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Participation Decision of Educated
Married Women in a District of
Punjab**

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Factors Determining the Labor Force Participation Decision of Educated Married Women in a District of Punjab

Amtul Hafeez and Eatzaz Ahmed¹

Abstract

The study identifies the various socio-economic and demographic factors, which influence the decision of educated married women about participating in the labor market. The study is based on the field survey conducted in the district Mandi Bahaudin. We have employed logit and probit models in order to empirically identify the effect of education level of husband and wife, women age, household structure, and size, household income, and asset ownership and rural/urban residence on female labor force participation (hereafter FLFP). The study finds that the females' education level is strong and positive determinant of FLFP. However, monthly household income, number of workers in the household other than husband and wife and financial assets are significantly and inversely related to it. Among demographic factors, age and household structure and size affect the FLFP rate positively.

1. Introduction

The majority of South Asian women work from dawn to dusk yet their work has hardly been recognized in the respective system of national accounts. Women work far longer hours than men, but a lot of work they do is in the realm of caring, nurturing and household maintenance. In Pakistan, female labor force participation has risen at a greater rate than that of men since 1980. Pakistan average annual growth rate of FLFP was 4 percent in 1980-90, 4.9 percent in 1990-95 and 5.1 percent in 1995-98, where as the growth rate of male labor force declined from 3.2 percent 1980-90 to 2.5 percent in 1990-95 and 2.7 percent in 1995- 98 (GOP, 1997b). Despite the recent increases in FLFP in Pakistan, this rate has been low compared to other South Asian countries. For example, FLFP rate is over 40 percent in Bangladesh and Nepal, 32 percent in India and Bhutan, 36 percent in Sri Lanka compared to only 27 percent in Pakistan (World Bank, 1999; UNDP, 1995a).

Female labor force participation has an important contribution in socioeconomic development by providing a second income and therefore reducing poverty. For this study we have defined FLFP as an act of participating in productive activities for the generation of cash income. The study of trends and structure of FLFP has attracted considerable attention over the past few years in Pakistan. Female participation rates are also important for a proper understanding of the productive and reproductive roles of the educated female population. Determinants of FLFP have been analyzed by many previous studies.²

1 Authors are respectively Ph.D Candidate and professor at Department of Economics, Quaid-i -Azam University, Islamabad. We would like to thank Dr. Shahrukh Rafi Khan (the referee), Ahmad Saleem and Shafqat Munir (editor of the paper) for their help and valuable comments.

2 See for example Kozel and Alderman (1990), Sahn and Alderman (1988), Hamid (1991), Shah (1975;1986), Chaudry and Khan (1987) and Khan and Bilquees (1962).

Factors determining the employment of women are extremely complex. At the individual level, women's decision to work is subject to such factors as the availability of jobs, and their own education level and skills. At the aggregate level, FLFP rate is largely determined by factors that in one form or the other are indicative of economic, social and demographic circumstances. Neoclassical economists consider education to be one of the key determinants of women's entering the labor market.³ The higher the education level, the greater is women's participation in the labor market. However, Benham (1980) does not look at it so simply. In his view, there are many other factors (for example household income) besides education, which induce women to participate in the labor market. Demographic factors like age, family size and household structure are also considered to be important in affecting the FLFP rate.

Since, in Pakistan, almost fifty percent of the total population comprises of females, the study of the participation of women in labor force may be of critical importance in determining the level of development in Pakistan. Also, the large part of mothers' earning is spent on child goods (books, food, stationary and tuition fee). Therefore the participation of married women in the labor market is important in improving the quality of children. The present study is mainly an attempt to explore that some educated married women are involved in earning activities while others are not. We have selected educated women for this study in order to see the effect of different years of education on FLFP along with various other variables. Various studies take into account the literacy level with respect to wage level and not the impact of different years of education on FLFP. Our sample consists of currently married women who acquired at least ten years of schooling, because they are normally considered independent and their status is compatible with their male counterparts. Such women are expected to be freer in making choices for entering the labor market as compared to unmarried women.

In order to analyze the factors determining the FLFP rate, we estimate the probability of participation using probit and logit models.

The study is organized as follows. In section 2 we provide review of literature of Pakistani as well as international studies. Data, methodology and estimation procedures are discussed in section 3. Section 4 presents and analyses the empirical results. Finally, section 5 consists of a summary and conclusion.

