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RELATION BETWEEN MOTHERS' WORKFORCE PARTICIPATION AND CHILDREN'S EDUCATION: An Empirical Analysis from India

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Abstract: This paper examines the influence of mothers' workforce participation on children's schooling in India. Data for the study is drawn from the fourth round of National Family Health Survey (NFHS). Using logistic regression models, it analyses whether the engagements of mothers in market work have a significant impact on their children's schooling compared to children whose mothers are unemployed. The paper also investigates whether mother's workforce participation has a different impact on female children compared with male children. The result shows that mother's participation in agriculture, household/ domestic services and manual work impacts negatively on children's schooling. However, the father's workforce participation has a significant positive effect on children's schooling. Further, the results of gender-based analysis show that female children are more likely affected by the mother's participation in agriculture and manual employment. However, mother's white-collar employment significantly increases the likelihood of schooling of female children. The likelihood of male children attending school is approximately 12 percentage points higher compared to female children in the household. If the child is oldest in the household, the likelihood of attending school is lower with respect to other children. But the effect is 5 percentage points higher if the oldest child in the household is female.

Keywords: Children's schooling, Mothers' work, Fathers' work, Gender

I. INTRODUCTION

Women employment and financial independence are important for gender equality and women empowerment (Kelkar *et al.*, 2013). According to World Bank (2019), among the countries across the globe, the female labour force

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participation rate is approximately 47.88 percent, although there is a considerable variationacross countries and geographical regions within the countries. Women are an integral part of the total workforce in India. As per Census (2011), nearly149.8 million women were employed in India. Out of this, 121.8 million women workers were employed in rural areas and the rest 28 million were in urban areas. Women's well-being and empowerment are crucial for the development of both women and their children (Kelkar *et al.*, 2013). It is believed that women empowerment helps nation to achieve its development goals such as reduction of poverty and human capital formation which includes health and education of women and their children. According to World Health Organization (2005), "children are the future of the society and mothers are the guardians of that future".Literature also argues that women are the fundamental subject for children's capability development (Francavilla and Claudia Giannelli, 2010). Women are traditionally considered as the primary caregivers of their children and they are particularly responsible for decisions regarding children's education, health and nutrition especially among the rural communities in developing countries (Saaka *et al.*, 2009). Children spend more time with their mother than their father (Yeung *et al.*, 2001). Given women's role as a primary caregiver, it is reasonable to assume that women's workforce participation would influence the education of their children.

Working women play dual roles in the household as generators of household income and caregivers to their children. The dual role of mother reduces the time available to spend with the children compared to non-working counterparts (Sayer *et al.*, 2004; Bianchi *et al.*, 2006; Fox *et al.*, 2013; Hsin and Felfe, 2014). In a typical rural household, father who is engaged in market work and allocates resources to household is considered as the primary breadwinner, and has more control over the household resources (Glick, 2002; Desai and Jain, 1994). At the same time, mother engages in unpaid activities such as household work, child care and has relatively less control over the household resources (Desai and Jain, 1994). In spite of various measures undertaken for reducing gender disparities, the women in the rural areas are still facing disadvantages from the economic sphere (World Bank, 2011). However, women empowerment through paid employment helps to earn income and allocate resources to household which increase their control over the household (Anderson and Eswaran, 2009; Desai and Jain, 1994). A group of studies found that mothers' workforce participation affects children's education negatively (Francavilla *et al.*, 2013; Francavilla and Claudia Giannelli, 2010; Skoufias, 1993). Whereas, other sets of studies found the positive relationship between women workforce participation and children's education (Thomas, 1993; Afridi *et*

al., 2016; Ural Marchand *et al.*, 2013). The evidences on the relationship between mother's workforce participation and children's education are scarce and contradictory in developing countries. Therefore, the present study tries to explore the relationship between mothers' workforce participation and children's education in the context of India.

II. BACKGROUND OF THE STUDY

According to Becker (1965), decisions about time allocation of the household members in different activities such as household production, labour market activities and leisure are completely dependent on comparative advantage of each member within the household. The comparative advantage of householdmembers varies from member to member with respect to age, gender, education, labour market experiences and non-labour market experiences within the home. Childbearing is the biologically determined comparative advantage of women and women are generally engaged in household activities such as child care, food preparation and cleaning which develop a comparative advantage in household production (Becker, 1965).In addition, women face gender discrimination in the labour market, getting a lower wage rate compared to male workers. Similarly, acquiring education is a comparative advantage for children as it is an investment in human capital as well as the benefits from it are directly related to the time duration for which a person will be available in the labour market after his or her education (Brue *et al.*, 2016). Historically, for many households, men devote more time in the labour market activities because they have comparative advantage in the labour market compared to women. Women devote more time in household production and children spend more time in acquiring education (Brue *et al.*, 2016).

