

**SOME ASPECTS OF ELEMENTARY EDUCATION IN RURAL INDIA: AN
EMPIRICAL ANALYSIS**

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Education serves as a potent catalyst for human development, fostering knowledge, skills and insight (Mankiw *et al.*, 1992; Sen, 1999; Self & Grabowski, 2004). The bedrock of a child's future academic and intellectual growth is laid in primary education. (Kingdon, 2007). It imparts essential skills pivotal for advanced learning and encompasses fundamental literacy and numeracy skills which are indispensable for communication, critical thinking and decision-making. In India, the school management system comprises government schools, private-aided schools (quasi-government schools) and private-unaided schools (also referred to as private schools). Government schools are entirely owned, funded, and managed by Central, State, or Local governments. Private-aided schools, adhere to government rules and regulations while being owned and managed by private institutions. These schools receive partial or full funding from the government. On the other hand, private-unaided schools are privately owned and managed by organizations in the private sector. In addition to the three main types of institutions, some 'unrecognized' primary schools do not comply with basic government regulations. Initiatives like the District Primary Education Program (DPEP), succeeded by the Sarva Shiksha Abhiyan (SSA) and the later-integrated Samagra Shiksha Abhiyan aimed to enhance elementary education's accessibility and quality. The Right of Children to Free and Compulsory Education Act (RTE) of 2010 further fortified this commitment by legally entitling children aged 6 to 14 years to free and mandatory education. The SSA and Samagra Shiksha Abhiyan have bolstered rural education by channelling government grants into vital areas. Rural public schools benefit from enhanced infrastructure facilities, teacher training and quality-focused initiatives fostering holistic development and enriching the educational panorama. Data from DISE 2008 and U-DISE 2018 underscores a marked rise in private school enhancement in India. From 2007-08 to 2015-16, the private school share increased from 19.49 % to 25.24 % with enrolment surging from 19.30% to 45%. Public primary schools show higher enrolment of girls than boys and the reverse scenario is observed in private primary schools, especially in rural India. (ASER 2020). Addressing these concerns is vital for gender parity contributing to the nation's progress and development. Muslim families' exhibit limited women's autonomy concerning household decisions such as choosing their children's schooling, allocating funds for education and healthcare and others. (Morgan *et al.*, 2002). This underscores the need to

address underlying factors to promote inclusive decision-making and equitable education access. (Zimmerman 2012; Saha 2013). The Governments of India have initiated several policies aimed at narrowing the gender gap in educational achievement. These initiatives include the Ladli Scheme (Delhi Government), Balika Samraddhi Yojana (Gujrat), Kanyashree Prakalpa (West Bengal) and various others. Additionally, specific assistance programs have been introduced to support girls living below the poverty line, such as Bhagya Laxmi Scheme (Karnataka), Kanya Jagriti Jyoti Scheme (Punjab), and Bangaru Thali (Andhra Pradesh) among others. Despite various efforts to reduce this gap, gender discrimination persists more in rural areas compared to its urban counterparts. Academic achievement is pivotal for a child's future development. Galor and Zeira's model (1993) emphasized human capital's role in sustainable economic development. Primary education lays the foundation for skilled labour, innovation and productivity. While improving enrollment is important focusing on learning outcomes and skills is essential for breaking the cycle of poverty and fostering economic growth. The health of a child significantly influences their academic achievement, serving as a crucial indicator of their educational progress. (Matingwina, 2018). Malnutrition significantly impacts the body's immune system, making it less capable of defending against diseases and infections. Malnutrition in rural children poses a serious threat to their immune systems, potentially jeopardizing their lives. Apart from impeding their physical growth and overall development, this nutritional deficiency can have lasting consequences on their future well-being. The issue extends beyond the immediate health challenges, as it can lead to long-term health complications, impacting their overall health trajectory as they grow older. Thus, addressing the problem of malnutrition is not only crucial for ensuring a healthy childhood but also for safeguarding the long-term health and well-being of these children as they transition into adulthood. Initiatives like Integrated Child Development Services (ICDS), National Nutrition Mission (Poshan Abhiyaan), Pradhan Mantri Matru Vandana Yojana (PMMVY) scheme, Mid-Day Meal Scheme (MDM), National Food Security Act (NFSA), and Janani Suraksha Yojana (JSY) are some of the major government policies and programs aimed at addressing child malnutrition in India. It's worth noting that combating child malnutrition is a complex challenge, and these initiatives are part of a broader effort to improve the overall health and well-being of children in the country. The findings of the third National Health and Family Survey conducted during 2005-06 in India revealed that nearly half of all children in the country experience undernourishment, emphasizing the pressing necessity for immediate and effective interventions to tackle this

pervasive problem. Addressing malnutrition is essential to ensure the well-being and future prospects of the younger generation. Effective and comprehensive strategies aimed at improving nutrition and healthcare are vital to reduce child mortality rates and empower children to reach their full potential.

Objectives of the Thesis:

The thesis aims to address the following research question expressed in summarized form.

1. The basic objective is to investigate whether the various government grants have been equitably distributed over time and whether they have effectively reached a substantial proportion of rural public schools. Furthermore, it will be tried to investigate whether the availability of these grants has improved over the years and whether they have reached the intended beneficiaries proportionately. Then the study tries to investigate whether any fascination exists during the enrolment process and whether parents' choices are influenced by gender-based considerations when selecting a schooling option for their children.
2. This study aims to assess the effectiveness of various grant-related and household-specific factors in influencing the Gross Enrolment Ratio (GER), specifically the GER for girls in India. Additionally, this thesis will also examine whether any regional disparities contribute to the variation of it or not.
3. Then the study will try to investigate the possible factors mainly school-related and socio-economic factors which are contributing positively towards achieving the Gender Parity Index (GPI) values at a target level in rural areas of India.
4. This study also tries to identify the household and school-related factors that play a role in influencing parents' decisions to enrol their children in private primary schools within rural India and also quantitatively assess the impact of each of these factors in elucidating gender-based disparities observed during the enrolment process in private primary schools within rural India.
5. This study aims to investigate the magnitude of unequal treatment based on gender that exists in the context of primary education expenditure within various religious groups in rural India.

6. This study seeks to explore the potential factors that can influence children's learning outcomes at the primary level in rural India.
7. Lastly, the empirical study concentrates on examining the correlation between child health and educational achievements within rural districts of India.

The thesis begins with Chapter 1 stating the introduction and the background of the study providing the importance of this research. Chapter 2 solely comprises of survey of numerous studies carried out to illuminate the landscape of primary school education attainment and achievement within the context of rural India. On the basis of the literature survey, several areas covering the picture of primary education in the Indian rural context are identified as either unexplored or partially explored. Now keeping in view of the title of the thesis and its meaning Chapter 3 orients itself towards raising some inevitable research questions which are imperative to be looked into in order to effectively evaluate the picture of primary education in the rural Indian context.

Chapter-4: Determinants of Overall Enrolment Ratio and Girls' Enrolment Ratio in Primary Education in Rural India: A Region-based Analysis

Introduction:

Governments of India have initiated various policies to reduce the gender gap in educational attainment like Ladli Scheme (Delhi Government), Balika Samraddhi Yojana (Gujrat), Kanyashree Prakalpa (West Bengal) and many others. Some Policies are also launched to give assistance focusing on girls living below the poverty line such as Bhagyalaxmi Scheme (Karnataka), Kanya Jagriti Jyoti Scheme (Punjab), Bangaru Thali (Andhra Pradesh) etc. According to UNESCO, to achieve gender parity during the time of enrolment in primary school, the value of the Gender Parity Index (GPI) should be between 0.97 and 1.03. In this background, it is required to identify the factors the government should give importance to enhance the enrolment of girl children in rural India in a satisfactory position. To do that overall Gross Enrolment Ratio (GER) and GER of girls in primary education should be given importance simultaneously. It has to be remembered that both GER and GER of girls are macro-specific variables and district-level data is the lowest possible unit (based on the availability of necessary data) to address the above research problem.

Research Objectives:

In this paper, four research objectives will be addressed on the basis of the research gap mentioned above. These are as follows:

- a) In the Indian context, whether there exists any inequality in achieving various grants such as increasing the availability of provision of Mid-day meals in school, teaching-learning material grants to enhance the teaching skills of the teachers, funds for the provision of girls' toilet facility and enhancement of funds for school development to influence on enrolment rate to attain basic education allotted to government primary schools focussing on the rural-dominated districts is not clear. We will try to address this issue and also investigate whether the availability of different government grants for public primary schools has increased over time and percolated down to most of the public primary schools in rural India proportionately or not. The research problem will be addressed after constructing the School Grant Coverage Index.
- b) Despite the availability of various grants to public primary schools, it is required to identify whether there exists any fascination of the rural parents to send their child to private primary schools during the time of enrolment or not and whether gender-based preference prevails among parents when deciding on the choice of schooling for their children?
- c) This paper tries to identify the efficacy of various grant-related and household-specific factors which can influence the overall GER and GER of girl children in India and whether there exists any regional variation of it or not¹.
- d) Lastly, a comparative analysis will be done about the impact of different exogenous factors on the enrolment of girl children in rural people-dominated districts between the four different regions considered in this study.

