The Validity of P/E Ratio Valuation: Evidence from A-share Listed Bank Companies

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Abstract. Contemporarily, financial development with Chinese characteristics has been the core of the development of Chinese society. Meanwhile, the banking industry was the core of its financial system for more than ten years. With the adjustment of China's policy in recent years, more and more urban and rural commercial banks have been listed in the A-share market. By the end of 2022, there are 42 listed banks in A-share market and 11 more companies were on the waiting list. The P/E ratio, as an index that also refers to stock price and financial report data, has been the focus of domestic and overseas capital markets. With the maturity of China's capital market and the listing of more and more banks in the A-share market, evaluating the actual value of listed companies is crucial. By analyzing the cross-sectional 2021 financial reporting data of listed bank companies, this paper examines the relevant economic data that affect the P/E ratios of listed bank companies in China. According to the analysis, it provides reasonable suggestions for the decision-making of investors and the pricing of the initial public offering of the bank companies to be listed. In general, these results provide a basis for guiding the effectiveness of P/E valuation of listed banking companies in China, especially the pricing of IPOs of urban and rural commercial banks.

Keywords: Banking; P/E ratio; cross-sectional data; financial data.

1. Introduction

The report of the 20th National Congress of the Communist Party of China focuses on the relationship between Chinese-style modernization and high-quality development of the banking industry and mentions that high-quality development of banks should embody the characteristics of Chinese-style modernization and the road of financial development with Chinese characteristics also requires high-quality development of banks [1]. The banking industry of China was the core representative element China's financial system more than ten years ago. From the report of the 20th National Congress, it is not difficult to notice the importance of the banking industry for the development of characteristic Chinese finance. This also shows the continued importance of the banking sector to China's economic development. At the End of 2022, there were 42 listed banks in China's A-share market, a 2.6-fold increase from 16 in 2010 and a 1.6-fold increase from 26 in 2018. Among the 42 listed bank companies in the A-share market there are six large state-owned banks, nine joint-stock commercial banks, 17 urban commercial banks, and ten rural commercial banks. Compared with 2010, not only the number of state-controlled commercial banks, national small and medium-sized joint-stock commercial banks, and urban commercial banks has increased, but also ten rural commercial banks have emerged. In addition, by the end of 2022, 11 banks were waiting in line to list on the A-share market. DaHe Cube says the eleven banks include five urban and six rural commercial banks [2]. The changes highlight the rapid development of China's Bank Industry over the past 12 years, but as the number of urban and rural commercial banks among a-share listed bank companies increases, concerns about the quality of China's banking sector have followed. As a result, the price-to-earnings ratio of the banking sector is also closely watched by investors and research institutions.

According to the existing domestic literature, the analysis of the P/E ratio focuses on the whole a-share market. In contrast, the banking industry study focuses on banks' investment value rather than the P/E percentage. The existing literature on the impact factors of the P/E balance of the banking industry remains about the 2008 financial crisis. Other factors may have a relevant impact on the P/E ratio, e.g., Zhou's results based on the 12 listed banks of the price-earnings ratio panel data [3]. The

study also find that the P/E ratio is significantly influenced by bank performance, stock market volatility, investor preference, and government regulation. Chen studies the factors that affect the P/E ratios of banks from a macroeconomic perspective [4]. Xia found that GDP growth rate, inflation rate, investor sentiment, and net interest margin are the main influencing factors of the P/E ratio. Through multiple regression analysis of macroeconomic, microeconomic and investor behavior, return on assets, the share of non-interest income and core Capital adequacy ratio have no significant effect on P/E ratios [5]. However, for the post-epidemic era and a-share listed bank companies doubled the number of the background of the P/E balance is not much analysis. A recent article is Zhang's 2018 study of the valuation effects of 26 listed bank companies. Based on the results, the proportion of urban and rural commercial banks in a-share listed banks at that time was limited [6].

This paper will focus on China's listed bank companies through descriptive statistical analysis, correlation analysis, regression analysis, and other methods to study the impact of the P/E ratio and the effect of different factors on the P/E balance. This study aims to help investors evaluate the value of existing A-share listed banks, especially the importance of urban and rural commercial banks. In addition, this paper will provide the valuation model with reference significance for the city bank and the rural bank, which will prepare to go public.

