

Research on the Influencing Factors and Paths of Non-performing Loan Ratio of Rural Commercial Banks in China

Qualitative Research and Investigation Based on Grounded Theory

Minghui Jiang

School of Management
Harbin Institute of Technology
Harbin, China 150000

Xin'ge Zhang

School of Management
Harbin Institute of Technology
Harbin, China 150000

Abstract—As a unique commercial bank in China, rural commercial banks play an important role in implementing policies on agriculture, rural areas and farmers and narrowing the urban-rural gap. However, its non-performing loan ratio is much higher than the average level of commercial banks, which seriously affects the timely and correct performance of rural commercial banks' functions. This paper adopts the qualitative research method of grounded theory, collects original data through in-depth interviews, forms concepts, categories and core concept categories through three-level coding, and obtains the influencing factors and paths of non-performing loan ratio of rural commercial banks. First, macroeconomic condition, source structure of loan repayment fund for peasant households, income level and labor force destination are all economic factors affecting the loan repayment ability of customers of rural commercial banks, thus affecting the non-performing loans of rural commercial banks. Second, personnel setting, capital reserve and profitability of the banks all affect the lending capacity of rural commercial banks as internal factors, thus affecting the non-performing loan ratio of agricultural commercial bank. And

third, some external interference factors such as: natural or man-made emergencies may irregularly and unexpectedly interfere with the normal recovery of loans of rural commercial banks, thus affecting the non-performing loan ratio of rural commercial banks.

Keywords—rural commercial bank; non-performing loan ratio; qualitative research; Grounded theory; in-depth interviews

I. INTRODUCTION

With the development of China's economy and society and the promotion of policies on agriculture, rural areas and farmers, rural commercial banks have been gradually established and organized, and become the backbone of rural financial institutions that will replace rural credit cooperatives and rural cooperative banks, and the main force in handling agriculture-related loans and assisting agriculture, rural areas and farmers. By the end of 2016, there were 1,055 rural and commercial banks nationwide. The distribution of them in each province is shown in "Table I":

TABLE I. NUMBER OF RURAL COMMERCIAL BANKS IN EACH PROVINCE

Region	Number	Region	Number	Region	Number	Region	Number
Eastern China	314	Middle-China	422	western China	234	Northeast China	85
Jiangsu	62	Anhui	83	Sichuan	46	Jilin	32
Guangdong	33	Hubei	77	Chongqing	1	Liaoning	22
Shandong	107	Hunan	93	Shaanxi	48	Heilongjiang	31
Zhejiang	51	Henan	56	Guizhou	38		
Beijing	1	Jiangxi	69	Inner Mongolia	23		
Shanghai	1	Shanxi	44	Gansu	23		
Tianjin	2			Xinjiang	10		
Fujian	20			Guangxi	26		
Hebei	32			Ningxia	9		

^a. Source: www.askci.com

However, according to a report from business.sohu.com/ on February 2017 that the non-performing loan ratio of China's rural commercial banks was 2.5%, about 0.7 percentage points higher than the average level of commercial banks. The high non-performing loan ratio seriously affects the normal operation and lending capacity of rural and commercial banks, and even affects the implementation of policies on agriculture, rural areas and farmers, as well as the living standard of farmers and rural and agricultural development. Therefore, investigating the factors influencing the non-performing loan ratio of rural commercial banks plays an important role and significance in finding ways to reduce the non-performing loan ratio of rural commercial banks, promoting the implementation of policies on agriculture, rural areas and farmers, promoting the development of modern agriculture and stabilizing rural society.

As agricultural commercial bank is a special commercial bank with Chinese characteristics, most of the research on it is concentrated in China. At the same time, it wasn't until 2000 that the rural commercial bank was established, the domestic research on it is not quite satisfactory. However, in terms of research methods, mature research methods and indicator systems for the non-performing loan ratio of general commercial banks have been applied abroad, which are not completely applicable to the research of China's special commercial banks — rural commercial banks. However, most domestic researches focus on the investigation of general macroeconomic factors and ignore the characteristics of rural commercial banks. Therefore, the method of qualitative research and grounded theory is selected to obtain primary data from the population closely related to rural commercial banks, and the influencing factors and paths gained in the process can make the conclusion more consistent with the characteristics of rural commercial banks and the suggestions more targeted.

