Education as a Determinant of Female Labour Supply

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Abstract: The increasing level of education among females should lead to a higher likelihood of labour force participation among them. Economic theories imply that higher levels of education mean higher levels of human capital which would lead to higher wages, drawing women into the labour force. Hence, there has been increasing emphasis in development policies on female education as a key intervening variable for the achievement of a number of development goals. Provision of higher education and creation of employment opportunities to younger cohorts of women will increase the labour force participation rate in near future. Consequently, there have been marked improvements in the field of women education in India. However, a closer look at whether education has made a significant impact on the workforce participation of the other half of the demographic dividend leads to shocking revelations.

Keywords: education, distress-driven employment, income effects, structural transformation, women's emancipation.

I. INTRODUCTION

Theories of human capital and human development have always stressed upon the importance of women education in the emancipation of women as well as enhancement of social welfare. Development is associated with rising female education levels and falling fertility, both of which can be considered to set the favourable pre-conditions for a rising female participation in the labour force. Given the positive effect female participation can have on economic growth, drawing women into the labour force can be a significant source of future growth of the Indian economy. This is particularly the case as higher female participation would be an important component of the so-called demographic dividend. Due to declining fertility, India currently has an advantageous age structure of the population with a growing share of working age people and relatively few dependents. Such a demographic dividend, if accompanied by higher female participation rates has the potential of leading to accelerated per capita growth rates.

In the present paper, the main emphasis has been on education as a determinant of women's employment and employability in the labour market. This paper follows the same approach as done by a number of studies to reveal the impact of education on the female labour force participation and seek an answer to the apparent contrast of theories and empirical facts in this context.

II. LITERATURE REVIEW

Empirical studies document a negative relationship between women education and labour force participation in India. This relationship is not restricted to only our country. Many studies suggest that poor and uneducated women in South Asia are more actively involved in the labour force, whereas among educated women the participation rates are relatively much lower. While rising education and declining fertility both generate conditions that theoretically imply an increase in female labour supply, in practice, data often fail to confirm these expectations. Often, it has been contended that education in India is associated with lower rather than higher work force participation rates. Several studies suggest that ceteris paribus, labour force participation of women declines with education (Kingdon and Unni, 1997; Fafchamps and Quisumbing, 1999; Sathar and Desai, 2000; Das and Desai, 2003).

Some literature suggest the existence of a U-shaped relationship between education and women's work force participation.(Kingdonand Unni,1997; Desai et al 2010; Pieters& Klassen,2012) These studies suggest that illiterate women are more likely to be in labour force than educated lot in India. Kingdon and Unni(1997) observed an U-shaped relationship between education and women's workforce participation which increases only when they have completed schooling beyond the middle level. Desai et al(2010) notes that labour force participation declines with education with an uptick in participation arising only around college education.

Another hypothesis forwarded in this regard conveys that the U-curve is the outcome of a combination of structural change in the economy, income effects, and social stigma against factory work by women. In initial stages of development, education levels rise and employment shifts from agriculture to manufacturing. However, in these initial stages, education increases much more for men than for women. Women's wages and opportunities for work change relatively slowly. Participation is further reduced because of social stigma against women working outside of the home as these are particularly strong in case of married women. As the economy moves towards development, employment in the agricultural and in the manufacturing sector tends to fall and employment in the services sector tends to increase in more developed countries. On the other hand, as women's education rises further, higher wages and socially acceptable types of work, and an erosion of a social stigma against female employment, lead to higher female labour force participation.(Goldin,1994; Mammen and Paxson, 2000)

Pieters and Klassen(2012)in their unit level analysis using NSSO data shows that participation of women with less than secondary education is indeed not affected by their own earnings potential, but predominantly driven by economic push factors including underemploymentof men in the household, and income and social status of the household (in line with Kingdon and Unni,2001; Sudarshan and Bhattacharya, 2009). They clearly stated that it is the *push drivers* that operate behind the decision making process of female participation in labour force among the illiterates who also belong to economically and socially backward classes whereas for the highly educated lot it is the *pull drivers* in the form of attractive pay scales and other social security benefits that draw women into labour force.

Bardia Das and Desai (2003) attributed declining female labour force participation to twocompeting theories to have potentially explained the phenomenon – one based on cultural factors and the other on labour market options.*Cultural* arguments suggest that women's withdrawal from labour force is associated with improvement in the social status of the family. Higher status families choose to educate their daughters, but at the same time, restrict their independence through labour force withdrawal. In contrast, *structural* arguments suggest that educated women – like educated men – prefer white collar jobs. Since formal sector jobs are scarce, opportunities for these desirable jobs are limited, resulting in labour force withdrawal of women.

