

Analysis of Village Banks' Operating Efficiency in Heilongjiang Province

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Abstract. On the field trip of the development of village banks in Heilongjiang province, compared with other rural financial institutions, In order to further understand the development of village banks in Heilongjiang province, the paper used the DEA model to analyze the operation performance of four village banks in Heilongjiang province, and put forward the strength and weakness, proposed support policies. To promote the sustainable development of village banks in Heilongjiang province, for the village banks reference.

Introduction

Heilongjiang Province is the largest province in the aspect of agriculture and has fertile soil and high grain output. In 2013, the grain output of the province reached a new height. In detail, planting industry of Heilongjiang Province in the first three quarters realized RMB 32,810,000,000 added value, with a year-on-year growth of 7.0 compared with the previous year. Specifically, cultivated area of rice was 60,430,000 mus, which increased 3,120,000 mus compared with that in the previous year, and the cultivated area of corns was 110,720,000 mus, which increased by 12,320,000 compared to that in the previous year. Although there has been 50 years' development history, rapid development of agriculture in rural finance has been a weak link of Chinese financial system. Besides, supporting functions of policies are weakened and rural credit cooperatives have monopoly, an unbalance state has existed in Chinese rural financial market all the time and efficiency is low. In the plan that about opening rural financial market, China Banking Regulatory Commission (CBRC) states village banks are core parts of new rural financial institutions and act as an important approach by which private capital is attracted to promote development of rural financial institutions and the important measure that opens new rural financial market Establishment of village banks in Heilongjiang Province is an inevitable trend of rural financial system in the province and of great significance for improvement in farmers' credit situations. In order to satisfy demands of work related to rural diversification and connect rural financial market with the whole financial market of China, village banks are built. We must learn experience from successful pilot projects of village banks, analyze village banks in Heilongjiang Province on the basis that advantages and disadvantages are analyzed, utilize use efficiency of input and output of DEA model and propose suggestions that are appropriate for practice of village banks in Heilongjiang Province to promote development of rural economy in Heilongjiang Province.

Advantages of village banks in Heilongjiang Province

The reason why Heilongjiang Province has good performance in agricultural production is that it has been paying much attention to agricultural production. In 2013, Heilongjiang Province continued enhancing a promoting project about 50 billion kilograms of grain energetically, expenditures of forestry finance and water affairs increased by 20.9%, input into agricultural science was enlarged and advantages of economic diversification was used to implement benefit farming policy actively. Firstly, agricultural scale is large and cost of village banks' loans is low. Heilongjiang Province has been an important commodity grain base of the country all the time. It has abundant cultivated land and uncultivated land resources, flat terrain, contiguous land, fertile soil, large land scale and numerous farmers. Now, its cultivated area is 0.127 billion mus, accounting for 8.2% of total cultivated area in China. The importance that the country attaches to agriculture, farmer and rural area enables income of farmers in the province to show a growing trend each year. Thus, demands for loans and deposits enlarge. For development of village banks,

they can have a wide prospect. Secondly, commodity rate of Heilongjiang Province's grain is high and agriculture complements agricultural loans. Farmers use land for loans. Since grain output is high and sales volume is large, they can repay loans in time. In case of surplus capital, they can carry out investment. Besides, support of national policies and demands for agricultural products are beneficial guarantee for agricultural development of our province. Thirdly, the country gives much support for agriculture in Heilongjiang Province and threshold for village banks is low. Low registered capital makes village banks continue showing trend of rapid expansion. In 2012, the number of newly increased village banks was 5 and the number reached 21 at the end of the year. Additionally, financial service system covers all parts of the province. Situations about registered capital are shown in Table 1.