Identification of rural people-dominated districts in 16 major states of India:

India is a socio-economic diverse nation with regional inequality in attaining education, health care, and other dimensions of social development (Maiti & Marjit, 2015), (Basu, 2015). Cultural practices and the socio-economic status of the society are important determinants of primary

¹ There are different socio-economic household-related factors which can influence the parents during the time of taking enrolment decision of their girl children in primary education. But as this analysis is based on macro-level data extracted from DISE statistics, data availability of other variables at least at the state level for the rural people from other sources is absent.

school enrolment in India. (Huisman, Rani, & Smits, 2010). Due to this plurality and socio-economic diversification, to investigate the above-mentioned problem, initially, rural people-dominated districts are identified in 16 major states of India and then the identified districts under different states are divided into four regions based on the geographical position of India where socio-cultural differences are also observed between different regions over decades but generally identical in a particular region. Based on the Census Report (2011), a district is classified as an urban district if above 75 % of its male main working population of the district is engaged in non-agricultural pursuits and below 25% of its male main working population is engaged in agricultural and allied activities. So, it can be said that in rural people-dominated districts, a major percentage of the population is engaged in agriculture and allied activities for their livelihood. Considering this criterion in our study, we have identified 120 districts as urban people-dominated districts and 352 districts as rural people-dominated districts out of 472 districts from 16 major states in this study.

Methodology:

The School Grant Coverage Index (SGCI) is initially framed and calculated to summarise the various supply-related grants provided to public schools under one head or index. This SGCI is important to make a region-wise comparison of the percolation of different grants in an index form. It is required to investigate whether there exists uniform percolation of the grants in primary schools in rural India or not. To investigate that, it is required to take the help of the inequality measurement technique. Here, the General Entropy Measure of Inequality is considered. After that, it is required to investigate whether proper percolation of government grants for school development among public primary schools encourages the parents to admit their children, more specifically their girl children to primary school. It is also required to investigate if there is an inclination of rural parents to admit their children to private primary schools. To do that, initially, it is required to investigate whether there is an expansion of private primary schools in rural districts of India and it is done with the help of the Mean Exponential Growth Rate (%) of expansion of private school enrolment to public school enrolment over the years in each region separately between our concern time periods. Finally, the static panel fixed effect regression model is applied to identify how various grant-related and household-specific factors can influence the overall GER and GER of girl children in India and whether there exists any regional variation of it or not. In this investigation district is considered a unit. To calculate the School Grant Coverage

Index (SGCI), we have considered the percentage of schools of a particular district in a particular financial year that has received different funds available in public schools sanctioned by the Central Government such as funds for the provision of mid-day meals, school development grant, teaching-learning material grant and funds for the provision of girls' toilet. The importance of each of the four variables considered here is not equal. Therefore, the weighted index is calculated for better implications. Principal Component Analysis (PCA) can be used for assigning the weights while computing the School Grant Coverage Index.

The Model:

We consider the following regression equation to investigate the influence of various grant-related and household-specific factors which can influence the overall GER and GER of girl children in rural India.

$$GER_{it} = \alpha_0 + \beta_1 ftech_{it} + \beta_2 gt_{it} + \beta_3 sd_{i(t-1)} + \beta_4 tlm_{i(t-1)} + \beta_5 mdm_{it} + \beta_6 pvt/pub_{it} + \beta_7 flit_{it} + \beta_8 mlit_{it} + \epsilon_{it} \dots\dots\dots (1)$$

Where $i = (1 \text{ to } 109)$ for the Eastern region, $i = (1 \text{ to } 114)$ for the Western region, $i = (1 \text{ to } 75)$ for the Northern region and $i = (1 \text{ to } 54)$ for the Southern region, $(t = 1 \text{ to } 5) t = 2007-08, 2009-10, 2011-12, 2013-14$ and $2015-16$ for each region. The above model will be estimated for all four regions of India separately to identify whether there exists any region-specific factor that can influence GER and GER_F. Here, GER_{it} represents the Gross Enrolment Ratio in primary education of i^{th} district in the t^{th} year.

We are considering the same explanatory variables mentioned in Eq. (1) to investigate whether the different grants, parental education, presence of female teachers in school, and expansion of private primary schools' influence GER of girls (GER_F) in elementary education (excluding 0–6-year girls) in rural India? The panel regression is expressed as:

$$GER_{Fit} = \mu_0 + \theta_1 ftech_{it} + \theta_2 gt_{it} + \theta_3 sd_{i(t-1)} + \theta_4 tlm_{i(t-1)} + \theta_5 mdm_{it} + \theta_6 pvt/pub_{it} + \theta_7 flit_{it} + \theta_8 mlit_{it} + \epsilon_{it} \dots\dots\dots (2)$$

Where $i = (1 \text{ to } 109)$ for the Eastern region, $i = (1 \text{ to } 114)$ for the Western region, $i = (1 \text{ to } 75)$ for the Northern region and $i = (1 \text{ to } 54)$ for the Southern region, $(t = 1 \text{ to } 5)$ i.e., $t = 2007-08, 2009-$

10, 2011-12, 2013-14 and 2015-16 for each region. GER_{Fit} represents the Gross Enrolment Ratio of girl children in primary education of i^{th} district in the t^{th} year.

Results and Discussions:

From our study, it is observed that the availability of coverage of grants to public primary schools in rural-dominated districts had increased over time in all four regions of India. The mean value of the SGCI in each region shows a sharp rise over the years. This is mainly because initially, few schools are getting the benefits. It is also observed that the slope of the GE curve that measures inequality in the percolation of the grant is steeper in Eastern and Southern regions as compared to Western and Northern regions which implies that inequality in the distribution of grants decreases more sharply in Eastern region and Northern region compared to Western and Southern region in India. Since the mean value of the exponential growth rate of the ratio of private to public enrolment in primary education between the concerning periods is positive in all four regions of India one can conclude that there is a gradual expansion of private school enrolment among the rural children relative to public school enrolment in India. This also indicates that over time, there is a gradual expansion of private schools at the primary level in rural India.

From this positive trend of privatization of education, one can conclude that despite the availability of various grants in most of the public schools in rural India, there is a gradual enhancement of private to public school enrolment which indicates the fascination of the rural parents to send their children to private schools in primary level. It can also reflect that there is a gradual expansion of private schools in rural districts of India.

It is found that the factors that can reduce the direct and indirect cost of elementary education like mid-day meals and teaching-learning material grants influence overall enrolment in rural districts of Northern and Eastern regions but have created no impact on Southern and Western regions of India. On the other hand, a father's education has positively influenced overall GER in the Western and Southern regions of India. Similarly, factors like mid-day meals, school development grants, and father's education influence female enrolment in Eastern, Western and Northern regions but failed to influence female enrolment in the Southern region of India. Interestingly female literacy fails to create any impact on GER and GER_F in any region. In the Southern zone, the grants provided by the government which directly or indirectly reduce the cost of education fail to have an impact on GER and GER of girls. Considering the existence of a patriarchal society, the

availability of female teachers has a great influence on parents in making enrolment decisions for girls' children, especially in rural areas. No literature has found where the influence of female teachers was addressed on enrolment mainly enrolment of girls in rural India. It is found that the availability of female teachers positively influences girls' enrolment in primary school attainment in the Eastern, Western and Southern regions of India. It is required to appoint more female teachers in the public schools of the Northern regions. Hence, more recruitment of female teachers in primary schools is required to enhance GPI at a targeted level in elementary education in rural India. It is also observed that girl children are facing discrimination from their parents during the time of admission in primary schools in every region of rural India. The ratio of private to public enrolment considered as a proxy for privatization of education has positively influenced overall GER but creates a negative impact on GER of the girl child in all four considered regions of rural India. This part depicts the gender biases in our rural households during the time of choosing a school for their children. This shows that girl children are generally preferred to be admitted to public primary schools in rural India in all four regions.

Chapter 5: Gender Parity Index in Primary Schools in Rural India: An Analysis

Introduction:

India has increased its spending on primary education to achieve universal primary education for its children and eliminate gender disparity in achieving education from the basic level of education. A high Gross Enrolment Ratio (GER) in primary education indicates that a large proportion of the primary school-age population is enrolled in school. A high Gender Parity Index (GPI) in primary education indicates that there is gender parity in enrollment, meaning that both girls and boys are equally likely to be enrolled in primary school. In some cases, high GER and a low GPI in primary education may coexist, indicating that while a large proportion of the primary school-age population is enrolled in school, there is still a significant gender gap in enrollment. In such cases, policies and interventions aimed at promoting gender equality in primary education may be needed to ensure that girls are not left behind. Conversely, a high GPI and a low GER could indicate that while there is good gender parity in enrollment, a low overall enrollment rate suggests a lack of access to education for both genders. In the previous chapter, we focus on GER in primary school and in this chapter, we will shift our focus to gender parity in attaining primary education in rural India. In rural areas, people have the notion that girls are meant for household chores and get married and sent to others' houses. On the other hand, boys are considered the legal heirs of the

family. Due to this notion, boys sometimes get preferential feeding in achieving education compared to girls. Gender discrimination is still a perennial problem in the Indian economy and this discrimination is more prominent in rural India compared to its urban counterparts. Gender Parity Index is a socioeconomic index designed to measure the relative access to education of boys and girls. It emphasizes on egalitarian treatment based on gender, here in terms of enrolment in elementary education.

The Ministry of Culture of GOI has divided India into overlapping cultural zones to promote and preserve the cultural heritage of various regions of India. Similarly, we have also divided the rural predominant district into zones to strengthen the ancient roots of Indian composite national culture. This local socio-cultural practice also plays an important role during the time of deciding on a girl's education. If we look at the GPI scores of Kerala and Haryana, we will find that the GPI scores of Kerala are much higher compared to Haryana. One of the main notions of this is the cultural difference between the two states. To tackle this, we have divided India into four zones such as North, East, West and South. Cultural heritage, cultural tradition, and cultural practice are time-invariant but can influence parental decisions on their child's schooling (Cole, Hakkarainen, Bredikyte, (2010)). So based on geographical position and census criteria² under each selected zone, we have identified the states. We assume that cultural and other factors are almost identical zone-wise³. We have considered the 16 major states in our study based on data available in DISE Statistics.

