Factors Affecting the Scenario of Women Participation in the Agricultural Labor Force in Punjab, Pakistan

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Abstract: The underlying research problem was the outcome of a crucial need to estimate the scenario of women participation in the agricultural labor force in the Punjab Province of Pakistan. It is an established fact that agriculture is the backbone of the economy of Pakistan and the rural women take part in the agricultural activities with zeal and zest as the male to female ratio is slightly higher in Pakistan according to the census of 2018. There are numerous factors which affect the female participation in the agricultural labor force. Hence, this study was an effort to identify such factors and quantify their effect on female labor force participation decisions in the rural areas of the Punjab Province, Pakistan. Cross Sectional data of 1800 women for the years 2001-02 and 2010-11 were extensively used which was collected by Household Integrated Economic Survey (HIES). The identified influencing factors were: Age, educational level, household size, monthly income, and the status of women. The analysis of the logit model showed a positive relationship between female age, educational level, household size, household monthly income, and female as the household head, on the female labor force participation (FLFP) decisions in the agricultural activities. Negative relationship of FLFP was found with married women and the infants (under 5 years) in the household for the year 2001-02. The status of women as daughter, daughter-in-law and others (cousin, aunt etc.) were negatively influencing the FLFP decisions. But for the year 2010-11, the presence of the infants in the household, age, educational level, household size, household monthly income was positively related to FLFP. The status of women in the household as the household head, daughter, daughter-in-law and others (cousin, aunt etc.) were also positively influencing the FLFP decisions in rural areas of the Punjab Province of Pakistan. The findings of this present research study suggest that in focusing on the factors that encourage women to participate in agricultural labor force of Pakistan, an economic revolution can be brought in all the socio-economic spheres along with the emancipation of the suppressed women in the other provinces of Pakistan such as Sindh and Baluchistan where though women participate in the labor force but their participation still is not recognized by the dominated male community.

Keywords: Females Labor Force, HIES, Status of females, Households income, Logit model.

INTRODUCTION

No nation around the globe can attain development and growth properly without the active participation of women in the economic activities. Women can play a very important role in the process of economic growth by engaging themselves in the economic activities or labor force. Women aged 15 years and above engaged themselves in the economic activities (production of goods and services) are included in the labor force.

According to World Development Report 2013 [1], issued by World Bank, the female labor force participation in Pakistan is only 28%. Total estimated population of Pakistan is 184.35 million in the year 2012-13. Of 184.35 million, 48.8% are females and of 48.8%, only 23% or 13.3 million females participate in the labor force [2]. According to Third Quarter Report of Labor Force Survey [2], there is only a slight increase in total labor force of Pakistan from 32% in 2010-11 to 32.1% in 2012-13. But the labor force participation rate of females was 14.8% in 2010-11 and in 2012-13 it decreases to 14.3%. There is also a decrease in the rural labor force participation rate of females i.e. from 18.5% in 2010-11to 17.8% in 2012-13. There is an increase of 5 percentage points in

female labor force participation in the last decade in Pakistan, but it is still low as compared to other South Asian countries [3]. The females in Pakistan are facing many problems like social norms, lack of opportunities for women, cultural or regional constraints, poor health conditions and many other household related factors e.g. low education level of females, lower household income, high fertility rate, rural urban residence, household size, marital status etc [4].

This present research study is mainly divided into five parts. The next part consists of literature review which shows the main ideology, shortcomings and main findings about this study. The third part consists of theoretical framework and methodology. The fourth part explains the results. Conclusions and policy implications are presented in part 5.