2. Review of Literature

This section reviews the literature on labor force participation (hereafter LFP) and labor supply both in Pakistan and worldwide.

Shah et al. (1976) analyzed the effects of selected demographic and socio-economic variables on FLFP in the four provinces of Pakistan. The study is based on census data of 961 households. The relationship of each of the predictor with dependent variable is estimated by looking at the Pearson product moment correlation coefficients and partial correlation coefficients.⁴ The results indicate that work participation is inversely associated with child-women ratio and nuclear family type. However marital status i.e. being married, dependency ratio and literacy rate are found to have positive relation with FLFP.

Aly and Quisi (1996) investigated socio-economic factors that influence Kuwaiti womens' labor market participation decision. The probability of participation in the labor market was estimated using a nonlinear maximum likelihood function method for cumulative logistic probability function. Data were

3 For details see Becker (1965) and Mincer (1980).

4 See Chaudhry (1965) for details on these procedures.

based on Annual Statistical Abstracts (1993) and the main characteristics of Population and Labor Force (1994). It was found that women's wage rate and education were positively correlated with FLFP rate, where as being married, the number of children and age were negatively correlated to it.

Discussing FLFP rates in a macro level study for west Malaysia and Singapore, Fong (1975) estimated the changes in these rates from 1921 to 1957 and related these changes to socio-economic changes. He established the levels and changes in FLFP rates for three major ethnic groups in Malays and Singapore - Malaya, Chinese and Indians. Empirical results of OLS estimation indicate that Malaya had shown declining female participation rates over time. Racial differences are considerable. Indian women had very high participation rates. Chinese women had the lowest rates with no uniform pattern for different states. The rates for Malaya women fell in between.

Our research also supports the issue and ideas presented by the above studies. Education has positive effect on FLFP. Female age, joint family system, family size and number of children also positively influence female participation in the labor market.

3. Data and Model

This study draws on cross-sectional data obtained from the field survey of district Mandi Bhaudin during 1998-99. It concentrates on the sample of currently married females and analyzes their participation in the labor market in relation to the various socioeconomic and demographic factors. For this study, we used stratified sampling based on population size of the area under study. We divided each locality in north, south, west, east and central parts. We selected 10 to 15 households from each stratum based on the population size. First household was selected randomly and then using snowball technique only those households were visited where we were informed of the presence of educated married women.⁵ However in some cases, we were not able to find females in the house. Either they were gone for shopping or to visit some relative. Therefore, they were revisited for the collection of information. In the district, there are three *tehsil* headquarters. We randomly selected two *tehsil* headquarters (Mandi Bhaudin and Malikwal), one sub *tehsil* town (Gojra) out of two and two nearest union council villages (Miana Gondal and Waryait) out of 41 union councils for data collection. Among the total population, about half are females. We visited almost 180 households and interviewed 210 married educated women who had acquired at least ten years of schooling. In the sample, fifty percent of women consists of married females working in the labor market, while the remaining fifty percent were involved in household activities.

According to the 1998 Population Census, the population of the area is about 1.1 million. People are engaged in both government and private services (e.g. bank, education, medical, business and shop keeping). Agriculture also plays an important role in sustaining the economy of the district.

We estimated a regression model in which FLFP is a function of several explanatory variables. The dependent variable can take only two binary values: 1 if a women participates in economic activity and 0 if she does not. We estimate nonlinear maximum likelihood function for the normal probability (probit) model and cumulative logistic probability function in order to compare the estimates of the two models.⁶

We start with a general function

5 No way of comparing uneducated with educated; only less educated with more educated.

6 These two models do not much differ except that the tail of probit is little thin than that of logit. However for details see Berndt (1991), Gujratai (1995), Kmenta (1971) and Greene (1993).

$$Y = f(X_1, \dots, X_n) \quad (1)$$

where Y_i denotes FLFP. Y is equal to 1 if a female participates in economic activity and equal to zero if she does not. X_1, \dots, X_n represent various socio-economic and demographic factors determining females decision to be involved in economic activity. Two non-linear models, namely probit and logit, are used to estimate the function specified in equation 1.

Appendix Table 1 gives the definitions of dependent and independent variables.