II. LITERATURE REVIEW

Since rural commercial banks are a kind of special commercial banks in China, there are both similarities and differences between rural commercial banks and general commercial banks.

However, in the relevant researches at home and abroad, the investigation on the factors influencing the non-performing loan ratio of general commercial banks has been relatively mature and gradually formed a system. Scholars at home and abroad have found that macroeconomic factors such as GDP and its growth rate, unemployment rate or employment level, income level or wage level, bank interest rate and other macroeconomic factors have a significant impact on the non-performing loan rate of general commercial banks. For example, Brookes M, Dicks M and Pradhan M (1994) found that unemployment rate and interest rate can significantly affect non-performing loans when they studied the empirical model of mortgage delinquency and recovery [1]; Lopes P (2008) proved in his study that labor income is directly related to default: as unemployment increases, borrowers with lower income levels are at higher risk of default [2]; Demirgüçkunt A, Detragiache E (2016)

proposed in their paper that GDP growth rate, unemployment, bank interest rate and moral hazard may affect the credit risk of banks and even lead to bank crisis [3]. Chinese scholars also tend to investigate macro factors when conducting relevant researches: Xie Haidong and Hao Yibo (2017) proved that from the perspective of long-term dynamic trends, GDP growth rate and market interest rate affect non-performing loans of commercial banks [5]. Zhang Xiaoxi (2017) also proved that year-on-year GDP growth affects the non-performing loan ratio of banks by using the panel data model [6]. Zhuo Mingying (2011) also confirmed in his research that GDP growth rate and inflation rate have an impact on the non-performing loan ratio of commercial banks [7]. Wang Guangwei and Tong Yuansong (2014) also proved that GDP growth rate has an impact on the non-performing loan ratio of commercial banks [8].

At the same time, domestic and foreign scholars have found that internal factors of banks, such as cost efficiency, bank capital and bank scale, also have a significant impact on the non-performing loan ratio of commercial banks: For example, Berger A N and Udell M (1997) proved that loan quality, cost efficiency and bank capital have an impact on non-performing loans [9]. Podpiera J and Weill L (2008) also investigated the causal relationship between non-performing loans and cost efficiency [10]. Belaid F (2014) also came to the conclusion that banks with low cost, less capital, diversification and miniaturization are more likely to produce non-performing loan portfolios [11]. Stolz S and Wedow M (2011) [12] J Ayuso, D Perez, J Saurina (2004) [13] et al. proved the negative correlation between capital adequacy and non-performing loans through empirical research, while Lindquist G (2004) [14] proved the positive correlation between capital adequacy and bank risk. In addition, studies by Xu Hui, Li Jian, Zhong Huibo et al. (2013) proved that the cost efficiency of banks has an impact on their non-performing loan ratio [15]. And Fan Yong also found that internal factors such as bank size and loan-to-deposit ratio affect the non-performing loan ratio when he studied the factors influencing the non-performing loan ratio of commercial banks.

However, as rural commercial banks and rural credit cooperatives (which will be established as rural commercial banks after completion of development, so the authors also looks them up for reference in the literature review) are types of banks with Chinese characteristics, domestic researches for this part of is far more than that of foreign banks. After reviewing relevant literatures in the past five years, it is found that researches on non-performing loans of rural commercial banks also pay more attention to external factors such as GDP and regional economic development level. Studies of Chen Weiping, Feng Zongxian (2015) [17], Li Jing, Zhu Chengliang and Zheng Shilin (2016) [18] for example, all have this feature.

In terms of research methods and quantitative investigation, Li Jing (2014) et al. have adopted the SBM-Undesirable model and Malmquist-luenberger productivity index to investigate; Huang Huichun (2014) et al have also adopted SBM-Undesirable model to measure and decompose, and investigate influencing factors based on panel data

model [19]; Geng Rui et al. (2014) adopted the time series model [20]; Chen Weiping et al. (2015) used the method of constructing the global malmquist-luenberger productivity index and conducting the convergence test in their study [23]; Li Qing (2016) used DEA model and Tobit regression model in her research [21]; and Cox model method was applied in the study of Ye Chusheng and Zou Xin (2016) [22]. In terms of qualitative investigation, the qualitative investigations on the non-performing loan ratio of rural commercial banks in China mostly take a specific bank as an example to analyze the current situation of the non-performing loan ratio and the problems existing in the bank, so as to speculate the influence of the non-performing loan ratio and give corresponding countermeasures according to the situation of the bank. Such qualitative research is targeted and can draw corresponding countermeasures according to specific bank conditions. However, as it only targets at a certain agricultural commercial bank, the generalization of conclusions and Suggestions is relatively weakened. At the same time, the mechanism of the influencing factors of the non-performing loan ratio of rural commercial banks is also lack of internal logical explanation.

