Study on the factors influencing the profitability of China's listed Banks

Shuaipeng Li, Weibo Hou

School of Mathematical Sciences, Huaibei Normal University, 235000, Huaibei, Anhui, China

ahfylsp@163.com

Abstract

The profitability of listed Banks is closely related to the banking business structure, but there are many factors affecting the profitability. Using regression analysis in mathematical statistics, quantitative analysis of 14 listed Banks in 2017 annual report, get the net profit, operating income, basic earnings per share, the weighted average return on net assets, total assets, net assets per share and non-performing loan ratio for the influence degree of listed bank profitability, which can optimize the structure of banking business.

Keywords

Listed Banks; Profitability; Influence degree.

1. Introduction

Since the reform and opening up more than 30 years ago, China's banking industry has developed rapidly. Listed Banks, as the best in the banking industry, are gradually breaking the traditional interest rate spread business. The main profit model of traditional Banks has always been interest rate spread business, but with the reform of interest rate liberalization, the profit model of traditional commercial Banks is in urgent need of transformation, and the development trend of global Banks is to carry out low-risk and high-return banking business.

In China, all state-owned Banks have been listed. The traditional single spread profit model is obviously not enough to meet the test of the international financial market, and the multi-level profit model should become the operating model of listed Banks under the interest rate liberalization. China's multi-level profit model started late, and the banking industry in developed countries has established a standardized intermediate business market. Many foreign scholars have made in-depth studies on this. Edward Zaik (1996)[1] developed a single corporate system based on the risk and capital analysis group of bank of America and found that each department of commercial Banks provides risk-adjusted return on capital as well as the level of individual products, transactions and customer relationships. Miguel Garcia-Cestona (2007)[2] observed and analyzed the ownership structure of Spanish savings Banks and concluded that diversified financial services under internal control can achieve profit maximization. Lgor Tomicic (2012) used statistical tools to find a series of relationships between the profit structure of Banks and the indicators such as average assets, total assets, average equity, pre-tax profits and after-tax profits.

Although China started relatively late and diversified banking market is not perfect, domestic scholars have given corresponding research results based on foreign research results and combined with the current situation of China's market. Sun Zhan (2002)[3] proposed that the central bank cut interest rates, which directly affected the reduction of interest margins of commercial Banks, thus increased operating profits, and the demand for financial business loans was unprecedented. Chen Heng (2011)[4] it is the financial structure of household assets that accounts for a relatively high proportion of the impact of the source of profits of commercial Banks, so the investment of household assets

should be diversified. Zhao Lei (2017)[5] studied under the background of interest rate liberalization and obtained that the decrease of deposit and loan spreads of Chinese Banks would lead to the decrease of profits of commercial Banks, suggesting that Chinese Banks should deepen the reform of loan models as soon as possible.

2. Banking

Banking, as the name suggests, is the business of banking. According to the complexity of business, it can be divided into traditional business and complex business. Traditional business generally refers to loans and simple foreign exchange trading, etc., while complex business is structured investment, enterprise financing, acquisition and listing, etc., which is more high-tech and high-profit than traditional business. Normally, we are classified according to its balance sheet, classification of concrete as shown in figure 1, innovation business in our country is far less than the traditional type of business, in modern society, the new normal economy solely on interest income d leading profit model is very difficult to meet the needs of nowadays people's life, the development of the diversity of non-interest income profit model is the key of the our country banking industry's future development.

Table 1 statistical figure of banking business classification [6]

Business Type	Business Content	Classification
Liability business	own capital, deposit liabilities, loan liabilities and others	traditional categories
Assets business	reserve assets, credit assets and others	traditional categories
Investment business	national bonds, stocks, corporate bonds and others	traditional categories
Loan business	ordinary loan limit, overdraft loan and others	innovative types
Payment and settlement business	bank draft, check and others	traditional categories
Bank card business	debit card, transfer card, stored value card and others	traditional categories
Agency business	agency type of securities issuance, payroll, housing mortgage withholding consumer loan repayment and others	traditional categories
Trading business	forward contracts, financial futures, options, interest rate swaps and others	innovative types

3. Research design

3.1 Sample selection and data source

On the basis of predecessors' research results, this paper selects 14 a-share listed Banks as sample, the sample of 14 bank China merchants bank, industrial bank, Shanghai pudong development bank, bank of China citic bank, bank of Shanghai, jiangsu, hangzhou, nanjing bank, bank of guiyang, wuxi, changshu, bank, bank of jiangyin, zhangjiagang, bank of wujiang, research span selection for January 1, 2016 - December 31, 2017. In this paper, econometric method is used to process the data. The software used is SPSS and Eviews7.0. The data in this section are all from the 2017 annual performance express of listed Banks.

