'*Whatever she may study, she can't escape from washing dishes'*: Gender Inequity in Secondary Education, Evidence from a Longitudinal Study in India

Renu Singh & Protap Mukherjee

Introduction

As universal elementary education is close to realisation there are concerns about secondary education meeting the pressure of increasing number of children moving into secondary levels. Secondary education is today seen not as a luxury, but as a necessary stepping stone towards a better and brighter future. It has been suggested that secondary education may serve as a pathway for students' advancement, or may appear as the main bottleneck preventing the equitable expansion of educational opportunities (World Bank, 2005).

Despite Millennium Development Goal 3 (MDG3) having the target of the elimination of gender disparity in primary, secondary and tertiary education by 2015, gender equity remained unrealised. Although there are many more girls attending school today than ever before, gender equity in secondary school participation remains elusive in many low-income countries. The UNESCO-UIS (2015) study reported that more than 40% of all out-of-school adolescents live in South Asia and girls' completion of secondary school remains low (UNGEI, 2014).

Globally, 83 per cent of lower secondary-school-age children are in either primary or secondary school, dropping to less than 70 per cent in low-income countries.

Consequences of Persisting Gender Gaps in Education

It is well known that gender gaps in education have negative repercussions throughout women's lives, translating into fewer opportunities in labour markets, less voice in decision-making at all levels, less control over reproductive health and choices (UN Women, 2013). Achieving gender equality in education in developing countries will not only promote greater equality in employment outcomes but also help postpone early-marriages, reduce infant mortality rates and improve health and education of future generations (OECD, 2011).

The Human Development Report (UNDP, 2015) ranked India 130 out of 188 countries, with a Gender Inequality Index measure of 0.56. This situation may be attributed to various barriers that girls face in accessing secondary education and in continuing to participate when enrolled. Given that MDGs didn't reach the key targets of gender parity in secondary schooling, it is critical to examine the factors that posed barriers to achieving the same while planning for the SDG's.

Indian context

The expansion of secondary schools/sections has resulted in considerable increase in enrolment at secondary level in India. Between 2000-01 and 2012-13, the enrolment in secondary/higher Secondary education has increased by 27 million (from 27.6 million to 54.6 million in 2001 and 2013 respectively). The enrolment of boys has increased by 12.1 million (from 16.9 million to 29.0 million) while the enrolment of girls increased by 14.9 million (from 10.7 million to 25.6 million) during this period.

At all India level, total enrolment in secondary / higher secondary education for girls in 2001-02 was only 12.1 percent which was 6.3 percentage points lower than the boys. By 2012-

13, there was considerable improvement in girls' overall enrolment (25.6%) in secondary / higher secondary education but the enrolment remained 3.4 percentage points lower than the boys (29.0%) and Net Enrolment Ratio (NER)[i] was still a low 42.48 for boys and 41.27 for girls (NUEPA 2014).

Since this article is based on data from undivided Andhra Pradesh (AP), it is important to highlight that there are marginal differences in gross enrolment ratio (GER)[ii] in secondary education for boys (69.7%) and girls (68.3%) in undivided Andhra Pradesh (NUEPA, 2014). While the Net Enrolment Ratio for girls at the secondary level at National level was 41.27, it was slightly higher in undivided Andhra Pradesh at 41.62 in 2012-13. Furthermore, gender differences are quite prominent across the socio-economic spectrum in terms of enrolment in secondary schools with children from Other Backward Class (OBC) accounting for 48.2 % of the enrolment, followed by children belonged to general / Other Caste (26.5 %), Scheduled Caste (18.3 %) and Scheduled Tribes (7.0 %). While the National average of transition rate from secondary to senior secondary at National level was 58.3 and 58.4 for boys and girls respectively it was 73.6 for boys and a lower 68.4 for girls in undivided Andhra Pradesh (SEMIS 2012-13).

Reasons for discontinuation of secondary schooling

The research on education also shows that girls are at a considerable disadvantage compared to boys. Not only are girls much less likely to go to school than boys (Kingdon, 2005), but increased female enrolment is compromised by persistently high rates of drop-out and poor attendance of girls relative to boys and that girls also constitute a large proportion of out-of-school children (Bandhopadhyay & Subrahmanian, 2008). The same authors further highlighted that gender inequalities interlock with other forms of social inequality, notably

caste, ethnicity and religion, with girls from Scheduled Castes, Scheduled Tribes and Muslim minorities particularly, constituting the population of out-of-school and drop-out children. Das (2010) suggested that gendered practices at the household level affect the opportunities of girls and boys to access and complete education. Ramachandra & Ekbote (2016) reveal that though several inter-related social, economic, school and cultural factors affect school dropout outcome regardless of the gender of the students, some particular factors increase the dropout rate for girls. They cite household work, lack of parental guidance, large family size, poor economic condition, failure in examination, lack of time for study, punishment by teachers, lack of interest in studies and illiteracy of parents to be the major reasons for dropping out of schools.

