LABOR FORCE PARTICIPATION OF MARRIED WOMEN IN CHINA DO CULTURAL FACTORS MATTER?

By

LU, Yifei

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
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Committee in charge:

Professor Shun WANG, Supervisor

Professor Hugh Erik SCHUCKMAN

Professor Ja Eun SHIN

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ABSTRACT

LABOR FORCE PARTICIPATION OF MARRIED WOMEN IN CHINA

DO CULTURAL FACTORS MATTER?

By

Yifei Lu

Using China Health and Nutrition Survey (CHNS) data, I investigate the determinants of married women's labor force participation in China. This study is testing hypothesis that besides the traditional economic factors, the cultural factors which have been shaped by government policies and changing economic environment have significant impact on married women's labor force participation in China. It shows that the family of married woman, which lives near to wife's mother, has significant positive impact on married women labor force participation. Moreover, the husband of married women, who has siblings, has positive impact on married women's labor force participation. The fertility rate seems to have little effect on married women's labor force participation due to the family planning program in China. Implications of the findings are discussed.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

When it comes to the enormous challenge of our time, to systematically and relentlessly pursue more economic opportunity in our lands, we don't have a person to waste, and we certainly don't have a gender to waste.

-----Hillary Rodham Clinton

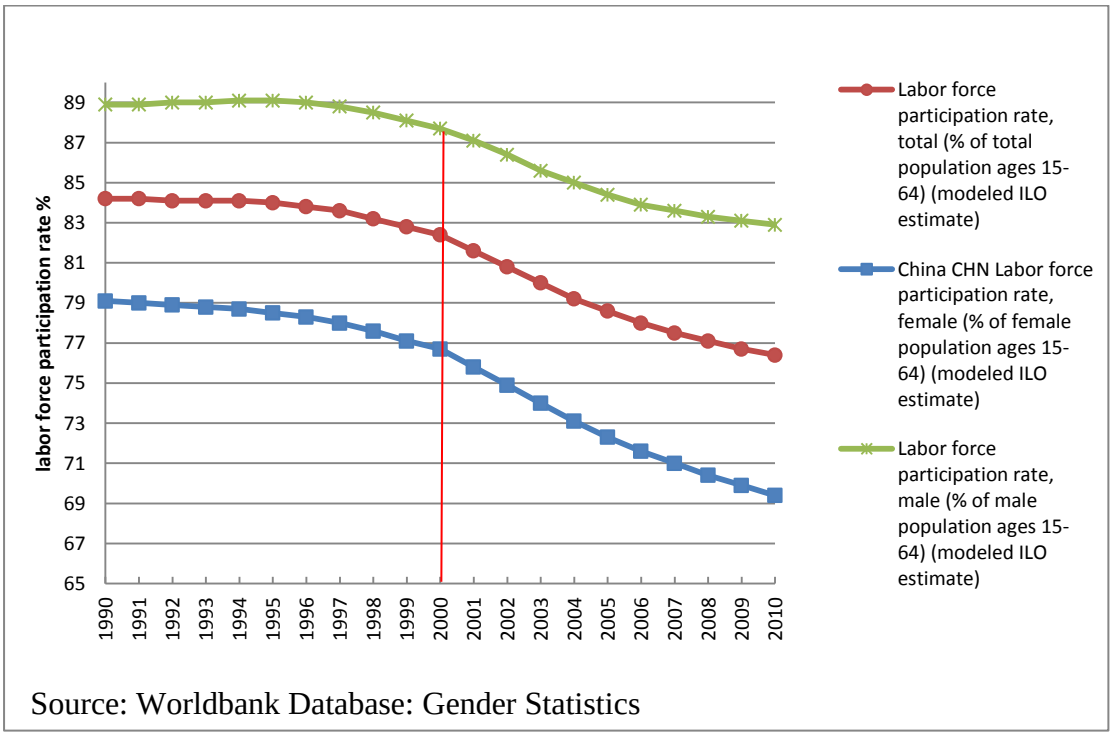
I. INTRODUCTION

In recent years, a marked feature in China's labor market is the constant decreasing of female labor force participation, for instance, it has declined from 79.1% in 1990 to 69.4% in 2010.[1] The economic reforms that began in 1979, have generally caused many people to lose their jobs, particularly women, who lost their jobs at a rate disproportionate to men. Even after more than 30 years, this phenomenon has not changed and the gap is getting bigger. Meanwhile, the female labor force participation in most regions of the world keeps increasing. For example from year 2000 to year 2010, the female labor force participation of ages 15 to 64 in Europe Union has raised 4.7%, in Latin America it has increased 5.9%, 2% and 1.9% is the growth rate in Africa and in Arab countries respectively.[2] Due to the aging population and low birth rate, policy makers and intellectuals in China realized the importance of female labor force participation for economy growth and human development. Many policies, which are aiming to promote female labor force participation, have conducted in recent years. For example, in 2006, China ratified the ILO Convention on Employment and Occupational Discrimination (Burnett 2010, P310); in 2007, it passed Employment Promotion Law and the Labor Contract Law, which extends the paid vocation for childbirth and reinforces the equal right of employment between men and women (Burnet 2010, P311). However, based on the statistics, the disparities of female labor force participation did not improve. As Figure 1 shows, from year 2000 to year 2010, the total labor force participation rate has decreased 6%;