3.2 Variable selection and description

In this section, variables are divided into dependent variables and independent variables according to the problems studied in this paper. Among them, the dependent variable is the profitability of the listed bank, and the independent variable is net profit, operating income, basic earnings per share, weighted average return on equity, total assets, net assets per share and non-performing loan ratio, respectively.

(1) Net profit (NP)

Commonly known as after-tax profit, is the enterprise by the provisions of the payment of income tax after the residual profits. The more the after-tax interest rate is, the better the development trend of the enterprise will be. At the same time, the net profit index is also a barometer of the enterprise's operating condition.

(2) Operating income (OI)

Operating income refers to the total inflow of economic benefits obtained by paying human and material resources in Commodity Exchange. When carrying out normal business activities, enterprises should strengthen the management of business income, which is also an important indicator affecting profits.

(3) Basic earnings per share (EPS)

The key to calculate the basic eps is to determine the current net profit attributable to common shareholders and the weighted average of the current issued common shares. As the highest authority, the general meeting of shareholders has its business objectives centered on the interests of shareholders. Basic earnings per share is the manifestation of shareholders' profits and an economic indicator of commercial Banks' profits.

(4) Weighted average return on equity (ROE)

In the calculation of profit of listed Banks, a frequently used index, the net profit after deducting non-recurring profit and loss is compared with the net profit before deducting, and the lower one is taken as the calculation basis of weighted average return on equity.

(5) Total assets (TA)

Assets are obtained by trade, distribution of social resources, the total assets of listed Banks is refers to the control or have long-term bonds, deposits, interbank lending instruments such as fixed and intangible assets, total assets is one of the main indicators of listed Banks scale, but also affect bank scale important basis.

(6) Net assets per share (BVPS)

Generally speaking, the ratio of Stockholders equity to the total number of shares is called net assets per share. Stock exists as the circulation means of listed bank funds, so the improvement of the actual value of each stock will definitely affect the circulation price of the whole stock market. The stock market rise of listed Banks can directly bring profits to Banks, thus affecting the profit structure of Banks.

(7) Non-performing loan ratio (NPLR)

The ratio of non-performing loans to total loans in listed Banks refers to loans that cannot be repaid by the lender. Once the non-performing loan ratio of Banks is excessively high, it will cause a series of events, such as weak public financing and low capital flow, and seriously damage the growth of national investment. The Chinese government has always been committed to reducing the non-performing loan ratio of Banks and reducing the incidence of dead and bad debts.

4. Research model design

4.1 Propose research questions

In the context of interest rate liberalization, deposit and loan spreads are gradually narrowing. The profitability of deposit and loan business under the traditional mode is no longer enough to support

the development of the whole listed bank. Domestic listed Banks urgently need to expand the multi-profit model with intermediate business as the core, which is also a major challenge currently faced by China's listed Banks[7]. International Banks have long been carrying out diversified intermediate businesses, and most of their operating profits come from finance, financial planning, intermediary and other businesses. Compared with the mode with more traditional businesses in China, we should explore diversified profit models suitable for listed Banks in China on the basis of foreign perfection. This is also the problem studied in this paper. Starting from the profit of listed Banks, this paper USES panel data to conduct quantitative analysis of the impact of various factors on the profitability.

4.2 Regression model design

According to the research questions, this section uses the known data to conduct multiple regression analysis, and studies the impact of independent variables such as net profit, operating income and basic earnings per share on the profitability of listed Banks. The model is established as follows:

$$LBEL = \alpha_0 + \alpha_1 NP + \alpha_2 OI + \alpha_3 EPS + \alpha_4 ROE + \alpha_5 TA + \alpha_6 BVPS + \alpha_7 NPLR + \varepsilon$$

Where: α_0 is a fixed constant term, indicating other influencing factors besides the seven independent variables; $\partial_1, \partial_2, \cdots\cdots, \partial_7$ respectively represents the influence degree of seven independent variables on dependent variables; ε is a random error term.