A synthesis of literature has characterised reasons why students leave school (Rumburger and Lim 2008). Ranking and Aytac (2006) found that while both genders were influenced by locality, family resources, and family structure, girls' chances of secondary schooling were higher if they live in metropolitan areas and in less patriarchal families. While various studies have looked at gender differences at primary and upper primary level, very few studies have focused on gender equity within secondary education in India. The few studies that exist on secondary education have also found gender significantly related to the transition to secondary education (Jha & Kelleher, Siddhu, 2011, Ramachandran, 2003, Singh, 2016). Singh & Krutikova (2016) analysing Young Lives data highlighted that in Andhra Pradesh by age 15, a major gender gap in enrolment was noticeable and the gender gap in favour of boys was prominently higher in senior secondary grades and college as well by the time the children were 19 years of age. Singh and Mukherjee (2015) using the same data from Andhra Pradesh, posit that there are a multitude of factors which affect successful progression through secondary education.

Given that education of women is seen as providing the key to securing intergenerational transfer of knowledge and providing the substance of long-term gender equality and social change (Subrahmanian, 2002), this paper aims to examine the factors that contribute to gender differential in completion of secondary education in the undivided state of Andhra Pradesh, India.

Data and Methods

Data

This mixed methods paper draws upon both quantitative and qualitative panel data from Young Lives in India, a longitudinal research study on childhood poverty following 3,000 children in former Andhra Pradesh now bifurcated into states of Telangana and Andhra Pradesh[iii]. Two cohorts of children aged 8 years old and 1 year old in 2002 have been followed since 2002 in four districts of Andhra Pradesh and three districts of Telangana. The survey has conducted four rounds of data collection at child, household and community level in 2002, 2005, 2009 and 2013. Four rounds of qualitative research with a nested sample of 48 children were conducted in 2007, 2009, 2010 and 2014. The qualitative data consisted of in-depth interviews with the children, their caregivers (mostly mothers, but occasionally both parents), and other key figures in the community.

For the present study, we have utilized longitudinal survey data related to Young Lives 'older cohort children' born in 1994-95. The initial sample size for older cohort children at

round 1 was 1,008 which became 952 children in round 4 with an attrition rate of 5.6 percent. The rationale for choosing the Older Cohort is because these children turned 19 years in 2013 i.e. Round 4 and most of them had completed their secondary education by this time. Given that the Young Lives data is drawn from a pro-poor sample, it is important to note that the results do not extend to children from middle class and richer households, nor can the findings be generalised to the rest of India.

Dependent variable

For this paper we are keen to examine gender differentials in completion of secondary education and therefore focus on a binary dependent variables which depicts '*completion of secondary education'*. In Round 4, the following question was posed before older cohort children "what is the highest qualification /certificate you have attained?' We find that 358 male children (76.8%) and 322 (66.3%) female children completed secondary education successfully, highlighting the gender inequality persisting within secondary education completion rates in the Young Lives sample.

Independent variable

To examine factors affecting secondary school completion for both boys and girls, this paper analyses three types of independent variables 1) socio-demographic, 2) households and 3) individual (children's) characteristics

1) Socio-demographic variables: Research literature provides evidence of the influence of certain socio-demographic factors on better educational outcome. Given that school participation among girls varies widely across different social groups (Dreze and Kingdon, 2005, Tilak, 2001, Bandopadhyay and Subrahmanian, 2010), we have taken two socio-demographic variables in this category which are believed to have profound effects on educational outcomes particularly within the Indian context – caste[iv] and birth-order of the child (Mohanraj, 2010, Siddu, 2011).

2) Household variables: Since household conditions such as poverty have been posited to play a central factor in hampering children's educational opportunities (Sabates et al, 2013, Das, 2010), we explore the effect of household wealth by using a composite index called household wealth index[v] as a proxy of household's economic prosperity. Parental education has been found to have varying effects on secondary schooling (Traag & van der Velden, 2011, Dubow et al, 2009). Afridi (2010) found that mother's education in India is known to have greater effect than that of father's in reducing the sex difference in grade attainment-therefore we consider mother's education under the household variables.