2. Data & Method

Based on the understanding and summarization of relevant literature at home and abroad, this paper mainly refers to Zhou and Chen for our banking listed companies' price-earnings ratio analysis, Chen for the listed companies P/E impact factors and combined with the current post-epidemic era of the background [7]. This research selects the variables that may affect the P/E ratio of a-share listed banking companies in the financial market and reveals the influence degree of these factors by using correlation analysis and regression analysis. This paper analyzes and collects primary financial data of 42 listed bank companies from financial year 2021. This study aims to determine the influencing factors of the P/E ratio of listed banks under the present situation of the rapid increase in the number of listed city commercial and agricultural banks. The research methods of this paper are as follows.

After acquiring the cross-sectional 2021 of the primary financial position of listed companies, the Return on Equity (X1), Net interest margin (X2), Non-performing loan ratio (X3), Provisioning coverage (X4), Loan provisioning ratio (X5), Loan-to-deposit ratio (X6), Capital adequacy ratio (X7), Tier-1 capital adequacy ratio (X8), Core Tier-1 Capital adequacy ratio (X9), Fees and commissions as a percentage of net income (X10), Liquidity ratio (X11), Leverage ratio (X12), the existence of bank of China's statutory monetary base (X13) and excess economic base (X14) were adjusted as research variables. Most of the variables mentioned above are directly extracted from the annual reports of listed bank companies. Some incomplete information is calculated relevant to listed bank companies through formulas. In the case of undisclosed fees and commissions, the procedure is equal to fees and commissions divided by operating income. In addition, due to unit differences (the first 12 variables are in percentages, and the last two variables are in RMB), the presence of the bank of China's statutory monetary base and excess economic base are adjusted. In the aspect of price-to-earnings ratio, this paper innovates that the price-to-earnings ratio of the company is equal to the price of the stock on the last trading day in 2022 divided by the earnings per share at the end of 2021.

Before the correlation analysis, this paper firstly makes a simple correlation analysis (Pearson Method) between 14 factors and the P/E ratio of A-share listed banks and preliminarily observes the influence of different financial data on the P/E balance [8]. After completing the correlation analysis, a least squares multiple regression analysis was conducted on the relationship between the appellate financial data and the P/E ratio.

3. Results & Discussion

3.1 Correlation Analysis

Fig. 1 is a heat map of simple correlation analysis for all listed companies, and Fig. 2 is a heat map of urban commercial banks and rural commercial banks. It is apparent that the correlation between the same financial data and the P/E ratios of all listed banks differs from that of urban and rural commercial banks. This study has conducted multiple regression analyses to reflect better the impact of different economic data on the price-earnings balance of different samples.

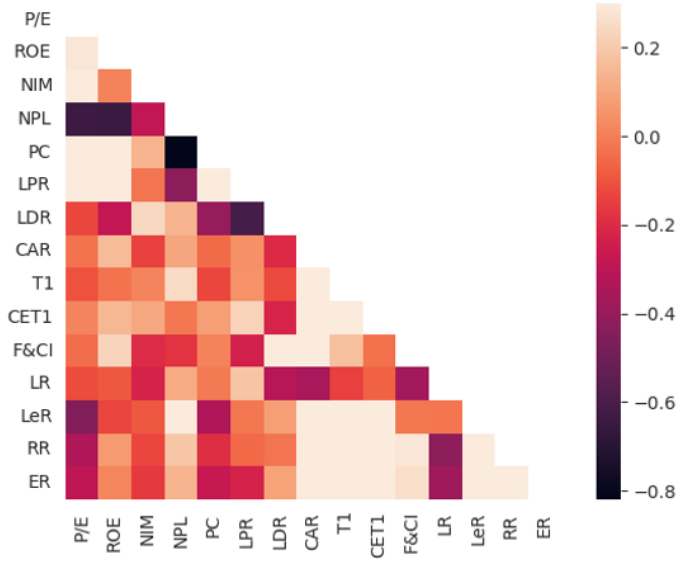


Fig 1. Relevant analysis of all listed banking companies.

