THE DETERMINANTS OF WOMEN'S LABOUR SUPPLY IN URBAN ZHEJIANG, CHINA

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ABSTRACT

Based on data from socio-economic survey of 1000 women aged 18 to 61, selected through random sampling in urban Zhejiang province (China), conducted between August and October 2003, this research aim to identify the determinants of women's labour supply in urban Zhejiang. Data collection was done through direct personal interview method by researchers properly oriented for the purpose. Probit regression has been used to analyze the data. The determinants of women's labour supply were found to be age, education and presence of other adults in the household. Results showed that the presence of children in the household was found to be insignificant as a determinant of labour market participation. However, Marital status significantly affects women's labour supply.

Key words: Women, labour supply, urban Zhejiang.

INTRODUCTION

Economic theory suggests that women's labour supply decisions can be understood through the careful modeling of their preferences for work and leisure. These preferences for work and leisure are predominately influenced by human capital endowments, demographic variables and family traits (Elisa, and Birch, 2002). Given that the labour supply of women has changed over the past 20 years, as women's educational attainment has been rising. Despite the discrimination and segregation that they are facing in the labour market worsened by structural adjustment, the labour force participation rate of women increased in China from 43 per cent in 1980 to 45 percent in 2000 (World Bank Economic Review

2001). It seems important that academic researchers and policy makers have a clear understanding of the relative significance of these influences on women's labour supply decisions.

China is, in the developing world, one of the countries with highest participation rate for women and also has one of the lowest fertility rates (due in large part to government policy and a strong family planning program). From 1970 fertility declined rapidly in China to an average of about 2.5 children per woman in 1980 and, after a period of significant fluctuations in the 1980's, went below the replacement level in 1990 with 1.84 children per woman, nowadays the government initiated the one-child policy (China Statistical Yearbook, 1999).

With the opening of the china in the 1978, the participation rates of Chinese women increased. Women's share of the labor forces in China is high by international standards, and has increased during the reforms from 42.9% to 45.2% in 2002.

Studies on labor supply determinant include Mon, (2000), Moehling (1997), Aly and Quisi (1996) investigated socio-economic factors that influence Kuwaiti women's labor market participation decision. It was found that women's wage rate and education are positively correlated with LFP rate, where as marital status, the number of children and age is negatively correlated with LFP rate. Lucia (1990) has shown that women's position in the labor market is far more strongly influenced than men's by factors such as age, academic achievement, number of children and marital status. El-Hamidi (2003) argued that it is widely demonstrated in the literature that variables such as age and level of education, as well as the demographic, social, and financial characteristics of the household affect the decision of labor supply. However, these determinants work differently according to the poverty level or the well being of the household. While Malik and al. (1994) found that woman's age, education and number of dependents do not significantly determine market time. Women wage rate and predicted male wage have significant and positive effect on women labor supply. Tienda and Glass (1985), using a Tobit model, found that in the US, the presence of other adults increased the probability of labour

force participation of mothers who were heads of households. Prieto, and Cesar (2000) found that the labour market participation of the married woman basically depends on her personal and family characteristics, her non-wage income and her potential earnings.

The goal of this study was to examine, on a set of variables; the explaining factors of the women's labor supply in Zhejiang. To ascertain the important factors that affect the women's decision to participate in the paid labour market.

METHODOLOGY

This paper draws on data from socio-economic survey of 1000 women in urban Zhejiang province (China), conducted between August and October 2003. The reason for choosing this urban area is purposive. In other words the ethnic, religious and cultural composition of the study area is more diversified, the level of education is more representative and the age distribution follows the standard pattern. 1000 women were selected through random sampling and investigated.

The survey contains data relating on personal characteristics (age, training, woman education, martial status,), wages, labour situation, family income from sources other than the woman, number of children, payment of educational expenses, hours of work, housing and housing support, health, region of residence, childcare and the balance between work and caring for those who need care. Information on her husband has also been extracted (wages, level of studies, whether he participates in the labour market or not).