In addition to children's comparative advantage in education, parents are concerned about the capability development of children mainly because of altruistic and egoistic behaviour of parents. The altruistic interpretation suggests that the parents wish to invest in education of children because household derives utility from their children's schooling. Assumption regarding the altruistic behaviourof parents is established in the theoretical literature on child labour by Basu and Van (1998). Whereas, according to the egoistic interpretation, parents expect that investment in children's education increases their earnings in future and they will support parents in their old age (Cigno, 2006). Children's comparative advantage in education and altruistic and egoistic behaviour of parents towards their children increase the probability to invest more on children's education.

But, in the developing countries like India, many factors affect investment in education of children. For poor households, education is a luxury good, which is unaffordable with a lower level of income which negatively affects children's schooling (Basu and Van, 1998). There exists a trade-off between education and child labour because engagement of children in work often reduces their time available for education (Psacharopoulos, 1997). Parents who value the well-being of children are concerned about the children's education. But the inability of parents to substitute for the forgone earnings of their children due to the non-existence of credit market facilities for loans against future earnings leads to child dropout from school and these children join the labour market (Ranjan, 1999; Jacoby and Skoufias, 1997; Jafarey and Lahiri, 2002). Similarly, the adult labour market imperfections also have a negative impact on children's schooling (Bhalotra and Heady, 2003). There are some evidences which shows wealthier households do not invest in children's education because return on education is lower in comparison to the returns from child labour (Bhalotra and Heady, 2003). Children who combine both work and study usually leave school in their premature age which negatively affects their educational attainment (Guarcello *et al.*, 2008).

In most of the rural households in India, women generally engage in childcare, cooking, cleaning and elderly care alongside with their low paid work due to the socially ascribed roles. According to Samman *et al.* (2016), on an averageacross 66 countries consisting two-thirds of world population, women spend more than three times as much time as men on household chores. Women's disproportionate responsibility at home results in less time for paid employment which affects their equal right to decent work, social security and adequate standard of living. At the same time, the movement of women from household production to the labour market reduces their time available for household activities and childcare (Glick and Sahn, 1998). A set of studies argue that mothers' workforce participation affects children's education negatively as mother's market work reduces their time available for household activities and childcare (Francavilla *et al.*, 2013; Francavilla and Claudia Giannelli, 2010; Skoufias,1993). Whereas, other studies argue that mothers' workforce participation affect children's education positively (Thomas, 1993; Afridi *et al.*, 2016; Ural Marchand *et al.*, 2013). These studies argues that working mothers compensate their time spend in the labour market by sacrificing their personal needs such as leisure and sleep, so that there is no reduction in the time available for childcare related activities (Bianchi *et al.*, 2006). Also, it is argued that mother's workforceparticipation increases household income which positively affects children's education.

III. REVIEW OF LITERATURE

There exists relatively less literature on the relationship between mothers' workforce participation and children's education in Indian context. The findings of major studies are discussed in this section.

Basu and Van (1998) analysed the relationship between economic conditions of the household and children's activities. The study argues that poor households consider children's leisure and education as luxury goods which can be affordable by parents only with a higher level of income. According to this study, from the labour demand side, mother's labour and child labour are considered as substitutes. Therefore, income from mother's workforce participation results positively on children's education. The positive relationship between mothers' workforce participation and children education is also reflected in the following literature. Luke and Munshi (2011) studied a group of tea plantation workers in South India, where women were working for multiple generations as permanent wage labourers. The study found that an increase in female income has a significant positive impact on the education of their children.Afridi *et al.* (2016) studied the impact of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on children's education through women's labour force participation.Using the Young Lives Survey (YLS) data, they found that greater the number of mothers in MGNREGA is associated with bettereducational outcomes for their children. The study argues that greater decision-making power of working women within the household leads to this positive relationship between mother's workforce participation and children's education.

