.1439 = 1.13$

Where $SE(\hat{\alpha}1)$ is the Standard Deviation of $\hat{\alpha}1$.

Now, we will compare the computed value of t with the critical value of t from t-table at 10% level of significance i.e., $\lambda/2 = 0.1/2 = 0.05$ and degrees of freedom n-k-1= 27.

So, the critical value of t from t-table is, $t\ \lambda/2, (n-k-1) = 2.052$

Here we see that |t*| < $t\ \lambda/2, (n-k-1)$, i.e., computed value of t is less than the critical value of t.

So, we accept H N and conclude that $\hat{\alpha}1$ is statistically insignificant at 10% level of significance.

Similarly, H N : $\hat{\alpha}2 = 0$

H A : $\hat{\alpha}2 \neq 0$

Now, under Null Hypothesis, we have to compute t value which is denoted by t*. The formula for computing t* is

$|t^*| = \hat{\alpha}2 / SE(\hat{\alpha}2)$

In case of X 2 i.e., the Coefficient of $\hat{\alpha}2 = 0.0239981465$ and the Standard Error (SE) = 0.12130918

Now we have to compute t value which is denoted by t*. The formula for computing t* is

where SE(α̂ 2) is Standard Error of α̂ 2

|t*| = α̂ 2 / SE(α̂ 2) = 0.00737 / 0.00982 = 0.7505

Now, we will compare the computed value of t with the critical value of t from t-table at

10% level of significance i.e., λ/2= 0.1/2 = 0.05 and degrees of freedom n-k-1= 27.

So, the critical value of t from t-table is , t λ/2 , (n-k-1) = 2.052

Here we see that |t*| &l t; t λ/2 , (n-k-1), i.e., computed value of t is less than the critical value of t.

So, we accept Null hypothesis and conclude that α̂ 2 is statistically insignificant at 10% level of

significance.

For examining overall significance of the estimated regression model we will apply F-test.

Formula of computing F* is:

F* = ESS/k ÷ RSS/(n−k−1) = 1.4983

Here, ESS =∑ α^1 ∑ x1iyi + ∑ α^2 ∑ x2iyi = 70398.422

RSS = ∑ ei^2 = 624268.243

k = number of slope parameters = 3

n= number of observation = 30

The test statistic is the F value of 1.4983 . Using α of 0.05, we have $F_{0.05;\,2,\,27} = 3.35$. Since the test statistic is smaller than the critical value , we accept the null hypothesis. The P-

value for 1.4983 is 0.5085 . So we can say that the fit is good enough. So the model is significant.

The regression table has given below

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.316074
R Square	0.099903
Adjusted R Square	0.033229
Standard Error	153.269
Observations	30

ANOVA

	df	SS	MS	F	Significance F
Regression	2	70398.42278	35199.211	1.498386	0.24149
Residual	27	634268.2439	23491.416		
Total	30	704666.6667			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	49.533	73.935	0.6699	0.508
U.7. Total Monthly educational expenditure on male Children:	0.16279	0.1438	1.1314	0.2678
income	0.0073	0.0098	0.7496	0.4598

Goodness of Fit (R^2) = 0.099903154, which implies that out 100% variation 9% variation can be explained by the two explanatory variables X_1 and X_2 . The value of Adjusted R^2 = 0.3332294, which implies that out of 100% variation 3%variation is explained by the explanatory variables. Here the value of R^2 is greater than the value of Adjusted R^2

which implies that as the number of explanatory variables increases, the Adjusted R^2 decreases than the R^2.

2^{nd} regression, $Y_i = \alpha_{0+} \alpha_{1i}X_{1i} + \alpha_2 X_{2i} + u_i$ .....(1)

	exp on male
Y_i	education
	exp on female
x1i	education
	household
x2i	income

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.444233
R Square	0.197343
Adjusted R Square	0.137887
Standard Error	200.3071
Observations	30

ANOVA					
	df	SS	MS	F	Significance F
Regression	2	266347.00	133173.504	3.319	0.051422
Residual	27	1083319.65	40122.950		

Total	29	1349666.66			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Up 9*
Intercept	175.77	91.364	1.9239	0.06496	-11.6848	363
U.8.Total Monthly educational expenditure on female Children:	0.2780	0.2457	1.1314	0.26782	-0.22619	0.78
Income	0.0239	0.0121	1.9768	0.05834	-0.00090	0.04

$\bar{Y}$= 733.333

$\bar{X}1$=503.333

$\bar{X}2$ = 7800

Estimated value of slope coefficients:

$\hat{\alpha_0}$ = 175.77, $\hat{\alpha_1}$ =0.2780 , $\hat{\alpha_2}$ = 0.0239.