3) Individual Variables: We have considered five variables under this category. They are (1) children's nutritional status at age 8, measured by stunting. This was included because it is a well-established fact that many children in India remain undernourished, and a lack of good health facilities, result in frequent illness and gaps in schooling, which may results in drop-out (Venkatnarayan, 2004), (2) reading ability at the age of 8 as a measure of early literacy, which has lasting long-term effects on the effects learning and academic development (Abadzi, 2006), (3) children's self-efficacy as measured by the self-efficacy index (Table A1). Perceived self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action required attaining designated types of performances (Bandura, 1986. p. 391).Being a

self-directed process, self-efficacy is known to enable students to proactively engage with their own development (Usher and Pajares, 2008) and therefore has been chosen as an individual variable. (4) We add two variables related to (4) domestic chores[vi] and (5) paid work[vii] at age 12 years, since several researchers (Ramachandran and Ekbote, 2016, Ahmad, 2011) have emphasised the negative effect of children's participation in work on their achievement and school performance.

Analytical Methods

As mentioned above, the first step taken in the analysis is to highlight the percentage of children who successfully completed secondary education by gender and various socio-demographic, households and individual variables and examine any significant gender gaps that emerge in each background variables. Then we use a probit model to examine what are the factors that are responsible for completion of secondary education separately for boys and girls. Further as an extension of probit analysis, we also conduct Fairlie's method of decomposition analysis to understand how much of the gender differences in completion of secondary education can be explained by differences in observable variables and what fraction remains unexplained for the gender gap.

Case studies of older cohort children and insights from group interviews with community members conducted in Round 3 and Round 4 of the qualitative surveys as well as a sub-study on children's work, offer deeper insights into the quantitative findings.

Probit Regression

Since we wish to investigate factors affecting completion of secondary education separately for boys and girls, we utilise probit regression[viii], since the dependent variable is binary rather than being continuous. In the probit model, the inverse standard normal distribution of the probability is modelled as a linear combination of the predictors. When the dependent variable is dichotomous rather than continuous as in this case, "ordinary least squares becomes an inefficient estimation technique, and the underlying linear probability model that is being estimated represents a poor a priori choice of model specification" (UCLA 2016).

For the ease of interpretation, the results from probit analysis are presented in the form of predicted probabilities[ix] which is quite useful, informative, and easy to understand.

Decomposition Method

Since the probit model only establishes whether the difference in the dependent variable is significant after controlling for socio-economic characteristics, we employ Fairlie's (2005) non-linear decomposition technique[x] which is particularly suited to calculating gaps for binary variables as an extension of Blinder-Oaxaca decomposition technique to logit and probit Models. The procedure computes the difference in the probability of an outcome between two groups and quantifies the contribution of group differences (male/female) in the independent variables to the outcome differential (Costa-Font 2008).

Fairlie's (2005) decomposition method provides gender difference that is due to group differences in the distribution of characteristics of the independent variables, also known as 'the explained part' as well as the gender difference due to differences in coefficients to the exogenous covariates. Besides this, it also captures differences in immeasurable or unobserved endowments and commonly accepted as measure of discrimination in literature (Sen 2004, Costa-Font 2008, Hussain 2010).

Results

Bivariate analysis

Table 1 presents completion of secondary education for boys and girls by various socio-demographic, households and individual variables. The magnitude of the gender differential or gender gap in completion of secondary education is represented by the percentage gap in secondary schooling completion rate between boys and girls and t-test has been done to examine whether or not this gap is statistically significant.

Findings reveal that the gender differentials in completion of secondary education was found significantly high among Scheduled Castes (-15.4) and Backward Caste (-16.4) children. Significant gender gaps are also observed amongst children with birth-order 'one to three' (-16.1).

The qualitative interviews with community members highlighted how cultural beliefs, lack of safety and practices such as dowry interplay in furthering gender inequality, particularly as birth order and number of daughters in a family increases. One community member explained this during a focus group interview:

> *parents would prefer keeping the girls (unmarried) only one are two years after they mature (enter puberty). People who have more daughters get them married sooner because the girls would be coming of age one after anot*her.

The qualitative interviews also highlight distance to schooling and travel barriers that impede girls' education.