REVIEW OF LITERATURE
Some previous studies are presented here which directly or indirectly are related to our topic. Chaykowski and Powell [5] described that the increase in age and educational level of women was positively related to FLFP in Canada. Divorced or separated females participated more in labor force than married females. Women having children between ages less than 15 years participate more in labor force than females having children of age's up to 2 years. Gray and Hunter [6] found the factors behind FLFP in Australia. They found that increase in the educational level of indigenous Australians did not result positively in increasing employment level, but it contributed positively for non-indigenous population. The women with status as married, widowed, separated or divorced were less likely to become a part of labor force. Brusentsev [7] examined the factors behind married female's participation in the labor force in three countries i.e. United States, Australia and Canada. The results of Probit Model showed that the single females participated more than married females while the female's unearned income was negatively related to FLFP. Jaumotte [8] identified the factors behind FLFP in OECD countries. Increase in the opportunities of part time work showed positive relation to FLFP. Childcare subsidies and provision of paid parental leave, female educational level and the labor markets that work very well were also positively related to FLFP. Ntuli [9] examined that the increase in female education level was associated with the increase in FLFP in South Africa. Married females participated very less in the labor force but the divorced female's participation in the labor force was very high. The presence of children (under 15 years) in the house and higher income level of husband negatively influence FLFP. Ackah *et al.,* [10] found the determinants of FLFP in Ghana. They found negative relation of high fertility with FLFP, while education level had positive effect on wage employment. Higher number of household members was positively related to FLFP.

Several studies were also conducted in Pakistan to identify the factors behind female participation in the labor force. Chaudhry and Khan [11] observed that the Purdah system in the rural areas of Pakistan was negatively related to FLFP. The labor force participation of rural females was lowest in the Punjab Province and the highest in Baluchistan Province of Pakistan. Ejaz [12] applied Logit and Probit Models and showed that age and educational level of females were positively influencing FLFP in Pakistan. The married females with higher household income had negative relationship with FLFP. Women living in the joint family system participated more than that of the women living in the nuclear family system. Faridi *et al.,* [4] investigated the determinants of FLFP in District Bahawalpur, Pakistan. The results of Logit Model showed that married female having children under 6 years and living in the nuclear family system were less likely to participate in the labor force than females living in the joint family system. Presence of large amount of assets, urban residence and salaried job of husband were also hindering the participation of females in labor force in the agricultural sector in general and other fields in particular.

Significance of the Study
The contribution of this present research study is two-fold. Firstly, it contributes to existing literature by examining and comparing the current status with the previous ones. Secondly, this study takes large sample of 1800 females from the rural areas of the Punjab Province, Pakistan to present a wide-ranging view of the scenario.

Theoretical Framework and Data
Data Sources
The Cross-Sectional secondary data for the two time periods i.e.2001-02 and 2010-11 were used for this study. The total data of 18,217 observations were taken of which only 4024 females of ages between 15-49 years was used for the year 2001-02. While, 18,022 observations were taken for the year 2010-11 of which 2250 females were included in the sample. The data used were obtained from Household Integrated Economic Survey (HIES).

For qualitative nature of the dependent variable, ordinary least square methods are not applicable rather Logit or Probit Models are more appropriate. Dependent variable is in dummy form in this study i.e. if yes=1, otherwise=0

$$Y_i^* = \beta_1 + \beta_2 X_i + \varepsilon i$$

Where Y_i^* is not observed. It is a latent variable. What we observe is a dummy variable *yi* defined by *$^*iy$*

$$yi = 1 \text{ if } > 0 \ ^*iy$$
$$= 0 \text{ otherwise}$$

y is equal to 1 if yes and zero otherwise. β is a row vector of parameters and ε*i* is normally distributed with mean 0.

The logistic function

$$\text{Probability } \Pi(X) (=1) = 1/1 + e^{-z}$$

Where

$$Z = \beta_1 + \beta_2 X_{ki} + \ldots + \beta_k X_{ki}$$

Analytical estimates obtained using STATA software as were feasible. Following is the detailed list of dependent and independent variables.

Dependent variable

The female labor force participation FLFP=1 if she participates in labor force
=0 otherwise

The employment dummy equal to 1 includes rural females as employer (employing less or more than 10 persons), self-employed, paid employee, own cultivator and livestock rearing. Females as unpaid family helpers were taken in FLFP dummy equal to 0.

Independent variables

Education level: schooling years of female
Age: age of female. Females between the age limit of 15-49 years were included in the study.

Monthly household income: total income of all the household members
Household size: total number of family members residing in a household
Children: total number of children under 5 years of age

Dummy variables
Marital status

Single=1 if female is single and 0 otherwise
Married=1 if female is married and 0 otherwise

Status: Female status in the household

Hh head=1 if female is hh head herself and 0 otherwise
Daughter=1 if female is daughter and 0 otherwise
Daughter-in-law=1 if female is daughter-in-law and 0 otherwise
Others=1 if female is aunt or cousin etc. and 0 otherwise

RESULTS AND DISCUSSIONS
Descriptive statistics

The results of descriptive statistics for both years i.e.2001-02 and 2010-11 are presented below. The results will show the mean, standard deviation, minimum and maximum values for all the variables.