[1] The World Bank. 2014. *World Development Indicators.* Washington, D.C.: The World Bank (producer and distributor). http://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS.
[2] The World Bank. 2014. *Gender Statistics. Washington, D.C.*: The World Bank (producer and distributor). http://databank.worldbank.org/data/views/reports/tableview.aspx.

in particular female labor force participation rate has decreased 7.3% and 4.7% for male. Therefore it is important to find the causation of this disparity of decline in order to promote female labor force participation. Former studies have pointed up that much of the changed female labor force participation is caused by the changed behaviour of married women (Mahoney 1961, P564). In order to give insight light and explore the female labor force participation behavior, this paper tries to find which factors are related to labor force participation of married women. This study finds that the social norms play an important role in explaining the overall patterns. In addition, it try to explore how the social norms shape married women's labor force participation in China by using panel data from China Health and Nutrition Survey (CHNS) and National Statistics Bureau, and give policy maker a reference to move the stigmas which against wives working.

Figure 1 - China Labor force participation rate, female (% of female population ages 15-64) (modeled ILO estimate)



Source: Worldbank Database: Gender Statistics

Two main theories are widely known to explain the behavior of married women's labor supply after World War II. Neoclassic theory claims that female labor force participation jointly determined by both their own income and their husband's income; some labor economists apply the game theory, and state that pursuing bargain power is one of the most important motivations for married women to go out to work. Apparently, there are many differences between China and western countries. First of all, comparing to US and European labor market, females in China have relatively high labor force participation rate historically. Before the economic reform in 1978, each adult had been assigned to a job, therefore the starting point of labor force participation is very high, the U-Shape curve which describe the relationship between economic growth and female labor force participation in advanced capitalism countries (Goldin 1995, P61-90), which discussed by Goldin cannot be applied in China. Secondly, the concept of family in China is quite different from its western partner, most of Chinese people are family-oriented and this also has an influence on their decision making procedure. The detail of the causation for this difference will discuss in the third part of this research. Thirdly, the one-child policy, which was implemented at 1980, forced by government, had made the fertility rate to decline very fast. Therefore, the number of children which is one of the most important factor in traditional theory, cannot account as family or personal decision. Instead, China's traditional and social changes are thought to have some significant impacts on the decision that whether married women should join the labor force or not. This paper focuses on determining to what extent these changes have affected their decisions.

This paper has classified explanatory variables into three categories, the economic variables such as women's expected wage and husband's wage (Mincer 1962, P65); the individual characteristics of married woman, for example, the fertility rate, age, and education; the characteristics of the household, like the situation of couple's siblings, the

members of the household (Brown 1985, P190). Based on the facts of the rapid growth of economy and the declining trend of female labor force participation in China, the research expect that economic variables may not be significant. However the social norms (including personal characteristic and household characteristic) become the governor factors for labor force participation of married women in China. Section II presents the theoretical debate of what are the determinants for married women's labor force participation. Section III illustrates the social changes in China. Section IV discusses the data. Econometric specification is presented in section V. The empirical results are presented in Section VI. The final section provides a summary and conclusion remarks.

II. LITERATURE REVIEW

The decision for married women to work is more like a household decision rather than individual decision. In the neoclassic world, the most important factors for married women's labor force participation are the market wage and husband's wage. The effect of women's expected wage in labor market is positive, and impact of husband's income on married women's labor force participation is negative. Moreover most of empirical evidence shows the positive income effect outweighed substitute effect (Mincer 1962, P79; Smith and Ward 1985, P63). In the meantime, some economists also found a decreasing sensitivity of economic variables on women's labor force participation over time, particularly after 90s. Goldin found that the income effect is not always significant, the elasticity declined through the century. They addressed the satisfaction as a factor for the married women to work outside. It seems that as the money income is continually increasing, people focus more on self satisfaction instead of market wage (Field 1976, P582; Finegan and Bowen 1969, P137; Goldin 1994, P32). These factors can be summarised as economic factors, and are considered as traditional determinants for married women's labor force participation. Based on recent

studies, which were mentioned above, the importance of traditional economic factors is diminishing.

Social factors such as care work for family members has increased married women's shadow price to join labor market. Instead, the impact of grandparents who can help for caring children, and would release married women from the caring burden is not clear, because eldercare can become a new burden for married women (Connelly 1992, P87; Wheelock and Jones 2002, P45). Some economists thought the increasing female labor force participation should be attributed to the social changes like the increasing education level, the low fertility rate, the equal rights between genders, rather than economic factors (Brown 1985, P198; Anderson and Dimon, 1998, P5). But it is hard for economists to quantify and clearly distinguish social changes from economic situation changes. Some studies, which conducted in rapidly changing society, are emphasising more the social norms and the impact of policies, such as the social stereotype, the family ties, or the impact of religions. Those cross-country and comparative studies provide a widen perspective in understanding the decision making of married women labor force participation in development countries (Lee, Jang and Sarkar 2007, P146; Sasaki 2002, P433).

However, most of the studies are based on the fact of rising female labor force participation. Because of the particular situation of the social change in China (from planned economy transfer to market economy), this paper address social norms rather than economic factors. The estimates of the role of these factors will be provided in our empirical results in the fifth part.

