

Analysis of Investment Value of 37 Listed Banks based on Factor Analysis

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Abstract

As the main intermediary of indirect financing, banks are an extremely important part of China's financial market. In order to understand the investment value of 37 listed banks and their changing trends, the data analysis software such as spss and Excel were used to analyze the data of 37 listed banks for a total of 5 years from 2015 to 2019 in terms of risk control ability, operating ability, solvency, development ability and profitability, combined with 12 investment value financial evaluation indexes to judge and evaluate their overall investment value in the past five years. After data analysis, it is concluded that the overall investment value of listed banks has been rapidly increasing in the past five years, and the industry as a whole is gradually becoming stronger while internal competition is also gradually intensifying.

Keywords

Listed Banks; Investment Value; Operating Performance; Factor Analysis.

1. Introduction

1.1. Research Background

China's financial services are mainly indirect financing, as the main intermediary of indirect financing, banks have been through the information asymmetry to earn the interest difference between deposit and loan and get a full amount of revenue, but in recent years, especially in nowadays, the homogeneous competition in the banking industry is so fierce that banks continue to look for ways to get new profit growth points, however, in the case of excessive attention to their own profitability, the risk tends to Therefore, banks should pursue business and profit growth under the premise of controlling systemic risks, instead of just pursuing profits and ignoring the occurrence of risks, only banks that pay attention to both risks and profits in this way are banks that can develop in the long run and are also banks with investment value that investors can invest in.

1.2. Purpose and Significance of the Study

The purpose of the study is to rank the 37 listed banks by each factor score to derive the company's performance in terms of profitability, operation, development, debt service, and risk control during the operating period, focusing on the assessment of the bank's investment value in five aspects, and then ranking the comprehensive score, integrating the information of 2 main factors and 12 financial evaluation indicators, including both static and dynamic variables, for a more comprehensive analysis and a comprehensive To assess their comprehensive ability and investment value, based on the above rigorous reasoning and empirical analysis of the sample data from 2015-2019, the overall comprehensive performance of a total of 37 listed banks in the past 5 years is judged and evaluated. Through the above effective and thorough analysis of the public financial information of the 37 listed banks, many problems can be identified, and it has certain reference value for improving the business conditions of the 37 banks.

1.3. Literature Review

There are many methods to analyze the investment value of banks, among which factor analysis is one of the more commonly used analysis methods, Zhao Liting [1] and Fan Yixin [2] analyzed and made suggestions for improving investment value and market efficiency from a scientific perspective by constructing a financial evaluation index system; Xie Xiaorui [3] and Zhao Zhan [4] used the same method and steps by selecting all listed Xiao Yiping [5] and Qin Zhengyan [6] selected the financial listed companies listed in Shanghai and Shenzhen stock exchanges as the research objects and used factor analysis to calculate the comprehensive score and ranking of the investment value of each listed company.

However, there seems to be less literature on horizontal and vertical analysis in consecutive years comprehensively, so this paper innovatively combines general listed companies' intrinsic value evaluation indexes and unique financial indexes based on banks' own characteristics.

2. Analysis of Investment Value of Listed Banks

2.1. Sample Selection and Data Sources

The data used in this paper are the annual reports of 37 A-share listed banks in Shanghai and Shenzhen from 2015 to 2019, and the data in this study are mainly from the annual financial reports published by SZSE, SSE and Flush. Bank of China, Bank of Wuxi, Bank of Jiangsu, Bank of Hangzhou, Bank of Xi'an, Bank of Nanjing, Bank of Yu, Bank of Changshu, Industrial Bank, Bank of Beijing, Bank of Xiamen, Bank of Shanghai, Bank of Agriculture, Bank of Communications, Industrial and Commercial Bank of China, Changsha Bank, Post and Reserve Bank, Everbright Bank, Bank of Chengdu, Zijin Bank, Zheshang Bank, Construction Bank, Bank of China, Guiyang Bank, CITIC Bank, Sunon Bank Bank of China, Bank of Guiyang, CITIC Bank, Sunon Bank, Ping An Bank, Bank of Ningbo, Jiangyin Bank, Zhangjiagang Bank, Bank of Zhengzhou, Bank of Qingdao, Qingnong Commercial Bank and Bank of Suzhou.

2.2. Establishment of Factor Analysis Index System for 37 Listed Banks

The establishment of evaluation indicators is the first and crucial step in the comprehensive analysis of investment value of listed banks, and the scientific selection of indicators can directly affect the effect of the whole analysis. Based on the selection of the above four categories of indicators [7][8][9][10], this paper extracts five primary indicators of solvency, operating capacity, profitability, development capacity, risk control capacity and 12 secondary indicators (X1 to X12), namely: return on net assets, net sales margin, total assets net margin, deposit taking (iii) KMO and Bartlett (2001), which are the first-tier indicators of profitability and risk control ability, and 12 second-tier indicators (X1 to X12), namely: net asset return, net sales margin, total net asset margin, net asset margin, deposit growth rate, loan and advance growth rate, total asset turnover, net asset turnover, gearing ratio, equity ratio, capital adequacy ratio, provision coverage ratio, and non-performing loan ratio, established a comprehensive index system of investment value of listed banks.

2.3. KMO and Bartlett's Test

In order to prove whether the variables are suitable for factor analysis, firstly, the data of 12 variables of 37 listed banks are input into SPSS software and KMO and Bartlett's test are conducted. the value of KMO ranges from 0 to 1, generally speaking, the value of KMO should be greater than 0.5 to do factor analysis, if the value of KMO is closer to 1, it means the more suitable the selected financial data are for factor analysis. The KMO value for this test is 0.701, which proves that the data can be used for factor analysis. In addition, the Bartlett's sphericity test result shows that its companion probability is 0, i.e., Sig=0.000, which indicates that its correlation coefficient matrix is unlikely to be a unit matrix, proving that the original hypothesis

is wrong, and the Bartlett's sphericity test result also proves that the 2019 data are suitable for factor analysis.

