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Research on the Measurement of Economic Capital of Commercial Banks in China

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Abstract

This paper first introduces the concept and function of economic capital, and then introduces the measurement of economic capital of three risks, credit risk, market risk and operational risk. This paper mainly introduces the main models and methods of economic capital measurement of international advanced banks, analyzes the current situation of economic capital measurement of commercial banks in China, and finally puts forward some suggestions.

Keywords

Commercial Bank; Economic capital measurement; Risk management.

1. INTRODUCTION

China's banking industry has entered a new era of comprehensive opening up, and is always facing great challenges from foreign commercial banks. How to improve their competitiveness and enterprise value in this environment is an unavoidable problem for China's commercial banks. With the acceleration of financial innovation, the marketization of interest rate and exchange rate and other factors, the degree of risk of China's banking industry is deepening, so the supervision of China's banking industry tends to be stricter. Considering the actual situation, the CBRC drew lessons from the Basel Accord and the New Basel Capital Accord and formulated the measures for the management of the capital adequacy ratio of commercial banks, which has been formally implemented on June, and stipulated that June, is the deadline for the capital adequacy ratio of commercial banks to reach the standard, which indicates that China has begun to implement comprehensive capital supervision. In view of the fact that the overall capital adequacy ratio of China's commercial banks is low and the differences in risk management level, business scale and internationalization degree are obvious, the CBRC believes that the basic strategies for China's banking industry to cope with the challenges of the new capital accord can be summarized as "two-step" and "dual track". The so-called "two-step approach" is to implement the capital accord of 1918 first. Commercial banks should first vigorously raise the level of capital adequacy ratio in accordance with the requirements of the measures for the management of capital adequacy ratio of commercial banks, To ensure that the capital adequacy ratio of the vast majority of commercial banks can reach or exceed eight percent. At the same time, large banks are encouraged to develop internal rating system and adopt internal rating method for capital supervision when conditions are ripe. The "two track system" means that in the future[1], the capital supervision of commercial banks will not be "one size fits all", and the qualified large commercial banks will adopt the "new capital agreement" for capital supervision, while other banks will continue to implement capital supervision in accordance with the "measures for the management of capital adequacy ratio of commercial banks". In the past, the evaluation index of commercial banks in China mainly focused on scale and profit, without considering risk. However, the indicators of scale and profit are short-term indicators, but the risks are lagging and hidden. Therefore, in practice, the branches of the bank are prone to one-

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sided pursuit of short-term scale expansion and current profit maximization. The introduction of economic capital management is the right remedy for the disadvantages of ignoring capital constraints and blind expansion of China's commercial banks. Although the measurement of economic capital of most domestic banks is still in its infancy and no comprehensive risk management system has been established, it is necessary to further understand the model and method of economic capital measurement tools. This is of great strategic significance for China's banking industry to achieve comprehensive economic capital management, stable operation and healthy development.

2. ANALYSIS

2.1. The Connotation of Economic Capital of Commercial Banks

Economic capital management method was born in the United States in the late 1970s. The concept of economic capital originated from the risk adjusted return on capital model created by trust bank in 1978. As for the specific definition of economic capital, scholars at home and abroad define it from different perspectives of bank risk management and capital management. Michael K. ong pointed out that economic capital is the capital reserved by the bank for uncertain potential losses, which can relieve the pressure of bank bankruptcy. Its purpose is to ensure that the bank can maintain operation when the loss really occurs and the debtor defaults. The Basel Committee on banking supervision defines economic capital as the measurement of the amount of capital a company needs to support its business and risk, which is the "common unit" of risk. Burns believes that economic capital is the measurement of risk, not the measurement of capital held, which is a kind of protection against unexpected losses at a specific confidence level. Fernando believes that in the imperfect competitive market, the value of a company depends on the capital structure, because economic capital can be defined as the method to maximize the economic added value. The proposal of economic capital reveals the basic principle that the bank's operational risk needs capital to offset, and also explains the basic idea that the bank's risk taking is the occupation of resources.