III. SOCIAL CHANGING IN CHINA

Since the establishment of People's Republic of China in 1949, the economy and society has changed a lot and both the economy development and the policies taken have

crucial influence in shaping modern society. Before the economic reforms everyone had "iron rice bowl," which means government assigned work with food, medical care, and children's education to all adults in the country. At that time, the housework burden was very small, because people were eating at government owned cafeteria and government also provided childcare from kinder garden until completion of education. In the 1970s government began to prepare economy reform, the "iron rice bowl" was replaced gradually and family planning programme was conducted in urban areas then extended to rural areas. The traditional Confucian culture addressed filial piety, therefore the old Chinese family had always kept in large size, and sons must live with their parents, while their parents were alive. After economy reform in nearly 40 years, the society and culture have changed a lot. The total fertility rate decreased from 6% before 1970 to 1.18% in 2010, the average life expectancy has increased 8 years, risen from 66 years in 1970 to 74 in 2010. The effect of family planning program and the cancelled welfare benefits is more obvious in recent years. According to the population census in 2010, based on the national residency "Hukou" system (it is a register system to prove the legal status of the household live in China), 30% of the family has at least one family member over 60 years old and the average size of household has declined from 3.46 persons per household to 3.08 persons per household. However this cannot reflect the real family relations. The idea of filial piety is still dominant in modern society, particularly as many nuclear families are choosing to live with or near to their parents. This family format is known as '4-2-1 family structure' (four old people, the couple, and one child). Studies on Chinese family relationship show that married daughters play a central role in the provision support for elderly, compare to financial support, married women in China provide more physical care for elder than other capitalist countries in Asia (Whyte 2005, P26).

IV. DATA ANALYSIS

In this study, most of data are from China Health and Nutrition Survey (CHNS), which includes sample of 11 provinces' sample, this study choose the survey years in 2000, 2004, 2006, 2009 and 2011 respectively. It includes 2415 married women respondents whose age range from 20 to 64 and the details of personal information is available. Since the labor force decision for married women are closely related to the market wage and regional unemployment rate, the research combined the average wage and unemployment rate of each province at survey years, and these data are from the National Statistic Bureau. Table 2 reports the labor force participation of married women with same marriage date during survey years. The sample data shows the same trend as census data, that the labor force participation has declined systematically. Married women, who got married before 1970, and between 1970-1980, their labor force participation has declined 22.6% and 20% from 2000 to 2011 respectively. This is understandable, because as age increased, more and more married women may got retired (the average age of retirement in China is 55 for women before 2013).

The number of women who got married after 1980 is continuously declining; for women who got married between 1980 and 1990, the labor force participation rate has declined 2.9% from 2000 to 2011; for women who got married between 1990 and 2000 it has decreased by 2.9%. Similarly, for the young couples who got married between 2000 and 2010, the labor force participation rate has decreased by 8.71%.

Table 1- Labor Force Participation of Married Women in Survey Years

Married Date	2000		2004		2006		2009		2011	
	Obs.	Mean	Obs.	Mean	obs	Mean	obs	Mean	obs	Mean
-1970	17	1.000	6	1.000	61	1.000	4	1.000	30	0.774
1970-1980	74	1.000	70	1.000	33	1.000	8	1.000	10	0.800
1980-1990	117	0.952	163	0.957	196	0.954	227	0.947	315	0.923
1990-2000	80	0.950	76	0.934	83	0.916	106	0.933	228	0.921
2000-2010			18	0.944	27	0.950	63	0.968	161	0.857

Because this study is more focusing on the relationship between social factors and married women's labor force participation, in order to avoid missing data problem, only those respondents who provide the information of family characteristics (couple's parents living information and siblings) were included. This may leads to the problem of selection bias, but there is big proportion that the respondents may randomly choose to answer these questions, which related to family characteristics. In that case, the impact of this procedure should be minimal.

The following variables were used in the study :

Lp: labor force participation for married women. This is a dummy variable scored 1 if the respondent is employed, 0 if the respondent did not have a job.

Economics Variables

Lnwg (+): the logarithm of average monthly wage in local area. It represents the expected wage for women if they go out to work (Mincer 1962, P67). Following the rule of neoclassic model, which expect the income effect of working as a positive impact on labor force participation. Higher market wage would increase the opportunity cost of dropping out from labor force and lead to higher married women's labor force participation (Ben-Porath 1973, P223).

Lnhincome (-): the logarithm of household income last year. Married women's work decision is considered to maximize whole family's welfare, the demand for service and leisure for married women is total family income (Mincer 1962, P66). Under extremely tight family ties background, not only husband's income has substitute effect, but also the income of parents who lived in the same household should be counted in the family income. So the content of data used here is the income, which includes all people who lived in the same household, excluding wife's wage. Following the neoclassic model's result, household

income is negative related to married women's labor force participation, while household income is increasing the expecting wage of married women will go up as well, therefore the opportunity of married women get a job will get smaller and the effect of household income is expected to be negative (Mincer 1962, P67; Killingsworth 1983, P87).