The following studies argue that, there exists a negative relationship between mothers' workforce participation and children's education. In a comparative study, Ray (2000) analysed child work, education and its key determinants in Peru and Pakistan. In the empirical analysis study incorporated the relationship between child labour, child schooling, and adult labour by including adult wage as the determinant of child work and schooling.The study found that an increase in the income and related variables of the poor households does notreduce child labour or improve children's schooling.A rise in adult female wage and a fall in adult male wages lead to a rise in the probability of child work.If adult female wage rate rises, mothers with non-altruistic parental behaviours, will tend to take their children, especially daughters, along with them to work which leads to a positive relationship between mother's work and child work and negatively affecting children's schooling. Additionally, the study found that increase in female education tends to reduce the likelihood of child work.

Francavilla and Claudia Giannelli (2010) analysed the relationship between mothers' workforce participation and children's statuses in India. They studied the probability of the child being in statuses such as study, market work, domestic work and inactive when mother employed. The study runs a minimal specification by including a dummy variable for mother's presence in the household and the results shows that the likelihood of attending school is higher for the children who live with their mother. Further, the study analysed child statuses as depends on employment status of the mother. The study failed to find any significant relationship between the mother's workforce participation and the child's condition in the urban area.Whereas, in the rural areas, participation of mother in labour market activity reduces the probability of children's schooling and increases the probability that the child does domestic works. Similarly, Skoufias (1993) analysed the intrafamily allocation of timebetween market work, household work, schooling and leisure activities by household members including children using data from the survey conducted by International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in six villagesin semi-arid tropic rural India.The study found that a rise in female wage rate attracts more women to the labour market thus it leads to a reduction in their time available for domestic work and leisure. Unavailability of women for household work leads to a substitution of children instead of the adult female to do the household works. Thus, the study found that the higher wage rate for female seems to have a negative impact on children's schooling. Francavilla *et al.* (2013) studied the relationship between employment of mothers and schooling of children in India using the National Family Health Survey (NFHS) second round data and multilevel bivariate probit model. The study indicates a significant negative relationship between mother's workforce participation and children's schooling. According to the study, children may do household activities or engage in labour market or simply stay inactive instead of attending school while their mother works. The study also found that women from the poorer households are more likely to work; however, they are unable to meet the cost of attending school. Therefore, the additional income earned by women is insufficient to improve children's school attendance.

The existing literatures on the relationship between mothers' workforce participation and children's education provide inconsistent results. A set of studies foundpositive relationship between mothers' workforce participation and children's schooling (Basu and Van, 1998; Luke and Munshi, 2011; Afridi *et al.*, 2016). According to these studies, the primary reason for child dropout from school is the poverty within the household. They argue that mothers' workforce participation increases household

income which helps to free up children from child labour and enable them to attend school. However, other set of studies provide negative relationship between mothers' work and children's education (Ray, 2000; Francavilla and Claudia Giannelli, 2010; Skoufias, 1993). In thisbackdrop, this paper tries to examine the impact of mother's workforce participationon children's education in India. The paper also tries to compares the impact of this among the male and female children in the households.

IV. DATA AND METHODOLOGY

The present study uses secondary data for the analysis. The data has been drawn from the fourth round of NFHS which was conducted in India during2015-16. The data covers samples from 29 Indian states and 7 union territories. In order to study the relationship between mother's workforce participation and children education, the study used information about children aged between 6-17 years by merging the household sample with data from ever-married women sample and men's sample.

To estimate the relationship between mothers' workforce participation and children's education, the study employs the following logistic regression model:

$$CS_{ij} = \alpha + \beta_i X_i + \beta_h X_h + \beta_p X_p + \beta_r X_r + \beta_w X_w + \epsilon_i \quad (3)$$

where *CS* is a zero-one variable representing whether child i in household j currently enrolled in school or not. X_i, X_h, X_p, X_r, and X_w are vectors of child, household, parents, regional and wealth characteristics of child in household respectively. is a stochastic error term representing unobserved child, household, parents, regional and wealth characteristics that effectson children's education.

The descriptive statistics of all variables used to analyse the relationship between mother's workforce participation and children's education is presented in the table 1.