Table 1 Registered capital of commercial banks and village banks Unit: RMB one million

Bank type	Registered capital
National commercial bank	≥1000
Urban commercial bank	≥100
Rural commercial bank	≥50
Village banks established by countries (cities)	≥3
Village banks established by villages (towns)	≥1

Data source: *Commercial Bank Law of The People's Republic of China and Temporary Provisions on Management of Village Banks*

Fourthly, agriculture-related loans have increased continuously in recent years. At the end of 2012, total assets of banking financial institutions in Heilongjiang Province was RMB 2350.18 billion, which increased by 22.2%, total liabilities were RMB 2,280.28 billion, which increased by 18.1%, and realized net profit was RMB 25,470,000,000, which increased by RMB 4,160,000,000 (as shown in Figure 1). At the end of the year, foreign currency deposit increased by 14.7% compared with other provinces and grew by 3.5% compared to the previous year. Because of the influence factor that hazard for investment of the financial market was enlarged, increment of units' and individual's fixed time deposit was higher than that of current deposit by RMB 64,530,000,000. All loans of domestic and foreign currency in Heilongjiang Province at the end of 2012 increased by RMB 149,880,000,000, which basically accorded with that in the previous year. The growth rate of other fields like modern agriculture, key industrial projects and middle and small-sized enterprises were higher than that of all loans. In the latest proportion of loans, agriculture and industrial project account for 40.4% and 1.4%, respectively.

Heilongjiang Province has been a big agricultural province of China all the time. Such a mode of rapid economic development will bring chances to agricultural development of our province undoubtedly. When farmers' income is increased, their demands for rural financial institutions will also be aroused, which will bring development space on a higher layer for development of village banks.

Disadvantages of village banks in Heilongjiang Province

The first question that village banks in Heilongjiang Province face with is unreasonable equity allocation. According to *Temporary Provisions on Management of Village Banks*, 'the largest shareholder or the only shareholder of village banks must be banking financial institution, shareholding ratio of the largest banking financial institution must not be less than 20% of a village bank's total capital stocks, the shareholding ratio of a single natural person shareholder and his related parties cannot exceed 10% of total capital stocks of the village bank and the shareholding ratio of a non-single natural person shareholder and his related parties cannot exceed shareholding ratio of banking financial institutions 10% of total capital stocks of the village bank either'. However, the situation that the shareholding ratio of banking financial institutions and natural person shareholders at village banks is too high generally exists in Heilongjiang Province. Now, we take Dongning Far East Village Bank, Dorbet Runsheng Village Bank, Bayan Rongxing Village

Bank, and Shuangcheng Huimin Village Bank for example, as shown in Table 2.

Table 2 Situations about equity allocation of village banks

Name of village banks	Foundation time	Registered capital (RMB 10,000)	Sponsoring bank's contribution to investment (RMB 10,000)	Enterprise shareholders' contribution to investment (RMB 10,000)	Natural person shareholders' contribution to investment (RMB 10,000)
Dongning Far East Village Bank	2008/10/10	2000	1020	1600	400
Dorbet Runsheng Village Bank	2008/11/12	2000	1020	1620	380
Bayan Rongxing Village Bank	2008/11/12	2380	2380	0	0
Shuangcheng Huimin Village Bank	2010/01/25	3000	3000	0	0

Data source: Harbin Central Branch of People's Bank of China

As shown in Table 2, the sponsoring bank's contribution to investment exceeds 50%, which is beyond specified standard, and some sponsoring banks' contribution even reaches 100%. Similarly, some natural person shareholders' contribution to investment also exceeds the specified requirement, i.e., 10%. As major initiators, the shareholding ratio of banking financial institutions is 1%, 51%, 100% and 100%, respectively. Although this kind of equity structure ensures banks' leading role, it also results in the situation that original intention of the government's establishment of village banks will be deviated easily. As a result, operation and management of village banks are absolutely controlled by the sponsoring banks, and it is difficult to achieve real independent management. It is easy to find that the main motivation of enterprises' stock equity does not aim at obtaining profits but shareholders' qualification, which makes shareholders of village banks do not involve operation or management in practical work. Thus, shareholders' supervision cannot work effectively.