Une (-): the local unemployment rate at survey years. Representing local labor market condition, if the unemployment rate is high that means it is hard to find a job at that time, we assume the impact of unemployment is negative (Bowen and Finegan 1969, P127).

Personal Characteristics

Age (+): the respondent's age in the wave year. Former studies have proved that the relationship between age and labor force participation is a "W" shaped curve, the highest labor force participation rate is between age 30 and 45(Mahoney 1961, P574). In a linear function, generally we can expect a positive impact before 50, based on the nature of database; this study expect age is positive related to married women's labor force participation.

Fertility (?): fertility rate as a proxy for the respondent's opportunity cost of working outside. Higher fertility rate may increase the need of care work and leads to higher reservation wage. In previous studies fertility rate and married women's labor force participation rate are negative related (Mincer 1963, P67; Cain and Dooley 1976, P182 ; Moore Olsen 1983, P112 ; Hofferth 1995, P137; Margart et al. 2009, P127). However, because of one-child policy, government controls fertility rate in China, the fertility rate has kept at low level by legal force. There is no former experience which studies the effect of unnatural low fertility rate on married women's labor force participation; therefore it is hard to anticipate the effect of low fertility rate on married women's labor force participation in this circumstance.

Edul(+): education level of recipients. 0 means graduate from primary school, 1 means graduate from lower middle school, 2 means obtain upper middle school degree, 3 means graduate from technical or vocational school, 4 means obtain university or college degree, 5 means obtain master or higher degree.

Cultural Factors

Htype (+): household types are a dummy variable used to distinguish respondents' identity. 0 means respondent lives in rural area, which belongs to farmer; 1 indicates that respondent lives in urban area, which belongs to urban citizen. Because of the unbalance economic development between urban and rural area, living in urban area can obtain more resources, which include education and information. (Izraeli 1983, P123). Generally living in the urban areas tends to raise the labor force participation of married women (Fosu 1998, P79)

Hsiblings (+): number of siblings on husband's side. Traditionally under Confucian culture context, son takes the responsibility to take care of elder parents. Therefore if husband has siblings, they can share the burden of eldercare (Sasaki 2002, P37). Neumark and Pstlewaite suggest that siblings may also have significant impact on married women's labor force participation through relative income (Neumark and Postlewaite 1998, P67). I assume the impact of siblings is positive.

Siblings (+): number of siblings on wife's side. This study assume that the variable has the same effect as previous one, and it can share the burden of eldercare, also can help childcare, the coefficient should be positive.

Wml (+): categorical variables, where respondent's mother lives. This variable ranged from 0 to 4, as the number get bigger if the respondent's mother lives farther from the daughter's family. 0 represents mother lives in the same house, 1 means she lives in next-

door, 2 indicates she lives in the neighbourhood or in same village, 3 means she lives in the same city or county, 4 means she lives in other city. Usually mother who lives in the same household or nearby is considered as a substitute labor for housework and childcare, which can reduce the housework burden of married woman (Rosett 1973, P57; Connelly and Rachel 1993, P98). Meanwhile, the family ties in China is very tight as mentioned in the previously part, grandparents taking care of their grandchild is quite common. The impact of Wml is positive if mother lives nearby.

Wmil (+): categorical variables, where mother in law lives. I assume this variable has same effect as Wml, the impact is positive, and based on the data collection.

Table 2 - Summary Statistics

Variable	Obs.	Mean	Max	Min	Std.Dev
Lp	2131	0.94	1.00	0.00	0.25
Lnwg	2131	8.15	9.13	6.36	0.64
Age	2131	38.71	95	20	13.43
$Age^2/100$	2131	16.79	90.25	4.00	12.05
Lnhincome	2131	7.75	11.44	3.40	1.05
Une	2131	3.69	6.50	1.40	0.73
Education Level					
Primary	387	0.00	0.00	0.00	0.00
Lower Middle	786	1.00	1	1	0.00
Upper Middle	432	2.00	2	2	0.00
Vocational & Technical	202	3.00	3	3	0.00
University	315	4.00	4	4	0.00
Master & Higher	5	5.00	5	5	0.00
Fertility	2131	1.18	4	1	0.46
Htype	2131	0.64	1	0	0.48
Hsiblings	2131	2.42	12	0	1.80
Siblings	2131	2.85	12	0	1.80
Wml					
Same House	119	0	0	0	0.00
Next Door	62	1	1	1	0.00
Same Village	854	2	2	2	0.00
Same City	945	3	3	3	0.00
Other City	149	4	4	4	0.00
Wmil					
Same House	385	0	0	0	0.00
Next Door	990	1	1	1	0.00
Same Village	315	2	2	2	0.00
Same City	337	3	3	3	0.00
Other City	95	4	4	4	0.00

V. Model Specification

Following models were used in many previous researchers (Bowen and Finegan 1969, P159; Fosu 1990, P285), the form of regression model:

$$Y_{it} = \alpha + X'_{it}\beta + \mu_{it} \qquad (1)$$

Where α is intercept, Y is dependent variable, X is a vector of explanatory variables, β is a vector of regression coefficients to be estimated, and μ denotes the stochastic perturbation variables, i and t represent individual and the year of survey conducted respectively.

