Research on the Influence of Family Housing Loan on Married Women's Labor Participation

Zhang Lipan, Peng Jingyi, Zhang Zhengjie*

Sichuan Agricultural University, Chengdu, Sichuan 611830, China

*Corresponding author

Keywords: Housing loans; Married women; Labor participation

Abstract: This paper studies the female labor participation rate from the perspective of household housing loans, and empirically tests the impact of household housing loans on female labor participation by using the data of China Household Financial Survey (CHFS). The results of the study show that family housing loans increase the possibility of female women's labor participation and employment, and the greater the total amount of home loans and the monthly repayments, the greater the promotion of female labor participation; The high-asset group found that as the income of the asset group increases, the labor participation rate of women will experience an increase and then the impact will not be significant. Furthermore, the improvement of family housing loans has a significant impact on the participation of workers aged 20-30, living in the East and west, having children in the family, being party members in political outlook and being educated.

1. Introduction

Since the reform and opening up, China's economic system has gradually shifted from a planned economy to a market economy. The economy has made rapid development and the labor participation rate has increased significantly. According to the results calculated from the census data, the labor force participation rate of urban women aged 16-55 years was 66.85% and the employment rate was 59.61% in 2000. In 2010, the labor force participation rate rose to 72.92% and the employment rate rose to 70.38%. Along with the increase in female labor participation rate, the scale of China's household debt, especially the scale of family housing loans, has increased rapidly. According to the data of the People's Bank of China, China's household loans increased from 3.16 trillion at the end of 2005 to 47.88 trillion at the end of 2018, with an average annual growth rate of 47.64%, much higher than the GDP growth rate during the same period. The consumer loans of the family increased from 2.19 trillion at the end of 2005 to 37.79 trillion at the end of 2018, with an average annual growth rate of 37.62%. Among them, medium and long-term consumer loans are mainly housing mortgage loans. By December 2018, household medium and long-term consumer loans accounted for 76.72% of the total consumer loans. So, with the rapid growth of household debt, especially housing loans, is the increase of female labor participation a reflection of the “debt effect”?

Many scholars have found that women's participation in labor and income can narrow the income gap of various classes [1], increase the education level of their children and reduce the intergenerational transmission of poverty [2], so it is necessary to study which factors affect women's labor participation. Theoretical and practical significance. With the deepening of China's aging, China will face the challenge of insufficient labor supply. According to the statistics bureau data, the number and proportion of China's working-age population have declined for 7 consecutive years, with a decrease of more than 26 million people in 7 years. Therefore, it is of great strategic significance to study which factors affect women's labor participation. With the expansion of college enrollment and the implementation of the one-child policy, the educational level of Chinese women has improved significantly [3], this will enhance women's employability and increase women's autonomy in employment and make women more independent. Then, in the case of economic system, family structure, family division of labor, wage structure, and gender wage gap

  DOI: 10.25236/cstss.2019.029

[4-5]. Will household housing loans affect women's labor participation rate? What is the direction and extent of its impact? Are there differences in family impact for children of different ages? Are there significant differences between different regions? This paper aims at answering these questions.

2. Journals Reviewed

According to the labor decision-making model under family time constraints, in order to maximize family utility, the higher wage rate in the market will invest more in market labor, while the lower market wage rate will invest more in family production. Women's physiological characteristics, family responsibilities, etc. will lead to higher non-salary costs than men, and they are in a disadvantaged position in participating in market competition. Under the drive of maximizing the profit of business owners, women are employed less, but women are raised in childbirth and child rearing. There are natural advantages in terms of aspects, so they are in an advantageous position in household production. However, with the gradual establishment and improvement of China's market economy system, women's education level and self-value awareness are continuously improving, and the labor participation rate of urban women is gradually increasing. With regard to the research on female labor participation, many scholars at home and abroad have gradually shifted their research from the traditional research perspectives of education, family economic status, marriage, childbearing, child care, etc. [6-7] to different novel perspectives [8-9] such as wage structure, advances in medical technology, policy transformation, marketization process, etc.