The Model:

The static panel regression model can be expressed in the following way to rule out the problem of multicollinearity:

$$GPI_{itz} = f\{ft_{itz}, gt_{itz}, sgd_{i(t-1)z}, tlm_{i(t-1)z}, mdm_{itz}, ptr_{itz}, fl_{itz}, a_{iz}\} \dots\dots\dots (1a)$$

$$GPI_{itz} = f\{ft_{itz}, gt_{itz}, sgd_{i(t-1)z}, tlm_{i(t-1)z}, mdm_{itz}, ptr_{itz}, ol_{itz}, a_{iz}\} \dots\dots\dots(1b)$$

² As per the census a district is classified as a rural district if above 75 % of its male main working population of the district is engaged in agricultural pursuits and below 25% of its male main working population is engaged in non-agricultural or allied activities

³ Tradition and culture of rural people in a particular zone is assumed almost identical.

Where $i = (1 \text{ to } 16)$, $(t = 1 \text{ to } 5)$ and $z = 1 \dots 4$. Cross section unit= 16

To do the investigation, we have to depend on the panel data regression model. This model is a Balanced Panel Regression Model. Here Hausman test has accepted the fixed effect regression result for the entire four zones.

Now Fixed effect regression mentioned in Eq.(1a) and Eq. (1b) is done separately for each zone.

Results and Discussions:

It is observed that in the rural districts of the selected major states of India of the Southern, Western and Eastern zones the value of GPI lies within 0.97 to 1.03. This indicates the achievement of Gender parity as mentioned by UNESCO during the time of school enrolment in primary school in rural India. But the situation is not encouraging in the rural districts of the Northern zone though the overall enrolment in primary education in that zone is satisfactory. Thus girls are not deprived during the time of enrolment in primary education in most of the zones except Northern zones of India. There are a large number of socio-economic factors which influence a parent during the time of deciding enrolment of their girl child in primary education. Here we mainly consider the factors related to school infrastructure and household factors. In the Eastern and Southern zone of India, we have found that a higher percentage of female teachers out of total teachers has a strong positive impact on girls' enrolment rates in rural-dominated districts in rural India. Female teacher act as role models for girl children and girls are more comfortable with teachers of the same gender. Parents in mainly rural-dominated districts think that the presence of female teachers may ensure the protection of girls from unwanted attention from boys or male teachers and even from sexual exploitation and abuse. According to the guidelines of SSA norms, the female-teacher ratio must be 50% in primary school but most of the primary schools failed to maintain this guideline (Evaluation report on SSA, May 2012). The government need to take steps to increase the recruitment of female teacher as these may bridge the gender gap in formal school participation mainly in the rural-dominated district. A low pupil-teacher ratio enables more attention from the teacher to individual students. It is also found in our study that the pupil-teacher ratio hurts girls' enrolment in primary schools in mainly rural-dominated districts of India. In the Eastern, Western and Southern zone, we have found a negative impact of the Pupil-teacher ratio on GPI. In the Northern zone, we have found a negative relation between PTR and Gross Enrolment Ratio. More recruitment of teachers' mainly female teachers can improve GPI in primary education during the

time of enrolment in rural primary schools of India. Mid-day meal scheme was launched to maintain the nutritional status of students as healthy students are more attentive in school. This scheme encourages parents to send their children to school. We have found that this scheme has a positive impact on girls' enrolment in primary school in most parts of India. In the Eastern, Western and Southern zone, we have found a strong positive impact of the Mid-day meal scheme on GPI and in the Northern zone we have found a positive relation between the Mid-day meal scheme and the Gross Enrolment Ratio.

It is found that school development grant and teaching learning material grant sanctioned by the government plays a positive role in increasing girls' enrolment in primary school. In the Eastern, Western and Southern zone, school development grant has a positive impact on GPI and in the Eastern and Western zone teaching learning material grant has a positive impact on GPI. Besides that, 'teaching learning material grant' has a positive impact on the gross enrolment ratio in rural public schools in the Northern zone. These grants also influence parents to send their children to primary school. Separate toilet facilities designed for girls' children are important for the proper sanitation of girl children. Parents also prefer to send their daughters to school with separate sanitation facilities for them. It is also seen that the provision of girls' toilets in rural public schools positively influences the GPI values in rural districts of the Southern, Eastern and Western zones of India. Female literacy which is considered a proxy variable of mothers' education in our study has a positive impact on girls' participation in primary education. In the Eastern zone, female literacy has positively influenced GPI. But in the Northern zone where women face the maximum discrimination in comparison to other areas do not have any power in decision making has resulted in the negative influence of female literacy on GPI. Educated women cannot be easily dominated and will not let their daughter get discriminated as she knows the importance of education. So, for a better and more progressive nation government needs to take steps to educate the parents mainly the mothers of the child so that the nation will be free from patriarchal dominance and which will open the mind and change the notion of the parents on their girls which will ensure proper development of the nation in a meaningful way.

Chapter 6: Gender Discrimination in Enrolment in Private Primary Schools in Rural India: A Fairlie's Decomposition Analysis

Introduction:

In the previous chapter, it is found that despite of various government grants available in public primary schools still there exists a fascination of the rural parents to send their children to private primary schools during the time of their enrolment. In this chapter, we will capture the gender discrimination in enrolment in private primary schools in rural India. Education always plays an important role in designing the socio-economic development of an economy. Based on the school management system, three different types of primary schools are available in India: (i) Government schools (referred to as public schools), (ii) Private-aided schools (quasi-government in nature) and (iii) Private-unaided schools (also referred to as private schools. Besides these three broad types of institutions, there are also a few 'unrecognized' primary schools that do not follow basic government regulations. This study classified primary schools as public schools and private-unaided schools. Prior studies suggest that with time, parents are fascinated to enrol their children in private primary schools even in rural areas of India. (Maitra *et al* 2011; Murlidharan, K. 2013; Biswas, P. & Kundu, A. 2022). Several kinds of literature have also shown that parent prefers to send their son to private school but their daughter to public schools (Muralidharan, 2013; Kingdon, 2007). Indeed, the gender gap during the time of enrolment in primary education has decreased over time (Kingdon, 2007). But still, it is a perennial problem for a developing country like India.

Research Objectives

We have considered only rural India for our study as a large section of the Indian population resides in rural areas and the majority of the people in rural areas are engaged in informal employment.

1. Initially, this study will try to identify the household and school-related factors that influence a parent when deciding to enrol their child in a private primary school in rural India.
2. Next, it is required to quantify the contribution of each factor in explaining gender discrimination during the time of enrolment in private primary schools in rural India. Fairlie Decomposition technique will be used to understand the relative contribution of

different covariates to the gender gap during the time of enrolment in private primary school.

Methods:

Logistic Regression to examine Parental choice of Schooling:

The following Logit regression equation is considered to address the first research problem.

$$Y_{ij} = \alpha + \beta_0 \text{gender}_{ij} + \beta_1 \text{lninc}_{ij} + \beta_2 \text{dist}_{ij} + \beta_3 \text{com}_{ij} + \beta_4 \text{occu}_{ij} + \beta_5 \text{med}_{ij} + \beta_6 \text{hhsz}_{ij} + \beta_7 \text{caste}_{ij} + \beta_8 \text{religion}^4_{ij} + \epsilon_{ij} \dots \dots \dots \text{(Eq. 1)}$$

Here, $Y_{ij} = 1$ if the i^{th} child from the j^{th} household is enrolled on a private primary school

$= 0$ if the i^{th} child from the j^{th} household is enrolled on a public primary school

All the independent covariates were tested for possible multicollinearity through the VIF test before putting them in the regression model⁵.

Fairlie’s Decomposition Analysis

Fairlie’s Decomposition Analysis quantifies the contribution of the explanatory factors influencing the decision of gender discrimination among rural parents during the time enrolling their children on private primary school.

Following Fairlie (1999) the decomposition for a non-linear equation, $Y = (X\hat{\beta})$ can be written as

$$Y^M - Y^F = \left(\sum_{i=1}^{NM} \frac{F(X_i^M \hat{\beta}^M)}{NM} - \sum_{i=1}^{NF} \frac{F(X_i^F \hat{\beta}^M)}{NF} \right) + \left(\sum_{i=1}^{NF} \frac{F(X_i^F \hat{\beta}^M)}{NF} - \sum_{i=1}^{NF} \frac{F(X_i^F \hat{\beta}^F)}{NF} \right) \dots \dots \dots \text{Eq. 2}$$

Here ‘F’ stands for girls and ‘M’ stands for boys and ‘N’ stands for sample size. In this case, the coefficient estimates $\hat{\beta}^M$ for boys are used as weights for the first term in the decomposition and the girls’ distribution of the independent covariates \bar{X}^F are used as weights for the second term.

The alternative expression for the decomposition is used because:

\bar{Y} does not necessarily equal $F(X\hat{\beta})$. An equally valid expression for the decomposition is:

⁴ For the logistic regression we have divided religion into three groups Hindu, Muslim and Christian. The ‘Other’ religion group is not considered for our study, so Interactive Dummy cannot be considered in this study.

⁵ We find the absence of collinearity among the explanatory variables.

$$\bar{Y}^M - \bar{Y}^F = \left(\sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^F)}{N^M} - \sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^F)}{N^F} \right) + \left(\sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^M)}{N^M} - \sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^F)}{N^M} \right) \dots \dots \text{Eq. 3}$$

In this case, the girl's coefficient estimates β^F are used as weights for the first term in the decomposition and the boys' distribution of the independent covariates \bar{X}^M are used as weights for the second term.