In this paper, my aim is to explore the influence of factors on the married women's labor force participation. Therefore, the model can be specified as

$$y_{it} = \alpha + x'_{1it}\beta + x'_{2it}\gamma + \delta_i + \mu_{it} \qquad (2)$$

The x'_1 represented variables which have universal features, such as market wage (Lnwg) and unemployment rate (Une) at provincial level, household income (Lnhincome) and age. x'_{2it} represents variables that have shaped by the changing society, such as number of siblings for couples, (Hsiblings and Siblings), the size of household (where mother and mother in law live) and household location (Htype). δ_i indicate the education fix effect through five survey years; μ_{it} denotes the stochastic perturbation.

The dependent variable is a dichotomy, whether married women were in the labor force during survey year. It can be interpret as the probability that married woman was in the work force; in that case we can use the Probit model to test the robustness of the regression model:

$$Pr(y = 1|x) = F(\alpha + x'_{1it}\beta + x'_{2it}\gamma + \delta_i) \qquad (3)$$

VI. Result

In the Ordinary Least Square (OLS) regression, the study begin with testing traditional factors, which include the market wage, the household income (exclude wife's wage), the unemployment rate, and married women's age (in order to make age more

independent, the study use age^2/100 here). Then to test the impact of variables, which had been shaped by the dramatically changing society. Column (a) only include traditional variables, column (b) include cultural variables. Through (a) and (b), the education level is fixed.

Table 3 - OLS Regression

Variables	(a)		(b)	
	Coef.	Robust SE	Coef.	Robust SE
Lnwg	-0.001	(0.006)	0.001	(0.006)
Age	0.025***	(0.002)	0.025	(0.002)
$Age^2/100$	-0.040***	(0.003)	-0.039***	(0.003)
Lnhincome	-0.012***	(0.004)	-0.007*	(0.004)
Une	0.010*	(0.005)	0.008	(0.005)
Edul (Lower Middle)	0.001	(0.010)	0	(0.009)
Edul(Upper Middle)	-0.015	(0.012)	-0.011	(0.013)
Edul(Vocational&Technical)	-0.038**	(0.014)	-0.034**	(0.013)
Edul(University)	-0.053***	(0.015)	-0.044***	(0.016)
Edul(Master&Higher)	-0.348***	(0.134)	-0.338***	(0.123)
Fertility			0.004	(0.005)
Htype			0.036***	(0.010)
Hsiblings			0.003	(0.002)
Siblings			-0.002	(0.002)
Wml(Next Door)			0.101***	(0.037)
Wml(Same Village)			0.129***	(0.027)
Wml(Same City)			0.138***	(0.029)
Wml(Other City)			0.149***	(0.022)
Wmil(Next Door)			0.01	(0.012)
Wmil(Same Village)			0.008	(0.014)
Wmil(Same City)			0.014	(0.017)
Wmil(Other City)			0.050**	(0.022)
N	2120		2120	
Cons	0.707***	(0.066)	0.500***	(0.078)
Adj-R^2	0.495		0.513	

*p<0.10, **p<0.05, ***p<0.01

Based on the OLS estimation, column (a) shows the influence of traditional factors. Out of expectation, the market wage is insignificant; there are two possibilities for this. First,

it may be attributed to the reduced elasticity of the income effect, which is similar as the empirical result of advanced country; another possibility is that, the huge gap between high income and low income may cause the average market wage cannot reflect married women's expected wage. Considered China's economy development level, the last explanation is more reasonable. Another important traditional factor is household income (Lnhincome). As we expected household income is significant and negative correlated with married women's labor force participation. This result is consistent with the neoclassical model, that substitute effect has negative impact on married women's labor force participation; when household income increases by 1% , the labor force participation for married women's will decrease 0.013%. The impact of age on married women's labor force participation is negative and statistically significant. When it increases by 1 unit the labor force participation for married women decrease 0.012%. This negative effect is also found in some other Asian countries which are deeply influenced by the Confucian culture. In those countries that the patriarchal culture is still dominant, the discrimination of female is a barrier for married women going outside to work, particularly for older married women (Sasaki 2002, P435; Lee, Jang and Sarkar 2007, P148). The unemployment rate is positive and significant at 0.1 level, which is in contrast with previous study. However Mincer's research may give us a hint to understand this situation, it indicates that in the higher unemployment region, husband also faced a hard time to find the suitable job, in order to afford the household consumption, wives may go out for working instead of doing unpaid domestic housework (Mincer 1985, P113). For those married women who graduated from university or higher, the effect of higher education is significant, particularly for married women who obtained master degree, or higher, the impact is negative and significant. This opposite result may be related to the high education bubble. University education in China has been expanded dramatically in recent years and labor market mismatch problem accelerated the risen unemployment rate of high-educated

people. Moreover, higher education drives the reservation wage goes up, but the market wage for university graduates is relatively low in labor abundance countries like China, therefore the higher education level presents negative coefficient on married women's labor force participation. After we include the changing societal factors in column (b), most of the results of the traditional factors are held and the only difference is that at education level 5, the college graduates, the impact is insignificant but still negative.