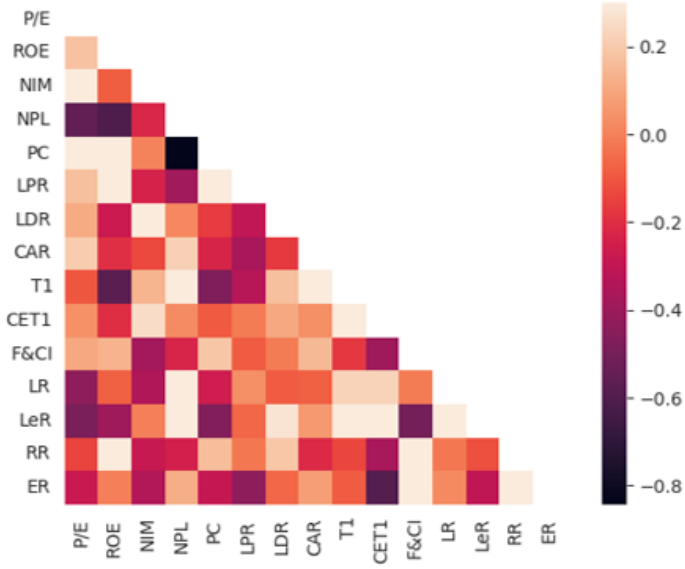


Fig 2. Correlation analysis between urban commercial banks and rural commercial banks.

3.2 Regression Analysis

To better investigate the impact factors of the P/E ratio, the 14 core financial data mentioned above is put into the multiple regression equation and set the P-value less than 0.05 as the threshold value. In this iteration, the significant factors of the P/E ratio are eliminated. Finally, in a regression analysis of all the factors that influence the price-earnings ratio of a bank company, provision coverage, loan-to-deposit ratio, Capital adequacy ratio, tier one Capital adequacy ratio, fees and commissions, net income ratio, leverage, the statutory monetary base of the central bank these seven core financial data

have a significant impact on P/E percentages. The R square, equal to 0.8, shown in Table 1, indicates that the above seven factors can explain 80% of the P/E balance of listed banks. In addition, in the regression analysis of the factors affecting the price-earnings ratios of urban and rural commercial banks, the ratio of provision coverage, loan-to-deposit, tier-one Capital adequacy ratio, fees and commissions as a percentage of net income, the leverage ratio, the five core financial numbers, has a significant impact on P/E ratios. The R square that equals 0.78 in Table 2 shows that the above seven factors can explain 78% of the P/E balance of listed banks. The results of the above regression analysis denote that the regression model used in this paper has a high degree of fit with the actual situation, and the regression effect is better. Second, investors should pay more attention to urban commercial banks and rural commercial banks. Furthermore, this study would also like to highlight the importance of net fees and commissions for listed banks. Peng noted in his research that the impact of fees on net income alone was positive for the 18 banks he studied, and that increasing the ratio of fees and commissions to net income had a positive impact on banks' profitability [9]. This is why the percentage of fees and commissions on non-interest income is used as the P/E ratio variable in this study. Therefore, raising non-interest income may be one of the ways to make profits for China's listed banks in the future. The regression results of this study also show the significant effect of fees and commissions as a percentage of net income on the P/E ratio. In addition, Xu pointed out that there are few laws and regulations related to non-interest income in China [10], hence listed banks should also pay more attention to the possible risks related to non-interest income, as far as possible to make sound business development.

Table 1. Regression analysis results of all listed banking companies.

	coef	Std err	t	P>|t|	[0.025	0.975]
Const	-4.9408	3.643	-1.356	0.188	-12.477	2.596
X4	0.0102	0.002	5.918	0.000	0.007	0.014
X6	0.0801	0.020	4.001	0.001	0.039	0.122
X7	0.6143	0.238	2.586	0.017	0.123	1.106
X8	0.6193	0.248	2.500	0.020	0.107	1.132
X10	-0.1232	0.036	-3.379	0.003	-0.199	-0.048
X12	-1.8868	0.431	-4.381	0.000	-2.778	-0.996
X13	-0.0216	0.010	-2.145	0.043	-0.042	-0.001

Table 2. Regression analysis results of urban commercial banks and rural commercial banks.

	coef	Std err	t	P>|t|	[0.025	0.975]
Const	1.9303	3.947	0.489	0.633	-6.596	10.457
X4	0.0094	0.002	3.892	0.002	0.004	0.015
X6	0.0723	0.027	2.712	0.018	0.015	0.130
X8	1.3567	0.328	4.141	0.001	0.649	2.065
X10	-0.1539	0.059	-2.604	0.022	-0.282	-0.026
X12	-2.6901	0.557	-4.832	0.000	-3.893	-1.487

4. Limitations & Prospects

Based on the previous literature, this paper makes a horizontal comparison and vertical analysis of the possible influencing factors of P/E ratios of listed bank companies of different sizes and classifications. This has helped improve the accuracy and applicability of research findings aimed at assisting investors in better understanding the extent of risk when investing in the banking sector. Considering the increase in the number of listed bank companies in China, this paper chooses the cross-section data rather than the panel data for regression analysis.

