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Effect of Asset - Liability Structure on Bank Performance

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Abstract. The banking sector is the core of modern financial system, and it plays an important role in national economy. The general performance of banking sector is low; therefore it is important for us to research asset-liability structure and bank performance. This paper examines the relationship between asset-liability structure and market efficiency of China's banking industry with the deposit ratio and loan ratio as the proxy variable of asset-liability structure and the return on assets as the proxy of market efficiency. Empirical studies show that deposit ratio is proportional to the performance, the loan ratio is inversely proportional to the performance, and then the corresponding policy suggestions are given for the present situation. The banking industry should improve the asset-liability structure and the capability of independent innovation.

Introduction

Banking has been playing an indispensable role in a country’s economy and has strong links with various sectors of the national economy. Li Sanjie believes that there is a clear positive correlation between the asset-liability ratio and the performance of banks and the proportion of deposits and liabilities has negative correlation with performance.[1]Xu Chun pointed out in the paper that China's banking industry has a low market performance as a whole, and the industry has a big particularity, so it is very important to study effect of asset-liability structure on bank performance. [2] In addition, nowadays how to optimize the market structure of China's banking industry, so that improves the general low performance, then enhance domestic and foreign competitiveness is also an important issue. Most of the domestic and foreign scholars analyze market performance from the banking profitability (mainly return on assets ratio), security (mainly non-performing loan ratio) and liquidity (mainly deposit-loan ratio), [3,4] but this paper only selects the profitability index to analyze China's banking industry, which is more targeted. The study of this topic can not only make the banking industry understand their own problems more clearly, guard against financial risks, and enhance their competitive advantage and overall performance level, but also can make use of China's financial resources to maximize and promote the national economy steadily. In addition, monetary policy that needs China's macroeconomic regulation and the banking sector reform are provided by theoretical reference and guidance.

Analysis on Asset and Liability Structure of China’s Banking Industry

In this paper, it uses deposit ratio and loan ratio to analyze the structure of assets and liabilities. Also it uses 2006-2015 part of the data for calculation and analysis from four major state-owned banks and eight small and medium-sized joint-stock banks, and according to the formula to calculate the major banks’ deposits ratio and loan ratio.[5]All data comes from wind,seen Table 1 and Table 2.

Deposits Ratio.

Table 1 Analysis on deposit ratio of China 's banking industry from 2006 to 2015 [%]

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ICBC	27.0	24.0	23.1	24.9	23.0	22.1	21.8	20.9	20.1	19.7
CCB	18.7	19.3	17.3	18.2	17.1	16.4	16.4	15.1	14.8	13.9
PBC	13.9	16.5	14.5	16.2	15.7	13.8	13.3	12.8	12.3	11.2
ABC	17.5	18.3	17.3	17.8	16.5	16.1	15.7	15.2	15.9	16.7
BC	4.36	4.28	4.81	4.96	4.73	4.88	4.90	4.81	5.23	5.87
CEB	1.93	1.98	1.98	2.23	2.25	2.52	2.53	2.58	3.46	4.01

Deposit ratio = total amount of individual bank deposits / total deposits in the banking sector over the same period in China. Several other commercial banks did not specify, the same below.

From Table 1, from the single bank’s deposit ratio, the four major state-owned bank deposit ratio were declining, which is the largest decline in the ICBC, other commercial banks showed a larger increase in the rate and smooth speed.

Loan Ratio.

Table 2 Analysis on loan ratio of China 's banking industry from 2006 to 2015 [%]

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ICBC	24.1	21.7	18.7	18.1	17.9	17.2	16.9	15.8	15.2	14.8
CCB	13.7	14.1	14.1	13.9	14.1	13.8	13.5	14.2	13.9	13.3
PBC	13.5	13.0	12.4	12.3	12.6	12.4	12.5	12.8	12.1	12.3
ABC	16.5	16.8	16.1	15.3	11.8	10.1	10.1	9.28	9.35	8.90
BC	4.24	4.75	5.12	5.07	5.38	5.16	6.01	6.05	6.77	6.94
CEB	2.19	2.23	2.42	2.59	2.65	2.70	2.33	2.38	2.56	3.01

Loan ratio = total amount of individual bank loans / total loans in the banking sector over the same period in China.

From Table 2, there is a similar variation trend with the deposit ratio from the single bank’s loan ratio. Through the above analysis, we can clearly see that China's banking market structure is in a monopolistic competitive state, although the four major banks still occupy the main control, but the monopoly has declined, while the small and medium-sized commercial banks have a rapid growth in competitiveness.