We define \bar{Y}^j as the average probability of the binary outcome of interest for gender j and F as the cumulative distribution function from the logistic distribution. Using coefficient estimates from a logit regression for a pooled sample β^* , the independent contribution of X_i to the gender gap can be expressed as:

$$\frac{1}{N^M} \sum_{i=1}^{N^M} (\hat{\alpha}^* + x_{1i}^F \hat{\beta}_1^* + x_{2i}^F \hat{\beta}_2^*) - F(\hat{\alpha}^* + x_{1i}^M \hat{\beta}_1^* + x_{2i}^F \hat{\beta}_2^*) \dots \dots \dots \text{Eq.4}$$

Similarly, the contribution of X_2 can be explained as:

$$\frac{1}{N^M} \sum_{i=1}^{N^M} (\hat{\alpha}^* + x_{1i}^M \hat{\beta}_1^* + x_{2i}^F \hat{\beta}_2^*) - F(\hat{\alpha}^* + x_{1i}^M \hat{\beta}_1^* + x_{2i}^M \hat{\beta}_2^*) \dots \dots \dots \text{Eq.5}$$

The contribution of each variable to the gap is thus equal to the change in the average predicted probability from replacing the girl's distribution with the boy's distribution of that variable while holding the distributions of other variables constant.

Results and Discussions:

Logistic regression is applied to identify the possible factors which influence the parent's aspiration during the time of enrolment of their children in private primary schools in rural India. Our study indicates that comparatively economically affluent rural households prefer to send their child to private schools. The ownership of a computer in a household acts as a proxy of household wealth and a certain education level of the household thus inducing parents to enrol their children in private school. The medium of instruction in school is an important determinant for the household to enrol their child in private school and the result depicts the same picture. Parents prefer to send their children to private schools because the medium of instruction in private schools is English. It is found that household belonging to the Christian community has a negative association with enrolling their children in private school. Fairlie's Decomposition result suggests that the religious practice of the household exhibits the highest contribution (41.17%) explaining the gender gap in enrolment in private schools in rural India. Household income level contributes

to 24.89 % in explaining the gender gap in enrolment in private primary schools in rural India. Medium of instruction in the primary school explains nearly 7% of the gap and occupation of the household explains 2.4 % of the gap in enrolment. Household size also exhibits a minor contribution of nearly 2% in explaining the gap in enrolment. The distance between the household and primary school also explains only 1% of the gender gap in enrolment, similarly the social groups to which the household belongs also explain 1% of the gender gap in the outcome variable. Household with computer exhibits nearly 2% in explaining the gap in enrolment. Social attributes like caste and religion widen the gender gap but economic attributes like income, occupation, and ownership of computers can reduce the gender gap in enrolment in private primary schools in rural India. On the other hand, school-related factors like the medium of instruction in primary school or the distance between the household and primary school widen the gender gap in enrolment in the outcome variable.

Parents even in rural areas prefer to send their children to private schools because the medium of instruction in most of the private schools is 'English'. Besides that, a good percentage of rural parents believe that the quality of education in the nearby public school is not satisfactory. This chapter delineates the fascination of parents to prefer private primary school over public school at the time of enrolment of their children. Hence, the government should initiate English as the medium of instruction in public primary schools. This can reduce gender discrimination during the time of enrolment. The government can also introduce a national family planning policy like a maximum two children policy which can induce households to increase the per-child household expenditure on their child's education which might lead to a reduction in the gender gap in primary school enrolment in rural India. The income of the households could be enhanced through different income support and income-generating programmes which can also reduce gender discrimination. Setting up new primary schools in the different gram panchayat is necessary to reduce the distance from the household to the nearest school and the gender gap in enrolment in primary school. The patriarchal mindset which plays a decisive role in the enrolment of girls in private primary schools vis-a-vis male children can be reshaped if those initiatives can be taken by the government.

Chapter 7: Gender Discrimination in Education Expenditure in Public Primary Schools in Rural India among Religious Groups: An Oaxaca-Blinder Decomposition Analysis.

The within-household gender bias toward male household members is even more predominant in rural areas compared to its urban counterparts (Muralidharan & Sheth, 2016). Parents prefer to enrol their male children on fee-charging private schools to receive a better education, on the other hand, enrol their female children on fee-free public primary schools. (Muralidharan, 2013; Kingdon & Datta, 2019). In the previous chapter, it is noticed that the religious practice of the household exhibits the highest contribution (41.17%) explaining the gender gap in enrolment in private schools in rural India. So, this chapter tries to capture the disparity in expenditure on primary education based on gender among the religious groups (Hindu, Muslim & Christian) and within the religious groups in rural India. The gender gap in education expenditure for a certain demographic group is calculated using the Oaxaca-Blinder decomposition approach. Further, we tried to identify the various household-related factors that might influence the decision to spend on a child's education. Several works of literature portray the picture of within-household preferential feeding towards the male household members in the intra-household allocation of resources in Indian patriarchal society. (Subramanian & Deaton, 1991; Kingdon, 1998; Dreze & Kingdon, 1999; Tilak, 2002; Pal, 2004; Kambhampati, 2008; Lancaster *et al*, 2008; Zimmerman, 2012; Azam & Kingdon, 2013). Muslim families score lower on the dimension of women's autonomy (Morgan *et al.*, 2002). This restricted autonomy prevails in terms of taking household-related decisions like the choice of schooling for their children, expenditure on education and health etc. Jeejeebhoy and Sather (2001) pointed out the scenario of female-constrained autonomy and access to information across different religious groups in India. Existing literature has portrayed the picture of differentiated treatment based on gender bias in primary education expenditure in the Indian context (Zimmerman, 2012; Saha, 2013). This chapter aims to study the magnitude of the gender gap in primary education expenditure in rural India among the various religious groups using the 75th-level National Sample Survey Office (NSSO) unit-level dataset of July 2017 to June 2018(one academic year). Still, now there is no work focusing on differentiated treatment based on gender in primary school education expenditure focusing on rural India. This chapter will try to bridge this gap in the existing literature.

Oaxaca-Blinder (1973) Decomposition Analysis-

Two separate equations for the i^{th} boy and i^{th} girl belonging to z^{th} religious groups are given by

$$Y_{Mz} = \alpha + x\beta_{Mz} + \varepsilon \dots \dots \dots \text{(For Boys) (Equation 1)}$$

$$Y_{Fz} = \alpha + x\beta_{Fz} + \varepsilon \dots \dots \dots \text{(For Girls) (Equation 2)}$$

M and F are indexes of Boy and Girl respectively.

The regression equation in equation (1) and equation (2) is estimated separately for boys and girls for each z^{th} religious group.

Here Y, the dependent variable is the expenditure incurred by the household on primary education expenditure items. X is the vector of independent variables like Log Income, Household Size, and household Occupation and a dummy d1, with a value of 1 if the child is enrolled to public school and 0, otherwise and another dummy d2, with a value of 1 if a member of the household has ownership of computer and 0, otherwise. These household characteristics might influence the household's expenditure decision on their children's primary school attainment. β are the vectors of the coefficient. ε (*scalar*) is a random error term capturing unmeasured and immeasurable effects on the dependent variable i.e. log expenditure on education. The response vector is measured on an ordinal scale. x (matrix) contains the household-related variables that might influence the expenditure decisions of households on primary education. Thus, the explanatory variables considered in our model are log (income), $[\log (\text{income})]^2$, household size, enrolment in public school, ownership of a computer, and occupation of the household.

We have Log Expenditure on Education as our outcome variable and we have considered three religious' groups (Hindu, Muslim, Christian). The parameter of Equation 1 and Equation 2 are estimated separately for boys and girls on the considered household characteristics.

In general Oaxaca-Blinder approach can be used to study group differences in any continuous outcome variable.

Let $N = N^M + N^F \dots \dots \dots \text{(Equation 3)}$

Here, N denotes the total number of observations N^M denotes the number of male (boys) observations and N^F denotes the total number of female (girls) observations.

As the difference between the genders is statistically significant the decomposition is performed. The difference between the overall mean for boys and girls among the different religious groups can be decomposed in the following ways:

$$\begin{aligned}
\overline{\ln Y^M} - \overline{\ln Y^F} &= \sum_{z=H,M,C} \alpha_z^M \overline{\ln Y_z^M} - \sum_{z=H,M,C} \alpha_z^F \overline{\ln Y_z^F} \\
&= \sum_{z=H,M,C} \alpha_z^M \overline{X_z^M}' \hat{\beta}_z^M - \sum_{z=H,M,C} \alpha_z^F \overline{X_z^F}' \hat{\beta}_z^F \\
&= \sum_{z=H,M,C} \alpha_z^M (\overline{X_z^M} - \overline{X_z^F})' \hat{\beta}_z^M + \sum_{z=H,M,C} \overline{X_z^F}' (\alpha_z^M \hat{\beta}_z^M - \alpha_z^F \hat{\beta}_z^F) \dots \text{(Eq 4)} \\
&= \text{Explained Effect} \quad + \quad \text{Unexplained Effect}
\end{aligned}$$

Equation (4) explains the components of the decomposition results for the major religious groups in India. Here α_z^M and α_z^F denotes the fraction of boys and girls' observations belonging to the z^{th} religious groups.

For identifying the religious groups with the highest gender discrimination, we have done a similar decomposition separately for each z^{th} religious group in the following ways:

$$\begin{aligned}
\overline{\ln Y_z^M} - \overline{\ln Y_z^F} &= \overline{X_z^M}' \hat{\beta}_z^M - \overline{X_z^F}' \hat{\beta}_z^F \\
&= (\overline{X_z^M} - \overline{X_z^F})' \hat{\beta}_z^F + \overline{X_z^F}' (\hat{\beta}_z^M - \hat{\beta}_z^F) + (\overline{X_z^M} - \overline{X_z^F})' (\hat{\beta}_z^M - \hat{\beta}_z^F) \text{(Eq 5)} \\
&= \text{Endowment Effect (E)} + \text{Coefficient Effect (C)} + \text{Interaction Effect (I)}
\end{aligned}$$

Equation (5) tries to identify the religious group where the magnitude of gender discrimination is highest comparing the components of all religious groups.