Table 1: Descriptive Statistics

	Total		*Male*		*Female*	
Variable	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Dependent Variable						
Currently enrolled in school (1 if yes, 0 if no)	0.91	0.29	0.92	0.28	0.90	0.30
Child characteristics						

contd. table 1

	Total		*Male*		*Female*	
Variable	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Age	11.09	3.36	11.04	3.33	11.15	3.38
Gender (1 if male, 0 if female)	0.52	0.50	-	-	-	-
Oldest	0.43	0.50	0.43	0.49	0.44	0.50
Mother present at the household (1 if yes, 0 otherwise)	0.99	0.11	0.99	0.11	0.99	0.11
Household characteristics						
Below Poverty Line (1 if BPL, 0 otherwise)	0.40	0.49	0.39	0.49	0.40	0.49
No. of children under 5 years	0.25	0.55	0.23	0.52	0.28	0.58
Household size	6.16	2.43	6.03	2.42	6.31	2.43
Age of household head	45.32	11.93	45.39	12.01	45.24	11.85
Gender of household head	0.88	0.32	0.89	0.32	0.88	0.32
Whether household speaks dominant language	0.88	0.33	0.88	0.33	0.88	0.33
Education of most educated female (base: no education)						
Primary	0.15	0.36	0.15	0.36	0.15	0.36
Secondary	0.40	0.49	0.41	0.49	0.40	0.49
Higher education	0.09	0.29	0.10	0.30	0.09	0.29
Education of most educatedmale (base: no education)						
Primary	0.15	0.36	0.15	0.35	0.15	0.36
Secondary	0.49	0.50	0.49	0.50	0.49	0.50
Higher education	0.13	0.33	0.13	0.33	0.13	0.33
Religion of household head (base: other)						
Hindu	0.72	0.45	0.72	0.45	0.71	0.45
Muslim	0.17	0.37	0.17	0.37	0.17	0.38
Christian	0.07	0.26	0.07	0.25	0.07	0.26
Mother's Characteristics						
Education level of mother (base: no education)						
Primary	0.17	0.37	0.17	0.37	0.17	0.37
Secondary	0.35	0.48	0.35	0.48	0.35	0.48
Higher education	0.05	0.22	0.05	0.22	0.05	0.22
Mother's age	35.70	5.83	35.69	5.82	35.72	5.84
Mother's Occupation (base: not in workforce)						
White collar	0.02	0.14	0.02	0.14	0.02	0.14
Clerical/sales	0.02	0.14	0.02	0.14	0.02	0.14
Agriculture	0.22	0.42	0.22	0.42	0.22	0.42
Household/domestic services	0.04	0.19	0.04	0.19	0.04	0.19
Manual (skilled and unskilled)	0.08	0.27	0.08	0.26	0.08	0.27
Father's characteristics						
Father's age	41.36	8.33	41.34	8.34	41.39	8.33

contd. table 1

	Total		*Male*		*Female*	
Variable	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Father's education (base: no education)						
Primary	0.18	0.39	0.18	0.38	0.18	0.39
Secondary	0.47	0.50	0.47	0.50	0.46	0.50
Higher education	0.09	0.28	0.09	0.29	0.09	0.28
Father's occupation (base: not in workforce)						
White collar	0.06	0.23	0.06	0.24	0.06	0.23
Clerical/sales	0.12	0.32	0.12	0.32	0.12	0.32
Agriculture	0.37	0.48	0.37	0.48	0.37	0.48
Household/domestic services	0.09	0.28	0.09	0.28	0.09	0.29
Manual (skilled and unskilled)	0.31	0.46	0.31	0.46	0.31	0.46
Regional characteristics						
Locale (1 if urban, 0 if rural)	0.27	0.45	0.27	0.45	0.27	0.44
Region of residence (base: North-East)						
South	0.11	0.32	0.11	0.31	0.12	0.32
North	0.31	0.46	0.31	0.46	0.30	0.46
West	0.27	0.44	0.27	0.45	0.27	0.44
East	0.18	0.39	0.18	0.38	0.19	0.39
Household has electricity (1 if yes, 0 no)	0.87	0.34	0.87	0.34	0.86	0.34
Wealth characteristics						
Household has land (1 if yes, 0 if no)	0.47	0.50	0.47	0.50	0.46	0.50
Household owns livestock (1 if yes, 0 if no)	0.58	0.49	0.58	0.49	0.57	0.49
Number of observations	94547	48702	45845			

Source: Calculated using NFHS-4 (2015-16)

The child's characteristics includes the following variables. The age of the child is included as a variable because age is an important determinant of children's schooling. The study is interested to know whether female children or male children are more likely to attend school. Thus, a dummy variable is used for gender; one for male child and zero for female child. Different studies have shown that firstborn child is more likely to engage in works, especially in the case of female, as often they are put in charge of household activities including household chores and childcare while their father or mother work outside the home (Edmonds, 2006). Increase in the likelihood of child work often reduces their time available for education (Psacharopoulos, 1997). Therefore, the study includes a dummy variable for the oldest child; one if oldest and zero otherwise. To understand the relationship between the mother's presence in the household and children's education, the study included a dummy variable for the mother's presence in the household; one if mother is usual resident, zero if visitor.

