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# Empirical Study on the Influencing Factors of Rural Households' Credit and Loan Demand

—Investigation Based on Jianhu County, Jiangsu Province

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**Abstract** By using the relevant data from 273 valid questionnaires of rural households in Jianhu County, Jiangsu Province, this study emphasizes on the factors of rural households' credit and loan demand by Probit model. The results show that the factors that influencing the credit demand of rural households include the features of the rural households, the economic activities of rural households and so on. Among the factors, the operation expenditure of rural households, the education degree of the household head and the understanding degree of the rural credit policies have great impact on the rural households' credit and loan demand. In the end, the suggestions on the basis of the research are put forward: developing diversified economy; improving rural households' income; increasing the reserve of rural labor resources and enhancing farmers' quality; strengthening the promotion of rural credit cooperative and perfecting the service quality of rural credit cooperative.

**Key words** Rural households, Credit and loan demand, Influencing factors, Probit model, China

With the diverse development of market economy and rural family management, although the demand of rural households' credit and loan has increased dramatically in a long time, it has not been satisfied. The rural households' credit and loan demand is the core in the field of rural finance. At present, it is acceptable that the demand of rural credit and loan develop towards diverse directions. The factors that influence the credit demand of rural households, the deep research is conducted in the theoretical circle from the aspects of the features of rural households, operation situation of rural households, the growth of rural financial market, credit and loan interest rate, loan period and mortgage and guarantee in credit and loan link. The study on credit and loan demand of theoretical circle focuses on the characteristics of rural household and the development of financial market. The credit and loan demand of rural households may affect the scale and structure of rural financial market, as well as the production and living expenditure of rural households, and then affect the scale of production and investment of rural households and the scale of consumption demand of them. The prerequisite of effective financial reform is to find the deep causes of the plight why the rural credit and loan demand did not be satisfied. Therefore, the study on the influencing factors of rural households' credit and loan demand has economic meaning. The data of rural households' credit demand obtained from the on-the-spot investigation in Jianhu County, in Jiangsu Province. By using the statistical analysis and econometric analysis, this article tries to figure out the factors that influence the credit and loan demand during the transitional period of economy in the perspective of rural households. Based

on this analysis, more feasible suggestions on the innovation of Chinese rural credit and loan reform in the new era are put forward, which helps to keep the right direction of rural financial reform.

## 1 Literature review and research hypothesis

**1.1 Literature review** The foreign empirical research on the factors that influencing rural households' credit and loan demand mainly concentrates on the features of rural households who are sure to influence the credit rationing behaviors of the formal financial institutes<sup>[1-2]</sup> and the features of rural households who influence the credit rationing behaviors of informal financial institutes. The domestic research mainly focuses on two aspects, the characteristics and use of credit and loan. Taking the empirical research of the big sample as the major approach, the scholars usually took a national investigation for achieving large sample in empirical research. Experts from rural financial team of rural development research institute in Social Science Institute of China find that the loan has been largely used in daily life; the low-income rural households are more likely to use the loan in agricultural production; it is positive correlation between the production credit demand and per capital income. Though the data from the rural residents investigation by State Statistics Bureau and the sample data of three provinces including Henan, Guizhou and Liaoning, ZHOU Xiao-bin, *et al* (2004) found that the scale, investment and payment willingness of rural households have a positive effect on the credit and loan demand in rural area, but the payment capacity of rural households has a negative impact on the credit loan of rural households<sup>[3]</sup>. YAN Zhi-jie (2006) found that the proportion of rural households achieving the loan will decrease with the non-farming employment increase; although the relations between the scale of loan and the non-agricultural people are not so sig-

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nificant, more children imply more education expenditure, so households with more children need more capital and have to loan more money; and the rural households whose houses have high value get more loans<sup>[4]</sup>. LI Cui-mei (2007), through investigating rural households in Huarong County and Anxiang County in Hunan Province and establishing Tobit model, found that the influence of the interest rates has insignificant impact on credit demand of rural households; the influences of the number of non-agricultural labors in a household, the understanding degree of credit and loan policy, farmland area, agricultural production income, agricultural production expenditure and living expenditure on credit demand of rural households are significant<sup>[5]</sup>. Based on the framework of Iqbal model and the data from 1962 rural households, HAN Jun *et al.* (2007), found that the relationship between household income and credit demand and achieving the loan shows the "U" type, which implies that when the household income increase, the credit demand of rural households will decrease before achieving some account and then increase; meanwhile, the productive income of rural households has a positive impact on the loan behaviors of rural households, significantly<sup>[6]</sup>.