Now we will check the significance of our model as well as significance of the slope parameters. For testing the significance of $\hat{\alpha_1}$ and $\hat{\alpha_2}$ we have to test the validity of the Null Hypothesis that the value of $\hat{\alpha_1}$ and $\hat{\alpha_2}$ is equal to zero against the alternative hypothesis which is not equal to zero.

H_N: $\alpha_1 = 0$

H_A: $\alpha_1 \neq 0$

Now under Null hypothesis we have to compute the t- value denoted by t*. The formula for computing t*

$|t^*| = \hat{\alpha}1 / SE(\hat{\alpha}_1)$

Here coefficient of $\hat{\alpha}1 = 0.278055769$ and Standard Error = 0.2457542

$|t^*| = \hat{\alpha}1 / SE(\hat{\alpha}1) = 0.278 / 0.246 = 1.13$

Where $SE(\hat{\alpha}1)$ is the Standard Deviation of $\hat{\alpha}1$.

Now, we will compare the computed value of t with the critical value of t from t-table at 10% level of significance i.e., $\lambda/2 = 0.1/2 = 0.05$ and degrees of freedom n-k-1= 27.

So, the critical value of t from t-table is, $t\ \lambda/2, (n-k-1) = 2.052$

Here we see that |t*| < $t\ \lambda/2, (n-k-1)$, i.e., computed value of t is less than the critical value of t.

So, we accept H N and conclude that $\hat{\alpha}1$ is statistically insignificant at 10% level of significance.

Similarly, H N : $\hat{\alpha}2 = 0$

H A : $\hat{\alpha}2 \neq 0$

Now, under Null Hypothesis, we have to compute t value which is denoted by t*. The formula for computing t* is

$|t^*| = \hat{\alpha}2 / SE(\hat{\alpha}2)$

In case of X 2 i.e., the Coefficient of $\hat{\alpha}2 = 0.0239981465$ and the Standard Error (SE) = 0.12130918

Now we have to compute t value which is denoted by t*. The formula for computing t* is

where SE(α̂ 2) is Standard Error of α̂ 2

|t*| = α̂ 2 / SE(α̂ 2) = 0.0239 / 0.1213 = 0.197

Now, we will compare the computed value of t with the critical value of t from t-table at

10% level of significance i.e., λ/2= 0.1/2 = 0.05 and degrees of freedom n-k-1= 27.

So, the critical value of t from t-table is , t λ/2 , (n-k-1) = 2.052

Here we see that |t*| &l t; t λ/2 , (n-k-1), i.e., computed value of t is less than the critical value of t.

So, we accept Null hypothesis and conclude that α̂ 2 is statistically insignificant at 10% level of

significance.

For examining overall significance of the estimated regression model we will apply F-test.

Formula of computing F* is:

F* = ESS/k ÷ RSS/(n−k−1) = 3.319

Here, ESS =∑ α̂1 ∑ x1iyi + ∑ α̂2 ∑ x2iyi = 266347.0092

RSS = ∑ ei^2 = 1083319.66

k = number of slope parameters = 3

n= number of observation = 30

The test statistic is the F value of 1.4983 . Using α of 0.05, we have $F_{0.05;\,2,\,27} = 3.35$. Since the test statistic is smaller than the critical value , we accept the null hypothesis. The P-value for 1.4983 is 0.5085 . So we can say that the fit is good enough. So the model is significant.

Goodness of Fit (R^2) = 0.1973 , which implies that out 100% variation 19% variation can be explained by the two explanatory variables X_1 and X_2 . The value of Adjusted R^2 = 0.13787 , which implies that out of 100% variation 13%variation is explained by the explanatory variables. Here the value of R^2 is greater than the value of Adjusted R^2 which implies that as the number of explanatory variables increases, the Adjusted R^2 decreases than the R^2.

CONCLUSION

Differential investment in human capital has become a subject of much debate. The present study aimed to investigate, if there are any gender-based differences in household's education expenditure in District Birbhum ,located in state West Bengal. This study considers monthly education expenditure for individual male and female child.

We can proudly said that we have no linguistic discrimination in West Bengal .Just like that , Through this whole research we have found no pro-boy bias in Ramnagar village. We have found from this research that parents are becoming intrested slowly in the education of girls .We have not found any discrimination by parents in allocating educational expenditure between male and female child. That is very good result and impressive .

