The Butterfly Effect on the Agricultural Bank System at the Grass-Roots Level

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Abstract. The competition power of the Agricultural Bank of China has been dropping down for several years. The reason is that banks at the grass-roots level don’t think much of managing the subtle links. The paper uses the theory of butterfly effect in Chaos for reference to discusses the risks existed in the Agricultural Bank of China at the grass-roots level such as the credit risk, the incomplete internal control, the loose accounting system, the disorder market competitiveness, the brain drain, the weak service consciousness, the financial innovation lag and the unbalanced development. Finally eight pieces of advice are brought forward as the measures against the eight butterfly effects.

Keywords: the butterfly effect, the chaos, the Duffing-Holmes model, the agricultural bank system at the grass-roots level

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1. Introduction

The agricultural bank of China (ABC) is one of the four state-owned commercial banks. The competition power of the ABC has been down for several years. According to the research on the rank of fourteen China-invested banks by a research center in 2005, the ABC was ranked the last but one. Fig 1 tells the variation about the competition power of the four state-owned commercial banks from 2003 to 2006. The red bar in the graph describes that the rank of the ABC has dropped down by 35 since 2003. Judged from the graph, the competition power of the ABC is the weakest among the fourteen banks.

Figure 1. The Rank of the four country-owned commercial bank from 2003 to 2006

Source: The histogram is drew by the data from China Investment Yearbook 2007
Why the competition power of the ABC has been dropping down for several years? The reason is that the ABC at the grass-roots level has been ignoring some problems such as the credit risk, the incomplete internal control, the loose accounting system, the disorder market competitiveness, the brain drain, the weak service consciousness, the financial innovation lag, the unbalanced development. These problems lie on the banks at the grass-roots level don’t think much of managing the subtle links. It can undoubtedly lead to the huge loss of the ABC system. The action effect principal of these problems extremely resembles the theory of the butterfly effect in the Chaos. Therefore on the basis of introducing the model and application of the butterfly effect, the eight kinds of the butterfly effect which are the problems of ABC at the grass-roots level are discussed in this paper. Furthermore eight pieces of the advice are brought forward as the measures against the eight butterfly effects.

2. The model and application of the butterfly effect

In 1960s, the Meteorologists Lorenz in MIT simulated the weather alteration model with computer. He found the minimal change of the initial conditions may lead to the larger weather changes in following days. He called it the “Chaos” Phenomenon, Extreme instability to the Initial value, as “Butterfly Effect”: A butterfly in South America which is flapping wings may cause a Tornado in Texas, USA [1]. “Butterfly Effect” is the basic theory of Chaos Theory. The phenomenon which looks irrelevant are Intrinsically linked to each other. Some Small Perturbations will be Gradually enlarged to huge disturbance. Some inadvertently Behavior may cause disasters. If the initial minor change keeps on, the future state may make a huge difference.

A. The Duffing-Holmes Model of the Butterfly Effect

The Duffing-Holmes model is an efficient tool to study the financial chaos. The model described correctly the different stats under different conditions in a complicated system [2]. Duffing-Holmes also can describe the dynamic operation process of the financial market disturbed by the external force [3] in (1).

The concrete form is as following.

\[ \ddot{x} + \epsilon \delta \dot{x} - x + x^3 = \epsilon Y \cos \omega t \]  

(1)

\( x \) is the states of financial market. \( \dot{x} \) is the velocity of state changing in financial market. \( \delta \) is the parameter which represents the ability of government to keep away the financial risk. It can be measured by the government foreign exchange reserve, foreign bonds and capital structure. \( \epsilon \) is the controlling parameter which reflects the change of financial system reform and the exchange rate system. \( Y \) is the gambling disturbance parameters. It reflects the influences by the international investors who invest or withdraw a great deal on the financial market. \( \omega \) is the self-modification ability of financial market order[4].

B. The Application of the Butterfly Effect

In nature and the social field, minor incidents may lead to huge and complicate consequences by the change of time and space and the participation of other factors. The butterfly effect is implied in the social security system. The butterfly effect will cause huge loss to the organization and family. For example, the fire, the power supply system, the medical epidemic prevention system etc. have taught us the profound lessons. Similarly, the butterfly effect is implied in the corporate organization system. Take the “Enron Event” for example, the event caused the credit system of American corporate be faced up with the collapse crisis. Take the Asian Financial Crisis for example; it is the trivial incidents that lead to the global economy turbulence and the spread of the crisis.
Not only the regions, the country, the industry but also the organization, the enterprise and the person should pay great attention to the butterfly effect so as to control the system efficiently. And for the same reason it is important for the agricultural bank system to analyze the butterfly effect.