III. RESEARCH METHODS AND DATA COLLECTION

A. Research Methods

When reviewing the literatures, the researchers find that at present, domestic and foreign researches on the factors influencing the non-performing loan ratio mainly focus on the researches on general commercial banks, while the researches on the factors influencing the non-performing loan ratio of rural commercial banks are relatively few. In addition, the indicator system of influencing factors of non-performing loans of general commercial banks is mostly adopted in the research of quantitative methods, which cannot reflect the characteristics of rural commercial banks. Although the adopting of qualitative methods is targeted, there is a lack of internal logic between mechanism and causation. Therefore, in order to find out the influencing factors of non-performing loan ratio that are more consistent with the particularity of rural commercial banks and explore its influencing mechanism, researchers choose grounded theory and qualitative research as the research method.

Grounded theory and in-depth interview, as qualitative research methods, have been recognized by the academic community as more effective methods for qualitative analysis.

The grounded theory, just as its name implies, emphasize grounding. Before starting this research work, the researchers usually do not make assumptions in advance, but directly obtain first-hand data to explore differences and connections, summarize and summarize, and then abstract theoretical concepts. And as an important tool of qualitative research, in-depth interview method can exactly enable researchers to obtain a large number of primary data. Researchers can interview the corresponding population to obtain the original data, which is more closely related to rural commercial banks and can better reflect the characteristics of rural commercial banks.

Therefore, in this chapter, the researchers refer to the grounded theory analysis method in qualitative research. Through in-depth interviews with bank employees, experts in relevant academic fields and farmers, and hierarchical compilation of open login, associative login and core login, the characteristics of rural commercial banks are obtained. In this way can the more accurate and effective factors influencing the non-performing loan ratio of rural commercial banks be obtained, and thus the influencing mechanism and path can be obtained.

B. Data Collection

This study intends to reflect the characteristics of rural commercial banks that distinguish them from other commercial banks. Therefore, in terms of the selection of interviewee, the researchers choose the group that is more close to or understand the agricultural commercial bank and divides it into the industry expert group and the customer group of the rural commercial bank. The "snowball" interview method was adopted, that is, in-depth interview and coding were conducted for each object until new categories could not be obtained. In the end, the interviewees include 1 expert and scholar on credit risk of commercial banks, 2 staff members of banks and financial institutions, and 6 farmers as the in-depth interviewees.

IV. RESEARCH PROCESS

A. Interview Process

The primary data collection in this chapter is mainly based on in-depth interviews. The researchers conducted in-depth interviews with the above-mentioned interviewees and set different interview Outlines for different groups with different emphases. For experts and scholars as well as practitioners of banks and financial institutions, researchers use semi-structured in-depth interviews to deepen their understanding of factors influencing the non-performing loan ratio of rural commercial banks, and set highly structured problems for peasant households who are not good at language expression and other related aspects.

The interview outlines are as follows:

1) *The interview outline for experts:* Question 1: What do you think are the factors that influence the non-performing loan ratio of agricultural and commercial bank? Question 2: What do you think is the reason why the non-performing loan ratio of agricultural commercial bank is higher than the average level of commercial bank?

2) *The interview outline for staff of banks and financial institutions:*

a) *The interview outline for non-rural commercial bank staff:* Question 1: What factors do you think affect the non-performing loan ratio of banks and financial institutions? Question 2: Do you know anything about rural commercial bank? If so, please talk about your views on the loan recovery risks faced by rural commercial banks.

b) *The interview outline for rural and commercial bank staff:* Question 1: what do you think are the

characteristics of rural commercial banks different from general commercial banks? Question 2: what factors do you think affect the non-performing loan ratio of rural commercial bank?