POLICY SUGGESTION

Every child deserves to reach her or his full potential, but gender inequalities in their lives and in the lives of those who care for them hinder this reality.

Wherever they live in India girls and boys see gender inequality in their homes and communities every day – in textbooks, in movies, in the media and among the men and women who provide their care and support.

Across India gender inequality results in unequal opportunities, and while it impacts on the lives of both genders, statistically it is girls that are the most disadvantaged.

Globally girls have higher survival rates at birth, are more likely to be developmentally on track, and just as likely to participate in preschool, but **In**dia is the only large country where more girls die than boys**.** Girls are also more likely to drop out of school.

In India girls and boys experience adolescence differently. While boys tend to experience greater freedom, girls tend to face extensive limitations on their ability to move freely and to make decisions affecting their work, education, marriage and social relationships.

As girls and boys age the gender barriers continue to expand and continue into adulthood where we see only a quarter of women in the formal workplace.

Some Indian women are global leaders and powerful voices in diverse fields but most women and girls in India do not fully enjoy many of their rights due to deeply entrenched patriarchal views, norms, traditions and structures.

India will not fully develop unless both girls and boys are equally supported to reach their full potential.

There are risks, violations and vulnerabilities girls face just because they are girls. Most of these risks are directly linked to the economic, political, social and cultural disadvantages girls deal with in their daily lives. This becomes acute during crisis and disasters.

With the prevalence of gender discrimination, and social norms and practices, girls become exposed to the possibility of child marriage, teenage pregnancy, child domestic work, poor education and health, sexual abuse, exploitation and violence. Many of these manifestations will not change unless girls are valued more.

To build equitable and good-quality public education that can help fight economic and gender inequality, policy makers must focus on the following actions: 1. Deliver universal, fee-free education from preprimary to secondary • Set out plans to ensure free, equitable and high-quality primary and secondary education for 12 full years, as agreed in SDG 4 on education. • Eliminate fees at all levels, including informal fees, progressively achieving fee-free secondary education. This must be carefully planned so as not to jeopardize 54 quality. Progressively expand access to at least one year of fee-free, quality preprimary education. • Support the poorest, minorities and children with disabilities with extra help to redress disadvantage, so that they stay in school and learning. • Support poor and vulnerable girls to go to school and stay in school. 2. Focus on policies that can help to deliver quality for all • Develop a fully costed and funded strategy to deliver a trained, qualified and wellsupported professional workforce, with enough teachers and other personnel to deliver education for all up to secondary school. • Invest in relevant and non-discriminatory teaching materials, taking into account mother tongues; the changing needs of the majority; and the need for schools to be places where sexist and patriarchal rules are challenged, not learned. • Develop local accountability mechanisms between schools and their communities, parents and children; build better safeguarding and accountability mechanisms from national to local levels, including ensuring budgets and other information is available publicly and transparently for citizen scrutiny. • Use appropriate assessments that encourage a feedback loop for curriculum development and classroom adaptations at the local level; do not simply equate higher test scores with improved quality. 3. Deliver more equal education systems • Develop national education plans that focus coherently and comprehensively on identifying pre-existing inequalities in education, producing data on gaps and needs, and developing appropriate strategies. • Ensure equitable teacher deployment, coupled with equitable spending on school infrastructure and learning inputs, to help redress disadvantage. This may require affirmative