3. Analyses on butterfly effect on the agricultural bank system at the grass-roots level

There are many hidden troubles in the agricultural bank system at the grass-roots level. Most of the agricultural banks at the grass-roots level don’t have greater benefits than the other financial organizations at the same level. One of the important reasons is that the hidden troubles in the system lead to the lower efficiency. These hidden troubles will be accumulated till the butterfly effect plays its role and leads to the irreparable losses to the agricultural bank at the grass-roots level. In this paper we analyzed eight kinds of the butterfly effect in the agricultural bank system at the grass-roots level.

A. Butterfly Effect On Credit Risk
It is the imperfect regulation mechanism that leads to the accumulation of the high bad assets. So the credit risk is the biggest hidden risk. At the beginning of the reform and opening, the credit economy expanded rapidly. But due to the incomplete market mechanism, the unhealthy financial rules and the weak legal and risk consciousness, the credit crisis took place in 90s. When each bank organization issued bank loans, it didn’t think about that the lack of strict loan examination procedures will bring with the huge bad debts. They just unilaterally went in for the short-term interests and ignored the hidden risk in the blindly expanding credit. When the credit crisis broke out, the butterfly effect became marked, and the large quantity of assets took a turn for the worse. The interests of the bad debts grew like the snow ball. The agricultural bank has to be burdened with the heavy baggage of the high bad assets.

B. Butterfly Effect on Incomplete Internal Control
The internal control mechanism is not completed which means that the internal control systems are not applied strictly. The minor careless ignorance in financial work will cause the big financial accident and may have serious influences on the reputation and the benefits.

It is well known that the ABC at the grass-roots level will set up the rules for implementation of financial business, the post responsibility and the operation procedure according to the system of the upper-level agricultural bank. But many affiliated agencies of the agricultural bank will be dominated by the extensive operation idea which means to develop business firstly and to regulate afterwards. Some affiliated agencies didn’t attach great importance to the system construction so that there are many problems in it. Furthermore there is “vacuum area” in the system among the connected business [5]. Sometimes the internal auditing system was a nominal one. These problems may become the fuse of huge hidden risk. Except for the influence of the hidden risk, they will have a bad influence on the safety, the reputation and the benefits.

C. Butterfly Effect On Loose Accounting System
The employees had feeble consciousness of keeping the accounting system severely. They ignored the importance of the right accounting system during the bank job. According to the butterfly effect, a slight deviance in the input end of the system will lead to the evil consequences in the output end under the amplification of time and space. In practice, some agricultural bank at the grass-roots level often made these mistakes.

D. Butterfly Effect On Disorder Market Competitiveness
Under the butterfly effect, the irrational operating decisions will lead to the chaos of local financial market order. As the market economy developed end to end, the agricultural bank
will pay more attention to the operating policy which is to enlarge the business scales and occupy market shares. So the upper-level bank kept working out the growth index of deposits so as to take priority over the other financial organizations by the quantity and the scale. While the lower-level banks racked their brains to grab the customers in order to finish the tasks. The local financial agencies started to compete with each other intensely. Some even promised the customers with unjust competitive means such as excessive interests, prizes for deposits etc. From the long-term point of view, on one hand the disorder competitiveness will lower the account stability and raise the cost, cut down the long-term benefits and reduce the competitive power, on the other hand it will disturb the order of the local financial market.

E. Butterfly Effect On Brain Drain
One of the butterfly effects which can not be ignored is the problems on human resource management. In practice, the agricultural bank at the grass-roots level didn’t have right human resource management mechanism. For example, they may not think much of the communications between the cadres and the employees, and don’t have fairness in the talents appointed system. Furthermore there isn’t a right appraisal mechanism on the original employees. So many employees showed dissatisfaction with the banks generally and finally caused brain drains. After the foreign-invested bank will enter into Chinese financial market in 2006, they will spare no efforts to adopt the mainland policy and strain their brains to absorb domestic financial talents. This will aggravate the brain drains of the country-owned banks. It will not only be the loss of the agricultural banks at the grass-roots level but also the loss of the whole agricultural bank of China.

F. Butterfly Effect On Financial Innovation Lag
The short of the innovation consciousness and the single financial product lead to the narrower of the developing space and the bigger gap from the foreign senior banks. Until now many agricultural banks at the grass-roots level keep developing the deposits market as the operating targets while ignoring the medium-business which has low cost, low risk and stable profits. Since 2006 domestic financial market has been opened up to the foreign-invested bank and the reform of interest market will be fastened. It will be a severe challenge for the agricultural bank at the grass-roots level that went on lying on the margins.