Table-1: Descriptive Statistics for Year 2001-02

Variables		Mean	Std. Deviation	Minimum	Maximum
Education level		3.30	3.421	0	16
Age		27.90	9.484	15	49
No. of infants		1.20	1.346	0	10
Household size		7.83	3.796	1	35
Monthly income		8871.04	5447.809	400	85000
Status of female	Household head=1	0.05	0.208	0	1
	Daughter=1	0.40	0.490	0	1
	Daughter-in-law=1	0.31	0.463	0	1
	Others=1	0.14	0.351	0	1
Marital status	Single=1	0.35	0.406	0	1
	Married=1	0.63	0.484	0	1

The results of descriptive analysis shows that the mean value of age for the year 2001-02 was 3.30 but the minimum level of education was 0 or illiterate and maximum level of education in the sample was 16 years of schooling. The age limit of minimum and maximum was 15-49 years but the mean age of females in the sample was 27.90 years. The mean number of infants in the sample was 1 child and maximum 10 in a household. The mean household size was 7 persons and the minimum and maximum values of the sample were

1 and 35 persons respectively. The minimum monthly income of household in the sample was Rs. 400 and maximum Rs. 85000. In the status of female in household, the females who were household head were very less of mean value 0.05 in the sample. The sample contained maximum females whom status was daughter in the household with the mean 0.40. The sample contained mostly married females with an average 0.63 and the mean single females were 0.35.

Table-2: Descriptive Statistics of For the Year 2010-11

Variables		Mean	Std. Deviation	Minimum	Maximum
Education level		7.30	3.716	0	23
Age		27.62	9.606	15	49
No. of infants		0.94	1.194	0	7
Household size		7.41	3.110	1	22
Monthly income		12824.15	13159.548	200	250000
Status of female	Household head=1	0.05	0.224	0	1
	Daughter=1	0.37	0.482	0	1
	Daughter-in-law=1	0.16	0.363	0	1
	Others=1	0.10	0.302	0	1
Marital status	Single=1	0.42	0.493	0	1
	Married=1	0.55	0.497	0	1

The results of descriptive analysis show that the mean value of education level in the year 2010-11 increased to 7.30 from 3.30 for the year 2001-02 and maximum level of education in the sample also increased to 23 years. The age limit of minimum and maximum was 15-49 years but the mean age of females in the sample was 27.62 years. The maximum number of infants in the sample decreased from 10 children for the year 2001-02 to 7 children for the year 2010-11. The maximum household size was 35 for the year 2001-02 and it decreased to 22 persons for the year 2010-11. The minimum monthly income of household in the sample was Rs. 200 and maximum Rs. 250000. The sample contained maximum females whom status was daughter in the household with the mean 0.37. The sample contained mostly married females with an average 0.55 and the mean single females were 0.42.

Logit Model

As our dependent variable is in dummy form so the logit model was applied [12]. This model tells the probability of an event to occur=1 and 0 otherwise. The results of logit model are shown below for the years 2001-02 and 2010-11 separately.

Table-3: Logit results

Year		2001-02		2010-11	
Variables		Coefficients	Marginal effects	Coefficients	Marginal effects
Education level		0.356***	0.0245	0.209***	0.411
Age		0.112***	0.007	0.061***	0.012
No. of infants		-0.0522	-0.0035	0.013	0.003
Household size		0.094***	0.0064	0.044*	0.008
Monthly income		-0.000032*	-0.000002	-0.0001***	-0.00001
Status of female	Household head=1	0.057	0.004	1.246***	0.289
	Daughter=1	-0.255	-0.016	0.562*	0.113
	Daughter-in-law=1	-0.112	-0.007	0.195	0.039
	Others=1	-0.241	-0.015	0.348	0.072
Marital status	Single=1	0.174	0.012	0.175	0.034
	Married=1	-0.340	-0.024	-0.253	-0.049