action in poorer or more marginalized districts or regions. • Ensure additional spending targeted at redressing disadvantage for marginalized or poor children in ways with proven impact. • Ensure schools and teachers are supported to address the unique learning needs of all students, including children with disabilities. This will require training teachers on differentiated instruction as well as proper data collection and diagnosis. 4. Focus on building public systems first; stop supporting privatization • Devote the maximum available resources to public education provision, to ensure adequately and equitably financed public schools; do not direct public funds to commercial or for-profit private schools, or market-oriented PPPs. Avoid diverting scarce public resources and attention away from the essential task of building good-quality, inclusive public schools that are free and accessible for all students. • Ensure adequate regulation of private education providers, especially commercial schools, to ensure educational quality and standards are being upheld. • Safeguard the labour rights of teachers, especially female teachers, in the public sector and the private sector as well. 55 • Donors and multilateral institutions such as the World Bank should support the improvement and expansion of public education delivery, and should not direct public aid funds to commercial or for-profit private schools, or market-oriented PPPs. 5. Ensure education works to strengthen equality for girls and women • Address the particular barriers that keep girls out of school or learning, such as providing separate bathrooms for boys and girls, addressing the non-fee related costs of schooling, and ensuring curricula and teacher training promote positive gender roles and avoid stereotypes. • Invest in early childhood care and education programmes that take account of the needs of women (i.e. fit around typical working hours), and young girls who are expected to care for children: this can free up women's time by easing the millions of unpaid hours they spend every day caring for their families and homes. 6. Fully fund public education systems to deliver quality and equality for all • Governments must scale up spending to deliver quality and equity in education; in low- and middle-income countries this will require at least 20% of government budgets, or 6% of GDP allocated to education. Those with the furthest to go, and large youth populations, may need to invest more than this in the short term. • Government spending must proactively redress disadvantage, including by adopting equity-of-funding approaches to address the historical disadvantage faced by the poorest groups. • Invest in building robust structures, from school to local to national levels, for the effective oversight and accountability of education budgets. • Tax wealth and capital at fairer levels. Stop the race to the bottom on personal income and corporate taxes. Eliminate tax avoidance and evasion by corporations and the super-rich. Agree a new set of global rules and institutions to fundamentally redesign the tax system to make it fair, with developing countries having an

equal seat at the table. Donors should substantially increase their official development assistance (ODA) commitments to education, especially to basic education and in countries with the greatest needs, in order to ensure developing countries are able to devote adequate resources to build quality public education provision.

REFERENCES

1. Kingdon GG. Where has all the bias gone? Detecting gender-bias in the household allocation of educational expenditure. 2003;1–43
2. Delelegn A. Intra-household gender-bias in child educational spending in rural Ethiopia : Intra-household gender-bias in child educational spending in rural Ethiopia : (Ethiopian Economic Association (EEA); 2008.
3. Saha A. An Assessment of gender discrimination in household expenditure on education in India an assessment of gender discrimination in household expen diture on education in India. 2013;0818
4. Chaudhuri K, Roy S. Do parents spread educational expenditure evenly across the two genders ? Evidence from Two North Indian States. Econ Polit Wkly. 2016;41: 5276–5282
5. Sharma S, Nordman C. The power to choose: Gender balance of power and intra-household educational spending in India. 2016;22.
6. Iddrisu AM, Danquah M, Quartey P. Gender bias in households' educational expenditures: Does the stage of schooling matter? 2017.
7. . Deaton A. Looking for boy-girl discrimination in household expenditure data. 1989;3:1–15.
8. Aslam M, Kingdon GG. Gender and household education expenditure in Pakistan Monazza Aslam; 2006
9. . Delelegn A. Intra-household gender-bias in child educational spending in rural Ethiopia : Intra-household gender-bias in child educational spending in rural Ethiopia : (Ethiopian Economic Association (EEA); 2008.
10. Himaz R. Intrahousehold allocation of education expenditure : The case of Sri Lanka. 2010;58:231–258.
11. . Shonchoy AS, Rabbani M. The Bangladesh gender gap in education : Biased intra-household educational expenditures; 2015.
12. Abu-Ghaida, D. & Klasen, S. 2003. "The Costs of Missing the Millennium Development Goal on Gender Equity," Discussion Papers in Economics 2, University of Munich, Department of Economics.
13. Venkatanarayana, M. 2004. "Educational Deprivation of Children in Andhra Pradesh: Levels and Trends, Disparities and Associative Factors". Centre for Development Studies (CDS).

14. Muralidharan, K., & Kremer, M. 2007. “Public and Private Schools in Rural India”. Harvard University.
15. Das, N. 1984. "Sex Preference Pattern and Its Stability in India: 1970-1980". Demography India, vol. 13(1-2), pp 108-119.
16. Agrawal, T. 2011. "Returns to education in India: Some recent evidence". Indira Gandhi Institute of Development Research, Mumbai, Working Papers 2011-017, Indira Gandhi Institute of Development Research, Mumbai, India.
17. Afridi, F. 2011. “The Impact of School Meals on School Participation: Evidence from Rural India”. Journal of Development Studies, vol. 47(11), pp. 1636-1656.
18. Himaz, R. 2009. "Is there a boy bias in household education expenditure: the case of Andhra Pradesh in India". MPRA Paper 21889, University Library of Munich, Germany.
19. Miller, B. D. 1997. “The endangered Sex: Neglect of Female Children in Rural North India”. Oxford University Press.
20. Ramachandran, V. 2004. “Gender and Social Equity in Primary Education: Hierarchies of Access”. Sage Publications.