2.4. Extraction of Common Factors

After determining the suitability of this data for factor analysis, the extraction method of principal component analysis was applied to derive the eigenvalues as well as their contributions and cumulative contributions, and the eigenvalues of the first two principal factors selected were greater than 1, which satisfied the condition, and their cumulative contributions reached 80.517%, which exceeded the requirement of 80%, indicating that they covered 80.517% of the data volume, so the first two principal factors extracted were able to analyze the listed banks for analysis.

2.5. Rotation Factors and Index Classification

After extracting the two main factors, in order to make the above two factors more representative and include all the information as much as possible, the original factor loading matrix is selected by the method of "orthogonal rotation with maximum variance", so that the factors are orthogonal and the variance between them is maximum. This way, the relative sum of squares is maximized after the rotation, which makes the analysis more comprehensive and scientific.

2.6. Comprehensive Score and Ranking

The factor composite scores of the listed banks in 2019 were calculated based on the component score coefficient matrix (factor scores were noted as F1 and F2).

$$F1 = 0.136 * X1 + 0.072 * X2 - 0.013 * X8 + 0.121 * X6 + 0.122 * X7 + 0.132 * X10 + 0.011 * X11 + 0.108 * X4 + 0.093 * X5 + 0.123 * X12 + 0.133 * X9 + 0.123 * X3 \quad (1)$$

$$F2 = 0.106 * X1 + 0.329 * X2 + 0.325 * X8 - 0.114 * X6 - 0.110 * X7 + 0.085 * X10 + 0.329 * X11 + 0.073 * X4 + 0.165 * X5 - 0.107 * X12 + 0.073 * X9 - 0.102 * X3 \quad (2)$$

Based on the factor scores derived from the analysis and the proportion of the contribution of each eigenvalue to the cumulative contribution, a composite score model was established to derive the 2019 investment value composite score of listed banks (denoted as F-summary 2019).

$$F_{\text{综}2019} = \frac{60.625}{80.517} F1 + \frac{19.892}{80.517} F2 \quad (3)$$

In order to more clearly see the trend of investment value changes of listed banks in recent years, the data of 37 listed banks from 2015 to 2018 were processed to arrive at the comprehensive investment value scores of these 37 listed banks from 2015 to 2018 and the ranking.

About 27.03% of listed banks had a composite score greater than 0 in 2015, 37.84% in 2016, the percentage with a composite score greater than 0 rose to 40.54% in 2017, fell to 35.16% in 2018, and rose again to 43.24% in 2019, indicating that the overall investment value of listed banks has been rising rapidly in the last five years, despite a decline in 2018, it climbed rapidly to a new peak in 2019. The analysis of the empirical study shows that banks such as Guiyang Bank, Changsha Bank and Bank of Ningbo have developed rapidly and maintained well in the past five years, and their overall investment value score has been steadily ranked among the top 37 listed banks in the past five years, indicating their strong overall strength and high investment value. At the same time, the total score ranking steadily rising and China Merchants Bank, Qingnong Commercial Bank, Changshu Bank, Zhangjiagang Bank and other banks,

investors can pay attention to such banks with strong development momentum when considering long-term holdings. This indicates that such banks are not able to keep pace with the progress of the times under the current situation of increasingly fierce homogeneous competition in the banking industry, and are not able to seize their own characteristics to differentiate their development leading to a gradually shrinking market and weakening capacity in all aspects year by year. The above analysis on the investment value of 37 listed banks can be used as a reference for stockholders to select stocks.

3. Conclusion and Insight

Based on the final results obtained and combined with a series of policies issued by the state in recent years, this paper will propose the following revelations for the sake of listed banks to continuously improve their investment value and for each bank to develop better and faster: 1. Cultivate a differentiated and multi-level banking system; 2. Assist the development of small and medium-sized enterprises; 3. Expand the degree of financial openness; 4. Strengthen the risk monitoring mechanism; 5. Make full use of emerging technologies such as big data and blockchain

References

- [1] Zhao Liting. Empirical analysis of investment value of listed banks and their stock market performance [D]. Liaoning University,2017.
- [2] Fan Yixin. Analysis of investment value of listed banks in China based on factor analysis[J]. Times Finance, 2018(11):111+121.
- [3] Xie Xiaorui. Analysis of financial competitiveness and investment value of Bank of Beijing[D]. Hefei University of Technology,2015.
- [4] Zhao Zhan. Research on investment value assessment of Bank of Qingdao based on Harvard analysis framework[D]. Qingdao University of Science and Technology, 2020.
- [5] Xiao Yiping. Research on the correlation between investment value and stock market performance of financial listed companies[D]. Changjiang University, 2014.
- [6] Qin Zhengyan. Analysis of investment value of listed companies in China's financial sector - based on financial index system[J]. Business Economics,2020(01):88-89.
- [7] Li Xiaotong. Research on intrinsic value measurement model of SSE bank stock trading [D]. Harbin Institute of Technology,2019.
- [8] Wu Jun. Analysis of investment value of listed bank stocks based on factor analysis and cluster analysis [J]. Popular Investment Guide,2019(19):1-2.
- [9] Yang Xia, Wang Yayun. Analysis of investment value of listed commercial bank stocks in China based on factor analysis[J]. Special Economic Zone,2015(12):67-69.
- [10] Yang Lin, Wang Tianyi, Zhao Guimei. Analysis of investment value of stocks in financial industry--based on factor analysis and cluster analysis methods[J]. China Market,2014(10):87-88.