With regard to the research on the impact of housing loans on female labor participation, foreign scholars have conducted a large number of studies on the relationship between labor supply and debt in various countries using cross-sectional data or panel data. Fortin used Canadian household expenditure survey data to find that housing loans have a significant positive impact on married women's labor participation. He further confirmed that the ratio of monthly contribution to income has a significant positive impact on women's labor participation rate [10]; Del Bocaand Lusardi established a simultaneous equation for housing loans and female labor participation, and found that female labor participation has a significant impact on the choice of family housing loans [11]; Bottazzi uses panel data from the UK household survey to find monthly comparisons between income and income. Wife labor participation has a significant positive impact, but the negative impact of child care on female labor participation is greater, resulting in the combined effect of the two is still negative [12]; Belkar, Cockerell and Edwards, using Australian micro-data, found that household debt significantly increased the likelihood of male and female labor participation, and had a greater impact on women than men [13].

3. Data, Variables and Descriptive Statistics

3.1. Data sources

This paper selects the data of China Household Financial Survey (CHFS) in 2013, which is a nationwide sample survey conducted by China Household Financial Survey and Research Center of Southwest University of Finance and Economics. The survey sample is distributed in 29 provinces, 262 counties and 1048 communities, with a total of more than 28,000 households.

3.2. Variables and descriptive statistics

The variable to be explained in this article is female labor participation, which refers to the ratio of female economically active population to female working age population. According to the question in the questionnaire, “Do you currently have a job, including farming?” , if the answer is “yes”, the labor participation is assigned to 1; If the answer is “no,” the question will be “why don't you work?” If the answer is “unemployed or unable to find a job”, she is also considered as an economically active population, and the labor participation variable is assigned to 1, while the other cases are assigned to 0. This paper focuses on the explanatory variable of housing loan, which is

measured by whether there is housing loan, the outstanding balance of housing loan and monthly repayment. In the CHFS questionnaire, if there are multiple housing units in the sample and one of them uses bank loans, and there is an outstanding balance at the time of receiving the questionnaire, it is considered that if the family owns housing loans, the variable value of housing loans will be assigned to 1, otherwise 0. The outstanding balance of the housing loan is based on the question "How much does your family still owe on the housing loan?" To determine, the value is the sum of the outstanding balance of 3 houses. The monthly repayment amount is estimated according to the total amount, term and interest of the family housing loan and the repayment method of equal principal and interest, and the value is also the sum of 3 sets of houses. Other control variables include household economic status variables and demographic characteristics variables, and demographic characteristics variables. The detailed description and description of the variables are shown in Table 1.

Table 1 Descriptive statistics of major variables

Variable	Mean value	Standard deviation	Minimum value	Maximum value
Female labor participation	0.67	0.47	0	1
Female employment	0.63	0.48	0	1
Is there a housing loan	0.07	0.34	0	1
Family Income (RMB 10,000)	8.27	37.79	0	2568
Family Assets (RMB 10,000)	125.83	1308.93	0.02	100240.1
Number of children aged 0-6	0.34	0.57	0	6
Number of children aged 7-19	0.51	0.68	0	7
Number of children aged 20-30	0.71	0.91	0	5
Age	39.83	9.02	18	55
College or above	0.23	0.42	0	1
middle school	0.6	0.49	0	1
Primary school	0.14	0.34	0	1
Party member	0.06	0.24	0	1
Health	3.13	1.14	1	5
East	0.48	0.5	0	1
West	0.26	0.44	0	1

In this sample, the female labor participation rate is 67%, of which 63% are employed, which is close to the data of the 6th population census in 2010, so the sample is very representative. Judging from the income characteristics of Chinese households, the proportion of households with housing loans in the sample is 7%, and the average of household income and assets are 82,700 yuan and 1,258,300 yuan respectively. The standard deviation is 379,700 yuan and 1,390,933,000 yuan respectively, the maximum value is 25.68 million yuan and 1002.4 million yuan respectively. It can be concluded that there is a large gap between the rich and the poor in China; from the perspective of family structure, families 0-6 years old The mean of the number is 0.34, the average number of children aged 7-19 is 0.51, and the number of children aged 20-30 is 0.71. The age of the child is positively correlated with the number of children in the family; From the perspective of education level, the average age of women in the sample is 39.83, with 23% college and above diploma, 60% middle school diploma and 14% elementary school diploma. At present, the higher education of working-age women in China is relatively scarce; from other aspects, the proportion of Party members is 6%, and the overall health status is on the middle side, due to the eastern part. Towns are relatively dense, so the proportion of eastern and western cities is 48% and 26% respectively.