Since 2005, China's commercial banks have learned and introduced economic capital management methods, and gradually established an economic capital management system suitable for the banks in the system[2]. In China, there is a convergence in the definition of economic capital. Zhan yuan (2003) defined economic capital as the capital required to absorb the potential loss caused by all risks at a given tolerance level. From the point of view of risk capital loss and unexpected capital loss, this paper puts forward a formula: unexpected capital loss and unexpected capital loss. In 2005, China Banking Regulatory Commission defined economic capital as "the capital that banks decide to hold to support their business development, resist risks and provide target solvency for creditors, which corresponds to the unexpected losses that banks bear. [3]On the whole, although different scholars have put forward different definitions, there are three key contents: resisting unexpected losses, a certain confidence interval and minimum capital demand. Expected loss is the risk cost management that has been classified as the bank. In fact, unexpected loss is the error of expected loss or the part of potential loss that exceeds the expected loss. It has volatility and is a variable quantity. It can only be resisted by quantifying the probability of occurrence and the amount of loss by the bank and calculating the minimum amount of capital accordingly.

2.2. Economic Capital Measurement Method of Commercial Banks

The asset fluctuation method is the basic method for measuring the overall economic capital of a bank. According to the potential value fluctuation of assets or risk positions within a given period, the capital level of each asset and position is specified. The methods introduced in this paper belong to the asset fluctuation method. Based on the default rate of customers, default

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loss rate of debts, default risk exposure and other risk factors, the asset fluctuation method measures the economic capital of the whole asset portfolio at a specific confidence level on the basis of considering the asset correlation[4]. In the actual operation of the banking industry, we usually adopt the bottom-up approach, that is, first calculate the credit risk, market risk and operational risk losses, and then summarize them to get the total economic capital. In the summary process, we also need to consider the correlation between the risks, rather than simple summation, because simple summation means that the three risks are completely positive correlation Overestimate the economic capital required.

3. THE CURRENT SITUATION OF ECONOMIC CAPITAL MEASUREMENT OF COMMERCIAL BANKS IN CHINA

In theory, the credit risk measurement of default exposure, the borrower's default rate, the default loss rate of bonds, debt maturity and default correlation of five risk factors, should learn from foreign advanced risk measurement technology, and combined with China's actual risk measurement management practice science to determine, but due to the relevant factors to determine the data, information technology level and so on Due to the limitation of conditions, based on the phased application of the asset fluctuation method mentioned above, the measurement of credit risk in China is still in the stage of internal risk coefficient method at present. Some asset fluctuation methods, that is, using a complete internal rating system, calculate the default probability and default loss rate of borrowers and debts one by one, quantify the expected loss and unexpected loss of each asset, and pay more attention It will take time.

Most banks in China use coefficient method to measure credit risk economic capital, but the coefficient statutory analysis accounts for a large proportion, which is not linked with the expected loss, and the measurement results are not accurate enough. At present, some banks represented by CCB have developed debt rating system on the basis of customer rating system, further improved the internal rating system, and improved the information system In the process of construction and data quality[5], CCB has successfully transformed from coefficient method to partial asset fluctuation method, returning to the essence of economic capital reflecting unexpected loss.

Guided by the development strategy and risk preference of the whole bank, and drawing lessons from the standard methods of the capital adequacy ratio management measures and the New Basel Capital Accord of the CBRC, CCB adopts the 99.43% confidence level corresponding to the external rating of BB + to measure the economic capital of credit risk, market risk and operational risk, and adopts the direct summation method to calculate the total economic capital, Do not consider the correlation between the three risks.