Padmaja, a rural girl studying in class ten, is the only one studying amongst the three siblings. She shares that '*School in the village is only until 5th class…that is why they dropped (out). Some have dropped out as they had no money… or due to poor economic condition… some dropped out as they gave no value to education'*.

At the household level, the gender differentials are examined by wealth terciles of the households and mother's education. No significant gender differences (-2.7) have been observed in completion of secondary schooling among top wealth tercile categories, since completion rate is high for both males (87 %) and females (85%). On the other hand, the significantly larger gender differential (-18.9) is found amongst the middle wealth tercile·, suggesting that girls in poorer families experience more discrimination.

A community member explained

We live in poverty. If somebody studies and becomes a Collector, other children would get inspiration to pursue education. But we are so poor that we have to work every day as daily wage labourer to survive. If we don't go to work even for a single day, we end up starving. In such circumstances who has time to pursue studies? (Round 4, interview 2014).

Regarding mothers' education, significant gender gap in completion of secondary schooling is observed amongst children with mothers without formal education (-11.4) and mothers with primary education (-17.3). The findings also point out to an increasing percentage of girls completing secondary education with increasing levels of mother's education. However, while not significant gender gap of 5.3 percentage points is observed even amongst boys and girls whose mothers had completed secondary and above level of education (97.8 and 92.5 percent respectively).

A close examination of individual characteristics of children exhibits interesting gender dimensions of completion of secondary education. Less gender disparity is observed amongst children who performed better in early reading at age 8 (-7.9), as against children with poorer early reading skills (-11.9). The most adverse gender gap (17.7 percentage points) is found among children who spent more than 2 hours in domestic chores (-17.7) at age 12 in comparison to those children who did not spend any time in domestic chores (2.4). In fact, the completion rate is found higher among female children (82.4 percent) than male children (79.9 percent) amongst those children who had not engaged in any domestic chores. This needs to be interpreted cautiously since only five boys were engaged in domestic chores for more than two hours (N=5).

Gender differential is also larger amongst children who were engaged in paid work at age 12 (-20.1), as compared to those who did not do any paid work at that age (-9.9).

The focus group discussions held with caregivers in Andhra Pradesh, revealed that most parents would like their children to go into paid work only after 15-16 years of age. However, they conceded that in certain poor and socially disadvantaged communities children were being sent to paid work as early as 10 years of age. It is evident that the situation differed between each village and between castes and gendered roles emerged very early with boys going for agriculture work at age 10, while girls take up both agriculture and domestic chores.

A Sarpanch (village headman) interviewed during Round 3 qualitative survey shared that:

Poor families think that it is appropriate to stop a girl's education once she attains puberty … Regarding boys, [if they are poor] they stop education after primary school, and believe the son should help the family looking after oxen, watering fields etc.

Singh & Sarkar (2014) using Young Lives data had suggested that entrenched gendered role played by expectations of girls and boys can be a primary contributory factor to gender differentials and that this was most stark amongst the poorest household. Gender differences meted out to boys and girls is pronounced amongst the poorest households. These households are keen to get their daughters married off as soon as possible, particularly since the system of paying dowry for girls persists. The following case study highlights intra-household gender disparity amongst households.

Mohan is a BC boy is sixteen and left school in Grade 9. His father shares that he had high aspirations from Mohan and wanted him complete secondary schooling. However, Mohan returned home from the hostel where he was enrolled, since he failed the secondary school examination. Mohan's father complains '*Mohan never studied there (in the hostel).. I decided to take him with me for masonory and cultivation work.*' Mohan's younger sister on the other hand, is very good in studies and cleared her exams. However, the family decided that higher education was of no use and their daughter should get married instead since '*whatever she may study, she can't escape from washing dishes.*'

The bivariate analysis with self-efficacy index reveals that significant gender gaps are observed across two self-efficacy levels of children, i.e. children with up to 3 positive traits (-10.2) and children having 4 and more positive traits (-11.7). Interestingly, in bivariate analysis, the gender gap is found to be significant amongst children with low self-efficacy index at the age 12.

Multivariate Analysis

This segment consists of two parts, the first one deals with the interpretation of the results as obtained from probit regression analysis to examine how gender differences in completion of

secondary education interacts with various socio-demographic, households and individual characteristics., followed by Fairlie's method of decomposition analysis.

Probit Regression

The probit regression model employs three models -pooled and two separate regression models were run separately for boys and girls with the aim of understanding the relative importance of the three sets of independent variables.