Secondly, cognition degree of village towns is low, stable deposit sources are lacked and size of loans is small. Most of 300 farmers that we interviewed randomly at Dachengzi Village of Dongning Country tend to choose rural credit cooperatives. Specific statistical data related to situations about their deposits are shown in Figure 2.

According to surveys, it is found that farmers' loans mainly involve short-term loans and they usually choose their relatives' and friends' interest-free loans. Besides, they also select neighbors' and acquaintances' loans with low interest for convenience. Annual interest rate of loans is between 6% and 10%. Finally, some people without conditions for loans will choose usury whose annual interest rate reaches up to 20-35% since they do not know village banks such a kind of new rural financial institutions. All of these have significant impacts on village banks' credit operations.

Analysis of village banks' efficiency in Heilongjiang Province

Data Envelopment Analysis (DEA) is a system analysis method proposed by Charnes, Cooper and Rhodes in 1978, which evaluates relative efficiency of decision-making units according to the same type of units' multi-index input and multi-index output data. DEA model (i.e., CCR model) is used to analyze efficiency of village banks. It is assumed that efficiency of n decision-making units and each decision-making unit has m input variables and s output variables. The decision-making unit j is recorded as DUM_j ($1 \leq j \leq n$). Suppose X_{ij} is the input of DUM_j for the i th type of input

($1 \leq i \leq m$), and y_{rj} is the output of DUM_j for the r th type of output ($1 \leq r \leq s$). Input and output of DUM_j are:

$X_j = (x_{1j}, x_{2j}, \dots, x_{mj})^T \geq 0$ and $Y_j = (y_{1j}, y_{2j}, \dots, y_{sj})^T \geq 0$, respectively. Efficiency rating evaluation index of DUM_j is $h_j = \frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m \mu_i x_{ij}}$, $j=1, 2, \dots, n$, and total appropriate option coefficient is μ, u , which makes $h_j \leq 1$.

Use this as a constraint condition and construct the CCR model: $\text{Max } \frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m \mu_i x_{ij}} = h_0$, s.t.

$\frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m \mu_i x_{ij}} \leq 1, \mu \geq 0, u \geq 0, j=1, 2, \dots, n$; carry out Charnes-Cooper conversion for the foregoing formula. The dual programming model that is generated by the obtained linear programming model is: $\text{Min } \theta$; s.t. $\sum_{j=1}^n x_{ij} \lambda_j \leq \theta X_j$, $\sum_{j=1}^n y_{rj} \lambda_j \leq Y_j$, $\lambda_j \geq 0, r=1, 2, \dots, n$; and θ is the efficiency value of DUM_j , and $0 \leq \theta \leq 1$. When θ equals 1, DUM_j is a valid decision-making unit; when $\theta \leq 1$, DUM_j is an invalid decision-making unit.

Table 3 Four village banks' input indexes

DUM	Operating expense (X1, RMB 10,000)	Interest expense (X2, RMB 10,000)	Loanable funds (X3, RMB 10,000)	The number of employees (X4, RMB 10,000)
Dongning Far East Village Bank	188	133	17847	33
Dorbet Runsheng Village Bank	119	235	5000	16
Bayan Rongxing Village Bank	153	30	7500	21
Shuangcheng Huimin Village Bank	122	30	366	17

Table 4 Four village banks' output indexes (RMB 10,000)

DUM	Loan balance (Y1)	Interest income (Y2)	Net profits (Y3)
Dongning Far East Village Bank	18082	455	155
Dorbet Runsheng Village Bank	3241	330	78
Bayan Rongxing Village Bank	6781	158	124
Shuangcheng Huimin Village Bank	5288	312	208

Data source: Harbin Central Branch of People's Bank of China

In accordance with Table 3 and Table 4 and via the CCR model of DEA, four village banks' relative efficiency value is calculated by DEAP2.1 software, as shown in Table 5.