The endowment effect (E) is the expenditure gap due to the average characteristic gap between the genders. If the discriminated group (girls) have the same endowment as the favoured groups (boys) then this term will be zero. This is the explained part. Coefficient Effect (C) quantifies the change in discriminating groups i.e., unequal treatment of characteristics based on gender. It is the unexplained part. The interaction effect (I) measures the simultaneous effect of endowment and coefficient effect between the discriminating group and the favoured group.

Results & Discussions:

The coefficient of household size is statistically significant and is negative for both genders implying that with an increase in the member of the household, there is a cut-down in education expenditure of the children in that household. The coefficient of log income and $(\log \text{ income})^2$ is

statistically significant for Hindu (girl) and Christian and Muslim (boy) communities. We find that the coefficient of log income is positive for sons and negative for daughters belonging to the Hindu community and Muslim communities portraying the picture of gender-based discrimination on primary education expenditure in rural India. This implies that with an increase in income the expenditure on education increases for boys but falls for girl child denoting the intra-household disparity in education expenditure based on gender for the Hindu and Muslim communities. Here our results show a negative relationship between household income and household belonging to Christian community expenditure on primary education⁶. It is noticed that household with regular or salary earners spends more on education expenditure for household belonging to the Hindu community but incurs negative expenditure on girl child belonging to the Muslim community denoting the picture of gender discrimination. Household belonging to Hindu and Christian community involved in casual labour tends to spend less on primary education expenditure of their children. The coefficient of the dummy variable ($d1=1$, if the child is enrolled in public schools) is negatively significant denoting that if education is free then education expenditure on primary education falls in rural India. Another dummy variable ($d2=1$, if any member of the household owns a computer) is positive for children belonging to Hindu and Muslim communities. It implies that if a household member owns a computer, then it induces the parents to spend more on their child's primary school education expenditure even in rural areas.

The Decomposition result suggests that the components of the differential based on religion group are noted. Oaxaca-Blinder's Decomposition shows that the difference in primary education expenditure between the genders is statistically significant denoting the presence of gender bias within households when deciding on expenditure on primary education in rural India. The magnitude of the "Unexplained Effect" component is higher in comparison to the "Explained Effect" component. The "Unexplained Part" captures all potential effects of differences in unobserved variables. The contribution of "Unexplained Part" is highest for households belonging to the Hindu community (75.52%) followed by the Muslim community (53.13%) and the Christian community (52.8%). It implies that discrimination based on gender is more severe in the Hindu community in comparison to Muslim and Christian communities. The contribution of the

⁶ With time Christian missionary schools are raising which attracts households mainly belonging to the Christian community to admit to these aided schools which are mainly funded by Christian missionaries (NCPCR Report,2016).There are also special reservations for children belonging to the Christian community in these schools

“Unexplained part” is lowest for households belonging to the Christian group denoting that the gender bias in primary education expenditure is least for them in comparison to other religious groups.

The components of the decomposition for each religious group are presented. The total differential between the boy and girl child expenditure on primary education is positive for all religious groups. This difference is highest for the Hindu community followed by the Muslim and Christian communities. The contribution of the coefficient effect is higher than the endowment effect for the Hindu and Muslim group. The coefficient effect is positive for all religious groups implying the pro-male bias in education expenditure and this component denotes different treatment based on gender. The contribution of the coefficient effect is highest for Hindus followed by Muslim and Christian communities. It portrays a higher degree of gender bias in this community concerning primary school education expenditure in rural India.

Chapter 8: Learning Outcomes in Primary Education in Rural India: An Inter-state Comparison.

Introduction:

In the previous four chapters, we have focused on overall enrolment, girls’ enrolment, availability of supply side government grants to public primary schools, percolation and inequality in the distribution of these government grants, the fascination of private schools and factors influencing parents in the enrolment decision, discrimination in private school enrolment and gender discrimination in education expenditure among and within the religious groups. In this chapter, we will shift our focus from education attainment to education achievement attained after successful completion of primary schools in rural India. Education is a process of imparting knowledge and developing powers of reasoning and judgement of an individual. It is one of the pillars of the Human Development Index (HDI). Without successful investment in human capital, a nation cannot achieve sustainable economic development. It was identified that if the marginal year of schooling rises, the enterprise income also rises by 5.5 % point (Sluis *et al*, 2004). Education not only provides knowledge and skills among children, youth and adults to be active citizens and to fulfil themselves as individuals but also literacy in particular contributes directly to poverty reduction. It has been estimated that global poverty can be decreased by 12 % point if all children in less developed countries can get access to elementary education (Education for All Global

Monitoring Report, 2009). The vicious circle of poverty in a less developed country can be broken through investment in human capital formation which will result in the overall development of the economy and that can be done through improving the quality of elementary education. Better learning outcome at elementary level can help the future citizens to be capable to work as skilled worker in their adult hood and can earn higher amount. This can play an important role to remove the incidence of poverty of that economy. Since independence, Government of India has taken several initiatives to improve literacy rate in India. Here we can mention, Sarva Shiksha Abhiyaan (SSA) which aims to provide universal elementary education to children between the age group of 6-14 years. SSA has its root back to 1993-94 when the District Primary Education Programme (DPEP) was launched. Actually, it is a primary vehicle for implementing the Right to Free and Compulsory Education Act (RTE). Right to Education Act enacted by the “Parliament of India “extended to the whole of India except Jammu and Kashmir and aimed to provide free and compulsory education to all children aged of 6-14 years. This Act is also known as the “Fundamental Child Right” enshrined in Article 21A of the Constitution (Ministry of Law and Justice, 2009). Ambrish Dongre, *et. al.*(2016) mentioned that the launch of the Sarva Shiksha Abhiyaan (SSA) in 2001 has resulted in a significant increase in Govt. of India’s (GOI) funding for elementary education. At the central and at the state level, allocation on elementary education increased more than two-fold from Rs 68853 crores in 2007-08 to Rs 147059 crores in 2012-13. Budgets for specific initiatives aimed at improving learning quality account for less than 1 % of Sarva Shiksha Abhiyaan’s budget [PAISA Report, 2012]. With the passage of time, school enrolment is approaching 100%. According to the Planning Commission report (2011), in most of the Indian states, there is a gradual enhancement of both the Gross Enrolment Rate (GER) and Net Enrolment Rate (NER) at the elementary level. India is close to “schooling for all”. However, no proper enquiry has been done to identify the learning outcome achieved by the children at the primary level.

This chapter will try to investigate the scenario of learning outcomes among children at the primary level in different states of India after the implementation of SSA. Learning outcome is the best indicator of learning because it shows what learners have actually learnt after completion of the class. Actually, if we want to remove the vicious circle of poverty from an economy, we should generate more skilled labour and that can be materialized if children can enhance their knowledge

from the primary level. Besides that, we will also try to investigate the possible factors which can influence the learning outcome of the children at the primary level in rural India.

Model:

Initially, we have arranged the state level data on reading ability and mathematical ability obtained by ASER household survey over the years (from 2010 to 2016). Then to get a proper indicator of learning outcome of the children at primary level in different states and in different years, the Learning Outcome Index at standard III and standard V level will be calculated. This Index is a composite index obtained after taking the geometric mean of reading ability and mathematical ability of the children (in Percentage term) in rural public school in each state. Relative picture of learning outcome of the children in primary education among 24 major states of India⁷ is shown by the Rank Analysis method. We have also calculated the Average Growth Rate (in %) at standard III level and standard V level among the different states of India. Later on, we want to investigate possible family related and school related factors which may influence learning outcome of the children in rural India on the basis of Panel data regression analysis. LOI_{1i} =Learning Outcome Index for standard III level children of the i^{th} state are calculated by using the following method:

$LOI_i = \sqrt{A_i B_i}$ Where, A_i indicates Percentage of children of the i^{th} state who can read at least standard II level text in standard III and B_i indicates Percentage of children of the i^{th} state who can do at least subtraction in standard III.⁸ Higher value of LOI_1 means better learning outcome among children at standard III level Next, we shall look at the learning outcome of the rural children at standard V level⁹ on the basis of LOI_2 .

⁷Here out of 24 considered states, Manipur, Meghalaya, Mizoram, Nagaland, Arunachal Pradesh, Himachal Pradesh and Tripura are under special assistance of Central Government. But special assistance from Central government may not reflect better learning achievement of the children at primary level.

⁸Here a gap of two years is considered. The basic logic behind taking this time gap is to get a better picture of change of learning ability among the children at primary level in a particular state over time.

⁹In India, at standard V, the student has completed 4 years of education at primary level. Though LOI_2 one can get a better picture of learning achievement scenario of children at different states after completion of four initial years of schooling. Higher value of LOI_2 of a state indicates better learning achievement of the children at that state after completion of primary education.

$LOI_{2i} = (A_i B_i)^{1/2}$ where A_i indicates the Percentage of children in standard V who can read a standard II level text and B_i indicates the Percentage of children in standard V who can do at least division.