Table 2 presents the predicted probabilities of completing secondary education using a pooled sample. The next two models help us in determining the significant factors responsible for completion of secondary education separately for boys and girls. In the probit model, the dependent variable is measured in terms of z-values for the normal curve. One needs to transform these values to probabilities (under the normal curve) so that the predictions for the dependent variable will fall between 0 and 1 and can be presented as marginal effects or predicted probabilities. As marginal effects for categorical independent variables does not make much sense technically, we present the results in terms of predicted probabilities for which the authors use *margin* command in Stata 13.1, after obtaining the coefficients from probit regression. The significance levels marked in Table 2 refer to the significance levels of the individual coefficients for each categorical predictor as obtained from the probit estimation.

The probit regression model for pooled model shows that after controlling for other factors, gender itself has appeared as a significant explanatory variable in completion of secondary education. Boys have shown higher predicted probabilities (80%) in completion rate compared to girls (72%) with a difference of 8 percentage points positively biased towards boys. Findings further reveal that higher the birth-order, lower the likelihood of completing

secondary education and 3rd born or 4th and later born children have 72 and 71 percent probability of completing secondary education respectively, which is lower than the 1st born children who have a predicted probability of 80 percent to complete secondary education. Children from top wealth tercile (81%) are more likely to complete secondary schooling than children from bottom wealth tercile (71%). All three mothers' educational levels, primary, upper primary and secondary and above, have emerged as significant categories of secondary school completion which shows that as mothers' levels of education increases, so does the children's probability of completing secondary schooling. Children with mothers having secondary and above level of education have 91 percent predicted probability in completion whereas the predicated probability of completion of secondary schooling is only 70 percent for children whose mothers do not have any formal education.

The pooled model also reveals four individual level variables which have significant effects on completion of secondary schooling at overall level. These variables are hours spent on domestic chores and paid work status at age 12, self-efficacy index at age 12 and early reading skill at age 8. Children who spent 2 hours and 3 and more hours in domestic chores on a typical day at age 12 are found to have 72 and 50 percent predicted probability of completing secondary education whereas children who did not spend any time in domestic chores at that age shows 80 percent predicted probability of secondary school completion. Similarly, the paid work status by age 12 is negatively related to secondary school completion. Children who did paid work at age 12 have less probability (50%) of completing secondary schooling than children who did not do any paid work (80%). Children with excellent early reading skill at age 8 show higher predicted probability (81%) than children with poor early reading skill at the same age (66%). Also children who demonstrated higher self-efficacy index with 4 and more positive traits at age 12 (84%) have higher chance of completing secondary education in

comparison to children who exhibited relatively lower self-efficacy index (up to 3 positive traits).

Whereas in the pooled model, we observe significant influence of gender variable on completion of secondary schooling, in the following section we focus on explaining the predicted probabilities separately for boys and girls, as our main aim is to find out the relative importance of the factors associated with successful secondary schooling for boys and girls.

Interestingly, caste has not emerged as a significant explanatory variable for girls, but it is significant for boys. Furthermore, even for boys, only children who belonged to Backward Class[xi] are found to have highest predicted probability (84%) for completion of secondary schooling amongst all caste groups. Birth-order on the other hand, has emerged as the significant variable for both boys and girls. While a significant association is seen for boys who are 4th born or later, birth order 3 amongst girls is found to have significant association with completion of secondary schooling. We observe that in both cases the predicted probabilities for completing secondary education are lowest for these categories (75% for boys and 61% for girls) in comparison to other birth-orders.

While wealth index does not emerge as a significant variable for boys, girls belonging to top wealth tercile households is seen as a significant predictor of completion of secondary schooling, even after controlling for other relevant factors. Findings reveal that girls from top wealth tercile households have 80 percent predicted probability of completion in comparison to 64 percent predicted probability by girls from bottom wealth tercile households.

The qualitative interviews reveal that boys from the poorest families are pushed into work and drop out of school early. However, girls are exposed to various layers of marginalisation and deeply entrenched gender discrimination and 'son preference' lies at the heart of less educational opportunities being available for girls. Hearing voices of the children, we can observe the deeply entrenched patriarchal notions of gender inequality that continue to persist, based on stereotypical expectations from girls.