**1.2 Research hypothesis** From the past literature, it is recognized that many factors that affect the credit demand of rural households. According to the economic activities of rural households, the main factors that affect the credit demand of rural households are the nature of economic activity, operation scale, receipts and expenditures from various aspects; from the basic features of rural households; the capacity of rural household head, the household labor composition, assets, the understanding degree on the credit and loan policies and so on are the factors that affect the credit and loan demand of rural households. Based on these, three hypotheses are put forward to be testified.

**1.2.1** The relationship between rural households income and credit demand shows a "U"-shape. The income of rural households reflects the payment capacity of rural households in terms of investing production and living expenditure in cash. Before a certain income level, the probability of the credit and loan demand will be smaller, when the household has a higher income level or larger scale of assets. However, when the income has surpassed a certain level and the rural households have an ability of investment, for example, large scale breeding and industrial and commercial industry, and then the credit demand will increase.

**1.2.2** Every expenditure of rural households has positive impact on their credit demand. The expenditure on agricultural production embodied the operating circle and operating feature of rural households. Higher productive expenditure implies higher demand of rural households on capital, so the probability of loaning will increase. When greater investment on daily life and children education, more credit and loan demand should be satisfied. On the one hand, higher expenditure on daily life equals to higher cost of living; on the other hand, the elasticity, the elasticity of education is very low, which means that rural households will spend great money on education; all these will

lead to the increase of credit and loan demand.

**1.2.3** The education degree and the understanding degree on policies of rural credit cooperatives have positive impact on the credit demand of rural households. As for rural households with high education degree, the limitation of employment is small, so they can get more non-agricultural income and their recognition on financing is strong. On the other hand, the rural households with higher education can accept new thoughts and new things, so they have more opportunities to increase income through loan and credit. Meanwhile, rural households know more about rural credit cooperatives; the capability of achieving the loan from formal institution will be large. In addition, after the rural households have been familiar with the procedures and preferential policies of rural credit cooperatives, their demand on credit and loan will increase.

## 2 Data sources and descriptive analysis of samples

**2.1 Data sources** General households were selected by convenience sampling and single random sampling in this investigation, and the major samples were originated from Shangang Town of Jianhu County, which is one of the hundred well-known towns in Jiangsu Province. In 2008, the GDP of the whole town is 1.14 billion yuan and the net income of farmers is 8365 yuan. The progress and growth rate is ranked top among the towns in Jianhu. 300 rural households were surveyed in this investigation and 273 valid questionnaires were taken back. The effective rate of the questionnaires was 91%.

**2.2 The descriptive analysis on the credit demand of rural households** Among the 273 valid questionnaires, 62 rural households have the credit demand willing, accounting for 22.7% of the total sample households. It has been showed from the questionnaires that rural households do not have a high demand on credit and loan. In the investigation, it is also found that rural households which merely rely on agricultural production do not want to loan, for they would rather pining and scraping than owing money to the bank. Among the sample households which have the demand on credit and loan, 15 households of them used the loan to pay for consumption expenditure; 11 households of them spend the loan on production; the number of households which need the loan for industrial, commercial and service industry expenditures are 3, 4 and 2 respectively; seven households need the loan to restore and construct their houses; seven to children education, four to use in wedding and funerals and the other nine need the money for other uses. It is obviously that the proportion of using the loan for consumption expenditure is higher than the proportion of using it for productive expenditure, but the gap is narrow.