G. Butterfly Effect On Weak Service Consciousness
The agricultural bank at the grass-roots level has weak service consciousness which will destroy the reputation and the competitive power of the entire agricultural bank system. After China entered into WTO, the process of global economic integration has been accelerated and more and more foreign businessmen invested directly in China. It will put forward higher demands for the internal financial organizations to raise the business innovation ability, the service level, the employee quality, the management and the international competitive power. Compared with the financial organizations in the western developed countries, our domestic agricultural bank doesn’t have enough service consciousness. There is a long way for our agricultural bank to keep pace with the foreign banks in service and management.

H. Butterfly Effect On Unbalanced Development
From the point of view of agricultural bank, the basic layer organizations are like the organs of the whole country bank system. Due to the obvious difference among the region, the outer economic environment varies from level to level and from region to region. So the development level of each bank is uneven. The difference between south-Jiangsu and north-Jiangsu is a good example. Unbalanced development will be a challenge for the agricultural bank to face up with menace. This unbalanced phenomenon will be amplified step by step. In the system of “County bank-city bank-province bank- head bank”, the higher the level is, the
more powerful the butterfly effect will be. It will affect the whole competitive power of the whole agricultural bank.

Figure 2. A sketch map of the butterfly effect on agricultural banks at the grass-roots level

4. Measures against eight Butterfly Effects

Since China entered into WTO in November 2001, according to some agreements of WTO, China would cancel the geographical restrictions and the customer restrictions for the foreign banks doing foreign exchange businesses, open the financial market in Shenzhen, Shanghai, Dalian, Tianjin. Secondly China would cancel the geographical restrictions for foreign banks to operate the Renminbi business gradually. In 2003 foreign banks were allowed to handle the Renminbi business for Chinese enterprises. In 2006 they were allowed to operate the business service and the personal service to all Chinese customers. It is important for the basic level agricultural bank to raise competitive power of entire agricultural bank. Following are the measures against the above butterfly effects for the agricultural bank at the grass-roots level.

A. Measure against Butterfly Effect On Credit Risk
Strengthen the demands for taking back the bad assets and build the sound risk early warning mechanism. To take back the bad assets can lighten the burden of the agricultural bank at the grass-roots level and weaken the destructive power by the credit risk butterfly effect. To build the sound risk early warning mechanism helps to find out the source of the risk and guard against the credit risk butterfly effect.

B. Measure against Butterfly Effect On Incomplete Internal Control
Be strict on the internal controlling mechanism, reinforce the education on the professional moral quality and set up the responsibility and safety consciousness. Firstly they should make up the holes of the intro-control system. Secondly they should control the human factors which are responsible for the disturbance.
C. Measures against Butterfly Effect On Loose Accounting System
Build a sound crystal dynamic law system. They should look after both the governing of risk and the developing of business in order to create the stable developing environment for the agricultural bank at the grass-roots level.

D. Measures against Butterfly Effect On Disorder Market Competitiveness
Change the operating idea and build the ordered competitive market. The agricultural bank at the grass-roots level should change the operating idea of treasuring the savings but despising the loans which has led to the incompatible growth proportion. Moreover they should look after both the immediate interests and the long-term interests. Only in that way can they prevent the butterfly effect on disorder market competitiveness.

E. Measures Against Butterfly Effect On Brain Drain
Pursue the people-oriented management and build the motivation mechanism. Firstly they should give the talents full space. Secondly the governors in the bank must respect and care for the staff. Thirdly the governors should strengthen communication with the staff in order to avoid the accumulation of the dissatisfaction feelings.

F. Measures against Butterfly Effect On Financial Innovation Lag
Fasten the innovation of business and technology, deal with the butterfly effect of financial innovation lags. Firstly they should learn the advanced management experiences and patterns. Secondly they may use the ideas and methods of overseas financial product innovation for reference. Finally they may grasp the advanced science and technology and promote the business innovation through the technology innovation.

G. Measures against Butterfly Effect on Weak Service Consciousness
Deepen the service consciousness. The competition among the financial organization is the competition of service to a certain extent in 21st. The agricultural bank at the grass-roots level should improve the service quality and strengthen the integrated competitive power so as to deal with the butterfly effect of weak service consciousness.

H. Measures against Butterfly Effect on Unbalanced Development
Catch up with the opportunity and promote development. Firstly the agricultural bank at the grass-roots level should handle with the relationship between the part and the unity. Secondly they should cooperate with each other and help each other. Thirdly the upper level bank may support the lower level banks in less-developed region .In this way they can deal with the butterfly effect of unbalanced development.

References