In the choice of factors, this paper used past articles for the stock market as a whole P/E ratio of the elements of the impact of research and personal experience judgment, net interest margin, Return on Equity, and liquidity ratio was selected as the variables of the correlation study. On the other hand,

considering the particularity of banking business and the changes in the government regulatory system, the Capital adequacy ratio, primary Capital adequacy ratio, non-performing loan ratio, loan-to-deposit ratio, loan provisioning ratio, provisioning coverage ratio, statutory monetary base and excess monetary base in the central bank are also included as influencing variables. In addition, considering the prosperity of internet finance, this study takes the ratio of service fees and net commission income as the variable influencing factors. It puts them into the regression model for analysis.

In view of the different regulatory systems, the main business modes of overseas listed banking companies are different from those of Hong Kong listed banking companies and A-share listed banking companies (mainly reflected in that a-share listed banking companies do not engage in investment banking business). Nevertheless, this research does not study the relative factors affecting the price-earnings ratio of domestic and foreign banking comparative analysis. In addition, this paper's correlation analysis cannot consider unquantifiable factors such as the operation and control of banks and brand value. Third, as banks are more exceptional listing units, they will be subject to strict supervision by both the CSRC and the CBRC simultaneously, i.e., do not rule out that the banking industry will be some of the financial data for special processing to meet regulatory requirements. Therefore, this research has reservations about the accuracy and authenticity of some data obtained by listed companies. Fourthly, because the cross-sectional data analysis is used in this paper, the samples of correlation analysis and regression analysis are both small, and the companies listed for nearly three years are excluded as outliers. Therefore, the applicability of this paper is limited, only for investors and banks to be listed on the effectiveness of the valuation model for the analysis of reference.

5. Conclusion

In summary, this study investigates P/E ratio valuation of China’s listed banks, especially urban and rural commercial banks based on perform correlation analysis and Person regression analysis on 14 key variables extracted from Banks’ financial report. Overall, two briefly conclusions can be drawn from the regression analysis between core financial data and P/E ratios. First of all, the financial data that affect the P/E ratios of all listed banks differ from those that affect the P/E ratios of urban and rural commercial banks. This means that investors need to distinguish urban commercial and rural commercial banks from other state-owned and joint-stock commercial banks before making investment decisions in the banking sector. Moreover, for city commercial banks and rural commercial banks to go public, they should also consider the differences between themselves and other listed bank companies when conducting IPO pricing. The study should not only refer to the data of the whole listed banks but also refer to the city commercial banks and rural commercial banks which have been listed and developed. In addition, the P/E ratio of the listed bank company in our country is influenced by the proportion of the service fee and the commission net income. This result means that the listed bank of our country should take the development of the non-interest income business as one of the critical development points concerning foreign experience and practice in this part. With the development of Internet finance and the narrowing of the loan-to-deposit ratio, developing a new business system less influenced by credit and other governments' requirements is essential.

References

[1] Deng Y. Prospect of China's banking industry in 2023: Chinese path to Modernization and High-quality Development. Financial View, 2023, 1: 13-15.

[2] Pei R. There are 11 banks waiting for the IPO of trillions of city commercial banks in A-share market. Sohu, 2022-12-12. Retrieved from: https://www.sohu.com/a/616463091_120109837.

[3] Zhou Y. Research on the Factors Influencing the P/E Ratio of Bank A-share Listed Companies. Zhejiang: *Zhejiang University of Finance & Economic, 2012.*

[4] Cui M. Research on the Impact of the COVID-19 on the Earnings of Listed Banks in China. Hebei: *Hebei University of Economics and Business, 2021.*

[5] Xia N. A Study on the Factors Influencing the P/E Ratio of Listed Banks in China. Shanxi: Northwest University, 2016.

[6] Zhang J. Research on the Factors Influencing Valuation of A-share Listed Banks. Zhejiang: Zhejiang University, 2018.

[7] Chen F. Research on the Factors Influencing the P/E Ratio of Listed Companies in China's Banking Industry. Shanghai: Fudan University, 2012.

[8] Chen Z. Evaluation of the Effectiveness of China's Monetary Policy: An Analysis Based on Pearson Correlation Coefficient. China Journal of Commerce, 2020, 6: 48-49.

[9] Peng C. Research on the Impact of Commission Income on the Profitability of Listed Commercial Banks. Jiangxi: Jiangxi University of Finance and Economics, 2020.

[10] Xu C. Research on the Impact of Non-Interest Income on the Operational Risk of Chinese A-share Listed Commercial Banks. Guangxi: Guangxi University of Science and Technology, 2020.