**2.3 The description of factors that affect the credit demand of rural households**

**2.3.1** In terms of age, the youngest one in the sample is 29 years old and the oldest one is 82 years old, with the average age in the sample is 49 years old. There are only two households of which the age of household head are under 30. Only one household has a householder who is over 65. The age

range in the sample is 30 – 60, accounting for 96.34%. The small scale proportion of youngest household operation in the sample resulted from the migration of younger labors. The average age of householders is 49, which shows that that most young people have not separated from their parents.

**2.3.2** Education degree of rural householders shows normal distribution. Among the householders, 6.22% of them are illiterate; 1.47% of them have accepted the junior college education; most have only accepted the junior middle school education, and the number of householders who have accepted a primary school education and high school education are equal, the sum of these three types are 181 households, accounting for 92.3%. The average years of education accepted by sample rural households are 8.65 years. It can be seen that the overall education degree of rural households are not so low. If the education degree of the younger people who work out is considered, the whole education degree of rural households will be higher.

**2.3.3** Rural households' understanding degree of credit policies. In the investigation, the understanding degree of rural households on rural credit policies embodied by the recognition of credit providing and credit card. The understanding degree of rural households is categorized into 3 groups: general understanding, understanding and understand well which accounts for 46.5%, 42.9% and 9.9%, respectively.

**2.3.4** The burden coefficient of rural labors. Most of rural households' burden coefficient ranges from 50% to 100%, within the 116 rural households. The proportion of rural households with the less than 50% burden coefficient, account for 10.6%, but households with the burden coefficient of 50% and 100% account for 21.2% and 25.65% respectively. The average level of burden coefficient is 69%.

**2.3.5** Scale of operation. The average scale of operation of per rural household is 0.413 hm<sup>2</sup>. The rural households with small operation scale of under 0.333 hm<sup>2</sup> account for 51.6%; rural households with the range from 0.333 to 0.667 hm<sup>2</sup> account for 38.1%; with 0.667 hm<sup>2</sup> take a smaller proportion and account for 10.3%. The small scale family and small agricultural production has formed the mutual intensification and stable relationship. This kind of relationship determines the lower production efficiency of rural households.

**2.3.6** The total income of rural households. Among the 273 rural households, the total income of most rural households is in the range of 10,000 – 30,000 yuan, accounting for 38.5%; rural households with the total income of 30,000 – 50,000 yuan are accounting for 31.1%. There are 43 households which have the total income from fifty thousand yuan to eight thousand yuan. Most of the sample rural households are in the industrial zone; over 80% of rural households choose to work out and work in the local place. Most of the rural households with the income over 80,000 yuan are households which take big scale operation, such as livestock breeding. The average income of per rural household is 44,279 yuan. Among which, the households with the least income are 2,056 yuan per year, but the highest income of households is even more than 1 million yuan.

**2.3.7** Production expenditure. The average production expenditure in this sample is lower than in northern Suzhou Province. One explanation is that Shanggang County captures natural advantages (locating in the intersection of subtropical and warm temperate zone) and external conditions (Kesheng cooperation). Meanwhile, the production expenditure has direct relations with the production scale. The least production expenditure is only 200 yuan and the largest expenditure can be achieved at 60,000 yuan. 80 households spent lower than 1,000 yuan on the production; 138 households spend from 1,000 yuan to 4,000 yuan; the number of household spending 4,000 – 10,000 yuan and more than 10,000 yuan on production is 22 households and 32 households respectively.

**2.3.8** Living expenditure. The most of living expenditure of the sample is in the range of 2,000 to 6,000, accounting for 37.4%; the living expenditure more than 10,000 yuan account for 30.4%; the expenditure from 6,000 to 10,000 account for 25.3% and the less than 2,000 yuan, account for only 8.8%. According to the statistics, the average living expenditure is 8,110.99 yuan. The living expenditure is greater than the production expenditure sample households. And the living expenditure grows largely, if the price increases.