The household characteristics includes the following variables. The Below Poverty Line (BPL) is included as a dummy variable in the logistic regression model, taking one if household belongs to BPL and zero otherwise. The sign and magnitude of the estimated coefficient of BPL variable allow us to examine the impact of 'poverty status' of the household on log odds ratio of children's education if the household crosses the poverty line. The household size is an important variable which determine children's education. Therefore, the study added household size to the model. The information about age and gender of the household head are the important variables that impacts children's education which are added to the model. Gender of the household head takes dummy variable one if male and zero if female. The language spoken by the household is added to the model as a dummy variable. For the households who speak the dominant language are given dummy variable one and zero otherwise. The level of education of most educated female and male member of the household are classified into four categories such as no education, primary education, secondary education and higher education and added to the model as categorical variable. The religion or caste system in India represents the social status of the household. Thus, the religion of the household also influences the education of the children. The households belonging to the upper-caste have high social status and are more likely to send their children to school. The religion of the household is also taken as a categorical variable such as Hindu, Muslim, Christian and other.

The parental characteristics are represented by the age, the level of education and occupation of both father and mother of the child. The education level of both mother and father are grouped into four categories such as no education, primary education, secondary education and higher education. The occupation of both mother and father is classified into six categories such as no work, white collar, clerical/sales, agriculture, household/domestic services and manual (skilled and unskilled) work.

The regional characteristics include following variables. All the states are grouped into five viz. north, south, west, east and north-east, and it's added to the model as categorical variable. Whether household belongs to urban or rural area takes dummy variable one if urban and zero if rural. Availability of electricity is considered as the infrastructure development of region, takes value one if available and zero if not available.

The economic status of the household is determined by household wealth. Thus, the wealth of the household also influences children's education. The land ownership and livestock ownership by the household are used as the measure of household wealth. The land ownership takes

dummy value one, if household owns land and zero, if otherwise. Also, the livestock ownership takes dummy values one, if household owns livestock and zero, if not.

V. RESULTS

Table 2 presents the age specific participation rate of children in schooling. The table shows the following remarks. The overall participation rate of children in schooling peaks around 9 years and then falls. The urban and rural classification also shows that participation rate of children in schooling peaks around 9 years. But, the overall participation rate at age 9 is higher in urban area with respect to rural area. The gender-wise picture is not similar to the overall picture. The total participation rate of male children in schooling reaches its peaks around11 years and 9 years for female children and then falls. Similarly, in rural area participation rate of male children in schooling reaches its peaks around 11years and 9 years for female children and then falls. The parameters given in table 2 shows that among all age groups, female children's participation rate in schooling is lower with respect to male children. However, there exist not much gender differences in school participation rate in urban area.

Table 2: Participation rates (in percentage) of children in schooling

	Total			*Urban*			*Rural*		
Age	*Boys*	*Girls*	*Overall*	*Boys*	*Girls*	*Overall*	*Boys*	*Girls*	*Overall*
6	87.58	86.69	87.15	91.99	90.37	91.23	86.07	85.50	85.80
7	94.07	93.61	93.85	96.11	96.47	96.28	93.35	92.59	92.99
8	95.79	95.17	95.49	95.94	95.73	95.84	95.74	94.98	95.37
9	97.03	96.78	96.91	97.55	97.24	97.41	96.85	96.62	96.74
10	96.29	95.65	95.99	96.68	97.39	97.02	96.15	95.04	95.62
11	97.05	96.25	96.66	96.31	97.30	96.79	97.35	95.82	96.62
12	95.28	94.42	94.87	95.62	95.97	95.79	95.15	93.84	94.53
13	93.37	92.10	92.75	94.51	95.12	94.81	92.96	90.99	92.00
14	90.70	89.33	90.08	91.64	91.80	91.71	90.31	88.28	89.39
15	86.83	83.88	85.28	88.30	89.70	89.02	86.22	81.63	83.78
16	80.51	77.34	78.88	84.21	83.09	83.65	78.85	75.01	76.84
17	75.51	72.39	73.95	80.14	78.36	79.25	73.50	69.83	71.66
All	91.68	90.16	90.94	92.91	92.74	92.83	91.22	89.20	90.23