Table 2 Home loan and sample family characteristics

Variable	Housing loan family				Homeless loan family			
	Mean	Standard deviation	Minimum value	Maximum	Mean	Standard deviation	Minimum value	Maximum
Female labor participation	0.76	0.43	0	1	0.66	0.47	0	1
Female employment	0.73	0.44	0	1	0.63	0.48	0	1

Table 2 shows the characteristics of households with and without housing loans. The female labor participation rate and employment rate of households with mortgages are 76% and 73%, respectively, while the female labor participation and employment rate of households without housing loans. 66% and 63% respectively. It can be seen that the female labor participation rate and employment rate of households with housing loans are 10% higher than those of households without housing loans, with obvious differences.

4. Empirical Analysis

4.1. Basic model test

4.1.1. Housing loans and female labor participation

This paper first uses the housing loan, the unpaid amount of housing loans and the monthly repayment amount to measure the housing loan of the family, and uses the Probit model to test the impact of housing loans on female labor participation. The results are shown in Table 3. The study found that households with home loans increased the likelihood of women's participation in work by 7.84% compared to families without home loans. At the same time, the more unpaid balance and monthly repayment of housing loans, the more likely women are to participate in work. For every 1% increase in unpaid amount and monthly repayment of housing loans, the possibility of women participating in work increases by 0.62% and 0.75%, respectively. In addition, households with housing loans will be accompanied by a certain debt service burden, and the greater the debt service burden, the greater the possibility of facing liquidity constraints, thus the greater the possibility of women participating in work.

Judging from the income characteristics of Chinese families, the family income (after deducting the female work income) has a significant positive impact on female labor participation. The influence of total family assets on female labor participation is negative, but it is not statistically significant.

From the perspective of family structure, the number of children aged 0-6 has a significant negative impact on women's labor participation, which is the same as Du Fenglian's conclusion. The number of children aged 7-19 has a negative impact on women's labor participation, but it is not significant. However, the number of children aged 20-30 has a significant positive impact on women's labor participation. It may be that children aged 20-30 are facing higher education, marriage, house purchase and other problems, which increase the economic pressure on families and increase the possibility of women's participation in work. The effect of age on female labor participation presents an inverted U-shaped situation, which first increases with age and then decreases with age.

From the perspective of education level, whether or not we have received university education has a significant positive impact on female labor participation, and the impact of primary and secondary education is not significant. Zheng Meiqin [4] believes that the higher the education level of women, the human capital stock The greater the potential salary, the higher the opportunity cost

of leaving the job, and the greater the likelihood that women will participate in the job full time. Secondly, the higher the education level of women, the stronger their self-awareness and the more urgent their willingness to participate in social labor, thus the higher the labor participation rate will be.

From other aspects, the female labor participation rate in western cities and towns is significantly lower than that in central cities and towns, while the female labor participation rate in eastern cities and towns is not significantly different from that in central cities and towns.

Table 3 Housing loans and female labor participate in the Probit regression results