Table 5 Four village banks' efficiency value

θ	DMU1	DMU2	DMU3	DMU4
DMU1	0.9314	0	0	0
DMU2	0	0.1459	0	0
DMU3	0	0	1	0
DMU4	0	0	0	0.2376

Data source: CCR model

After studying data of the four village banks, it is found that Bayan Rongxing Village Bank is a valid decision-making unit. In proportion, it is calculated that the rate of effective situations of village banks in Heilongjiang Province is about 25%, but the rate of effective situations of rural

credit cooperatives is about 50% generally. Even if the efficiency value calculated by the CCR model of DEA is 1, it will not represent that operation and management of the village banks have stayed in an optimal state but only imply that various linear combinations of other village banks cannot constitute a combination that is more effective than the bank among compared combinations. However, we still find that there are some problems, as shown in the following. Firstly, in regions with high degree of urbanization, for instance, Daqing, efficiency of village banks is the lowest, the number of employees is small and development of village banks has been a little backward. Secondly, at country areas, especially some towns, for example, Dongning Far East Village Bank, monopoly position of local rural credit cooperatives makes it lack progressing power. Thirdly, efficiency of financial institutions is mainly affected by internal resource allocation. For example, the main reason why the efficiency value of Shuangcheng Huimin Village Bank is low is that its business mainly involves operation of loans and deposits, it uses obtained interest rate differential as main income sources and scope of its business is narrow.

Suggestions for improvement in village banks' efficiency in Heilongjiang Province

2014 is a year when spirits of the Eighteenth National Congress of China Communist Party are implemented comprehensively, Heilongjiang Province should improve construction of village banks' banking offices gradually and enhance financial supply of less developed rural areas in the province on the basis that a stable development trend is kept. In order to keep sustainable development of village banks in Heilongjiang Province, solve problems existing at village banks in Heilongjiang Province in the research on DEA model and explore effective combination ratio, the following suggestions are proposed:

4.1 Improving employees' quality and paying attention to brand innovation

Since Heilongjiang Province is a big agricultural province, the number of its farmers is large. With development of agricultural economy in recent years, farmers' demands for loans and deposits are enlarged. When business increases, it is essential to hire advanced knowledge businessmen to give business training to employees, lay a solid foundation for diversified and personalized financial serviced, pay attention to cultivating clients' loyalty index, attract clients' participation by using modern methods and high-quality service, rely on powerful network resource superiority to develop consultancy business training for talent and support rural banks' employees to have practice at large state-owned banks,, form their own brand advantages, create economic environment with appropriate competition and implement effective and benign cooperation among counterparts.

4.2 Improving core competitiveness and increasing banking offices reasonably

Since 2013, banks' risk resistance capacity has been enhanced as financial reform deepens. There are 7 baking institutions and 47 operating networks at each county of Heilongjiang Province. As a result, the financial organizational system that all kinds of banking institutions coexist is formed in county territory. Heilongjiang Province takes the lead to realize the situation that banking institutions cover all towns. Although management structure and mechanism construction have basically finished reform, and county enterprises' vitality, ability to resist and control risks and financial service capability are improved obviously, it is essential to pay attention to standardizing management system to prevent excessive privatization systems from being generated. Village banks in Heilongjiang Province should accelerate construction of banking offices at urban areas and towns in the county region, enhance breadth of business, direct at making clients conduct business like deposits and loans conveniently and implement the service that benefits people practically.

4.3 Enlarging business scope and attaching importance to input and output efficiency

As a main backbone of new county economy, village banks rely on local conditions of rural areas and different convenient conditions, take part in villages and towns with different economic development levels, launch industrial characteristics according to different situations of regions where village banks locate, realize continuous upgrading of product images in order to adapt to financial products with different demands, such as deposit insurance system and business related to securities when they excavate local resources features deeply. Besides, it is essential to pay attention to reasonable ratio of operating expense, interest expenditures and loanable funds, make

development planning well and make full use of advantages. In doing so, development of village banks in Heilongjiang Province will realize the best economic effect undoubtedly.

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