

# Value Investing: Evidence From Listed Companies in China's Banking Industry During the COVID-19 Epidemic

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## Abstract

The purpose of this paper is to explore the influencing factors of return on investment (ROI) from listed companies in China's banking industry during the COVID-19 epidemic. Based on value investing perspectives, a simple accounting -based fundamental analysis is employed to establish the conceptual framework of this research which aims to discover the relationship between ROI and the historic financial indices documented in financial statements. The results from the empirical analysis shows that average three-year earning per share has a significant positive impact on ROI, while PB and NPL ratios have a significant negative impact on ROI, however, the size of the bank does not have an impact on ROI.

**Keyword:** value investing, listed companies, China's banking industry, COVID-19 epidemic

## 1. Introduction

### 1.1 Status Quo of the ROI in the Listed Companies from China's Banking Industry

With the rapid spread of the COVID-19 epidemic, the economy suffers deeply across the globe. To certain extent, this crisis goes beyond financial turmoil in 2008. Almost all walks of life is experiencing a tough time. This paper aims to explore the status quo and the influencing factors of return on investment (ROI) from listed companies in China's banking industry during the COVID-19 epidemic. According to the newest official classification of industry released by China Securities Regulatory Commission in 2021, there are 43 listed companies in China's banking industry that construct the fundamentals of Chinese financial market. One of the banking listed companies tends to delist from Chinese A-share stock market, and five listed companies in banking industry have been listed for less than one year. Thus, these six listed companies were excluded from this research for the lack of sufficient statistics as well as comparability. Since the outbreak of the epidemic occurred at the end of 2019, this research calculates the ROI from the end of December in 2019 to the 31<sup>st</sup> December in 2021 which represents the results of employing the value investing methods. The ROI can be expressed as a formula:  $[ESP(2020-2021)+CI(2019-21)]/P(2019)$ , where: ESP(2020-21) = Average earnings per share in 2020 and 2021, CI = Capital increase from the end of 2019 to the 31<sup>st</sup> December in 2021, P = the price at the end of 2019.

Apart from 5 listed companies mentioned above, the ROI of the 37 banking listed companies is as follows:

Table 1. Frequency of ROI

Items	Categories	N	Percent (%)	Cumulative Percent (%)
ROI	negative	7	18.92	18.92
	positive	30	81.08	100.00
Total		37	100.0	100.0

Source: Original Research.

Table 2. Descriptive analysis on ROI

Items	N of samples	Min	Max	Mean	Std. Deviation	Median	Kurtosis	Skewness
ROI	37	-0.250	0.930	0.222	0.263	0.210	0.667	0.601

Source: Original Research.

As shown above, 18.92% ROI is negative, while 81.08% is positive in the sample of 37 listed companies in China's banking industry. The minimum, maximum and mean value of ROI are -25%, 93% and 22.2% respectively. The standard deviation is 0.263 which means that the variance of ROI of listed companies in China's banking industry is quite small. Meanwhile, the kurtosis is only 0.667, indicating that the return on investment of Chinese banking listed enterprises is far from normal distribution. Also, the skewness is 0.601, which means the distribution of ROI is moderately and positively skewed.

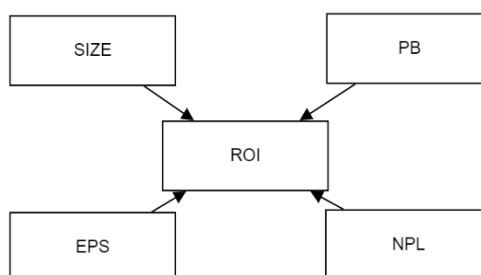
### 1.2 Research Objectives and Questions

During the COVID-19 epidemic, when the return on investment in other industries was relatively low, the return on investment of Chinese banking listed enterprises was more eye-catching. According to value investing principle proposed by Graham (2009), the intrinsic value of the stocks always can be found in the economic crisis, thus to explore the influencing factors of the ROI during COVID-19 from 2019-21 bears significance in verifying the effectiveness of value investing theory. The objects of this research are (1) to ascertain the factors influencing ROI in the listed companies in China's banking industry; (2) to explore the extent of the association between ROI and the factors that influence it. (3) to ascertain the causes of change of influencing factors and the relationship between them.