Salman, a Muslim boy living in old city of Hyderabad, lost his father at age 10 and has four siblings. He shared that his mother had stopped him from going to school, since he and his elder brother had to earn to pay the house rent and buy provisions. His mother works as a domestic maid in three houses and his elder brother was working as a mechanic. She shared that *'our situation is like that….children had to take up (paid)work. We cannot educate them, (so I thought) if they go to work they can learn something.* At 19, Salman was working as a driver and was keen to support the education of his younger brother studying in Grade IX, though he did not wish for his younger sister in Grade X to continue her studies. When asked why his sister should not study, he explained **'***girls might study …but ultimately they have to come back to the house and wash utensils'*.

Mother's education emerges as significantly positively associated with completion of secondary education for both genders though with different predicted probabilities. Amongst boys, all three educational levels (primary, upper primary and secondary and above) of mothers emerge as significant in comparison to boys with mothers having no formal education. On the other hand, amongst girls, only mothers with upper primary and secondary and above level of education are associated with significant increases in secondary school completion as against girls with mothers without any formal education. Boys with mothers having secondary and

above education (96%) shows highest predicted probability of completing secondary education compared to boys with mothers having no formal education (74%). Whereas, girls with mothers having secondary and above education shows higher predicted probability of completing secondary education (85%) compared to girls with mothers having no formal education (66%). It is also important to note that given similar mothers' level of education, the predicted probability of completing secondary schooling remains higher among boys than girls.

During a FDG in 2011, a community member explained '*only when the parent is educated, can he can educate his children. If parents are uneducated, they don't know what is what and their children won't listen to them.*

Individual factors at an early age, play an important role in determining completion of secondary education for both boys and girls, though they have different effects. For boys, paid work and self-efficacy level at age 12 as well as early reading skill at age 8 have significant associations with completion of secondary schooling, whereas stunting and engagement in domestic chores at age 12 do not emerge as significant. On the other hand, while stunting does not emerge as a significant factor affecting girls, the rest of the variables such as domestic chores, paid work and self-efficacy at age 12, along with early reading skills emerge as significant predicting factors.

It is important to highlight that the predicted probability of completion of secondary education is 63 percent for girls who spent 2 hours of work in domestic chores at age 12, in comparison to 80 percent probability for girls who did not do any domestic chores at age 12. The largest negative effect has been observed amongst girls who spent 3 hours and more in domestic chores- with a predicted probability of a low 46 percent completion of secondary education.

Paid work emerges as a significant predictor for both boys' and girls' completion of secondary schooling. Amongst boys, children who did paid work at age 12, the predicted probability of completing secondary education is 63 percent compared to 86 percent who did not do paid work, while it is 50 percent for girls who did paid work compared to 75 percent for girls who did not engage in paid work.

The Young Lives data clearly reflects that schooling without engaging in paid work and domestic chores is a luxury that very few children enjoy as they grow older.

Ranadeep, a rural boy aged 15 from a Backward Class household living in Poompuhar, a poor mandal in Telangana, dropped out of school in Grade 10 after failing in mathematics. He reports that out of a class of 43 students, only 23 students managed to pass the exams. Ranadeep feels very sorry he could not complete secondary school, and explains that the main reason for his failure was irregular attendance, since his family insisted on his working on the cotton farm. He says that he was absent from school for long periods: '*If the plant gets flowers, my parents stop me from going to school, since we cannot afford to pay 100 rupees per day for hiring labor.*'

Early reading skill at age 8 is also found to be significantly positively associated with secondary school completion for both boys and girls. The predicted probability of secondary school completion for boys with excellent early reading skill at age 8 compared to boys with poor reading skill are 85 and 72 percent respectively, while for girls, the probabilities are 76 and 61 respectively. Having 4 or more positive traits on the self-efficacy index has also emerged as significant positive factor for completion of secondary education for both boys and girls with 91 and 78 percent predicted probabilities which is significantly higher than boys and girls having up to three positive traits in self-efficacy index (78% and 69% respectively).

We have examples of qualitative case studies where girls and boys have beaten all odds to continue their studies and Sanjana is one such example.