Descriptive Statistics

The summary statistics of the variables appears in Appendix Table 2 given the age group of 18-55 years considered in the survey. It is not surprising that the mean age of married females in our sample is about 31 for participating while it is 27 years for non-participating females. The table shows that those belonging to large as well as joint families are more likely to participate in the labor market as compare to those belonging to small and nuclear families. Summary statistics indicate that female education plays an important role in determining female participation in the market. Similarly economic status of the household also has a significant impact on FLFP. For example, females who belong to rich families are participating less in the labor market than those who belong to relatively poor families.

4. Empirical Results

Appendix Table 3 shows that there is not much difference in the qualitative nature of results across the two models. We present findings of only one (probit) model in detail for the sake of brevity. It appears that the most important factors affecting the labor force participation (hereafter LFP) decision of women are the level of their education, number of other workers in the family, household income, household size and structure and the womens' age. Almost all the regression coefficients are statistically significant which imply that they all matter a lot in influencing the FLFP decision at the 5 percent and 10 percent level.

The interpretation of regression coefficients in the probability model is not very straightforward. Low values of R^2 and log likelihood in probit and logit regression should not be taken as a poor reflection on the quality of our results. Low value of R^2 is typical of cross-section studies especially when the numbers of observations are small. There are invariably many unknown factors affecting the dependent variable under consideration, no matter how careful one tries to be in selecting the potential explanatory variables.

For the interpretation of regression parameters we have computed the probability derivatives for all the variables. These derivatives measure the effect of one unit change in an explanatory variable on the probability of FLFP. For a dummy variable, the probability derivative measures the change in the probability of LFP when the dummy variable takes the value of 1 rather than zero. Since the probit and logit models are nonlinear, their probability derivatives are not constant. Therefore we estimate these derivatives at the mean of the sample. The results are reported in Appendix Table 4. The table shows that there is a remarkable consistency in results across the two models; therefore we interpret here only one (probit) model.

We find that the probability of FLFP increases with age. A simple interpretation of this result stems from the fact that younger females would not command a decent wage due to low level of education and the

lack of experience and training. Also, since they are young, they might have not yet completed their family size. The estimation results indicate that the women's age has quite a sizeable impact on their LFP decision. Probability of FLFP increases with age. The likelihood of participation of women in the labor force is expected to increase by about 0.8 percent with *FAGE*.

We also find that education plays a vital role in determining the FLFP decisions. All the regression coefficients of female education dummies are positive and significant at 5 percent level. They monotonically increase with the education level. Thus, there is clear evidence to conclude that the women with higher level of education are more likely to participate in the labor force. The higher the educational level of women, the higher is the opportunity cost for them producing the non market output and higher the probability of participating in the income producing activities outside the home. For example according to probit estimates, the probability of LFP for a woman with intermediate level education is higher than that for a woman with metric level education. Similarly the likelihood that a woman with bachelor degree participates in the labor force is higher than those with matriculation. The probability derivatives for the master level and higher education can be interpreted likewise. For example, *INTERM* and *BACHLRS* increase the FLFP by 39 percent and 47.2 percent respectively.

Likewise household size has strong positive correlation with the FLFP. This is so because, the pressure on the financial resources in households comprising of more members is high which induce educated women to participate in earning activities. Similarly, the set up of the family has a significant positive relationship with the FLFP decision. The results show that women living in joint family participate more than those living in the nuclear family. The most plausible explanation for this result is that the pressure of many persons in the joint family reduce the pressure of households chores and the educated women can offered to come out of the home and work for cash. The result also implies that there is no significant adverse pressure of relatives in the joint families against women participation. That is, *HHSIZE* and *JNFAMILY* increase the FLFP by about 3 percent and 9 percent respectively and coefficients are significant at 5 percent level. Thus the women living in large and joint families are more likely to engage in LFP compared to those living in relatively small and nuclear families.

The education of husband is likely to reduce FLFP, but the relation is statistically insignificant. Two types of effects are possible due to education of husbands, which could affect each other. Educated husbands are also likely to earn more as compared to uneducated husbands. As a result, they may want their wives to stay at home just to perform their household responsibility, particularly that of childcare. However education could bring a change in the attitude of husbands to more accepting of FLFP. Therefore, the final result may be statistically insignificant because of these offsetting effects. In any case *EDHUS* is likely to reduce female labor force participation by 5-percent.