**2.3.9** Education investment. In the investigation, 109 of all households do not have the school-aged children. On the one hand, most the heads of the sample householders are middle- or old-aged; this implies that most of their children have grown up. on the other hand, many people in rural areas choose to study in short-term skill-training school. 104 households spend 3,000 to 10,000 yuan on the education. Although the education of compulsory education is free, most rural households spent lots of money on studying accompanying which is universal among households with high school students and the expenditure has occupied the major part of the total household expenditure. The number of households spending less than 3,000 yuan and more than 10,000 yuan on education are 31 and 29 respectively. At the end, more than one child in family implies greater burden on the education.

### 3 Empirical analysis on the factors that affect the credit demand of rural households

The following empirical testing aims to figure out which factors influence the rural households credit and loan demand. The binary Pobit model for testing this issue is specified as follows:

$$Credit_i = X_i\gamma + \varepsilon_i \quad (1)$$

The coding is as follows:  $Credit_i = 1$  if rural households need a loan, 0 otherwise. In the equation (1),  $\gamma$  defines the parameter of each explanatory variable to be estimated;  $X_i$  represents various factors that affect the credit demand of rural households;  $\varepsilon_i$  is random distribution term.

When rural households do not need loan, then  $Credit^* = 0$ ; but when the credit demand of rural households does not equal to 0, that is when  $Credit^* > 0$  (the observable of the credit demand of rural households is impossible to be negative), it can suppose that  $Credit = Credit^*$ . The following equation can

be used

$$Credit = \begin{cases} Credit^*, & \text{suppose } Credit > 0 \\ 0, & \text{suppose } Credit^* = 0 \end{cases} \quad (2)$$

By the above conversion, the Probit model can be used to estimate. Bringing the estimated value to each explanatory variable, the following estimated model can be obtained:

$$Credit_i = X_i\gamma + C + \varepsilon_i \quad (3)$$

In the equation,  $\gamma$  is the parameter to be estimated of each explanatory variable and C is constant term.

The regression results were showed at Table 1. The gross income of rural households and the square of gross income of rural households have negative effect on the credit demand of rural households, which is in accordance with the hypothesis of "U" type impact in "1.2.1". That is to say, in the sample rural households, the income level of rural households lays in the inflexion point of "U" type. After surpassing the level at the inflexion point, with the increase of the aggregate income of rural households, the credit demand of rural households will increase rather than decreasing. After the calculation, the inflection point of credit demand is 40 196.71 yuan. The investigation results show that there are 82 rural households who have surpassed the total income level.

Each item of expenditure by rural households has a positive impact on their credit demand, which is consistent with the hypothesis in "1.2.2", although the effect is not significant. The possible explanation is that the income of rural households in the local area is relatively high, for the Shanggang Town is one of the hundred well-known towns in Jiangsu Province. The economic development level and the economic developmental pattern are transferring, so the expenditures are not the main factors that influence the credit demand of rural households.

It can be seen from Table 1 that, the education degree of rural householders has positive impact on their credit demand at 10% level significantly. This implies that more education accepted by the householders need more credit and loan demand. Usually, higher education degree accepted implies larger possibility to take non-agricultural businesses; therefore, their demand of credit and loan is high. On the other hand, high level of education means more ability to accept things on the outside and the ability to understand, and they have more opportunity to achieve more income. The understanding degree of rural credit and loan policies is one of the most significant variables that affecting the credit demand of rural households and it has a positive impact on the credit demand at the 1% level, significantly. The results are consistent with the hypothesis in "1.2.3". The rural finance reform is conducted through the innovation of rural credit cooperatives. The policies are preferential in nature, but some rural households do not agree it. Besides, some rural households do not know the credit policies of rural credit cooperative, so they will flinch from it. Deep recognition of policies about rural credit cooperatives also leads to larger probability trich.

In addition, judging from the parameter coefficients, it was showed that the production scale of rural households has a positive impact on the credit demand of rural households. For

the seasonal feature of agricultural production, the growth of short-term demand on capital seems inescapable; further, larger management scale requires more investment in labors and machine, it also result in a greater credit and loan demand. The factors influencing the credit and loan demand are classified into the householders' demographic characteristics, like the age of household heads and burden coefficient of rural households and so on, which have a positive impact on the credit demand of rural households. Due to average older age of rural householders, more likely among 40 to 60 years old, their demand on credit will be higher. However, the impact of labor burden coefficient on credit demand is opposite to the assumption. A plausible explanation is that smaller burden coefficients, implying greater capacity to take credit and loan risk, increase the willing to loan.