III. OBJECTIVES

➢ To observe the impact of education on female labour force participation, along with other socio-cultural factors known to be related to women employment.
➢ To observe the influence of socio-cultural factors on the decision to participate in labour force of females belonging to different education levels.
➢ Study the education specific trends of female employment as well as unemployment in rural as well as urban areas over different NSSO rounds in post-reform period.

IV. HYPOTHESIS

➢ Whether the negative relationship between education and female labour force participation exists over all education groups?
➢ Whether socio-cultural factors impact the female labour participation identically at different education levels?
➢ The above hypothesis are tested separately for urban and rural areas to look for any significant difference that might exist.

V. SOURCES OF DATA& METHODOLOGY

In this paper, **NSS 66th round unit level data(July 2009 – June 2010): 'Employment and Unemployment Situation in India**' is used to examine the relationship between women's education and labour force participation along with other socio-cultural factors known to be effecting employment decisions. For examining the trends of employment and unemployment over the NSSO rounds post 1990s, the NSS 66th round report is used.

For examining the relationship between education and labour force participation, women in the age group of 15-60 years has been taken as per NSS procedure and the labour force status is assigned as per the usual principal activity status of the female individual. Accordingly, a female would be considered to be in labour force on the basis of the activity status on which a person spent relatively long time (i.e. major time criterion) during the 365 days preceding the date of survey. Persons are considered to be in the *labour force* (either employed orunemployed) and those *not in the labour force* depending on the major time spent duringthe 365 days preceding the date of survey.

Since we are to observe the impact of education along with other factors on the decision of a women to be in labour force, our dependent variable is a binary response variable which takes the value 1 if female is in labour force and 0 otherwise. Along with education, the other factors taken to be influencing female labour force

participation decisions are age, marital status, gender of head of the household, no. of members in the household, religion and to which social group does the household belong to. An additional variable 'land possessed by the household' is taken in case of rural areas as a proxy for unearned income of the females.

The dependent variable being a binary response variable, we use logit model to run the regression. We use dummies for categorical variables such as marital status, religion, social groups, education groups etc.Also, to capture for the probable difference in behaviour of other socio-cultural factors at different education levels, interaction dummies are employed. The logit models used are stated below followed by the list of variables.

Model Specification:
1) Rural Areas:
Logit L= a + b_1 hhsize +$b_2$land_poss+ b_3 female head +$b_4$mrtlstatus+ b_5 religion+ $b_6$socialgrp + $b_7$edugrp+ b_8(religion*edugrp) + b_9 (socialgrp*edugrp)

2) Urban Areas:
Logit L= a + $b_1$hhsize + b_2 female head +$b_3$maritalstatus+ b_4 religion+ $b_5$socialgrp + $b_6$educationgrp+b_7(religion*edugrp) + b_8(socialgrp*edugrp)

Table 1: List of Variables and description

Type of Variable	Variable Description
DEPENDENT VARIABLE (L)	Describes the decision to participate in labour force, includes workers and those available and seeking employment. L=1; the female is in labour force L=0; otherwise

INDEPENDENT VARIABLES	
HH size	Continuous variable, size of the household meaning no. of members in the household
Land Possessed (only for rural areas)	Continuous variable; gives the average area of land possessed perhousehold
Marital Status	Dummy ; = 1 ; if female is currently married = 0 ; otherwise(not married/divorcees/widows)
FemaleHead	Dummy; = 1; if female is the head = 0 ; otherwise
RELIGION DUMMY: HINDU MUSLIM OTHERS	OTHERS is the base category
SOCIAL GROUP ST SC OBC OTHER CASTES	STs IS THE REFERENCE CATEGORY
EDUCATION GROUPS ILLITERATES LITERATES UPTO PRIMARY UPTO HSEC DIPLOMA, GRAD.S & ABOVE	ILLITERATES IS THE REFERENCE CATEGORY

VI. RESULTS & ANALYSIS

The table below summarises the results of the regression exercise to explore the impact of education on women's decision to participate in the labour force along with the other conventional individual and household characteristics viz., age, marital status, religion, social group etc.