Variable	Housing loan	Outstanding amount of housing loan	Monthly reimbursement
Is there a housing loan	0.0387**		
	(1.977)		
Outstanding amount of housing loan		0.00315*	
		(1.764)	
Monthly repayment			0.00153*
			(1.823)
Other loans	0.0185	0.0185	0.0181
	(0.830)	(0.828)	(0.802)
Household income	-0.00966***	-0.00967***	-0.00973***
	(-3.292)	(-3.295)	(-3.380)
Family assets	0.000216***	0.000217***	0.000219**
	(2.630)	(2.631)	(2.352)
Number of children aged 0-6	-0.108***	-0.108***	-0.108***
	(-9.477)	(-9.481)	(-9.947)
Number of children aged 7-19	-0.00264	-0.00267	-0.00278
	(-0.276)	(-0.279)	(-0.304)
Number of children aged 20-30	0.0448***	0.0448***	0.0450***
	(6.195)	(6.192)	(6.349)
Age	0.118***	0.118***	0.118***
	(17.69)	(17.70)	(18.21)
Square term of age	-0.00156***	-0.00157***	-0.00156***
	(-18.76)	(-18.77)	(-19.34)
University or above	0.157***	0.158***	0.158***
	(5.848)	(5.856)	(6.186)
Middle school	-0.0324	-0.0323	-0.0321
	(-1.135)	(-1.131)	(-1.196)
Primary school	0.00102	0.00111	0.00148
	(0.0329)	(0.0361)	(0.0509)
Party member	0.155***	0.155***	0.155***
	(9.252)	(9.251)	(8.738)
Health	-0.0265***	-0.0265***	-0.0265***
	(-5.706)	(-5.708)	(-5.774)
East	0.0248**	0.0248**	0.0247**
	(2.061)	(2.061)	(2.049)
West	0.0160	0.0162	0.0157
	(1.165)	(1.177)	(1.151)
Observed value	9,526	9,526	9,526

Note: Marginal effects are reported in the Table, with Z values in brackets.*** indicates significant at 1% significance level, ** indicates significant at 5% significance level, and * indicates

significant at 10% significance level.

4.1.2. Housing loans and female employment

Similarly, whether the housing loan, the unpaid amount of the housing loan, and the monthly repayment amount are used to measure the housing loan of the family, and the Probit model is used to test the impact of the housing loan on the female labor participation. Similar to the above conclusions of women's labor participation, the three variables of family housing loans have a significant positive impact on the likelihood of female employment. Compared with households without housing loans, households with housing loans have a 4.42% increase in the likelihood of female employment. For every 1% increase in the unpaid balance of housing loans, the likelihood of female employment will increase by 0.36%. For every 1% increase in monthly repayment, the likelihood of female employment will increase by 0.16%. Similarly, the greater the debt service burden, the greater the likelihood that families will face liquidity constraints, thus the greater the likelihood that women will find employment.

4.2. Endogenous problem

Because there are many factors that affect women's labor participation, considering the mutual influence between family housing loans and them, the problem of missing variables and the possibility of being jointly affected by some unknown factors, this paper considers the endogenous problem of housing loans. Using Bottazzi[14] and Belkaretal[15] for reference, we use community house prices as tool variables to carry out Ivprobit two-stage regression. Because Ivprobit is only applicable to the case where the explained variable is 0/1 variable and the explained variable is continuous endogenous variable, and the monthly repayment of housing loan can better represent the economic pressure faced by the family, this paper only estimates the monthly repayment amount and female labor participation as tool variables. In the first phase of the regression of instrumental variables, community housing prices have a significant impact on the monthly repayment amount of housing loans at the 1% significance level, and there is no problem of weak instrumental variables. The value of the statistic in the Wald test is 16.45, and the corresponding P value is 0.0001. The hypothesis that the Probit regression result is exogenous is rejected. To avoid the bias caused by the endogeneity problem, the Ivprobit model needs to be used for estimation.

The estimated results are shown in Table 5. Columns (1) and (2) correspond to the regression results of monthly reimbursement and female labor participation, monthly repayment amount and female employment. From the regression results, it can be concluded that the monthly repayment of housing loans has a significant positive impact on female labor participation and female employment, and the coefficient of regression of instrumental variables is larger than the coefficient of regression without using instrumental variables, indicating the previous The regression results underestimated the impact of monthly loan repayments on female labor participation and female employment. Judging from other control variables, household income excluding women's wages has a negative impact on women's labor participation and employment, indicating that the more household income excluding women's wages, the lower the possibility of women's labor participation and employment; The impact of total household assets on women's labor participation and employment is positive. The more total household assets, the greater the possibility of women's labor participation and employment. The number of children aged 0-6 has a significant negative impact on female labor participation and employment, while the number of children aged 20-30 has a significant positive impact on female labor participation and employment. The influence of age on women's labor participation and employment presents a non-linear form. At first, it increases with age, and then decreases with age when age reaches a certain level. Women with a political face as Party members have a significant increase in the probability of labor participation and employment. From the perspective of regional differences, the western part of China is characterized by a significant increase in the probability of labor participation and employment. The probability of female labor participation and employment in urban areas is significantly lower than that in central urban areas.