3) *The interview outline for farmer:* Question 1: do you currently have a bank loan? What is the purpose of the loan? Why do you choose to borrow money from this bank? Question 2: if you need a loan in the future, would you choose a rural commercial bank (rural credit cooperatives) or another commercial bank (which one)? Why? Question 3: if you have a loan, which resource do you depend on to repay your loan? (Farming income, wage income or other income (please specify it) Question 4: if you have a loan, which reason do you think will affect your timely repayment? (E.g. crop yields, weather conditions, work, wages, etc.) Question 5: do you think the main reason why the bank can't call in loans is that?

The in-depth interviews focus on the interview outlines, but not limited to the interview outlines. The researchers appropriately adjusted the interview outline and increase or

decrease the questions according to the respondents' answers to the questions and the content of the answers. For example, if respondents said that they thought the non-performing loan ratio of agricultural and commercial bank might be related to the bank itself, they would ask about this answer: "what do you mean by the bank's own problem?"

B. Open Login

First, we made an open coding of the original data obtained from the interview. This part is also called first-order coding. In this process the researchers broke up the interview record into pieces and name and code it word for word and sentence for sentence to refine the initial concepts and analyze the relations among initial concepts. And then the attributes of each concept were defined and grouped accordingly to achieve categorization. According to the interview record, the researchers obtained 101 original sentences and corresponding initial concepts. After categorizing synonymous concepts and excluding invalid concepts, a total of 20 valid concepts and 10 categories were obtained, as shown in "Table II".

TABLE II. CONCEPTS AND CATEGORIES FORMED BY OPEN CODING

Initial concepts	Categorization
Farming accounts for a small proportion of income/farming as a main source of income	Source structure of loan repayment funds
Low wages/poor harvests	Income level
Middle-aged people engaged in agriculture/young people engaged in industry or project in cities	Labor force destination
Poor harvests caused by natural disasters/Sudden change in work without pay/Sudden family changes	Natural or man-made emergency
Debt escaping/default/malicious default	Subjective willingness to repay
Poor economic conditions /falling agricultural prices	Macroeconomic condition
The bank business personnel frequently transfers and the new staff ignores the former accounts/The bank staff are insufficient and the average management of accounts are too many	Bank personnel setup
Bank strength/bank lending capacity	Bank capital reserves
The ability of the bank to generate revenue	Profitability of banks
The difficult execution of the courts on bad loans.	Policy executive strength

C. Associative Login

In the previous section, the categories formed by researchers with open coding are all independent and scattered. Therefore, it is needed to analyze the relationship between various categories, summarize them into the main category and the sub-category, and reclassify them. The categories of the same kind are classified into a group called sub-category, and extract its categories as the main category. Therefore, associative login (second-order coding) is necessary. After the analysis and induction of the internal relations among various categories, the researchers extracted three main categories, namely economic factors, internal factors of banks and external interference factors, as shown in "Table III".

TABLE III. MAIN CATEGORIES AND SUB-CATEGORIES EXTRACTED FROM ASSOCIATION ENCODING

Sub-categories	Main categories
Source structure of loan repayment funds	Economic factors
Income level	
Macroeconomic condition	
Labor force destination	External interference factor
Natural or man-made emergency	
Loan enforcement	
Subjective willingness to repay	Internal factors of the bank
Bank personnel setup	
Bank capital reserves	
Profitability of banks	

D. Core Login

After conducting the open login and associative login, the next step is to find a Core concept category, so as to include the research results, reflect the logicity and hierarchy of categories, and establish the systematic connection between categories. Therefore the researchers conduct the third-order coding, which is core logging. Based on the comparison and analysis of the relationship between the categories for many times, the researchers extracted the core category that included all the research results: "factors and paths influencing the non-performing loan ratio of rural and commercial banks". The story line around this core category can be illustrated as follows: Whether the source of loan repayment funds of rural commercial bank customers is stable, whether the structure is reasonable, whether the income level of customers is high or low, the macroeconomic situation is good or low, the number of labor force is large or small, whether they are working or farming, all act as economic factors to affect the loan repayment ability of rural commercial bank customers, thus affecting

the non-performing loans of rural commercial bank; whether the bank staff setting is reasonable or not, such as whether there are enough people in the bank to fully manage the lender and the condition of banking supervision, bank reserves, that is, whether the strength of the bank is strong or weak, whether the condition of bank profitability is high or low, namely the bank operation situation is good or bad, as banks internal factors affecting the bank's lending capacity, which affects bank non-performing loan ratio; in addition, some outside interference factors: natural or man-made emergencies, such as natural disasters caused lenders to failure, lenders suddenly unemployed, lenders' willingness to pay is not high, subjective malicious default, some institutions such as court for enforcement of loan defaults will not regularly, unexpected interfere with the normal recycling of bank loans, thus affecting the bank non-performing loan ratio. Based on the above factors, the researchers constructed the influencing factors and influencing path model of non-performing loan ratio of rural commercial banks, as shown in "Fig. 1".