The data sample used in the empirical analysis was restricted to women aged 18 to 61 years in urban Zhejiang (China), being in the paid work or temporarily unable to work or engaged in a process of job hunting during referring month. Data collection was done through direct personal interview method by research investigators properly oriented for the purpose. The researchers were former students of the Department of Economics, University of Zhejiang. Their acquaintance with the area and

the assistance they received from zone officials and leaders greatly facilitated data collection. A well-structured, pre-tested schedule was used for the purpose of data collection.

Variables

A number of potential variables for inclusion in the probit regression are identified on the basis of results of the chi-squared tests and also on the basis of theoretical models, which explain women's participation in the labour force.

The dependent variables for the analysis is PARTW (a dichotomous variable that takes the value 1 if a woman participate in the labour market and 0 otherwise).

The individual characteristics of the woman are measured by way of four variables: marital status: MARST (a dichotomous variable that takes the value 1 if a woman is currently married and 0 if she is single), age: AGE (in completed years), training: FORW (a dichotomous variable that takes the value 1 if the woman received training and 0 otherwise) and Woman's level of education: EDUCW (number of years spent in school).

The family characteristics include four variables: The family income: INF (in Yuan: china currency); Number of Children: CHILDN (discrete variable); Husband/Tutor's labor participation: HUSBS (a dummy variable that takes 1 if Husband/tutor participates in the labor market and 0 otherwise); Presence of additional adult in the family: PAF (a dummy variable that takes 1 if there is additional adult in the family and 0 otherwise).

Model Specification

The method we use to analyze the determinants of the labour market participation of the woman, proposed by Benie, M.K. *et al.* (1994), consists of estimating the following equations:

$$Vi = f(Ii, Fi, Dei, Fci,) \quad (i = 1,\ldots n) \quad [1]$$
$$Ri = g(Ii, Fi, Dei, \lambda i) \quad (i = 1,\ldots n) \quad [2]$$
$$Si = h(Ii, Fi, Dei, Fci, Imwagei) \quad (i = 1,\ldots,n) \quad [3]$$

The equation [1], [2] and [3] represent, respectively: the reduced equation of labour supply, the wage equation and the structural equation of labour supply. Parameters Ii, Fi, Dei, Fci,λi and Imwagei represent, respectively, the education, training, demographic factor (age), the family context (husband/tutor labour participation, Presence of additional adult in the family, children and monthly total family income), the inverse Mills ratio, and the imputed wage.

Since data on wages are only available for those people who work, the expected value of the error term in the wage function, conditional on P*i* = 1, is non-zero in the sample, and then estimation of the wage function using OLS will produce biased and inconsistent estimates of the coefficients. In order to overcome this problem, the Heckman's estimation method was used to obtain unbiased and consistent estimates of the coefficients of the explanatory variables in the wage function as follows.

In the first stage [1], the probability that an individual will participate in the labour market determined according to a probit regression in which personal and family Characteristics serve as the regressors, is estimated. From the probit results, a selection variable, the inverse Mills ratio term, is created. In the second stage, the wage equation [2] is re-estimated including the Mills ratio as a regressor by the OLS to produce unbiased and consistent estimates of the coefficients. The estimated coefficient on the Mills ratio measures the sample selectivity effect as the covariance between the errors in the participation and wage equation. The estimated

coefficients from the wage equation are used to generate an imputed wage, Imwage, for each individual. Imwage is then entered into the structural participation function (as potential income), [3] which is estimated by maximum likelihood techniques. The estimated coefficients obtained are unbiased (Heckman, 1979).

RESULTS

The descriptive statistics are given in table 1.

Table1: Descriptive statistics

Variable	Mean	Std
Age	37.90	10.083
education	3.27	1.462
training	1.65	0.476
number of children	2.07	0.914
husband work pattern	1.44	0.497
Marital status	1.50	0.500
presence of other adult in the household	1.46	0.498
income family	1.96	0.951
women earning	1.87	1.024
women working	0.50	0.500
Number of observation	1000	

Std means standard deviation

Table 2: Reduced equation of women labour supply

PROBIT ANALYSIS

Parameter estimates converged after 17 iterations.

Optimal solution found.