Credit risk is generally measured by asset fluctuation method. For credit business, economic capital is measured separately by corporate risk exposure and retail risk exposure. Based on the default probability model of CCB, under the assumption that asset loss obeys β distribution, the economic capital of each debt is calculated according to the formula. Among them, it is the unexpected loss of the bank's asset portfolio, which is calculated through the customer default probability PD, default loss rate LGD[6], default risk exposure ead, and customer average correlation coefficient ρ of a single debt, and cm is the economic capital multiplier, corresponding to the determined confidence level. The retail exposure credit risk economic capital is approximately calculated according to the regulatory capital calculation method proposed in the new capital accord. For capital and investment businesses, due to data limitations, it is temporarily impossible to use the asset fluctuation method for measurement. In order to reflect the characteristics of exposure risk, according to the principle of matching

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with credit business risk, capital and investment industries determine their credit risk economic capital occupation proportion by product category.

The market risk is generated by the third-party software RM system based on the daily value at risk (VaR), and calculated by the historical simulation method. At 99% confidence level, calculate the holding period of one day. Then, according to the following conversion formula, the portfolio market risk VaR is converted into market risk economic capital.

According to the ratio of the total of the first three basic annual capital income (interest income) and the net operating income of the main business, it is determined by the method of non average capital income. The proportion proposed in the new capital accord is 15%. Considering the current situation of internal control management and the actual situation of special case management, CCB has increased the proportion to 20%. At the same time, in order to reflect the regional differences, the adjustment coefficient is set for the operational risk economic capital of each tier one branch. According to the ranking score from high to low, set five adjustment coefficients, which are 0.90, 0.95, 1.00, 1.05 and 1.10 respectively. Operational risk economic capital = average main business income of the first three years × 20% × regional adjustment coefficient.

4. CONCLUSION AND SUGGESTION

Suggestions for the construction of economic capital management system of domestic commercial banks are as follows :

First of all,different economic capital coefficients should be set for enterprises with different credit grades and different periods of holding assets.In China, the internal coefficient method is widely used in the allocation of economic capital, and the coefficient is distributed according to the risk coefficient of the product or capital itself, which has an obvious guiding effect on the credit policy. However, because the coefficient does not consider the credit status of the enterprise itself, it will lead to the flow of credit resources to customers with low credit rating and high risk.

Second,speed up the establishment of credit evaluation system and build a powerful database supporting risk measurement.From the reality of the international banking industry, asset fluctuation method has many advantages, such as intuitive, accurate, forward-looking and so on. It has been adopted by most foreign banks. China's commercial banks must seize the time to actively study asset fluctuation method to measure risk. Speed up the theoretical research and practical exploration of credit risk, market risk and operational risk measurement, speed up the establishment of credit evaluation system, build a strong database, and gradually improve the economic capital management system suitable for China.

At last,establish internal rating system and strengthen the combination of internal rating and external rating.At present, the internal credit rating system of commercial banks in China is not mature, and one of the basic elements of credit risk measurement model is the internal credit rating system. In the operation of the rating system, we should consider the organization division of the rating responsibility, the rating standard, the review of the rating, the role of external rating and statistical model in the rating process, the normalization of the rating process and the standardization of the rating definition, and the docking of internal rating and external rating.

REFERENCES

[1] Feng Jianjian, applied research on economic capital management of China Construction Bank, 2010, Lanzhou University, P. 38.

ISSN: 2472-3703 DOI: 10.6911/WSRJ.202102_7(2).0007

[2] Li Baoliang, research on economic capital management of commercial banks in China, 2008, Jinan University, P. 53.

[3] Li Ping, research on economic capital management and operational risk control of China commercial banks, 2008, Jilin University, P. 124.

[4] Liao Yanhua, research on economic capital management of China Construction Bank, 2013, Nanchang University, P. 53.

[5] Liu Chunzhi, economic capital of commercial banks: theoretical explanation and Chinese practice. 2011.

[6] Ma JinFang, on economic capital management of commercial banks. Heilongjiang foreign trade and economic cooperation, 2006 (09): 84-85.