The static panel regression model can be explained in the following way:

$$LOI_{1it} = f\{MEI_{it}, MEV_{it}, MEX_{it}, MEX_{+it}, FEI_{it}, FEV_{it}, FEX_{it}, FEX_{+it}, PH_{it}, EC_{it}, PS_{it}, PTR_{it}, P_{it}, DW_{it}, TS_{it}, MTM_{it}\} \dots \dots \dots \text{Eq. (1)}$$

$$LOI_{2it} = f\{MEI_{it}, MEV_{it}, MEX_{it}, MEX_{+it}, FEI_{it}, FEV_{it}, FEX_{it}, FEX_{+it}, PH_{it}, EC_{it}, PS_{it}, PTR_{it}, P_{it}, DW_{it}, TS_{it}, MTM_{it}\} \dots \dots \dots \text{Eq. (2)}$$

Where $i = (1 \text{ to } 24)$ and $(t = 1 \text{ to } 4)$. Here $t=2010, 2012, 2014, 2016$ and 24 states of India is considered as cross-sectional unit. Here we have considered a gap of two years as children need two years to get promoted from standard III levels to standard V level as there is no retention policy.

Results and Discussions:

Here from the ASER data, it is found that parental education has a positive impact on child's education. Hence to improve the learning outcome of the children at the primary level, expansion of education among the parents is important. The availability of playground facility in the school, availability of mid-day meals, drinking water and proper sanitation at school creates a positive impact on standard V level children to improve their quality of education.

The government of India has taken many initiatives to reduce the direct cost of education through different types of subsidized programmes both at the elementary level and secondary level. India follows the strategy of decentralisation of educational management through the central state and panchayat raj. The central government has taken many policies like the National Programme for the Education of Girls at Elementary level (NPEGEL) to encourage female literacy and reduce the Gender Parity Index. Similarly, various program is also undertaken by the State government like Kanyashree, Sikhashree programme implemented in West Bengal to increase female literacy. If a girl receives an education, then in her next generation, after her motherhood she wants to send her child to school to become educated because educated parents are usually more involved in their child's education. Actually, every child's first education begins at home then after attaining a certain age they are admitted to school and their school-based education starts. It is found that

some of the intergenerational effects of education may be transmitted through parents. More educated parents provide an environment which improves their children's opportunities and decision process. A mother knows best, and the amount of education she attains can predict her children's success in reading and mathematical skill. So, government apart from giving importance on child education should also give more stress on adult education mainly education among mothers. That can be done through Local panchayat or NGOS. Government needs to take strong steps in this matter so that girls get proper education and thus their next generation receive proper schooling and can work as skilled worker in their adult age through improving their learning ability. According to RTE guidelines, a school must have playground, proper drinking water, sanitation, Mid-day meal facility but unfortunately some places are still lacking these amenities. But these items in school can make a child more attractive and (s) he can devote more quality time to school education. It is required to find out whether the benefit of this policy can be reached to every corner of society. The demographic dividend of India's population can be achieved if and only if the learning outcomes of the children improve so that in their adulthood they can work as skilled workers.

In this chapter, an analysis is done on learning outcomes achieved in rural primary schools and the various household and school-related factors that influence the academic achievement attained in primary school over the last ten years. The next chapter will focus on the impact of children's health, measured by stunting, wasting and underweight and other socioeconomic factors and school-level infrastructure on the academic achievement attained by rural Indian children after completion of primary education.

Chapter 9: Nexus between Children's Malnutrition and their Academic Achievement at the Primary Level in Rural India.

Introduction:

In the previous chapter, an investigation is done on learning outcomes achieved in rural primary schools and the influence of various household and school-related factors on the academic achievement attained over the last ten years. This chapter attempts to identify the influence of children's health, measured by stunting, wasting and underweight and other socioeconomic factors such as household characteristics, parental education, and school-level infrastructure on the academic achievement of rural Indian children after completion of primary education. Learning

outcome is the best indicator of learning because it shows what learners have actually learnt after completion of the class. Children must acquire quality education to increase their knowledge and develop their skills which will lead to the creation of human capital in the economy in the long run. (Grant, Catherine, 2017). . Children must acquire quality education to increase their knowledge and develop their skills which will lead to the creation of human capital in the economy in the long run. (Grant, Catherine, 2017). The focus should extend beyond just increasing enrolment rates, and towards providing individuals with access to high-quality education that can equip them with the skills and knowledge required to succeed in a rapidly evolving global economy. Galor and Zeira (1993) highlighted the importance of the value of human capital in fostering sustainable economic growth. According to them, the development of human capital is a major contributor to economic growth and is driven by an array of factors, including the amount invested in education, the educational quality, and the pace of technological advancement. A strong foundation in primary education is crucial for children, as it sets the stage for their future academic and professional success. Even with high enrolment rates, if education quality is compromised, children may lack the necessary skills and knowledge required to thrive in the labour market. Malnutrition weakens the body's ability to defend against diseases and infections and hinders the essential nutrient absorption process. This results in stunted growth, both physically and mentally, which can have adverse effects on a child's development and learning abilities in the future (Lloyd-Still, Hurwitz, Wolff & Shwachman, 1974; Chatterjee & Saumitra, 2016). This further reduces the body's immunological capacity, creating a potentially life-threatening situation. The problem of malnutrition among rural children not only obstructs the normal growth and development of children but also has a long-term impact on his/her future health. Traditionally stunting, wasting and being underweight have been used as anthropometric indicators of undernutrition among children. This chapter will try to investigate whether undernourishment (measured by stunted, wasted or underweight) among children may affect their quality of education at the primary level. Our study also attempts to identify the influence of other socioeconomic factors such as household characteristics, parental education and school-level infrastructure on academic achievement through an empirical cross-sectional analysis covering 352 rural-dominated districts of India and also presents policy recommendations based on the findings.

Two-Stage Least Squares (2SLS) Regression Model:

Nutritional deficiency of the baby as measured by stunting, wasting or being underweight is treated as an endogenous explanatory variable that may affect the academic achievement of the child (which is here considered as an outcome variable) but is correlated with the disturbance term. The disturbance term in this model accommodates some factors like food security, hygiene in school and at home, poverty, environmental factors etc. which may affect the child's learning outcome but cannot be considered as explanatory variables due to lack of data availability. We consider the mother's health condition during pregnancy (Z) as an instrument which can influence 'st' and 'wt' but is uncorrelated with the error term, u of our structural model. We assume that st , wt and unw , are endogenous variables of Equation 1, Equation 2 and Equation 3 respectively.

Here 'i' implies the sample district and 'j' implies the factor. The structural equations considered to address the research problems are as follows:

For Model 1:

$$gloi_{ij} = \alpha_0 + \alpha_1 st_{ij} + \alpha_2 ps_{ij} + \alpha_3 un_{ij} + \alpha_4 tlm_{ij} + \alpha_5 tstaff_{ij} + \alpha_6 ptr_{ij} + \alpha_7 yrmore_{ij} + \alpha_8 elec_{ij} + \alpha_9 mdm_{ij} + \alpha_{10} fi_{ij} + \alpha_{11} ft_{ij} + \mu_{1ij} \dots \dots \dots \text{Eq. 1}$$

$$st_{ij} = \delta_0 + \delta_1 bmis_{ij} + \delta_2 anem_{ij} + \delta_3 anc3_{ij} + v_{1ij} \dots \dots \dots \text{Eq. 1A}$$

For Model 2:

$$gloi_{ij} = \beta_0 + \beta_1 wt_{ij} + \beta_2 ps_{ij} + \beta_3 un_{ij} + \beta_4 tlm_{ij} + \beta_5 tstaff_{ij} + \beta_6 ptr_{ij} + \beta_7 yrmore_{ij} + \beta_8 elec_{ij} + \beta_9 mdm_{ij} + \beta_{10} fi_{ij} + \beta_{11} ft_{ij} + \mu_{2ij} \dots \dots \dots \text{Eq. 2}$$

$$wt_{ij} = \lambda_0 + \lambda_1 bmis_{ij} + \lambda_2 anem_{ij} + \lambda_3 anc3_{ij} + v_{2ij} \dots \dots \dots \text{Eq. 2A}$$

For Model 3:

$$gloi_{ij} = \gamma_0 + \gamma_1 unw_{ij} + \gamma_2 ps_{ij} + \gamma_3 un_{ij} + \gamma_4 tlm_{ij} + \gamma_5 tstaff_{ij} + \gamma_6 ptr_{ij} + \gamma_7 yrmore_{ij} + \gamma_8 elec_{ij} + \gamma_9 mdm_{ij} + \gamma_{10} fi_{ij} + \gamma_{11} ft_{ij} + \mu_{3ij} \dots \dots \dots \text{Eq. 3}$$

$$unw_{ij} = \pi_0 + \pi_1 bmis_{ij} + \pi_2 anem_{ij} + \pi_3 anc3_{ij} + v_{3ij} \dots \dots \dots \text{Eq. 3A}$$

Here in our model, the endogenous variable i.e., the stunting, wasting and being undernutrition measure of malnutrition among standard five-level children is correlated with the error term,

leading to biased estimates of the coefficients in the regression model. The use of instrumental variables is particularly important in these situations where the endogenous variable is correlated with the error term, which can lead to biased estimates of the coefficients in the regression model.

From Eq. 1(A), we can obtain the predicted value \widehat{st} . Similarly, from Eq. 2(A) and Eq. 3(A), we can obtain the predicted values of \widehat{wt} and \widehat{unw} respectively

Finally, in the second stage, the structural equation is estimated by replacing t with \widehat{st} , wt with \widehat{wt} and unw with \widehat{unw} .

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Finally, in the second stage, the structural equation is estimated by replacing t with \widehat{st} , wt with \widehat{wt} and unw with \widehat{unw} .