Thus the research questions can be derived out of the objects as (1) What factors influence ROI in the listed companies of the China's banking industry? (2) What is the nature and extent of the relationship between ROI and its influencing factors? (3) What are the factors influencing ROI themselves affected by and what are the interactions between them?

### 1.3 Conceptual Framework

Considerable researches on value investing theory documented that profitability, financial risk control capability, price on purchase as well as the size of the listed enterprises etc. have impacted the ROI in various lines of industries to a certain extent throughout decades of researches conducted by prior academicians. Based on the contribution provided by prior researches, this paper incorporates the epidemic situation into consideration and establishes the conceptual framework on value investing basis as below:



Note.

EPS: Average earnings per share in 2020 and 2021;

NPL: Non-performing Loan (2019);

PB: Price-to-Book Ratio (2019);

SIZE: Assets (2019)

ROI: The ROI can be expressed as a formula:  $[ESP(2020-2021)+CI(2019-21)]/P(2019)$ , where: ESP(2020-21) = Average earnings per share in 2020 and 2021, CI=Capital increase from the end of 2019 to the 31st December in 2021, P = the price at the end of 2019.

### 1.4 Research Hypotheses

Based on the research framework above, the research hypotheses can be established as below:

H1: There is a relationship between ROI and profitability (EPS).

H2: There is a relationship between ROI and financial risk control capability (NPL).

H3: There is a relationship between ROI and price on purchase(PB).

H4: There is a relationship between ROI and the size of the listed enterprises(SIZE).

The proposed hypotheses will be examined in null style with a 95% level of confidence.

## 2. Literature Review

Value investing principle have been proposed by Benjamin Graham for approximately 90 years, a plethora of academic papers documented its validity of the theory out of various lines of industries. Graham (2009) stressed the significance of the deep analysis of financial statement as well as the nature of business that the listed companies operated.

Its followers have developed the methods of analysis on original value investing basis. More accounting-based indicators have been explored to validate or falsify the original value investing theory. Piotroski (2000) showed that the average return earned through the selection of financially strong high BM firms can be increased by at least 7% annually, and the small and median size of the high BM firms could benefit from financial statement analysis, yet this superior outcome does not depend

on purchasing shares on low prices. The results provided by Piotroski (2000) are consistent with the partial perspectives from Graham such as small size and high BM of listed companies are more valuable. But Graham (2009) also demonstrated that large-sized companies in certain area like manufacturing industry were robuster and more valuable than small-sized firms in the stock market especially during financial crisis. Almas and Duque (2008) followed Piotroski's (2000) nine signals to measure three parts of the listed companies' financial condition and enabling to select firms from the high B/M quintile, and then created a portfolio from the intersection of high B/M portfolio with low accruals portfolios, lastly combined high B/M and low probability of bankruptcy in order to evaluate the performance of portfolios selected using three modified versions of B/M strategy applied to stocks listed in Euronext markets. Banerjee and Deb (2017) also employed Piotroski's (2000) nine signals to test the historical success of a value strategy, in general, which relied on the strong performance of a few firms while'tolerating the poor performance of many deteriorating companies' within the broad value group and the results showed that firms with strong fundamentals within the value group outperform their less robust counterparts, based on absolute as well as risk adjusted measures.