The coefficient of changing societal factors presented in column (b), most of societal factors show significant results, except the fertility rate and the number of the daughter's siblings. As expected, due to the family planning program, the impact of fertility rate is not significant for married women's labor force participation in China. The household type and number of husband's siblings are significant and positive. Married women living in the urban area have higher labor force participation rate comparing to those who live in the rural area, and married women are likely to join the labor force if husband have siblings. It is obviously that people live in urban areas have more advantages for self development and finding a job, Moreover, rural areas are more conservative and discrimination on women is stronger. Married women whose husband has siblings may share the eldercare, which will release the burden from married women; another explanation is that the only boy will inherit all property from his parents, but if he is not the only child, that means he can only inherit part of his parents' property, which reduce the expect income of family in future. As mentioned before, the married women's labor force participation is a household decision, so this passive expectation may encourage married women to go out for work. Coefficients of the location of mother and mother in-law are also significant and positive related to married women's labor force participation. The reasonable explanation is that if mother or mother in-law live nearby or in same house, they may help housework and take care of their grandchildren, therefore,

the shorter the distance between mothers and their child's family the greater opportunity for wife participate in the labor force.

In the empirical study, household income and education level, as well as age may have collinearity problem. So I checked the variance inflation factors (VIF) and the mean of VIF is 1.35, which indicates that the possibility of collinearity for OLS regression is quite small.

Table 4 compares the result of OLS regression and Probit regression. Most results of Probit regression are consisted with OLS regression, except three variables. These are the fertility rate, the location of mother in-law and the number of husband's siblings. Although the factors wmil and hsiblings become insignificant in Probit regression, but it still positive related to married women's labor force participation. The effect of fertility rate has an opposite outcome presented in Probit regression. It becomes positive and statistically significant. Since I suppose that the effect of number of children is hard to predict, the increasing of living cost and education cost may drive mother into labor market. Estimate of the correlation matrix shows that the correlation between child and married women's labor force participation is positive (r=0.079) , therefore the result of Probit regression for this explanatory variable is more reliable. According to the result of Probit regression, my OLS result is robust.

Table 4 - OLS and Probit Regression

Variables	OLS				Probit			
	(a)		(b)		(c)		(d)	
	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE
Lnwg	-0.001	(0.006)	0.001	(0.006)	0.121	(0.113)	0.167	(0.122)
Age	0.025***	(0.002)	0.025	(0.002)	-0.287***	(0.060)	-0.276***	(0.080)
$Age^2/100$	-0.040***	(0.003)	-0.039***	(0.003)	0.147***	(0.050)	0.133**	(0.070)
Lnhincome	0.012***	(0.004)	-0.007*	(0.004)	-0.180**	(0.074)	-0.136	(0.088)
Une	0.010*	(0.005)	0.008	(0.005)	0.245**	(0.071)	0.258**	(0.083)
Edul (Lower Middle)	0.001	(0.010)	0	(0.009)	0.001	(0.267)	-0.172	(0.243)
Edul (Upper Middle)	-0.015	(0.013)	-0.011	(0.012)	-0.449*	(0.260)	-0.526**	(0.253)
Edul(Vocational &Technical)	-0.038**	(0.014)	-0.034**	(0.013)	-0.605*	(0.300)	-0.730**	(0.303)
Edul (University)	0.053***	(0.015)	0.044***	(0.016)	-0.693**	(0.266)	-0.701**	(0.284)
Edul (Master&Higher)	0.348***	(0.134)	0.338***	(0.123)	-3.08	(0.376)	-3.781	(0.455)
Fertility			0.004	(0.005)			0.631*	(0.262)
Htype			0.036***	(0.010)			0.903***	(0.157)
Hsiblings			0.003	(0.002)			-0.014	(0.041)
Siblings			-0.002	(0.002)			-0.091*	(0.054)
Wml (Next door)			0.101***	(0.037)			0.63	(0.472)
Wml (Same village)			0.129***	(0.027)			0.783***	(0.245)
Wml (Same city)			0.138***	(0.027)			1.080***	(0.250)
Wml (Other city)			0.149***	(0.029)			1.176***	(0.392)
Wmil (Next door)			0.01	(0.012)			0.399*	(0.206)
Wmil (Same village)			0.008	(0.014)			0.174	(0.300)
Wmil (Same city)			0.014	(0.017)			0.164	(0.244)
Wmil (Other city)			0.050**	(0.022)			0.386	(0.440)
N	2120		2120		2120		2120	2120
-cons	0.707***	(0.070)	0.500***	(0.078)	12.009***	(2.152)	9.382***	(2.730)
Adj-R^2	0.495		0.513					
chi^2					633.380		686.780	
bic	-1306.200		-1287.500		473.090		510.205	

*p<0.10, **p<0.05,***p<0.01

VII. Summary and Conclusion

This paper address the impact of changing society factors on the married women's labor force participation in China. Using data from CHNS and National Statistical Bureau from 2000 to 2011, it try to give an insight light for the big question of why the female labor force participation is decreasing despite the rapidly growing economy and the increasing attendance at tertiary school. The result of empirical work has been consistent with previous studies but it also raises some new questions, that family composition in China can affect married women's labor force participation decision, particularly where married women's mother live, and the number of husband's siblings. Because the grandparents from wife's side, always help their daughter to take care of her child in China, so build family which near to mother can help her take care of young child. Moreover sons have more responsibility in terms of eldercare in China, and under patriarchy dominate culture, the responsibility always transfer to his wife. therefore if husband has more siblings, the burden of physical care for married women will reduce, particularly under the changes of family structure which shaped by one-child policy, these two factors are significant in both OLS and Probit estimation.