Results & Discussions:

It is found that there is a strong negative association between child under-nutrition as measured by stunting, wasting and being underweight with their academic performance when the district is considered as a unit. It is found that parental support in educational attainment plays a positive role in educational achievement. Similarly, if the school have efficient teaching staff and the teacher possesses adequate institutional material then this will lead to improved academic achievement of the children. It is observed that if the student understands the teaching taught in the class, then it leads to better academic scores for the students. Female teacher plays role model for girl child and the more percentage of the presence of female teacher in primary school leads to better quality education at the primary level in rural India. Maternal education plays a positive role in achieving quality education for the children. Our findings portray that the mid-day program and pupil-teacher ratio at school are not effective in improving academic achievement among children covering rural

India. Immunization of children under five years fails to influence the learning outcome of primary school children in rural areas of India.

Conclusion of the Thesis:

This thesis emphasizes rural areas due to their demographic significance and distinct socio-economic context, heightened by their substantial population. The coverage of government supply-side grants as measured by the School Grant Coverage Index among the primary schools in rural people-dominated districts has increased, inequality in the distribution of grants has reduced and also the grants have percolated down to most of the schools in rural India. But despite this, it's also found that there exists a fascination of rural parents to send their children to private primary schools during the time of their enrolment. The availability of female teachers in school not only encourages the enrolment of girl children but also plays a crucial role in maintaining gender parity in primary school enrolment. Furthermore, the positive influence of female teachers extends beyond just enrolment but also leads to improved academic achievements for all children in primary education, regardless of gender, in rural India. The results portray that fathers' education level significantly impacts enrolment decisions for their children. On the contrary, surprisingly mothers' educations fail to influence the enrolment decision for their children in primary school enrolment in rural India. Despite this, a distinct and positive correlation exists between a mother's education and the education achievement of children in rural primary schools. In other words, while mothers' education may not directly affect enrolment decisions it does play a crucial role in ensuring that their children receive good quality education at the basic level. Pupil-teacher ratio failed to influence both academic attainment as well as academic achievement in rural primary schools. The mid-day meal program has a positive impact on academic attainment but it failed to influence the academic achievement received in primary school in rural India. This study reveals that while the enhancement of private education has contributed positively to overall enrolment, it had an adverse effect on the enrolment of girl children in rural public schools. This intriguing finding sheds light on the captivating dynamics surrounding parental decisions during the admission of their children. It appears that parents exhibit a preference for sending their girl children to public schools, while simultaneously enrolling their boys in private schools, likely driven by the desire to provide a better-quality education for their sons.

The observations from the rural districts of the selected major states of India, within the Southern, Western and Eastern zones, reveal that the Gender Parity Index (GPI) falls within a promising

range of UNESCO's standards between 0.97 to 1.03 during primary school enrolment.. However, the situation in the rural districts of the Northern zone portrays a less encouraging picture, despite the overall satisfactory enrolment rate in primary education within that zone. Increasing the recruitment of teachers, particularly female teachers, availability of school development grants, availability of girls' toilets and availability of teaching-learning material grants holds the potential to improve the Gender Parity Index (GPI) in primary education during enrolment in rural Indian schools. Furthermore, the implementation of the Mid-day meal scheme, aimed at maintaining the nutritional status of students, has proven effective in enhancing students' attentiveness in school. This scheme serves as an incentive for parents to send their children, especially girls, to primary schools, resulting in a positive impact on girls' enrolment rates across various regions in India.

Social attributes like caste and religion tend to exacerbate the gender gap in enrolment rates in private primary schools in rural India. In contrast, economic attributes such as income, occupation, and ownership of computers can help to narrow the gender gap in enrolment in private primary schools. However, school-related factors, such as the medium of instruction in primary school or the distance between the household and primary school have been found to widen the gender gap in enrolment in the same context. Various factors contribute differently to the gender gap in enrolment in private primary schools in rural India. The most significant factor is the religious practices of the household, accounting for 41.17 % of the explanation. Household income level also plays a substantial role, contributing 24.89 % to the gender gap. The medium of instruction in primary school explains approximately 7 % of the gap, while the occupation of the household contributes 2.4 %. Household size and ownership of computers have relatively minor contributions of nearly two % each in explaining the gap in enrolment. Understanding these various influences can help devise targeted strategies to address the gender gap in enrolment in private primary schools in rural India.

It is found that the mean log expenditure difference between boys and girls is positive denoting the presence of discrimination in primary school education expenditure between the genders. The analysis revealed a concerning finding that there exists a positive mean log expenditure difference between boys and girls in primary school education, indicating the presence of discrimination based on gender in expenditure patterns. Moreover, when examining potential discrimination, it is observed that the "unexplained part" contributes more significantly to the differences in expenditure than the "explained part" for all three major religious groups in India. This suggests

that a considerable portion of the gender-based expenditure disparity remains unaccounted for and may be attributed to factors related to discrimination. Among households in rural India, the gender gap in education expenditure, as indicated by the unexplained effect, exhibits varying degrees across different religious communities. The highest gender gap in education expenditure is observed among households belonging to the Hindu community, followed by households belonging to the Muslim community. On the other hand, the gender gap is relatively less pronounced in households belonging to the Christian community. This suggests that the factors contributing to the unequal education expenditure between genders differ among these religious groups, with the Hindu community experiencing the most significant disparity. Next, to enhance learning outcomes at the primary level, promoting the expansion of education among parents becomes crucial. By increasing parental education levels, it can positively impact children's academic performance and overall education attainment. Several school-related factors also play a vital role in improving the quality of education for children at the primary level. The presence of playground facilities, provision of mid-day meals, access to clean drinking water and proper sanitation facilities at schools have positively contributed to the educational experience and academic performance of students. Ensuring the availability of these essential resources and amenities can create a conducive learning environment, leading to improved educational outcomes for primary school children in rural India. The findings of the last chapter reveal a robust negative association between child under-nutrition, as indicated by stunting, wasting and being underweight, and their academic performance. The detrimental impact of undernutrition on a child's learning outcomes underscores the importance of addressing nutritional issues as a critical component of efforts to improve educational performance and overall well-being among children. Parental support plays a vital and positive role in a child's educational achievement attained at primary school. When parents actively engage and provide support in their child's learning journey, it significantly contributes to improved academic achievement. Likewise, the quality of the school environment and teaching staff also substantially impacts children's academic performance. Primary schools with efficient, teaching staff, coupled with adequate institutional materials and resources, create a conducive learning atmosphere that fosters better educational outcomes for students. Therefore, investing in teacher training and providing schools with necessary educational materials are essential steps towards enhancing the academic achievements of children in primary school. It is observed that students who comprehend the teachings delivered

in the classroom tend to achieve better academic scores. When students grasp the concepts effectively, it positively impacts their overall academic performance. Encouraging more female representation among teachers can play a crucial role in fostering better quality education and empowering girls in their educational pursuits. The results highlight the positive impact of maternal education on achieving quality education for children. Maternal education is a crucial factor that significantly influences a child's educational outcomes and overall academic success. The findings also portray that the mid-day meal program and the pupil-teacher ratio at school, do not effectively improve academic achievement among children in rural India. Additionally, the research reveals that immunization of children under five years does not influence the learning outcomes of primary school children in rural areas of India. While immunization is essential for overall health and well-being, it does not seem to directly impact children's academic performance in the context of the study. Understanding these factors can help policymakers and educators to focus their efforts on effective strategies that genuinely enhance educational quality outcomes for children in rural Indian context.

Policy Prescriptions:

India has adopted a decentralized approach to educational management through central, state and panchayat raj systems.

1. The establishment of new primary schools in different gram panchayats is essential to reduce the distance between households and the nearest schools. This strategic move can help to bridge the gender gap in primary school enrolment and promote better access to education for all children.
2. In rural Indian primary schools, female teachers often play role model for young girls that goes beyond academics. Their nurturing and caring qualities can be reminiscent of a mother figure, leading to a positive impact on student's academic achievement and attainment. Through their presence, they break gender stereotypes and inspire female students to dream big and pursue education passionately. This empowerment can lead to increased academic engagement and improved academic performance among girls, setting them on a path to a brighter future. The motherly qualities exhibited by female teachers in rural Indian primary schools have a profound positive impact on academic achievement and attainment. Thus,

the presence of female teachers not only fosters girls' enrolment and participation in primary education but also contributes to overall academic excellence and quality of education for all students. The government can recruit more female teachers in primary schools as it might encourage children mainly girls in their primary school education achievement as well to enhance the GER of girls at a targeted level in elementary education in rural India.

3. Addressing malnutrition at the primary level in India is crucial to ensure that children have the physical and cognitive capabilities necessary to excel academically. This requires comprehensive efforts from the government, schools, parents, and the community to provide adequate nutrition, healthcare, and support systems to enhance these vulnerable children's overall well-being and academic achievement.
4. Proposing 'English' as the medium of instruction in public primary schools could be an effective measure to address gender discrimination and increase public school enrolment in rural India.
5. By implementing a national family planning policy, such as a maximum two-child policy, the government can encourage households to allocate higher per-child expenditure on their children's education.
6. By implementing various income support and income-generating programs, the government can effectively enhance household incomes. This measure has the potential to reduce gender discrimination and promote greater gender equality in primary school enrolment in rural India.
7. The government can play a significant role in reshaping the patriarchal mindset that can reduce gender discrimination in private primary school enrolment in rural India. Implementing specific initiatives and policies implemented by the central government and various state governments can bring about positive change and encourage equal opportunities for girls in education.
8. To foster a more progressive and inclusive society, it is crucial for the government to prioritize educating parents, particularly mothers. By empowering mothers with education, the nation can break free from patriarchal dominance, leading to a transformative shift in parental attitudes toward their daughters. This change in mindset will play a pivotal role in ensuring the comprehensive development of the nation, promoting gender equality and

unleashing the full potential of all citizens. Education for mothers will not only equip them with knowledge and skills but also empower them to challenge traditional gender norms and expectations. As mothers become more educated, they will be better equipped to make informed decisions about their children's education, health and overall well-being. This, in turn, will lead to more opportunities for girls to access quality education and fulfil their potential, fostering a generation of empowered and confident women. Furthermore, an educated mother can serve as a role model for her children, inspiring them to pursue education and break free from limited societal stereotypes. As such positive influences permeate through families and communities, the nation will witness a positive ripple effect, propelling it toward meaningful development and progress.