Parameter Estimates (PROBIT model: (PROBIT (p)) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.
AGE	.02961	.00431	6.87496
FORW	.12205	.09898	1.23311
EDUCW	.29494	.02995	9.84729
MARST	.15316	.08502	1.80143
CHILDN	.00976	.05220	.18691
INCF	.02840	.04453	.63780
HUSBS	-.11637	.08566	-1.35848
PAF	.40904	.08528	4.79625
λ	-.760	.122	

Intercept	Standard Error	Intercept/S.E.
-3.02508	.34100	-8.87128

Pearson Goodness-of-Fit Chi Square = 997.557 DF = 991 P = .536

Since Goodness-of-Fit Chi square is NOT significant, no heterogeneity factor is used in the calculation of confidence limits.

Table 3: The results of the wage equation estimation by the OLS

	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta		
(Constant)	1.138	236		4.041	000
women training	012	063	005	187	852
women education	107	031	153	3.402	001
Mukman control factor(λ)	.760	122	.283	6.230	000

a Dependent Variable: women wage; F=67.874

Table 4: Structural equation

Variables	B	S. E	Wald	df	Sig.	Exp (B)
AGE	048	007	44.528		000	1.049
MARST	254	141	3.267		071	.289
CHILDN	062	078	639		424	.064
RICF	044	074	355		551	1.045
HUSBS	.192	141	.839		175	825
MAF	693	141	24.276		000	2.001
WWAGE	005	.000	92.733	1	.000	1.005
Constant	4.743	541	76.857		000	009

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1195.698	.174	.231

Table 2 shows the results of reduced model of labour force participation. These results are similar to some of the previous findings such as those by Kumar (1999). Age, education and presence of additional adult in the family are significant determinants of participation in the labour force for women.

From the OLS results, it can be seen that the coefficient of lambda, the variable controlling for self-selection, is significantly negative, indicating that the errors of the reduced participation model and those of the wage function are negatively correlated. This means that certain unobserved factors of the decision to participate or the probability of participation such as attitude and commitment do affect the market wage of a woman negatively.

Educational attainment was a major determinant of average earnings. The higher the level of school completed, the higher the wage, which could be expected. More education raises wages. The return to education is 10.7%

The parameters of the structural equation show that labour supply is influenced by several factors: age, presence of other adult in the family, marital status and imputed wage. First of all, labour supply is an increasing function of age; ceteris paribus, an increase in age of one year involves a rise in the probability of taking part in the labour market of 0.048. Studies by Mckenna, Mcnabb, Serumaga-Zake and Kotze, 2003) showed that Labour supply is positively related to the educational level. Education had permitted women to leave the traditional role of sex, to take their place in the society and to be independent.

In particular, one can observe that the existence of a low educational level reduces considerably the chances to take part in the labour market. Moreover, it was already shown that many women were localised in the protected wage earning where a certain educational level is necessary. It is a point that should draw the attention in the economic policy formulation.

Presence of other adult is yet another variable found significant in the regression analysis. The positive coefficient indicates that presence of relatives tends to encourage female employment. The presence of relatives

indicates an extended family structure in which household responsibilities of each individual member would be lesser and hence chances of women taking up employment outside the home larger. Moreover, the presence of relatives provide less costly and safer childcare options which otherwise would act as a major hindrance to married women's labour force participation.

Still another factor found significant in the regression analysis is marital status. The positive coefficient implies a higher propensity for married women to go out for work.

Contrary to what many studies found that low fertility leads to increases in the female LFP rate (ESCAP 1995), In Zhejiang, the presence of children does not push women to participate in paid work. The insignificance of the presence of children can be explained by childcare. Having children requires time to care and raise them. A high proportion of women reported that childcare and other family responsibilities are the major reason for not participating in the labour market.

CONCLUSION

The determinants of women's labour force supply have been found to be age, education, marital status, presence of other adult in the family and imputed wage. The analysis provides strong confirmation for the individual characteristics and the family context on the women decision to take part in the labour market. Wage is the important determinant in their decision to work; it raises the quality of life not only at the level of household but also for society at large. The presence of children in the household was found to be insignificant.

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