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

From the table-3, it is clear that female education level, age and household size are highly significant. This means that female education level, female age and household size are positively related to FLFP. It may be due to the fact that increase in female education level will provide her more and better opportunities to get better job with good incentives e.g. salary, pension after retirement etc. so she will be attracted to participate in labor force. The marginal effects show the change in probability of dependent variable due to one unit change in independent variable. From the above table it is clear that education level is positively increasing the probability of FLFP. An additional year of education level causes 0.024 percent increase in the probability that a female will participate in the labor force. Increase in age of female is also positively related to FLFP. It may be due to the fact that with the increase in age, there is increase in knowledge, but the female become free from household responsibilities to some extent as her children get older especially in Pakistan. An increase in household size is also positively related to FLFP due to the fact that there are more persons in the household to take care of household responsibilities and the burden of these responsibilities is not on one female. Monthly household income is negatively related to FLFP. This means that an increase in monthly household income will cause FLFP to decrease. If the income level of household is enough to meet the needs of household members then the female especially in Pakistan will not

participate in the labor force. The coefficient for the number of infants i.e. under 5 years of age in the household is negatively related to FLFP. This means that if the infants are present in the house, it causes FLFP to decrease because the female becomes busy in childcare activities and her decision to participate in the labor force will be influenced negatively.

The coefficient for female household head is positively related to FLFP. If the female is household head herself, she will participate in the labor force due to many reasons. In the context of Pakistan, if her husband or father is not alive, she has to fulfill the needs of her family by participating in the labor force. The other reason may be the increase in power to take her own decisions in house. The coefficients for female as daughter, daughter- in- law and others are non-significant. This factor is negatively related to FLFP. Female as daughter and daughter-in-law do not participate in the labor force due to cultural, regional, religion differences and purdah system that are most common in rural areas of Pakistan. 'Others' status (female as aunt or cousin etc.) is also negatively related to FLFP. The marital status single dummy is positively related to FLFP. This means that single females participate positively in the labor force. It may be due to the fact that in Pakistan, mostly single females do not have to bear household responsibilities unlike married females, that is why they positively participate in the labor force.

The results of logit model for the year 2010-11 in table 3 shows that the education level of female is positively related to FLFP. With the passage of time there is increase in the female education level which may be due to changing attitudes of our people towards female education and increased urbanization which has opened the doors to formal jobs for females in Pakistan. Increase in the female age is also significant and positively related to FLFP. By increase in the female age, she decides to participate more actively in the labor force and share her husband's responsibility of getting income in the house. The coefficient of monthly income of household is negatively related to FLFP. Due to increased urbanization and increased income levels, the female's lifestyles have become luxurious in Pakistan, so they do not participate in the labor force. Increased household size is positively related to FLFP due to sharing of household responsibilities by others. The numbers of infants (under 5 years) in the household are positively related to FLFP. These results are opposite to the results of the year 2001-02. This means that with the passage of time and modernization in the attitudes of females, the presence of infants in the household motivates the female to participate in the labor force to provide better living conditions to her children.

If the female is household head, her participation in the labor force increases due to family responsibilities or power of decision. If the female

status in the household is as daughter, her labor force participation also increases. Female status as daughter-in-law and "others" are also positively related to FLFP unlike the results of the year 2001-02. This can also be explained by positive change in people's attitudes and increased female education levels. Marital status as single is non-significant but it is positively related to FLFP. Single females participate in labor force. While married females negatively participate in the labor force due to lack of time and household or childcare activities mostly in rural areas of Pakistan. The marginal effects show that the probability to participate in labor force decrease by 0.049% if the female is married.

CONCLUSIONS AND POLICY IMPLICATIONS

This paper concludes that educational level, age, household size, female as household, and household income are positively contributing in the female labor force participation for both the years 2001-02 and 2010-11 in the agricultural and fields. The female status as daughter, daughter-in-law and "others" (aunt, cousin etc.) were negatively influencing the female labor force participation for the year 2001-02 while they were positively related to female labor force participation for the year 2010-11. Presence of infants (under 5 years) in the household was negatively influencing the female decision to participate in the labor force in the year 2001-02 but in the year 2010-11 it was positively related to female labor force participation. Single females participated positively than married females in the labor force in both 2001-02 and 2010-11. So, the education facilities should be provided more and free of cost in rural areas to increase female participation in the labor force. Larger household size provides free time for females, so the childcare services must be provided to females in order to increase the female labor force participation.

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