Furthermore, the study indicates that age and higher education level of married women have negative impacts on their labor force participation during that period. The same trend is shown in other Asian countries in previous studies, which imply that discrimination of working married women in these societies is still a serious issue. In addition, job mismatch problem for higher educated labor force should be taken into account as well, because the more investment in education the higher reservation wage people will expect. Another interesting result is that household type has significant impact on married women's labor force participation as it implies the huge income gap between urban and rural areas that also rise the inequality of employment opportunity. This found worth future study, to distinguish

the different determinants of married women's labor force participation between rural and urban area in China.

Since this study uses the usable data from existing datasets, it was limited by the data availability. This study is focusing on the determinants which shaped by China's Policies and the social changes. The results of this study may give a big picture for married women's behavior in labor market in China. Many interesting questions also arise from the research, such as why there is different impact between mother and mother in law on female labor force participation. For the study on labor market, it is worth to figure out why higher education has a negative impact on married women's labor force participation. It also suggests that government should be alarmed by the declining trend of female labor force participation, particularly in the period of low fertility rate and the increased aging population. It may reflect that the there is more gender discrimination in the labor market than before, and the problem of job mismatch may become future barrier for human capital accumulation.

BIBLIOGRAPHY

Amyra, Grossbard-Shechtman. "A Theory of Allocation of Time in Markets for Labor and Marriage," *The Economic Journal 94*. No. 376 (1984): 863-882.

Anderson, Joan B., and Denise Dimon. "Married Women's Labor Force Participation in Developing Countries: The Case of Mexico," Estudios Económicos Vol. 13, No.1 (1998): 3-34.

Aguirre, and others. *Women and Work in 2012*. Empowering Third Billion, Booz & Company Inc., 2012.

Ashenfelter, Orley, and James Heckman. "The Estimation of Income and Substitution Effects in a Model of Family Labor Supply," *Econometrical 42, No 1* (1974): 73-85.

Becker, and S. Gary. *Demographic and Economic Change in Developed Countries: An Economic Analysis of Fertility.* Princeton: Princeton University Press, 1960.

Ben-Porath Yoram. "Economic Analysis of fertility in Israel: Point and Counterpoint, " *The Journal of Political Economy 81*, No.2 (1973): 202-233.

Bergman Barbara. *The economic Emergence of Women.* New York :Basic Books,1986.

Betson, David, and Jacques van der Gaag. "Working Married Women and the Distribution of Income Author," *The Journal of Human Resources Vol. 19*, No. 4 (1984): 532-543.

Blundell, Richard, and Ian Walker. "Modelling the Joint Determination of Household Labour Supplies and Commodity Demands," *The Economic Journal 92, No. 366* (1982): 351-364.

Brinton, Lee, and Parish. "Married Women's Employment in Rapidly Industrializing Societies: Examples from East Asia," *American Journal of Sociology Vol. 100*, No. 5 (1995): 1099-1130.

Bowen, William G., and Thomas Aldrich Finegan. *The Economics of Labor Force Participation.* Princeton, N.J.: Princeton University Press, 1969.

Burnett, Jamie. "Women's Employment Rights in China: Creating Harmony for Women in the Workforce," Indiana *Journal of Global Legal Studies 17,* No. 2 (2000): 289-318.

Cain, Glen G, and Dooley. "Estimation of a Model of Labor Supply, Fertility, and Wages of Married Women," *Journal of Political Economy Vol. 84*, No. 4 (1976): 179-200.

Carrasco, Raquel. "Binary Endogenous Regression in Panel Data: Estimating the Effect of Fertility on Female Labor Force Participation," *Journal of Business and Economic Statistics 19* (2001): 385-94.

Clair Brown. "An Institutional Model of Wives' Work Decision," *Industrial Relations 24*, No2.(1985): 182-204.

Chen, Liu, and Mair. "Intergenerational Ties in Context: Grandparents Caring for Grandchildren in China," *Soc Forces* (2011): 571-594.

Connelly, Rachel. "The Effect of Child Care Costs on Married Women's Labor Force Participation," *The Review of Economics and Statistics Vol. 74*, No. 1, (1992): 83-90.

Du, Fenglian, and Xiao-Yuan Dong. "Women's Employment and Child Care Choices in Urban China during the Economic Transition," *Economic Development and Cultural Change 62*, No. 1 (2013): 131-55.

Duleep, Harriet Orcutt, And Seth Sanders. "The Decision to Work by Married Immigrant Women," *Industrial and Labor Relations Review 46* (1993): 677-690.

Durand, John D. "Married Women in The Labor Force," *American Journal of Sociology Vol. 52*, No. 3, (1992): 217-223.

Fosu, Augustin Kwasi. "Labor Force Participation of Married Women: Do Regions Matter," *The American Economist Vol. 44*, No. 1 (2000): 70-80.

Hofferth Sandra and Moore Kristin. "Women and Their Children." Chap in *The Subtle Revolution: Women at Work*. Washington: Urban Institute, 1975.