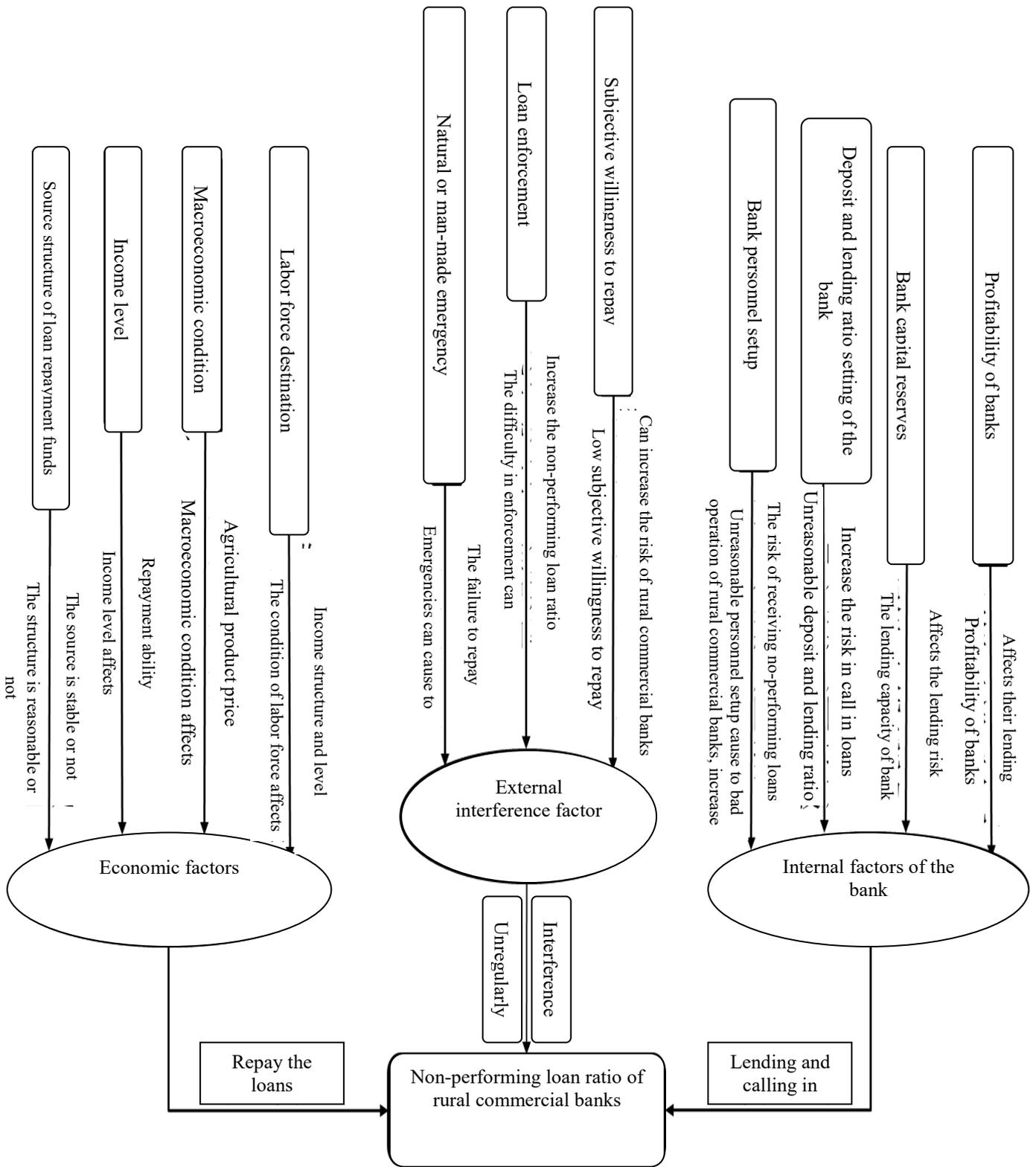


Fig. 1. Influencing factors and paths of non-performing loan ratio of agricultural commercial bank.