But Sharma, M. and Sharma, P. (2009) provided adverse evidence to the findings shown by Piotroski (2000), arguing that the results of F\_score based on traditional signals showed that is statistically insignificant in differentiating the returns of high and low group firms. Furthermore, Woodley, Jones, and Reburn (2011) found that the financial statement variables identified by Piotroski (2000) no longer distinguish future winners from future losers among those stocks with high book-to-market ratios, confirming that Piotroski's findings for the 1976-1996 window used for his study, over the ensuing 12 years the results are actually reversed. Specifically, by most measures the stocks of "High F\_Score" firms produce returns lower than those of "Low F\_Score" firms and lower than those of the set of value stocks as a whole. Daniel and Titman (2001) contended that while a stock's future return was unrelated to the firm's past accounting-based performance, it was strongly negatively related to the "intangible" return, the component of its past return that is orthogonal to the firm's past performance.

Mohanram, (2003, 2004) created an index - GSCORE by combining traditional fundamentals, such as earnings stability, growth stability and intensity of R&D, capital expenditure and advertising to separate winners from losers among low BM stock market by analyzing financial statement. Results are robust in partitions of size, analyst following and liquidity and persist after controlling for momentum, book-to-market, accruals and size.

Abarbanell and Bushee (1997) examined whether the application of basic concepts of fundamental analysis can yield significant abnormal returns. The results shows that the fundamental signals provide information about future returns that is correlated to future earnings news. Furthermore, a significant portion of the abnormal returns is generated around subsequent earnings announcements. Also, Abarbanell and Bushee (1997) indicated that many of the fundamental signals are related to future earnings and forecast revisions in the same way they are related to returns, however some significant exceptions are noted.

Beneish, Lee, and Tarpley (2001) employed 2-stage methods to predict firms that are about to experience an extreme (up or down) price movement in the next quarter. The results suggested that forecasting power of accounting-based indices with respect to future earnings enhanced while controlling for many market-based attributes. Griffin and Lemmon (2002) examines the relationship between book-to-market equity, distress risk, and stock returns, the paper indicated that the book-to-market effect was largest in small firms with low analyst coverage. Lev and Thiagarajan (1993) explored the intrinsic value of listed companies on fundamental basis by

such as earnings, risk, growth, and competitive position. The findings supported the incremental value-relevance of most of the identified fundamentals;

Nguyen (2003) analyzed the relationship between financial statements information and stock returns for firms listed on the Tokyo Stock Exchange. The findings demonstrated that score-based portfolio strategies can generate significant excessive gains over a 10-year sample period. Fama and French (2006) stated that given Bt/Mt and expected profitability, higher expected rates of investment imply lower expected returns. But controlling for the other two variables, more profitable firms have higher expected returns, as do firms with higher Bt/Mt.

To be concluded, most academic research on value investing validated that fundamental analysis on financial indices documented in financial statements are more likely to outperform other methods on predicting the trend of the stocks, and seldom papers proved the ineffectiveness of value investing methods derived from the followers of Benjamin Graham like Piotroski (2000). With the development of statistics in financial research, a considerable number of scholars preferred the whole stock market as the research population, rather than dividing the stock market into industries as Graham (2003) did. As a matter of fact, the variance exists out of diverse lines of industries which has been confirmed by Graham (2003) as well as Zhu, Walsh, and Ampornstira (2020). Thus, this paper attempts to provide further academic contribution to existing literature by studying specific industry under epidemic circumstance in order to explore the influencing factors of ROI in listed companies from China's banking industry.

### 3. Methodology

#### 3.1 Definition of Population

In this paper, the research population is defined as the overall listed companies in China's banking industry which includes 43 enterprises according to the newest official classification of industry released by China Securities Regulatory Commission in 2021. Due to the short listing time and being warned to delist, six listed banks were excluded from the scope of this study, 37 listed companies formed the sample of this study.

#### 3.2 Methods of Data Analysis

All of the data needed is extracted from financial statements in the 37 listed companies, and both fundamental analysis and inferential statistics are employed to explore the association among ROI (dependent variable) and other indices (independent variables), these variables are shown as below:

EPS: Average earnings per share in 2020 and 2021;

NPL: Non-performing Loan (2019);

PB: Price-to-Book Ratio (2019);

SIZE: Assets (2019)

ROI: The ROI can be expressed as a formula:  $[ESP(2020-2021)+CI(2019-21)]/P(2019)$ , where:  $ESP(2020-21)$  = Average earnings per share in 2020 and 2021,  $CI$  = Capital increase from the end of 2019 to the 31st December in 2021,  $P$  = the price at the end of 2019.