Table 4 Monthly repayment amount and female labor participation rate, employment IV_Probit estimate

Variable	Female labor participation	Female employment	Variable	Female labor participation	Female employment
	(1)	(2)		(1)	(2)
Monthly repayment	0.286**	0.256**	Age	0.291***	0.265***
	(2.417)	(2.330)		(7.806)	(7.663)
Other loans	-0.203	-0.129	Square term of age	-0.00381***	-0.00352***
	(-1.273)	(-0.872)		(-7.909)	(-7.849)
Household income	-0.0381***	-0.0314**	University or above	-0.0274	0.00914
	(-2.734)	(-2.422)		(-0.103)	(0.0372)
Family assets	0.00108**	0.000958**	Middle school	-0.214	-0.248*
	(2.376)	(2.066)		(-1.397)	(-1.747)
Number of children aged 0-6	-0.283***	-0.252***	Primary school	0.0213	0.0101
	(-4.968)	(-4.776)		(0.137)	(0.0701)
Number of children aged 7-19	0.0821	0.0802	Party member	0.482***	0.515***
	(1.440)	(1.519)		(4.729)	(5.445)
Number of Children Aged 20-30	0.226***	0.202***	Health	-0.0174	-0.0397
	(4.425)	(4.260)		(-0.506)	(-1.244)
East	0.000257	0.0510	West	-0.321*	-0.255*
	(0.00391)	(0.839)		(-1.952)	(-1.670)
Observed value	9,195	9,195			

Note: z values are shown in parentheses, *** indicates significant at 1% significance level, ** indicates significant at 5% significance level, and * indicates significant at 10% significance level.

4.3. Further research

In order to further test the robustness of the results, this paper divides the sample into low-income and high-asset groups according to household income and household assets, focusing on the difference between low- and middle-income groups and low-income groups and high-income groups. The results show that the housing loan variable has a significant positive impact on women's labor participation in low- and middle-income families, while the labor participation of high-income group women is not significant. Low-and middle-income families will bear greater repayment pressure after making housing loans and may face liquidity constraints in the short term, thus increasing the possibility of women participating in labor. For high-income families, housing loans will not make them face short-term liquidity constraints.

According to the regression results of household assets grouping, like income grouping, housing loan variables have significant positive impact on the probability of labor participation of housewives in low-and middle-income asset groups, but have no significant impact on the probability of labor participation of housewives in high-income asset groups. Households in the low- and medium-asset group do not have sufficient assets to support the repayment of debts. Housing loans expose households to liquidity constraints, and women tend to choose to participate

in the labor market to earn more. Households in the high-asset group have sufficient assets to pay their debts and do not have a significant impact on women's participation in labor.

5. Conclusion

This paper uses the China Family Tracking Survey (CFPS) data to empirically test the impact of family housing loans on labor participation of married women in urban areas.:

First, the increase in family housing loans will significantly promote women's labor participation. Compared with families without housing loans, the possibility of family women with housing loans participating in labor and employment will increase. Moreover, the greater the total amount of unpaid housing loans and the monthly repayment amount, the greater the possibility of women's labor participation and employment. Housing loans have significantly increased the labor participation rate of women in urban households.

Secondly, by distinguishing the middle-low and high asset groups, it is found that with the increase of the income of the asset group, the female labor participation rate will experience an increase and then have no significant impact. After housing loan, middle-low income and low-asset families will bear greater repayment pressure, and may face liquidity constraints in the short term, thus increasing the possibility of women's participation in labor. For high-income and high-asset households, housing loans will not face short-term liquidity constraints.