9. In addition to education, the government needs to create an enabling environment that supports and encourages gender equality initiatives. This includes implementing policies and programs that promote equal opportunities for women in all spheres of life, including education, healthcare, and the workforce.
10. By prioritizing the education of mothers and championing gender equality, the government can build a more inclusive and progressive society. This transformative approach will not only benefit the current generation but will also leave a lasting legacy for future generations, ensuring the nation's sustainable and holistic development in the coming years. Education plays a vital role in narrowing the persistent gender gap in educational achievements. By providing women with access to education, they gain economic independence and greater decision-making abilities, leading to positive transformations in their lives and society as a whole.
11. While the government of India has taken commendable steps by introducing various schemes to improve primary education in rural areas, it is now crucial for policymakers to shift their focus from mere attainment to measuring the actual achievement obtained in primary schools. By emphasizing the quality of education and learning outcomes, the government can further enhance the effectiveness of these initiatives and ensure that students receive a well-rounded education.
12. It is important for our policymakers to maintain the GPI value between 0.97 and 1.03 as the achievement of gender parity during the time of enrolment.

13. Regularly investigating the proper utilization of the various grants provided by the government and assessing the quality of teachers are essential steps to enhance education achievement in rural Indian primary schools.
14. By ensuring effective resource allocation and maintaining teacher standards, the government can foster improved learning outcomes and overall educational quality for students in rural India.
15. The government can initiate awareness campaigns focusing on the significance of parental education. Educated parents comprehend the value of education and actively support and guide their children, leading to better quality education even at the primary level. By promoting such campaigns, the government can foster a positive impact on children's learning outcomes and overall educational development.
16. The government should prioritize increasing the recruitment of female teachers, especially in rural-dominated districts, as a crucial step to bridge the gender gap in formal school participation. By ensuring more female representation among educators, young girls in rural areas can find role models, fostering greater enthusiasm for education and promoting gender equality in school enrolment. When a girl receives an education, it positively impacts future generations. As a mother, she is more likely to prioritize sending her child to school and encouraging their education because educated parents tend to be more involved in their child's learning journey.
17. The intergenerational impact of education underscores the importance of continued efforts to promote education, especially among girls, to create a more educated and empowered society. Studies show that intergenerational effects of education are influenced by parents, particularly more educated ones who create a conducive environment that enhances their children's opportunities and decision-making process. Therefore, the government should not only prioritize child education but also emphasize adult education, especially among mothers.
18. Promoting adult education can be achieved through partnerships with local panchayats or NGOs. By taking assertive measures in this regard, the government can ensure that girls receive proper education, leading to a positive impact on the next generation's schooling and their potential as skilled workers in adulthood, as their learning abilities are enhanced through quality education.

19. As per the Right to Education (RTE) guidelines, schools are mandated to have essential facilities like a playground, proper drinking water, sanitation, and the provision of mid-day meals. Unfortunately, some places still lack these amenities, which can hinder a child's overall learning experience. Access to these resources can make a school environment more attractive for children, leading them to invest more quality time in their education.
20. The government can monitor the functioning of ICDS and Anganwadi centers to ensure the supply of nutritious foods to expected mothers. This strategic effort aims to enhance the nutritional well-being of both mothers and children, ultimately leading to improved child nutrition levels.
21. It is crucial to ensure that the benefits of various government policies reach every corner of society. The demographic dividend of India's population can only be achieved if there is a significant improvement in the learning outcomes of children of the economy. By equipping schools with the necessary facilities and focusing on enhancing learning outcomes, children will be better prepared to become skilled workers in their adulthood, contributing to the nation's progress and development

Selected Bibliography:

- Azam, M., and Kingdon, G. G. (2013). Are girls the fairer sex in India? Revisiting intra-household allocation of education expenditure. *World Development*, 42, 143-164.
- Basu, S. (2015). India's future shaped by the past: The politics of foreign investment. *Global Asia*, 10(2), 80-86.
- Bedi, A. S., & Garg, A. (2000). The Effectiveness of private versus public schools: the case of Indonesia. *Journal of Development Economics*, 61(2), 463-494.
- Biswas, P., Kundu, A. (2022). Determinants of Enrolment of Girl Children in Primary Education in Rural India: A Region-based Analysis. *Indian Journal of Human Development*, 16(2), 1-21.
- Census Data, 2011. Office of the Registrar General & Census Commissioner, India. Ministry of Home Affairs, Government of India.
- Chatterjee, N., Saumitra, M. (2016). Developmental Outcome in Children with Malnutrition. *Journal of Nepal Paediatric Society*, 36(2), 170-177.

- Dongre, A. and Kapur, A., (Sept. 2016): "Trends in Public Expenditure on Elementary Education" *Economic and Political Weekly*, 51(39), 23-25
- Drèze, J. and Kingdon, G.G., (2001). School Participation in Rural India. *Review of Development Economics*, 5(1), 1-24
- EFA Global Monitoring Report, (2009). Overcoming inequality: why governance matters.
UNESCO Publishing. Oxford University Press.
- Fairlie, W., (2006). An extension of the Blinder-Oaxaca Decomposition Technique to Logit and Probit Models. *Journal of Economic and Social Measurement*, 30 (4), 305-316.
- Galor, O., Zeira, J., (1993). Income Distribution and Macro Economics. *The Review of Economic Studies*. 60(1), 35-63.
- Grant, C., (2017). The contribution of education to economic growth. *Institute of Development Studies*.
- Jejeebhoy, S. J., & Sathar, Z. A., (2001). 'Women's autonomy in India and Pakistan: The influence of religion and region'. *Population and Development Review*, 24(4). 687-712.
- Kambhampati, U.S., (2008). 'Does household expenditure on education in India depend upon the returns to education?' *Henley Business School University*.
- Kingdon, G. G., (2007). The progress of school education in India. *Oxford Review of Economic Policy*, 23(2), 168-195.
- Kingdon, G.G., (1996). The Quality and Efficiency of Public and Private Schools: A Case Study of Urban India. *Oxford Bulletin of Economics and Statistics*, 58 (1), 57-82.
- Kingdon, G.G., (2005). Where Has All the Bias Gone? Detecting Gender Bias in the Intrahousehold Allocation of Educational Expenditure. *Economic Development and Cultural Change*, 409-451.
- Kingdon, G.G., Pal, S., (2014). Can Private School Growth Foster universal literacy? Panel evidence from Indian districts. Bonn: IZA Discussion Papers No-5274, *Institute of Labour Economics*.
- Lancaster, G., Maitra, P., & Ranjan, R., (2008). Household expenditure patterns and gender bias: Evidence from selected Indian States. *Oxford Development Studies*, 36(2), 133-157.
- Lloyd-Still JD, Hurwitz I, Wolff PH, Shwachman H. (1974). Intellectual development after severe malnutrition in infancy. *Paediatrics*, 54(3), 306-11.

- Maiti, D., & Marjit, S., (2015). Regional openness economic growth and disparity during 1980-2009: Empirical evidences from major Indian states. *South Asia Economic Journal*, 16(1), 145-166.
- Mankiw, N. G., Romer, D., & Weil, D., (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 407-437.
- Morgan, S., & Stash, S., & Smith, H., & Mason, K., (2002). Muslim and non-Muslim differences in female autonomy and fertility: evidence from four Asian countries. *Population and Development Review*, 28(3), 515-537.
- Muralidharan, K. & Sheth, K. (2016). Bridging Education Gender Gaps in Developing Countries: The Role of Female Teachers. *Journal of Human Resources*, 51(2), 269-297.
- Muralidharan, K. (2013). Priorities for Primary Education policy in India's 12th five-year plan. *National Council for Applied Economic Research*, 9(1), 1-61.
- Paisa Report (2012). Do school get their money? Accountability Initiative.
- Pal, S., (2004). How much of the gender difference in child enrolment can be explained? Evidence from rural India. *Bulletin of Economic Research*, 56(2), 133-158.
- Report, ASER (2014). Annual Status of Education Report (Rural). New Delhi: Pratham.
- Report, ASER (2019). Annual Status of Education Report. New Delhi: Pratham.
- Report, ASER (2020). Annual Status of Education Report. New Delhi: Pratham.
- Report, Census (2011). India: Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Govt. of India.
- Saha, A., (2013). An assessment of gender discrimination in household expenditure on education in India. *Oxford Development Studies*, 41(2), 220-238.
- Self, S., & Grabowski, R. (2004). Does education at all levels cause growth? India: A case study. *Economics of Education Review*, 23(1), 47-55.
- Sen, A. (1999). Development as Freedom. *Oxford University Press*.
- Sluis, D.V. J., Praag, V. M., and Viverberg, W., (2005). The World Bank Economic Review Entrepreneurship Selection and Performance: A Meta-Analysis of the Impact of Education in Developing Economies. *Oxford University Press*.
- Subramanian, S., & Deaton, A., (1991). Gender effects in Indian consumption patterns. *Woodrow Wilson School-Development Studies*. Princeton.
- Tilak, J.B., (2002). Education poverty in India. *Review of Development and Change*, 7 (1), 1-44.

U-DISE. (2008, 2018). Unified-District Information System for Education Report, MHRD.

<http://schoolreportcards.in/DISE.InResponsive/DistrictReportCards/DistrictReportCards.aspx>

Zimmermann, L., (2012). Reconsidering gender bias in intrahousehold allocation in India. *The Journal of Development Studies*, 48(1), 151-163.