Goldin, Claudia. "Life-Cycle Labor-Force Participation of Married Women: Historical Evidence and Implications," *Journal of Labor Economics 7* (1989): 20-47.

Goldin, Claudia. *The U-Shaped Female Labor Force Function In Economic Development Andeconomic History*. National Bureau of Economic Research, No. 4707. New York, 1995.

Izraeli, Oded. "The Effect of Environmental Attributes on Earnings and Housing Values across SMSAs," *Journal of Urban Economics 22* (1982): 361-76.

Jiang, Lin. "Changing Kinship Structure and its Implications for Old-Age Support in Urban and Rural China," *Population Studies Vol. 49, No. 1* (1995): 127-145.

Judith, Fields M. "A Comparison of Intercity Differences in the Labor Force Participation Rates of Married Women in 1970 with 1940, 1950, and 1960," *The Journal of Human Resources* 11 (1976): 568-77.

Lee, Bun Song, Soomyung Jang, and Jayanta Sarkarc. "Women's Labor Force Participation and Marriage: The Case of Korea." *Journal of Asian Economics 19*, No. 2 (2008): 138–154.

Lim, Lin Lean. "Female Labour-Force Participation." *In Population Bulletin of United Nations: Completing The Fertility T*ransition, (2009): 203-221.

Mahoney, Thomas A. "Factors Determining the Labor-Force Participation of Married

Women," *Industrial and Labor Relations Review Vol. 14,* No. 4 (1961): 563-577.

Marianne Ferber and Bonnie G. Brinbaum. "The 'New Home Economics': Retrospect as Prospects" *Journal of Consumer Research 4,* No.1 (1977):19-28.

Margaret, Connelly, and others. *Childcare, eldercare, and labor force participation of married women in urban China: 1982 -2000.* IZA discussion papers, No. 4204. 2009.

Mincer, Jocob. *Labor Force Participation of Married Women: A Study of Labor Supply, In Aspects of Labor Economics.* Princeton: Princeton University Press, 1962.

Mincer, Jocob "Intercountry Comparisons of Labor Force Trends and of Related Development: An Overview," *Journal of Labour Economics 3* (1985):1-32.

Neumark, David, and Andrew Postlewaite. "Relative Income Concerns and the Rise in Married Women's Employment," *Journal of Public Economics* 70 (1998): 157-183.

Olsen, Lawrence. *Cost of Children.* Lexington: Lexington Books, 1983.

Reimers, Cordelia W. "Cultural Differences in Labor Force Participation Among Married Women," *The American Economic Review Vol. 75,* No. 2 (1985): 251-255.

Rawski, and G. Thomas. *China's Industrial Development: In Hina's Great Transformation.* Cambridge: Cambridge University Press, 2008.

Sasaki, Masaru. "The Causal Effect of Family Structure on Labor Force Participation among Japanese MarriedWomen," *The Journal of Human Resources Vol. 37,* No. 2 (2002): 429-440.

Schultz, T. Paul. "Testing the Neoclassical Model of Family Labor Supply and Fertility," *The Journal of Human Resources 25,* No. 4 (1990): 599-634.

Smith, J. P., and Ward, M. P. "Time-series growth in the female labor force," *Journal of Labor Economics,* 3 (1985): 59-90

Wang Yanqiu. "Women's Rights Protected and Gender Awareness Enhanced." (2011):10.

Wheelock, Jane , and Katharine Jones. "Grandparents Are the Next Best Thing, Informal Childcare for Working Parents in Urban Britain," *Journal of Social Policy 31,* No. 03 (2002): 441 - 463.

Whyte, Martin King. "Continuity anChange in Urban Chinese Family Life," *The China Journal No. 53* (2005): 9-33.

Yi, Zeng. "Changes in Family Structure in China: A Simulation Study." *Population and Development Review, Vol. 12,* No. 4 (1986): 675-703.

APPENDICES

Data Source

CHNS: The China Health and Nutrition Survey (CHNS) is a project which aims to investigate the impact of economic transformation and family planning policy on health and nutrition of Chinese citizen. CHNS is cooperated by the Carolina Population Centre at the University of North Carolina, and the Chinese Academy of Preventive Medicine in Beijing, which began in 1989. So far it has conducted nine times (1989, 1991, 1993, 1997, 2000, 2004, 2006, 2009 and 2011), and covered both rural and urban area in nine provinces, including Liaoning, Heilongjian, Shandong, Jiangsu, Henan, Hubei, Hunan, Guangxi, and Guizhou, Beijing, and Shanghai were included in 2011. The database covered demographic characteristics, economic development, public resources, and health indicators. Moreover, CHNS also includes community dataset, including information on the food market, medical institutions, and other social service facilities. CHNS used a multistage, random cluster random method to select the samples in nine province. Then stratified counties by income level(high, middle and low), and weighted four randomly selected counties at each level in each provinces as rural samples. In total the survey has covered 108 villages, 41 urban areas and 38 suburbs, and covered 4,400 households and around 19,000 individuals. For more details on the data, see www.cpc.unc.edu/projects/china.

World Development Indicators: World Development Indicators are a series of complex development indicators which collected by World Bank. It includes data at national level and provides global estimates as well. For more information on the data, see http://data.worldbank.org/products/wdi.