The variables mentioned above are proposed and tested by considerable research discussed in part 2 literature review, except NPL which represents the risk control capability especially in banking industry. In this paper, we proposed NPL as an explored factor to analyze the potential cause of ROI in order to provide new evidence on value investing theory. Thus, the linear regression will be used as statistic method to test the extent and association among ROI and other proposed independent variables. And the regression equation can be expressed as below:

$$ROI = \theta + \alpha * PB + \beta * SIZE + \theta * EPS + \lambda * NPL$$

### 4. Results

Table 3. Descriptive analysis on independent variables ( $n=37$ )

Items	N of samples	Min	Max	Mean	Std. Deviation	Median	Kurtosis	Skewness
PB	37	0.450	1.630	0.939	0.342	0.870	-0.338	0.871
EPS	37	0.370	3.180	1.033	0.655	0.890	3.295	1.752
NPL	37	0.008	0.024	0.014	0.003	0.014	1.391	0.443
SIZE	37	683.600	301094.000	50844.286	79183.978	13430.000	3.626	2.111

Source: Original Research.

Table 3 above indicate that the size of the listed companies from China's banking industry is much more volatile from min to max value, while the standard deviation of PB, EPS as well as NPL of the 37 listed companies is relatively small. Besides PB, the kurtosis of the other three variables is positive, and all of the four variables is positively skewed.

Table 4. Parameter estimates ( $n=37$ )

	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>	VIF	<i>R</i> <sup>2</sup>	Adj <i>R</i> <sup>2</sup>	<i>F</i>
	<i>B</i>	Std. Error	<i>Beta</i>						
Constant	0.827	0.272	-	3.041	0.005**	-			
PB	-0.315	0.126	-0.410	-2.503	0.018*	1.431			<i>F</i> (4,32)=5.320, <i>p</i> =0.002
SIZE	-0.000	0.000	-0.073	-0.502	0.619	1.135	0.399	0.324	
EPS	0.185	0.055	0.461	3.352	0.002**	1.006			
NPL	-34.683	12.610	-0.428	-2.750	0.010**	1.290			

Dependent Variable: ROI

D-W: 1.869

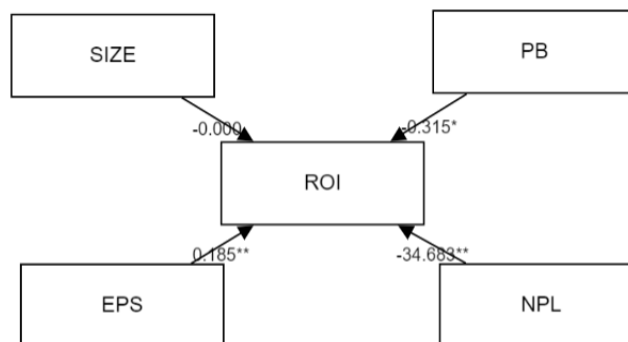
\* $p < 0.05$  \*\* $p < 0.01$

Source: Original Research.

As can be seen from the above Table 4, PB, SIZE, EPS, NPL are defined as independent variables, and ROI is used as a dependent variable for linear regression analysis. The model formula can be expressed as:  $ROI = 0.827 - 0.315 * PB - 0.000 * SIZE + 0.185 * EPS - 34.683 * NPL$ , and the model R-square value is 0.399, which means that PB, SIZE, EPS, NPL can explain 39.9% of the change in ROI. When the F-test was performed on the model, it was found that the model passed the F-test ( $F = 5.320$ ,  $p = 0.002 < 0.05$ ), which means that at least one of PB, SIZE, EPS, and NPL will have an impact on ROI.