V. MODEL DESCRIPTION

Through three levels of coding, the researchers extracted that the non-performing loan ratio of rural commercial banks

was affected by economic factors, internal factors and external interference factors. The first part of the economic factors include the source of loan repayment funds, income level, macroeconomic situation and labor force destination,

which comprehensively affect the ability of the lender of rural commercial bank to repay the loan, and whether the customer has the ability to repay the loan also affects the non-performing loan ratio of rural commercial bank. The second part of the internal factors includes some sub-factors of bank staff setting, bank reserves and bank profitability for a couple of factors, which affect the bank's lending capacity, lending quotas (desire), strictness of lending censoring and loan recovery ability, effectiveness, possibility, which directly affects the bank non-performing loan ratio. And the third part of the interference factors including natural or man-made emergencies, repayment of loans enforcement, subjective intention that are difficult for banks to control, just as banks can't control an early frost, because they are unable to or can only take a big cost to expect that farmers cannot repay the loan on time because of sudden flood drought and crop failures.

VI. CONCLUSION

A. *The Impact of Economic Factors on Loan Repayment*

It is suggested that rural and commercial banks should pay attention to the source and structure of loan repayment funds of customers when approving loans. They should not only take into account the salary statement, or written information of coinsurance members, such as the coinsurance loan of farmers, but also deeply investigate the income source structure and income level of the family, and comprehensively investigate the repayment ability of the lender and the loan team. As for the joint liability guarantee group, they should not lend to the group due to the high expectation of the solvency of one of its members, but should consider it as a whole and comprehensively examine its overall credibility level and loan repayment expectation. It is suggested that rural commercial banks should pay close attention to the current macroeconomic situation at all times. For example, when the economy goes down, they should be more cautious in lending. And for the loan approval of rural households, the market conditions of agricultural products should be investigated in advance to reduce the risk of non-performing loans.

B. *The Impact of Internal Factors in the Bank*

In fact, this is the factor that rural and commercial banks have the best control over. Banks should carefully measure their strength and operating conditions, and determine lending strategies based on their own conditions. Proper risk appetite can lead to profits, but it can also lead to losses. Banks should balance their own conditions, adjust their business strategies and ensure profits with lower risks. As for the setting of bank personnel, it is suggested that rural commercial banks adjust their personnel structure according to their own characteristics. In areas and regions prone to non-performing loans, they should set up more staff and reduce the per capita household management. At the same time, attention should be paid to "professional skills" for household management personnel, who should be transferred their work in similar fields such as household management fields and regions, so as to prevent the efficiency reduction

and other risks brought by the transition period of newcomers. At the same time the system management should be strengthened, by classifying reward and punishment to put an end to the bad atmosphere of "new staff ignoring the former accounts". At the same time, since they are commercial banks that emphasize policy, the government departments should strengthen supervision to prevent the preference for aggressive behaviors for profit of individual rural commercial banks.

C. *The Impact of External Interference Factors*

For external interference factors, which are irregular and most of them cannot be expected or the expected cost is quite large, the rural commercial banks should pay attention to preventing these factors. For natural disasters, such as drought, flood and so on, the observation of relevant institutions can be used to avoid the non-performing loan risk brought by customers who go to loan in the year of natural disasters. For the risk of sudden change in the lender's job, the first countermeasures for the impact of economic factors can also be used for reference. In the approval of loans, the income structure of the loan should be investigated, so as to avoid some risks to a certain extent. As for the court's execution, it also needs the policy support of the government and judicial departments. As for the subjective willingness of repayment of the repayment person, the credit standing of the lender should also be investigated before the approval of the loan. Not only the credit record of the repayment person, but also the character and risk evaluation of the repayment person should be comprehensively examined. This is relatively easy for the rural commercial banks that implement the loan of the Joint liability guarantee groups, because in the same village there are frequent contacts between people and people have deep understanding of each other, and it is easy to obtain the evaluation of the lender for staff sent for field visits. Moreover, they can obtain the evaluation of many lenders at one time, so the comprehensive evaluation has high practicability there. In addition, for the regions with bad ethos of default, on the one hand, rural commercial banks need to be vigilant and cautious in lending; on the other hand, the government and the public sector also need to strengthen local legal publicity and moral construction.

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