Source: Calculated using NFHS-4 (2015-16)

Table 3 presents the estimates of the coefficients in logistic regression of children's schooling on its various child, household, parents, regional and wealth characteristics. The column (1) in the table 3 displays the results

in pool of male and female children. As for child's characteristics, the odds ratio shows that the children at a particular age are 0.13 times less likely to attend school compared to children in the next lower level of age. That is, one-year increase in age reduces the likelihood of a child attending school by about 13 percent. This is in line with previous findings on the role of age in the schooling of children in developing countries (Francavilla *et al.*, 2013). Consistent with results of Ray (2000); Francavilla and Claudia Giannelli (2010) and Francavilla *et al.* (2013) this study also found that a gender differential exists in favour of schooling of male children. That is, the likelihood of attending school among male children is 13 percentage points higher than female children in the household. Being the oldest child in the household, the likelihood of attending school is 24 percentage points lower compared to younger children in the household. This study failed to find any significant relationship between the mother's presence in the household and children's education.

As for household characteristics, the children who belong to BPL households are less likely to attend school by 4 percent points compared to those children who belong to Above Poverty Line (APL) households. In other words, children from non-poor households are more likely to attend school than children from poor households. The household structure has a vital role in children's schooling. For example, larger numbers of children under five years reduce the odds of children attending school by about 15 percentage points. Also, children from larger households are 0.09 times less likely to attend school compared to children from smaller households. This is in line with previous findings on household size in the schooling of children in developing countries (Anh *et al.*, 1998). The age of household head has a small positive effect on children's education. The likelihood of child attending school from the households headed by a male are 0.23 times lower than those households headed by a female. Following Ray (2000), this study also argues that the level of education of most educated male and female members in a household tend to increase the likelihood of schooling of children. While comparing the education of most educated female in the household with the most educated male in the household, the former has more effect on children's education.

As for parents' characteristics, following Anh *et al.* (1998) and Francavilla and Claudia Giannelli (2010), this study argues that parental education plays a crucial role in children's education. The level of education of both mother and father showed highly significant positive associations with children's schooling. The reported odds ratio sizes exhibit higher values (that is, higher the likelihood of schooling of children) when levels of education attained by both mother and father are higher (compared with no education). The

mother's age has a small negative effect on children's education (3 percentage points) whereas the study failed to find any significant relationship between father's age and children's education. The relationship between mothers' workforce participationand children education is the particular interest of this study. Mother's participation in the 'white-collar' and 'clerical/sales' employment has no statistically significant effect on children's schooling whereas her participation in 'household/domestic service', 'agriculture' and 'manual (unskilled and skilled)' employment decreasesthe probability of children's schooling. Turning to the mothers who do agriculture work, the likelihood of children attending school is 5 percentage points lower as compared to other mothers. The likelihood of attending school among children of those mothers who do manual unskilled or skilled works are 17 percentage points lower than those other mothers. Also, the likelihood of children attending school among children of mothers who do household/domestic service are 19 percentage points lower as compared to other mothers. The father's employment variables except agriculture work seem to have statistically significant positive effect on their children's schooling. Moreover, the better profession of the father the higher the probability that the children attend school.

In order to study whether there is any gender difference exists in the relationship between mothers' workforce participation and children education, the study segregated the sample into male and female and re-run specification outlined in equation (3). The column (2) and (3) in table 3 provide the results for male and female subsample, on its various child, household, parents and regional characteristics. There are some similarities and dissimilarities between the male and female children's estimates. For both male and female children, age reduces the probability of children's schooling. However, the effect is about 1 percentage point higher for female children. If the oldest child is a male, the likelihoodof attending school is about 21 percentage points lower compared to younger children in the household. Whereas, if the oldest child is a female, the likelihood of attending school is about 26 percentage points lower compared to younger children in the household. The effect is statistically significant for male and female children but about 5 percentage points higher for female children. This might be because of first-born children, especially female, are often put in charge of household activities including household chores and childcare.

As for household characteristics, the gender-based analysis results show that the male children who belong to BPL households are less likely to attend school by 6 percentage points lower compared to those children from APL households. However, BPL variable seems to have no effect on

the schooling of female children. Male and female children from the smaller households are more likely to attend school compared to children from larger households. But the effect is about 2 percentage points lower for female children compared to male children in the household. The level of education of most educated female and male in the household is positively related to the schooling of both male and female children. The positive effect of the education of most educated female and male in the household is bigger for female children than that of male children.