5. Comparative analysis

This section uses the software Eviews7.0 for data processing, and the results are shown in figure 2:

Table 2 Results of seven-element linear regression analysis

Variate	Modulus	SD	T 2-statistic	T 2-statistic Significance
α_0	4.986372	2.086423	2.009893	0.0309
NP	0.036972	0.034062	3.157842	0.0012
OI	-0.742582	0.028461	-1.761683	0.0523
EPS	-2.33E-05	1.22E-06	-0.429656	0.6225
ROE	-0.234716	0.000861	-0.468411	0.0000
TA	-4.29E-06	9.70E-06	-0.722683	0.0324
BVPS	0.009874	0.019946	0.298759	0.0998
NPLR	0.036959	0.008642	4.357610	0.0792
Fit coefficient	0.918872	Corrected determinants		0.910383
RMSE	0.176634	Durbin - Watson test values		1.711264
F 2-statistic	205.9168	F 2-statistic Significance		0.000000

In figure 2, when the fitting coefficient is close to 1, the better the fitting degree of the multiple regression model is. The corrected determination coefficient refers to the goodness of fit obtained after excluding the fitting coefficient increasing with the increase of dependent variables, and the reliability of this result is higher. When the significance probability of the T statistic is less than or equal to 0.025, the independent variable has a high degree of influence, but if the significance probability of the T statistic is too high, the influencing factor fails the T test. The F statistic can represent the significant influence between the respective variables and dependent variables, and the influence increases with the increase of the value [8].

According to the results of seven-element linear regression, some variables did not pass the T test, and the effect of these variables was not significant, so it was necessary to screen the variables for further regression analysis. Through observation, the significance of NP, OI, ROE and TA, the four independent variables, is relatively high, especially the effect of NP is the most significant, and the

adjoint probability value of T statistic is less than and close to 0.025. Therefore, we need to conduct further regression analysis on the above four independent variables with significant influence. The regression results are as follows:

Table 3 Results of quaternary linear regression analysis

Variate	Modulus	SD	T 2-statistic	T 2-statistic Significance
α_0	4.637290	1.758024	2.721683	0.0106
NP	0.064325	0.163462	4.628719	0.0226
OI	-0.625834	0.783411	-1.761683	0.0143
ROE	-0.415726	0.013674	-0.637412	0.0000
TA	-9.21E-06	6.26E-06	-0.321187	0.0033
Fit coefficient	0.914231	Corrected determinants		0.913297
RMSE	0.163358	Durbin - Watson test values		1.503750
F 2-statistic	340.6227	F 2-statistic Significance		0.000000

Figure 3 after excluding the three variables of basic earnings per share, net assets per share and non-performing loan ratio, the fitting coefficient reached 0.914231, which was 0.004641 lower than before, but the adjusted determination coefficient increased by 0.002914, thus improving the goodness of fit of the regression model. The standard error of regression decreased by 0.013272, the durbin-watson test value was still close to 2, the F statistic increased by 134.7059, and the significance probability of T statistic of each independent variable was less than 0.025. Therefore, the results of quaternion linear regression were improved in all aspects.

6. Main conclusions

(1)The above regression results show that the four dependent variables -- net profit, operating income, weighted average return on equity and total assets -- have a significant impact on the profitability of listed Banks.

(2)Profits of listed Banks increased with the increase of net profit increase, at present our country tradition of listed Banks share of total business is big business, ordinary spread business net profit and forward contracts, financial futures, options, interest rate swaps and other innovation business net profit of less than, so listed Banks in our country should expand innovation business market share, enhance the yield listed Banks.

(3)The amount of operating income depends on operating costs, and only effective use of funds can increase revenue and control costs.

Total assets are closely related to the size of assets. To achieve economies of scale, listed Banks in China must stop sticking to the traditional interest rate spread business and expand their business scope through continuous innovation, so as to improve the profitability of listed Banks.

References

[1] Edward Zaik. Raroc at bank of America: From theory to practice [J]. Journal of Applied Corporate Finance, 1996, 29(15-16):83-93.

[2]Miguel Garcia-Cestona.Multiple goals and ownership structure:Effects on the performance of Spanish savings banks [J].European Journal of Operational Research,2007, 17(07-12):582-599.

[3]Sun Zhan. Interest rate cuts "force" large adjustment of bank profit structure [J]. Contemporary Economic Science,2002,31(6):04.

[4]Chen Heng. Impact of changes in financial asset structure of Chinese residents on profit sources of commercial Banks [J]. Value Engineering,2011,21(4):121-122.

[5]Zhao Lei. Research on the impact of deposit and loan spreads on profits of commercial Banks in China under the background of interest rate liberalization [D]. Shandong: Shandong university, 2017:46-54.

[6]Zhang Shan. A brief analysis of the profit structure of China's commercial Banks -- a case study of 16 listed Banks [J]. Financial and Economic Circles: Academic Edition,2015,15(10):19-21.

[7]Zhang Nanmu. Research on the transformation of profit structure and profit model of commercial Banks in China [D]. Zhejiang: Zhejiang university, 2013:35-52.

[8]He Lei, Ren Senchun. Comparative study on profitability of listed Banks [J]. Journal of Mudanjiang Normal University: Natural Science Edition, 2016,27(3):15-18.