The col-linearity test shows that the VIF values in the model are all less than 5, which means that there is no col-linearity problem; and the D-W value is around 2, which means that there is no auto correlation in the model, and there is no correlation between the sample data. Model is better. The final specific analysis shows that the regression coefficient value of PB is -0.315 ( $t = -2.503$ ,  $p = 0.018 < 0.05$ ), which means that PB will have a significant negative impact on ROI. The regression coefficient value of SIZE is -0.000 ( $t = -0.502$ ,  $p = 0.619 > 0.05$ ), which means that SIZE does not affect the ROI. The regression coefficient value of EPS is 0.185 ( $t = 3.352$ ,  $p = 0.002 < 0.01$ ), which means that EPS has a significant positive impact on ROI. The regression coefficient value of NPL is -34.683 ( $t = -2.750$ ,  $p = 0.010 < 0.01$ ), which means that NPL will have a significant negative impact on ROI. The summary analysis shows that EPS will have a significant positive impact on ROI. As well as PB, NPL will have a significant negative relationship with ROI. But SIZE does not have an impact on ROI.

Based on the results shown above, the extent of the influencing factors on ROI of listed companies in China's banking industry can be depicted as below:



## 5. Discussion and Conclusion

### 5.1 Discussion

In this research, four variables including size, NPL, PB and EPS defined as independent variables was proposed to explain the causes of the ROI in Chinese banking listed companies. Based on the results investigated above,

we find that PB has a significant negative impact on ROI which is consistent with BM effects (see, eg., Abarbanell & Bushee, 1997; Almas & Duque, 2008; Banerjee & Deb, 2017; Beneish, Lee, & Tarpley, 2001; Graham, 2003; Graham & Dodd, 2009, etc). Also, the result indicates that profitability has a positive association with ROI which is in accordance with previous research (see, eg., Abarbanell & Bushee, 1997; Almas & Duque, 2008; Banerjee & Deb, 2017; Fama & French, 2006; Graham, 2003; Griffin & Lemmon, 2002; Lev & Thiagarajan, 1993; Mohanram, 2003; Piotroski, 2000, etc.). Furthermore, this paper provides evidence that NPL is negatively related to ROI which means financial risk control is a must when the investors purchase banking stock during COVID-19 epidemic. Finally, the size effect has been disproved by the result showed above in this research. There is no statistical significance between ROI and the size of listed enterprises in Chinese banking industry which is inconsistent with size effect theory documented in previous studies. (See, eg., Graham, 2009; Piotroski, 2000; Almas & Duque, 2008; Banerjee & Deb, 2017; Mohanram, 2003, 2004; Griffin & Lemmon, 2002; Fama & French, 2006, etc.).

In this paper, based on value investing perspectives, a simple accounting-based fundamental analysis is employed to establish the conceptual framework of this research and we attempt to provide further academic contribution to existing literature by studying specific industry under epidemic circumstance in order to explore the influencing factors of ROI in listed companies from China's banking industry.

## 5.2 Conclusion

In this paper, four proposed influencing variables of ROI comprising profitability (EPS), financial risk control (NPL), the size of the banking listed companies (SIZE) as well as price on purchase (PB) have been tested and analyzed. During COVID-19 epidemic, we find that 18.92% ROI is negative, while 81.08% is positive in the sample of 37 listed companies in China's banking industry which means banking industry in China does not suffer deep depression in contrast with other real economy. Moreover, the EPS of 37 listed companies in China's banking industry are positive and relatively stable across the epidemic span, and the NPL of these listed companies are relatively low which meet the basic requirements of the Central Bank of China. From the result showed above, we can find that most of the listed companies investigated in this research are not overpriced from 0.45 to 1.63. Finally, the size of listed enterprises in this paper ranges from 68.36b. to 30110b which means a vast variance in the scale of the investigated listed companies.

Linear regression conducted to test the proposed hypotheses suggests that average three-year earning per share (EPS) has a significant positive impact on ROI, while PB and NPL ratios have a significant negative impact on ROI, however, the size of the bank does not have an impact on ROI.

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