As for parents' characteristics, the gender-based analysis show that mother's education is positively related to the schooling of male and female children. Mother's primary education increases the likelihood of schooling of male and female children but the effect is about 0.04 times lower for female children compared to male children. However, mother's secondary education increases the likelihood of schooling of female children than that of male children. Therefore, higher level of mother's education is crucial for the improvement of education of female children. The different level of education of father is positively related to children's schooling. However, the positive effect is larger for male children compared to female children. For male children, the mother's white-collar occupation seems to have no effect on children's schooling. But for female children, mother's white-collar occupation increases the likelihood of schooling by 57 percentage points. For male children, mother's occupation in agriculture seems to have no effect on children's schooling. But for female children, mother's occupation in agriculture decreases the likelihood of schooling by 8 percentage points. Turning to the mothers who do household/domestic services, the likelihood of male and female children attending school is 22 percentage points and 15 percentage points lower respectively than that of children from other households. The effect is statistically significant for male and female children but about 7 percentage points lower for female children. The odds of attending school by male and female children of mothers who do manual work is 16 percentage and18 percent lower respectively than children from other households. The effect is statistically significant for male and female children but about 2 percentage points higher for female children. Turning to the father's occupational variables, all the occupational variables of father have statistically significant positive effect on their children's schooling except agriculture work of father on male children's schooling. Moreover, the better the professional position of the father the higher the probability that the male and female children attend school.

As for regional characteristics, the gender-based analysis results show that only male children from the southern region are positively related to children's schooling. The education of female children negatively affected

by the region of residence. Among all regions, the negative effect on the education of female children is less in the southern region. The likelihood of attending school is higher for male and female children from the household who owns land. However, the effect is 3 percentage points higher for male children compared to female children. Also, the ownership of livestock by the household increases the likelihood of schooling of both male and female children. However, the effect is 14 percentage points higher for male children than that of female children.

Table 3: Logistic regression result (reported odds ratio)

	(1) *Total*	*(2)* *Male*	*(3)* *Female*
Age	0.865***	0.872***	0.859***
	(-0.004)	(-0.006)	(-0.006)
Gender	1.129***	-	-
	(-0.027)		
Oldest	0.759***	0.790***	0.736***
	(-0.022)	(-0.033)	(-0.030)
Mother present at the household	1.02	1.284	0.824
	(-0.147)	(-0.253)	(-0.175)
Below Poverty Line	0.957*	0.941*	0.969
	(-0.024)	(-0.034)	(-0.034)
No. of children under 5 years	0.852***	0.848***	0.859***
	(-0.020)	(-0.031)	(-0.027)
Household size	0.908***	0.916***	0.901***
	(-0.006)	(-0.009)	(-0.008)
Age of household head	1.007***	1.009***	1.005***
	(-0.002)	(-0.002)	(-0.002)
Gender of household head	0.772***	0.787***	0.752***
	(-0.033)	(-0.048)	(-0.045)
Speaks dominant language	1.039	1.019	1.054
	(-0.041)	(-0.057)	(-0.059)
Education of most educated female (base: no education)			
Primary	1.176***	1.133	1.217**
	(-0.068)	(-0.095)	(-0.098)
Secondary	1.631***	1.442***	1.820***
	(-0.073)	(-0.091)	(-0.116)
Higher education	3.872***	2.782***	5.553***
	(-0.407)	(-0.382)	(-0.913)
Education of most educated male (base: no education)			
Primary	1.127**	1.085	1.163*
	(-0.063)	(-0.087)	(-0.091)