However, the education of father has a positive and significant association with FLFP showing that daughters of educated fathers are more likely to be educated and to participate in the labor market. For example one-year increase in the *EDFATHR* is likely to increase the women participation in the labor market by one-percent and result is significant at 5 percent level.

Household monthly income is another important factor influencing the LFP decision of women. The estimation results suggest that the increase in household monthly income reduce the probability of women participation in the labor force. Similar results are found with respect to the number of other workers (other than husband and wife) in the family. Thus the women living in more wealthy families are less likely to participate in the labor force. Although the women's LFP decision is inversely and strongly influenced by monthly income of the family, but the magnitude of this effect is rather small. For example,

if the *HHINCOM* increases by 10000 rupees, the probability of LFP of women decreases by about 0.05 percent only.

The effect of increase in number of other workers (other than husband and wife) in the family on women's LFP decision is quite prominent. For example, *NOWKRS* reduce the probability of women's LFP by at least 7 percentage points and regression estimate is significant at 10 percent level.

Similarly land ownership and home ownership is likely to effect the FLFP decision to a greater extent. For example, *LANDOS* and *HOMEOS* reduce FLFP by 6 percent and 7 percent respectively and coefficients are significant at 5 percent level. Thus the estimates show that women belonging to relatively rich families are less likely to participate in the income generating activities.

Finally the regression results show that women belonging to rural areas are less likely to participate in formal sector jobs like teaching and health. This is so because in rural areas education and formal employment opportunities are not available for women. At first it is very difficult for rural women to acquire education. Secondly, even if they are able to acquire some education, they find it very difficult to get some formal job. This implies that rural residence is likely to have negative effect on the labor market participation of educated married women. That is *RURAL* is likely to reduce the participation of educated married women in earning activities by about 17 percent.

5. Concluding Remarks

We have explored the factors, which cause some educated married women to participate in earning activities while the others remain at home.

Our results suggest that there are strong and systematic factors that explain the labor force participation decision of women in the district. The main findings of the study are that the education level appears to be influencing female labor force participation. Thus the probability of participation increases substantially with the increase in the level of education.

Demographic characteristics of families have a major impact on the labor force participation decision of the women and their choice of work. The females living in large and joint families are more likely to participate in labor market than those living in small as well as nuclear families due to availability of other family members to work at home. Also in the large families, pressure on the financial resources of the household is high which induce educated women to participate in the labor market. Joint families are also assumed to be large in size. Similarly, the women age has quite a sizeable impact on their labor force participation decision.

Likewise, the financial position of the family significantly influences the labor force participation decision of family members. For example, women in the households with low monthly income and few financial assets or/and who live in families with fewer other workers are more likely to participate in the labor force. Therefore economic pressure and hardship is one of the main factors that bring women to the labor market.

On the whole, the study finds that economic factors are most important in influencing the labor force participating decision of women and in shaping their wage and work profiles. Some of the social factors considered in the study do not appear to have an adverse effect in this regard. For example, women living in joint families are not socially constrained from participating in the labor force.

To address these issues, there is need that policies on female employment should be carefully planned, based on proper analyses of the available field data that provide the most important input in this regard. The government can also intervene in the labor market with measures to provide formal job facilities particularly in rural areas, improving education, training and child care facilities. Education can bring awareness among people regarding the importance of female labor force participation both for improving the economy of the household as well as of the country. The provision of increased educational formal job opportunities is especially in rural sector however, one of the major questions to which the social and economic planners need to address.

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Appendix

Table 1 Complete List of Definition of Variables

Variables	Description
Dependent Variables	
FLFP1	= 1 if females are currently participating in the labour market, and 0 otherwise.
FIFP0	= 1 if females are not currently participating in the labour market, and 0 otherwise.
Explanatory Variables	
Women Characteristics	
FAGE	Women age
METRIC	Female education dummy= 1 if female has metric level of education, 0 otherwise (Base category)
INTERM	Female education dummy= 1 if female has intermediate level of education, 0 otherwise
BACHLRS	Female education dummy= 1 if female has bachelors level of education, 0 otherwise
MASTRS	Female education dummy= 1 if female has masters level of education, 0 otherwise
HIGHER	Female education dummy= 1 if female has higher level of education, 0 otherwise
Household Characteristics	
HHSIZE	Household size
JNFAMILY	= 1 if a women lives in joint family, 0 otherwise
EDHUS	Education years of husband
EDFATHR	Education years of father
NOWKRS	Number of other workers in the household
HHINCOM	Monthly household income
LANDOS	= 1 if household owns land, 0 otherwise
HOMEOS	= 1 if household owns house, 0 otherwise
RURAL	= 1 if a woman lives in rural area, 0 otherwise
N	Sample size