Table 2: Logistic Regression predicting the probability of being in labour force for women aged 15-60 years:

Variables	Model-1		Model-2	
Continuous Variables	Logit Value (Odds Ratio)		Logit Value (Odds Ratio)	
Hhsize	-0.0447	(0.956)***	-0.047	(0.953)***
Land Possesed	0.00313	(1.0003)***		
Categorical Variables				
Marital Status	0.2199	(1.246)***	-0.291	(0.7472)***
Female Head	1.33	(3.777)***	1.291	(3.635)***
Hindu	0.429	(1.536)***	0.099	(1.104)
Muslim	-0.591	(0.554)***	-0.567	(0.566)***
Sc	-0.681	(0.506)***	-0.253	(0.77)**
Obc	-0.492	(0.6115)***	-0.4588	(0.632)***
Other Castes	-0.895	(0.4083)***	-0.77	(0.462)***
Literates Upto Primary	0.185	(1.204)**	0.254	(1.29)*
UptoHsec	-0.289	(0.748)***	-0.408	(0.664)***
Dip.,Grads& Above	1.0933	(2.984)***	1.039	(2.83)***
Interaction Dummies				
Lit. Upto Primary *Hindu	-0.495	(0.6904)***	-0.508	(0.601)***
Lit. Upto Primary*Muslim	-0.378	(0.684)***	-0.483	(0.617)**
UptoHsec*Hindu	-0.412	(0.662)***	-0.432	(0.649)***
UptoHsec * Muslim	-0.0814	(0.922)	-0.081	(0.921)
Dip.,Grads& Above*Hindu	-0.727	(0.483)***	-0.526	(0.591)
Dip.,Grads& Above*Muslim	0.704	(2.021)***	0.342	(1.407)**
Lit. Upto Prim*Sc	0.059	(1.061)	0.0329	(1.033)**
Lit. Upto Prim*Obc	0.166	(1.18)**	0.118	(1.126)
Lit. Upto Prim*Othrs	0.139	(1.15)*	-0.199	(0.819)
UptoHsec*Sc	0.242	(1.273)***	-0.027	(0.973)
UptoHsec*Obc	-0.0078	(0.992)	0.067	(1.07)
UptoHsec*Othrs	0.185	(1.203)	-0.113	(0.892)
Dip,Grads *Sc	-0.006	(0.993)	-0.2314	(0.794)
Dip,Grads*Obc	-0.133	(0.8757)	-0.0377	(0.908)
Dip,Grads *Othrs	0.011	(1.011)	-0.142	(0.962)

***= significant at 1%; **= significant at 5%; *= significant at 10%

We know that if the logit is positive, the odds that the female will participate in the labour force increases and vice versa. Here, the odd-ratios of the logistic regression are reported where a value greater than 1 indicates more likelihood of participation and if less than 1 it would imply less likelihood of participation in the labour force as per the definition of the dependent variable.

The above states results reveal the following points:

▸ The results of the logistic regression predicting labor force participation in Model 1 as well as 2 indicate that post-primary education significantly reduces the likelihood of being in the labour force for women. Education dummies reveal the U-shaped relationship i.e illiterate and less educated women are more active in the labour force and participation declines as education increases with an uptick observed only for graduates and above.

▸ Women belonging to large families are less likely to be in the labour force. And the likelihood of labour force participation among rural women increases with the land possessed. This is so because women in rural areas are mainly engaged in agriculture.

▸ A contrast in the participation of married women of rural and urban areas has been seen to exist. While in rural areas married women are more likely to be in labour force, the married women in urban areas are less likely to participate in labour market.

▸ Females who are the head of the households are more likely to be in labour force. This is so because widows and divorcees and single mothers are more likely to in labour force to support their families.

▸ Religion dummies indicate that Hindu women are more likely to be in labour force and Muslim women are not.

▸ We interact education with social groups to see if the negative effect of education on women's employment was driven by cultural factors, it would be largely limited to the upper caste women. Under these conditions, we would expect the interaction terms for education variables and scheduled caste/tribe to be positive and large enough in magnitude to compensate for the negative main effect of education. Our results

suggest that both upper caste as well as Scheduled Caste and Tribe women are less likely to be employed if they are educated. However, for women with post-primary education, there is little difference in the decline in labour force participation between upper caste women and Scheduled Caste and Tribe women.

▸ Interaction of education with religion does not reveal any significant result. In both rural and urban areas, Hindu women are unlikely to be in labour force even if they are very educated. Only muslim women belonging to highest education group show strong likelihood of being in the labour force.

Education reflects many different aspirations on part of every individual. Ability to earn more and a desire to improve one's social status are the prominent ones. At low education levels, female are drawn into the labour force by necessity dictated by survival instincts. These women, generally belonging to the poor section, are forced to join the labour force due to distress and most of the time to meet the '*reservation wage requirements'* of the household.