contd. table 3

	(1) *Total*	*(2)* *Male*	*(3)* *Female*
Secondary	1.261***	1.133*	1.399***
	(-0.057)	(-0.073)	(-0.088)
Higher education	2.262***	2.223***	2.317***
	(-0.202)	(-0.296)	(-0.281)
Religion of household head (base: other)			
Hindu	0.891	0.934	0.861
	(-0.065)	(-0.096)	(-0.09)
Muslim	0.537***	0.556***	0.520***
	(-0.041)	(-0.059)	(-0.056)
Christian	0.855	0.851	0.864
	(-0.081)	(-0.111)	(-0.119)
Education level of mother (base: no education)			
Primary	1.486***	1.512***	1.466***
	-0.089	-0.131	-0.123
Secondary	1.913***	1.913***	1.949***
	-0.109	-0.152	-0.159
Higher education	1.299	2.051**	0.797
	-0.232	-0.525	-0.203
Mother's age	0.968***	0.972***	0.965***
	-0.003	-0.004	-0.004
Mother's Occupation (base: not in workforce)			
White collar	1.162	0.915	1.572*
	-0.194	-0.198	-0.416
Clerical/sales	1.095	1.125	1.06
	-0.125	-0.182	-0.17
Agriculture	0.947*	0.984	0.918**
	-0.029	-0.043	-0.038
household/domestic service	0.813***	0.781***	0.849*
	-0.055	-0.075	-0.082
Manual (skilled and unskilled)	0.830***	0.840**	0.816***
	-0.036	-0.052	-0.049
Father's age	1.002	0.998	1.006
	-0.003	-0.004	-0.004
Father's education (base: no education)			
Primary	1.267***	1.311***	1.235*
	-0.066	-0.098	-0.09
Secondary	1.930***	2.223***	1.692***
	-0.093	-0.154	-0.113
Higher education	1.665***	1.762***	1.574**
	-0.212	-0.33	-0.275
Father's occupation (base: not in workforce)			
White collar	1.689***	1.682***	1.729***
	-0.179	-0.257	-0.256
Clerical/sales	1.405***	1.430***	1.397***
	-0.095	-0.139	-0.131

contd. table 3

	(1) *Total*	*(2)* *Male*	*(3)* *Female*
Agriculture	1.017	0.958	1.075**
	-0.055	-0.073	-0.081
Household/domestic services	1.264***	1.220**	1.321***
	-0.088	-0.12	-0.129
Manual (skilled and unskilled)	1.173***	1.141*	1.213**
	-0.063	-0.087	-0.092
Locale	0.966	0.877**	1.059
	-0.034	-0.044	-0.054
Region of residence (base: North-East)			
South	1.038	1.292***	0.833*
	-0.072	-0.126	-0.082
North	0.784***	0.988	0.624***
	-0.043	-0.075	-0.05
West	0.533***	0.665***	0.425***
	(0.02)9	-0.051	-0.034
East	0.805***	0.798***	0.803***
	-0.045	-0.061	-0.065
Household has electricity	1.666***	1.589***	1.753***
	-0.052	-0.071	-0.075
Household has land	1.345***	1.361***	1.330***
	-0.038	-0.055	-0.052
Household owns livestock	1.085***	1.162***	1.023
	-0.032	-0.049	-0.043
Constant	101.629***	64.431***	174.948***
	-20.618	-18.107	-51.183
Number of observations	94547	48702	45845
P seudoR2	0.166	0.155	0.181
P rob > chi2	0	0	0

Source: Calculated using NFHS-4 (2015-16)

VI. CONCLUSION

The paper examined the relationship between mothers' workforce participation and children's schooling in India. The analysis is based on the fourth round of NFHS, which was conducted during 2015-16. The result of the overall analysis shows that mother's participation in the agriculture, household/domestic services and manual (skilled and unskilled) work has a statistically significant adverse effect on the likelihood of children's schooling. Moreover, the result shows that female children are less likely to enrol in school than that of male children in the household. Being the oldest, belonging to the household below poverty line, a larger number of children under 5 years and larger household size decrease the likelihood of children's schooling. Whereas, the education of both father and mother and the education of most educated female and male in the household

increase the likelihood of schooling of children. Additionally,ownership of land and ownership of the livestock are the other important characteristics which increase the likelihood of schooling of children.

The study also examined the relationship between mothers' workforce participation and children's schooling separately for both the male and female children. Thestudy failed to found any significant relationship between mothers' participation in agriculture work and male children's schooling. Whereas, the study found a negative relationship between mothers' participation in agriculture work andfemale children's schooling. Mothers' participation in household/domestic serviceshas statistically significant negative effect on the likelihood of schooling of both male and female children. However, compared to female children, the schooling of male children is more likely affected by the mother's participation in household/domestic services. Mothers' participation in manual work also shows a significant negative effect on the likelihood of schooling of both male and female children. However, compared to male children, the schooling of female children is more likely affected by the mother's participation in manual works. As far as gender is concerned, the results clearly show that the schooling of female children is worse than male children. This might be due to the fact that female children, especially older female children, are often substituted at home to do household activities including household chores and childcare while their mother engages in market work.

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