Sanjana, a Backward Caste girl, was 17 years old in 2011 and continuing her education, despite having dropped out of school in Grade 7 and rejoining school only after a gap of two years.Her father grazed sheep and her mother and younger sister worked as agricultural labourers.. She said that she had been made to do paid work and sheep grazing since she was 7 years old, and often had to miss school and borrow notes from other children. She had to constantly give the excuse of "getting fever" to her teacher for missing school and was always scared of getting hit for giving the same excuse repeatedly. She is pleased she could rejoin school with encouragement from her grandmother. In her view ' *even if we work in our fields there is no guarantee we will get money, but if we go to school and study we can learn and gain knowledge. If educated, our future will be bright and we need not depend on any one'.*

Decomposition Analysis

Having identified the determinants of completion of secondary education, we carried out Fairlie's method of decomposition analysis to understand the gender gap in completion of secondary education which distinguishes between explained and unexplained parts of the total gender differences in the outcome. Though the explained part of the gap can be explained by the differences in the distribution of observable variables (Costa-Font 2008) and often regarded as 'endowment' (Fairlie, 2003, 2005), but it is difficult to seek any direct explanation for this unexplained gap from the decomposition analysis itself. This unexplained part may be due to the contribution by unobservable variables such as social norms, culture and patriarchy to the gender gap, and often labelled 'discrimination', in gender differences in child school enrolment (Pal, 2004). -

Table 3 shows the aggregate Fairlie's decomposition results which divide the total gender gap into two parts: explained and unexplained. The model is able to explain 31% of the

gender gap based on the set of independent variables adopted (endowment factors). However, 69 percent gender gap in the secondary school completion remains unexplained in the decomposition analysis and could be attributed to factors such as distance to school, prevalent socio-cultural norms and biased attitudes towards girls as seen in the qualitative interviews.

The decomposition analysis further highlights the importance of the individual contribution of each independent variable (observables) to the gender gap in the explained part (Costa-Font, 2008). Table 4 shows the contribution of each independent variable to the gender gap e.g. early reading skill at age 8 (nearly 5%), mother's education (2.6%)and birth-order of the child (2%). The largest significant contributor to the gender gap however appears to be the hours spent on domestic chores (36%), followed by paid work status (10%), both at age 12. These findings highlight the ill effects of both unpaid domestic chores and paid work at age 12 on completion of secondary education. Singh and Mukherjee (2015) also found that children who engaged in paid work and more than three hours of domestic chores at age 12, were 54 and 70 percent respectively less likely to complete secondary education. Clearly girls spend much more time on household chores from an early age, which impacts their ability to study thereby having a huge detrimental effect on completion of secondary education and persisting gender gap at later stage. Singh & Khan, 2016 analysing work patterns of Young Lives children and time use data posited that children were required to juggle school, home and farm work for two to three months a year. This would be especially difficult for girls who are expected to take care of household chores as well as attend to farm-work and school, resulting in being both pushed and pulled out of school.

Regarding the unexplained part of the decomposition analysis, the qualitative interviews with children and community members demonstrate existing gender prejudice,

based on persisting patriarchal norms that discriminates girls education. Child marriage is one of the most common reasons for disruption of schooling for girls.

Madhavi Latha interviewed in 2011 was 17 years old and was already married to her aunt's son. She had dropped out of school after Grade V since her mother wanted her to help in agriculture work. Her brother completed his graduation from college, but she says she started working very early because '*there was no capacity at home to educate both… … I remained at home doing work.*' Now married she laments '*It would have been better if I was educated… if educated up to Intermediate (Grade X) I would have done some job'*. She further shares that girls are married off very early because families '*fear that they may commit mistakes after they attain puberty… children are talking about 'love' and other things and are married so that they do not bring a bad name to the family*.'

Conclusion

The paper highlights that persistent gender inequity exists in completion of secondary education among Young Lives children in undivided Andhra Pradesh in India.

The most important contribution of this article is that certain individual factors affecting both boys and girls have been identified as playing not only an important role in completion of secondary education, but also as explanatory factors for gender differentials in completion-rate via the bivariate and multivariate analysis. The analysis from the multivariate probit regression models undertaken separately for boys and girls shows that while a few significant predicting factors were common for both boys and girls, there were some variables which only affected girls. The common variable were mothers' education, paid work status at age 12, early reading

skills at age 8, self-efficacy and birth order However, engaging in more than two hours of domestic work as at age 12 has emerged as the most detrimental factor affecting educational outcomes of girls. Clearly gendered patterns of socialisation and practices at the household level affect opportunities of girls and boys to complete secondary education. Girls in particular, are expected to start helping in household chores from an early age and this impacts the time they can spend on leisure and studies.

The analysis clearly reveals that interaction of poverty, maternal education, early reading skills, birth order as well as work-status at age 12 with gender are key reasons for the poorest children particularly girls not completing secondary education. Given the greater positive effect of early reading skills and negative impact of engaging in more than two hours of domestic chores and paid work at age 12 on girls than boys, one can deduce that the poorest girls and boys, who are also most likely to have less literate parents and poor access to reading materials and other socio-cultural resources would be least likely to successful transitions through secondary education.