**Table 1 The quantitative analysis of the factors that influence the credit demand of rural households**

Variables	Coefficient	$P >  Z $	Z value
Age of householder	0.019 4	0.137	1.49
Education degree	0.070 7	0.063 ***	1.86
Scale of management	0.000 5	0.986	0.02
Labor burden coefficient	0.125 8	0.779	0.28
Gross household income	-6.18e-07	0.874	-0.16
Square of total household income	-9.85e-13	0.860	-0.18
Productive expenditure	0.000 02	0.138	1.48
Living expenditure	0.000 02	0.208	1.26
Education expenditure	9.43e-06	0.666	0.43
Understanding degree of policies	0.583 9	0.000 *	4.22

Note: \*, \*\*\*, \* represent that the variables are significant at 1% and 10% level respectively.

## 4 Conclusions and countermeasures

**4.1 Conclusions** According to tempirical analysis above, most factors influencing rural credit and loan demand are consistent with assumption, except the labor burden coefficient, And these factors have positive impact on the rural credit and loan demand, likely householders' age, years of education accepted, household management scale, the expenditure of production, living and education expenditure and the recognition of rural credit cooperatives. The relationship between household income and credit demand shows "U" type, and the impacts of the year of education and the understanding degree of credit are significant at 10% and 1% level, respectively. .

**4.2 Countermeasures** Not only the factors mentioned above, but also the differentiated demand preference and diversity financial markets, all lead to form features of the demand of credit and loan. Therefore, when the local government implements innovation in rural financial system, certain autonomy should be given to the local financial departments according to their feature of financial system, and all these systems should be under the supervision of financial authorities. In order to satisfy the demand of rural credit and loan, the government should hold the internal and external factors of rural households on credit demand.

**4.2.1** Developing diverse economics and improving rural household income. Form the empirical study, the income of rural households has the "U" type impact on the credit demand

of rural households. With the increase of income, rural households' credit demand will decrease initially and then increase. When the income level of rural households has surpassed the certain point, rural households tend to increase investment by using credit and loan to improve income. Therefore, the government should encourage rural labor to change the current small scale production mode and push rural households to take non-agricultural jobs. In addition, the efficient transform can improve the low agricultural production, increase the farmers' income and fully display the functions of rural labors.

**4.2.2** Increasing the reservation of rural labor resources. The impact of education accepted by the rural householders on the credit demand is significant. The impact is not only directly and positively, but also promotes the non-agricultural tendency and the growth of annual income of rural households through indirect way. So, through education, training and other ways to increase human capital reserve funds is an effective to enhance credit availability farmers the long run. Science and technology through the promotion and talent will bring rural areas to help farmers improve their learning ability and capabilities, and can greatly improve the quality of farmers.

**4.2.3** Strengthening the promotion on rural credit cooperatives and increasing the quality of services. Understanding of rural credit cooperatives also has an important impact on the farmers' credit needs. In order to enrich the knowledge, financial experience and to guide farmers to actively anticipate the loan system through the formal financial situation, more promotion of rural credit cooperatives should be done; other ways, likely credit policy, range of services, service orientation, service object and other aspects of information dissemination to rural areas, peasants and rural cadres to enhance the visibility of rural credit cooperatives. Meanwhile, the rural credit cooperative should improve the efficiency of loan; provide better financial services and enhance its social reputation. The credit demand of rural households is characterized into decentralization, small scale, flexible period ( the span of the credit demand on

agricultural production is long, while the span on non-agricultural production and living is short), high risk and hard to supervise. Based on the current financial services and products, new regulations should actively been explored to satisfy the rural credit and loan demand. The current existing model of " rural credit cooperative + rural cooperative organization + rural households" can guarantee the accessibility of loan for rural households and maintain the simplification of credit process, but this still needs further development.

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