The decline in FLFPRs as education increases can be partly explained by the fact that educated women are more likely to get married to men with higher incomes and hence are restrained from participating in the labour market. Only at very high levels of education, does their positive own wage effect dominates over the negative unearned income effect and as a result a steep rise in LFPRs is observed.However, for the low educated group of females, the unearned income effect works as a push factor, while own earning potential plays no role. The recent rise in participation rates among these females reflects that push factors dominate the decisions of poorly educated women to work. Also,educated women are more likely to be married to educated men with high incomes who have lesser need of women's contribution to the household and therefore encourage more labour force withdrawal. Women who come from families with higher social status tend to educate their daughters but don't let them participate in the labour force. Only at very high levels of education do these patriarchal controls seem to fade away.

To analyse the impact of education on work participation rates of females belonging to different education categories, we take a look at the trends of education specific worker-population ratio in urban as well as rural areas for the four NSSO rounds in the following figures:

Figure 1: Education-level specific worker population ratio for females of age 15 years & above in Rural areas
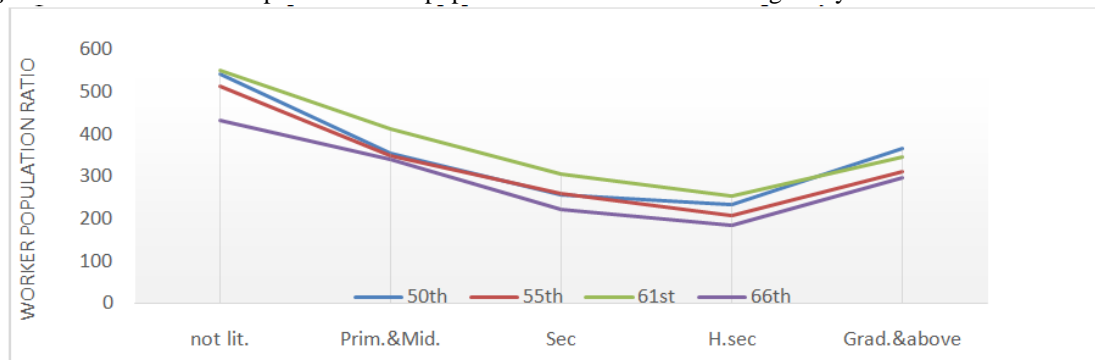
Figure 2: Education-level specific worker population ratio for females of age 15 years & above in Urban areas
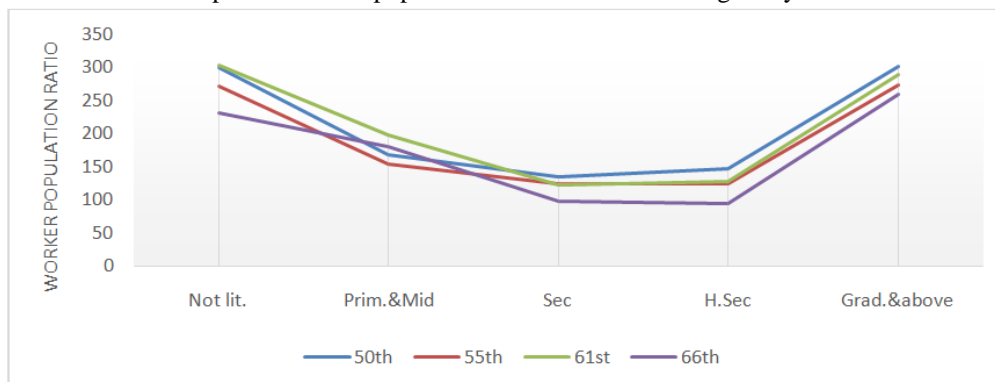

Over the years, this U-shaped relationship between education and female labour force participation has been seen to persist. Whereas in the earlier literatures that mentioned about this U-shaped relationship, the lowest WPRs corresponded to the primary and middle schooling categories, now it is seen to have shifted in a way that the lowest WPRs is among those belonging to secondary and higher secondary education categories.

The fact that illiterate women are more likely to be absorbed in the workforce is paradoxical. However, among those working, an increasing participation is found in agriculture & manufacturing, self-employment & in domestic services, which are often poorly paid and highly insecure jobs. Hence, it remains debatable whether increased participation in low paying and informal jobs should be seen as an improvement over non-participation.