The unexplained part from decomposition analysis can well be explained through the discriminatory treatments of girls within families and gendered roles that emerge very early in life highlighted by the qualitative case studies In other words, this unexplained part of the cause of the gender gap in secondary school completion may well be the result of deeply entrenched discrimination and social practices such as child marriage and dowry. For example Ramya's mother expected her two daughters to work on the farm while they were enrolled in school, though she did not do expect her son to miss school. She gives her reasons for the same:

> '*girls are healthier…. when the girls are working anyway why should he (son)work? He is the only son we have. That's why we did not let him work on the farm … it would have been different if we had had two or three sons'.*

Given that hours spent on household chores for the girl child has appeared to be the biggest contributor for the gender gap, it is important to reconsider the recent amendment in 2015 to the Child Labour (Prohibition & Regulation) Act, 1986 which allows children until the age of 14 year to work in family enterprises and farm lands after school hours and on holidays. Long hours of domestic chores at age 12 clearly impedes girls from continuing into secondary education and households must be sensitised to provide girls the time and space to study.

Addressing existing 'patriarchy' and son preference along with 'gendered roles' is important to achieve gender equality in education. While this needs to be addressed within the social system, it is also important that social policies target both boys and girls in appropriate ways (Singh & Sarkar, 2014). The fact that mother education effects both boys and girls also requires policy attention. Unless we are able to realise the goals of access with equity and quality by addressing all the factors at household, school and societal level, universalisation of secondary education will remain a distant dream.

Notes

[i] Net enrolment ratio is defined as enrolment in secondary education of the official secondary school age group expressed as a percentage of the corresponding population.

[ii] Gross enrolment ratio is defined as the total enrolment in secondary education, regardless of age, expressed as a percentage of the eligible official secondary school age population in a given school-year.

[iii] For detailed information on Young Lives sampling, see Kumra (2008).

[iv] Caste in India is divided into four official categories. Scheduled Tribes, Scheduled Castes and Backward Classes are recognised in the constitution of India as historically disadvantaged, while Other Castes are the more privileged and socially and educationally advantaged caste.

[v] Wealth Index is a composite index that reflects the welfare of household members in terms of the quality of dwelling (for example, the materials of the walls, roof etc.), use of durable goods (whether the household owns a radio, TV, bicycle etc.) and access to basic services (whether the household has drinking water, electricity etc.).

[vi] Domestic chores at the household level has been obtained from time use data from round 2 when children were approximately 12 years old. There was a direct question on *hours spent on domestic tasks on a typical day*.

[vii] Paid work status of the children by age 12 refers to any paid work done by the children in last 12 months before Round 2 (2006) survey.

[viii] A probit model is able to constrain the estimated probabilities of the outcome to be between 0 and 1 and is able to overcome the deficiencies of a linear probability model as estimated by ordinary least squares (OLS). Probit model specifies different functional forms for p as a function of regressors, and the models are fitted by maximum likelihood technique (Cameron and Trivedi, 2009) and so it is possible to compute estimates of the coefficients and their corresponding standard errors that are asymptotically efficient (Nagler, 1994).

[ix] Estimates from probit regression cannot be interpreted in the same manner that normal regression coefficients are (Nagler 1994, UCLA 2016). Because in the probit model the dependent variable is measured in terms of z-values for the normal curve. One needs to transform those values to probabilities (under the normal curve) then the predictions for the dependent variable will always fall between 0 and 1 and can be presented as marginal effects or predicted probabilities.

[x] Decomposition method is commonly attributed to Blinder-Oaxaca (Fairley 2005) and the method is used to determine differences in measurable characteristics on a continuous dependent variable, which is not suitable when the dependent variable is binary, as is the case of our dependent variable, *i.e.*, completion of secondary education (no, yes), and when the coefficients are from a logit or probit model.

[xi] Backward classes (BC) is one of the four caste groups in the stratification. In undivided Andhra Pradesh, there are more than 100 Backward Caste or Backward Class communities which constitutes 52% population of the state approximately (see http://www.srikakulamonline.co.in/andhra-pradesh-backward-caste-list/ for full list). The BC does not constitute one social category but has a multitude of communities with varying socio-economic position. From Young Lives data, 31 percent Older Cohort children belong to top wealth tercile households.

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