Table 2: Summary Statistics of Sample ($N = 201$)
(Sample Means and Standard Deviations)

Explanatory Variables	FLFP1	FLFP0
Women Characteristics		
FAGE	31.736 (5.749)	27.451 (6.442)
METRIC	0.010 (0.101)	0.010 (0.198)
INTERM	0.131 (0.348)	0.010 (0.099)
BACHLRS	0.232 (0.424)	0.010 (0.099)
MASTRS	0.242 (0.431)	0.010 (0.099)
HIGHER	0.101 (0.303)	0.010 (0.099)
Household Characteristics		
HHSIZE	6.343 (2.572)	4.107 (1.694)
JNFAMILY	0.697 (0.462)	0.373 (0.495)
EDHUS	10.867 (3.104)	12.863 (3.215)
EDFATHR	7.283 (5.680)	6.519 (5.364)
NOWKRS	0.746 (0.442)	0.833 (0.400)
HHINCOM	10700.30 (6724.84)	22722.55 (27015.40)
LANDOS	0.414 (0.495)	0.667 (0.474)
HOMEOS	0.615 (0.491)	0.873 (0.335)
RURAL	0.343 (0.486)	0.608 (0.491)
N	99	102

Note: The dependent variable is set equal to one for workers and zero for non-workers.

Table 3: Estimates Of Probability Models For Female Labor Force Participation

Explanatory Variables	Normal Probability Model (probit)	Logistic Probability Model (logit)
INTERCEPT	-2.128 (-1.915)**	-3.608 (-1.864)**
Women Characteristics		
FAGE	0.072 (2.554)*	0.127 (2.575)*
INTERM	3.605 (2.755)*	6.349 (2.685)*
BACHLRS	4.329 (2.996)*	7.584 (2.900)*
MASTRS	2.733 (4.157)*	4.768 (3.859)*
HIGHER	3.954 (3.270)*	6.916 (3.407)*
Household Characteristics		
HHSIZE	0.343 (2.807)*	0.583 (2.752)*
JNFAMILY	0.894 (2.215)*	1.587 (2.181)*
EDHUS	-0.059 (-1.070)	-0.103 (-1.089)
EDFATHR	0.088 (2.482)*	0.152 (2.386)*
NOWKRS	-0.698 (-1.645)**	-1.145 (-1.504)**
HHINCOM	-0.00005 (-3.070)*	-0.00009 (-2.978)*
LANDOS	-0.602 (-1.605)**	-0.038 (-1.413)
HOMEOS	-0.721 (-1.702)**	-1.359 (-1.741)**
RURAL	-1.60 (-3.452)*	-2.760 (-3.385)*
N	201	201
R ²	0.74	0.74
Loglikelihood	-40.57	-40.49

Note: The dependent variable is set equal to one for workers and zero for non-workers. The statistics significant at 5% and 10% level are indicated by * and ** respectively.

Table 4: Probability Derivatives With Respect To Independent Variables

Explanatory Variables	Normal Probability Model (probit)	Logistic Probability Model (logit)
INTERCEPT	-0.231	-0.224
Women Characteristics		
FAGE	0.008	0.008
INTERM	0.394	0.394
BACHLRS	0.472	0.470
MASTRS	0.298	0.296
HIGHER	0.431	0.429
Household Characteristics		
HHSIZE	0.037	0.036
JNFAMILY	0.097	0.098
EDHUS	-0.006	-0.006
EDFATHR	0.010	0.009
NOWKRS	-0.076	-0.071
HHINCOM	-0.00005	-0.00005
LANDOS	-0.066	-0.064
HOMEOS	-0.079	-0.084
RURAL	-0.174	-0.171
N	201	201

Note: The dependent variable is set equal to one for workers and zero for non-workers.

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