An Analysis of China’s Banking Market Performance

This paper analyzes the market performance from the profitability index of the banking industry. Banks, as a unique enterprise, always pursue profit maximization, so the bank's profitability is a standard to evaluate performance. In this paper,it uses the Return on Assets (ROA) to analyze the profit level of the banking industry,seen Table 3.It reflects the level of earnings from the bank assets’ reinvestment over a period of time. [6] Seen Eq.1,

$$\text{Return on Assets} = \text{Net Profit} / \text{Total Assets} \times 100\% \quad (1)$$

Table 3 Analysis on ROA of China 's banking industry from 2006 to 2015 [%]

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ICB	0.43	0.48	0.55	0.84	1.04	1.00	1.09	1.14	1.35	1.47
CCB	0.88	1.12	0.75	1.12	1.13	1.01	1.15	1.21	1.29	1.43
PBC	0.58	0.60	0.85	1.14	1.17	0.80	1.03	1.16	1.38	1.51
ABC	0.12	0.07	0.11	0.14	0.64	0.63	0.76	0.87	0.94	1.08
BC	0.49	0.65	0.61	0.88	1.19	0.86	1.04	1.04	1.23	1.36
CEB	0.38	0.43	0.43	0.72	1.01	0.72	0.86	1.05	1.12	1.34

From Table 3, the ROA of China's banking industry is basically in steady growth from 2006 to 2015. From this analysis we see that,with the further reform of banking industry, the profitability of

China's banking sector has increased,and the profitability of state-owned banks generally stronger than the joint-stock banks, but the level of banking performance is still low.

Study on the Relationship between Asset-Liability Structure and Performance

In this paper, it uses EVIEWS software to model and analyze the relationship between assets-liabilities structure and market performance and does analysis of parameters and regression, according to the collected data.

Variables Selection and Model Building. This paper selects average data of four state-owned banks and eight joint-stock commercial banks as the sample data, the time span is 2006-2015. First, the ROA, which measures the performance of banks, is used as the dependent variable. Second, this paper selects the deposit ratio and loan ratio as the independent variables. According to the above variables, the following model is established.seen Eq.2,

$$Y = \alpha + \beta_1 InX_1 + \beta_2 InX_2 \quad (2)$$

In this model, Y represents ROA; X_1 represents deposit ratio; X_2 represents loan ratio; α is constant.

Model Regression Analysis. This paper does regression analysis on the annual sample data of 2008-2015 through EVIEWS software and uses ordinary least square method to estimate each parameters . The results are listed in the following Table 4:

Table 4 regression results in EVIEWS

Variable	Coefficien	t value	P value
C	8.9053	2.4971	0.0412
LNX1	1.8948	1.7058	0.5031
LNX2	-5.6509	-2.7936	0.0268

R2	$\overline{R^2}$	F value	P value (F)
0.6979	0.5988	5.6610	0.0345

According to the regression results, the following model is established: $Y = 8.91 + 1.89LNX_1 - 5.65LNX_2$ .From the above results, we can get R^2 = 0.698, and the modified coefficient is 0.599, which indicates that the model fit to the sample in a high level.

F Test: for $\beta_1 = \beta_2 = 0$, and the given significance level $\alpha = 0.05$, I get the critical value (2,7) = 4.74 for the degrees of freedom k-1 = 2 and n-k = 7 in the F distribution table. Getting F = 5.661 from the above table, and it can see F=5.661 > (2,7)=4.74, so the original hypothesis $\beta_1 = \beta_2 = 0$ should be rejected, indicating a significant regression of the equation, that is,two variables——"deposit ratio" and "loan ratio" have a significant impact on the "banking performance" together.

Economic Significance Test: This model estimates that the performance of the banking industry increased by 1.89 units for each additional unit of the deposit ratio assuming the loan ratio is unchanged; for each additional loan ratio of 1, assuming a constant deposit ratio Unit, the performance of the banking sectors reduces 5.65 units. This is because the main business of the banking industry is the deposit and loan business, but due to the lack of a sound banking service system, advanced management concepts, innovative and flexible products, resulting in their operating performance is generally poor.[7]

Conclusion

Based on the current assets-liabilities structure of the banking industry, the relationship between the performance and the market performance is studied. The empirical results show that the deposit ratio is directly proportional to the banking performance, and the loan ratio is inversely proportional to the performance.Also, China's banking industry overall performance level has improved, but the performance of the four major state-owned banks is still low, while small and medium-sized joint-stock banks in the rapid development, and have a high market performance.

Policy Recommendations

Improve the Assets-Liabilities Structure of the Banking Industry, and Enhance Effective Competition. Whether the structural layout of the banking industry has a great impact on its market performance. In order to improve competitiveness, we must perfect the banking assets-liabilities structure and improve the banking system, further reduce the degree of monopoly to create a relaxed and free competitive environment.

Promote the Banking Sector by the Separation of Business to Mixed Operation. From the international financial industry forward direction, mixed operation is the trend of deepening economic globalization in the next few decades. Moreover, the mixed operation is conducive to the rationally and efficiently use funds, increases competition in the industry, broadens the scope of the bank's business and revenue sources. [8]

Relaxation of Industry Mechanisms to Eliminate Barriers to Entry and Exit. China's banking industry has high barriers to entry and exit, so making the degree of competition is low, and ultimately affect the banking market performance. Therefore, the Government should reduce the control of the banking industry; in particular, reduce the conditions of the industry access mechanism. In addition, the government should also improve the corresponding laws and regulations, often held financial seminars, so experts and scholars can discuss fair trade system, and also establish and improve the deposit insurance system, and the development of advisory bodies.

Deepen the Reform of the Banking Industry; Improve the Capability of Independent Innovation. As China's banking industry, there are many problems, like lack of incentive mechanism, the unsound internal organizational structure, leading to the slow development of China's banking sector, and the impact on the national economy is not enough, so the industry should further deepen reform, and introduce advanced modern enterprise management system and technology.

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