Thirdly, the improvement of family housing loans has a significant impact on the participation of workers aged 20-30, living in the East and west, having children in the family, being party members with political outlook and being educated. The influence of age on women's labor participation shows an inverted U-shaped trend. First, it increases with age, and then decreases with age. The probability of female labor participation and employment in western cities and towns is significantly lower than that in eastern cities and towns. At the age of 20-30, children are facing higher education, marriage, house purchase and other problems, which increase the economic pressure on families and increase the possibility of women participating in work. The probability of labor participation and employment for women with party members is significantly increased. The higher the education level of women, the stronger their awareness of self-realization and the more urgent their willingness to participate in social labor, thus the higher the labor participation rate will be.

With the development of society and the improvement of the level of women's human capital, the female labor participation rate in our country is on the rise. This shows on the one hand that the employment status of urban women is rising and the problem of employment inequality is decreasing. On the other hand, it also shows that with the rapid growth of family debts, the pressure of family debt repayment is increasing. The government should further address the issue of gender inequality in employment, implement a positive employment promotion policy, increase the income of residents, reduce the debt burden of families, and enhance the ability of families to repay loans. Secondly, family housing loans promote women's labor participation rate, indicating that the rapid growth of housing loans has had a profound impact on family behavior. We must pay close attention to the scale and growth of household debts, learn from the lessons of the US subprime mortgage crisis, and actively Preventing systemic risks of household debt.

References

[1] Ding Sai, Dong Xiaoyuan, Shi Li. Employment and Income of Chinese Urban Women under Economic Transformation and Its Impact on Household Income Inequality [J]. Economics (Quarterly), 2007(04):1319-1338.

[2] Zhao Ying. Laid-off Employees, Family Resources and Children's Education [J]. Economic Research, 2016,51 (05): 101-115+129.

[3] Jie Chen, Liu Yafei. The Influence of Education Matching on Married Women's Labor Participation-An Empirical Analysis Based on the Data of the Third Women's Social Status Survey

[J]. Southern Population, 2019,34(02):58-68.

[4] Peng Qingqing, Li Hongbin, Shi Xinzheng, Wu Binzhen. Changes in urban women's labor force participation rate in the process of marketization in China [J]. Financial Research, 2017(06):33-49.

[5] Ma Shuang, Li Xuelian, Cai Dongliang. Minimum Wage and Labor Participation of Married Women [J]. Economic Research, 2017,52(06):153-168.

[6] Mincer J. Labor force participation of married women: A study of labor supply[M].Aspects of labor economics. Princeton University Press, 1962: 63-106.

[7] Becker G S. Altruism in the Family and Selfishness in the Market Place[J]. Economica, 1981, 48(189): 1-15.

[8] Wu Yuxiao, Wang Peng, Chao Huang. Family Asylum, Institutional Asylum and Work-Family Conflict-Employment Status and Subjective Well-being of Chinese Urban Women [J]. Sociological Research, 2015,30(06):122-144+244-245.

[9] Omowumi O. Idowu. Demand Drivers of Female Labor Force Participation: Evidence From Selected African Countries[J]. ECONOMICS,2019,7(1).

[10] DiNardo J, Fortin N M, Lemieux T. Labor market institutions and the distribution of wages, 1973-1992: A semiparametric approach[R]. National bureau of economic research, 1995.

[11] Del Boca D and A Lusardi (2003), ‘Credit Market Constraints and Labor Market Decisions’, Labour Economics, 10(6), pp 681–703.

[12] Bottazzi R. Labour market participation and mortgage-related borrowing constraints[J]. 2004.

[13] Belkar R, L Cockerell and R Edwards (2007), ‘Labour Force Participation and Household Debts’, RBA Research Discussion Paper No 2007-05.

[14] Bottazzi R. Labour market participation and mortgage-related borrowing constraints[J]. 2004.

[15] Belkar R, L Cockerell and R Edwards (2007), ‘Labour Force Participation and Household Debts’, RBA Research Discussion Paper No 2007-05.