The unemployment trends across the education categories for the different NSSO rounds also reveal interesting facts as shown in the figures below:

Figure 3: Unemployment rate among Rural Females of age 15 yrs and above with different educational attainments for the NSSO rounds in post 1990s
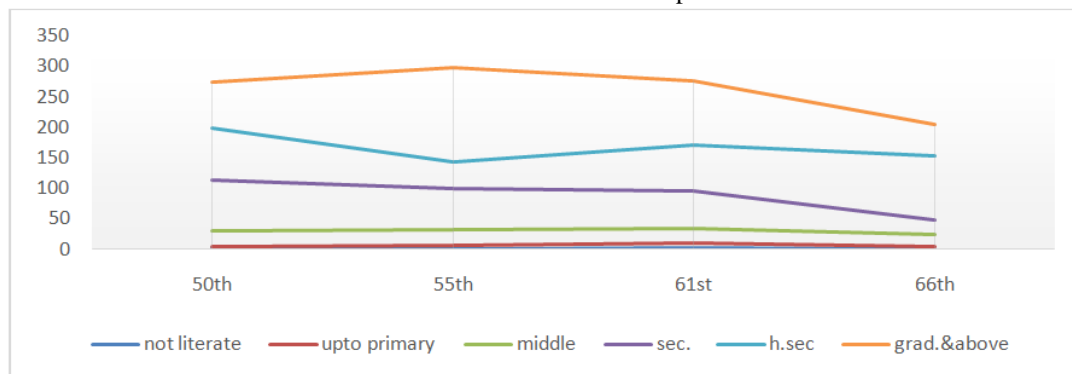
Figure 3: Unemployment rate among Urban Females of age 15 yrs and above with different educational attainments for the NSSO rounds in post 1990s
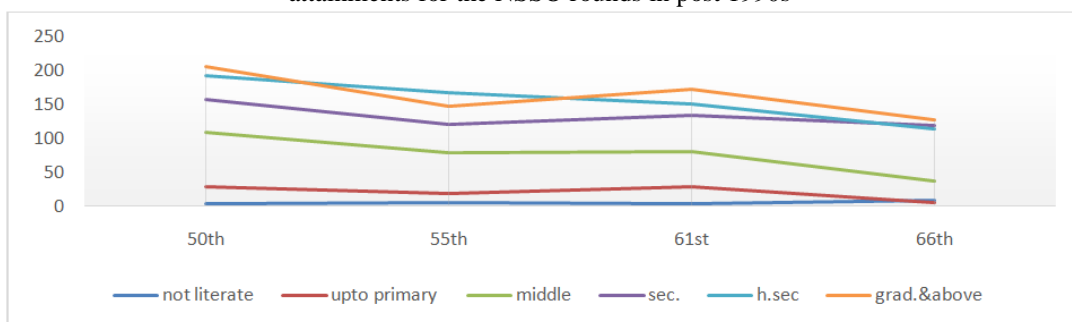
Since educated women prefer skilled jobs and do not intend to toil as casual workers or on family farms, many are unable to find acceptable jobs resulting in high rates of unemployment, especially so in rural areas. Thus we find highest unemployment rates among the females with graduation and above education and low education groups are associated with low levels of unemployment.These low rates of unemployment found in case of poorly educated women who mostly belong to the poor section of the society is indicative of the fact that these women tend to accept any kind of employment as remaining unemployed involves opportunity cost which in most cases is starvation.

The cultural arguments put forwarded by Das and Desai(2003) can be said to be dominated by the structural factors because the results as well as the trends reveal that it is the lack of appropriate employment opportunities for the educated lot but any other socio-cultural factor that results in low labour force participation. Despite India's economic boom, it appears that for all but the very well educated, the labour market conditions for women have not improved yet.

VII. CONCLUSION

The present study helps us to reinstate what has been suggested by earlier studies that educated women are less likely to be in labour force. The overall picture emerging from the above study suggests that education seems to show different impacts on the workforce participation of females belonging to high and low education groups. Hence, there exists an unconditional U-shaped relationship between education and female work force participation rates revealing the negative effect of education on workforce participation of females of the low education groups.

The study also suggests education leads to aspirations for quality employment. In India, where educational growth outpaces structural adjustment women are unable to find suitable jobs and results in labour

force withdrawal. Also, among those working, an increasing participation is found in agriculture & manufacturing, self employment& in domestic services, which are often poorly paid and highly insecure jobs. Hence, it remains debatable whether increased participation in low paying and informal jobs should be seen as an improvement over non-participation.

The current situation, therefore, calls for structural adjustments to be made in a direction so as to accommodate the overwhelming preference for formal sector jobs among the educated women. More efforts should be put in to draw more and more of these women into the labour force for future growth of the economy or else the realisation of our so called 'demographic dividend' would be a distant dream.

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