

Research on the effectiveness of value investment strategy based on shanghai and shenzhen a-share market

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Abstract. As a common stock investment strategy adopted by the developed countries in Europe and America, the value investment has great controversy on whether it is suitable for the stock market in China. Usually, some people, who think that value investment is not suitable for the stock market of our country, deny the applicability and effectiveness of the value investment strategy in China's stock market on the grounds of the basic national conditions of our country are different from the national conditions of the western countries, securities market is not mature and others. In fact, the value investment strategy, which is corresponding to the stock arbitrage and based on the perspective of business management, as a kind of equity investment concept has a certain universality. Therefore, taking this as the purpose of the study, based on a brief introduction to the basic theory of value investing, this paper focuses on the 10-year data of Shanghai and Shenzhen listed companies as samples for statistics, and the empirical analysis is carried out through indicators B/M and P/E, to get the relationship between P/B ratio, P/E ratio and stock yield. It is also found that when applied to long-term investment, the effect of the value investment strategy is significant, and from the short-term effect, if it is in a bull market, its short-term yield is obvious. As a result, the most effective way for investors to gain stable yield is to hold high-quality stocks for a long-time. Finally, because of the limited level of the author, this paper inevitably has shortcomings, and I hope the relevant experts criticize and correct.

Key words. Value investment, Shanghai and Shenzhen A-shares stock market, Empirical study.

1. Introduction

China's stock market has developed to a large scale since its establishment in 1990, and investing in the A share market has become the main way of investment for most domestic investors. Since the establishment of the stock market in china, its concept of market investment has also experienced the same characteristics as the capitalist countries in the West, and has gone through three stages of development.

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From the early stage of stock market, it mainly displays the characteristics of speculation and manipulation, and develops to the bud of value investment concept, and then to the current value investment strategy^[1-3]. The concept of value investment was introduced into China's securities market in 1992 and it took more than ten years to get the attention of academic and practical circles. Since then, all kinds of public funds, social security funds, insurance companies and other institutions have achieved good results in the stock market through the application of mature value investment concept and effective value investment strategies. At present, these investment institutions have become the main force for further development of the A share-market, and play a positive role in promoting the effective dissemination of value investment strategies in China, and then lead small and medium-sized investors begin to pay attention to the evaluation of the intrinsic value of the listed companies, so that they began to use value investment as their main investment strategy^[4-5]. At present, the A share-market has gradually changed from the initial speculative mode of speculative prevalence to an investment style based on value analysis, and the stock price of listed companies is more and more influenced by their intrinsic value, market competitiveness and enterprise growth, which is the main feature of A share market in the process of international capital market. Therefore, the efficiency analysis based on value investment is of great practical significance to the choice of the stock investment strategy of the investors in our country^[6].

2. An Overview of the Basic Theory

Value investment theory is also called solid foundation theory, and its main connotation is that stock price shows the trend of fluctuation based on the stable point of the intrinsic value, and the intrinsic value can be determined by certain methods. In the long run, the stock price has a trend of intrinsic value regression. When the stock price is higher or lower than the intrinsic value, it is assumed that the stock is overvalued or underestimated, and the investment opportunity appears at this time^[7-8].

2.1. The economic base of value investment

Value investment theory has a deeper economic base than other investment theories, and the economist who first used economic theory to analyze value investing is Marx. Marx think that: " Market values change with the benefits and degree of reliability they have the right to claim. . . . The market value of this securities is partly speculative, because it is not determined by real incomes, but by market expectations, and determined by pre-calculated income. However, when the added value of real capital remains unchanged, the fluctuation of the market price of this stock is inversely proportional to the interest. " On the basis of Marx's research, western economists have done further research, such as John B Williams, Franco Modigliani, Mertor Miller and others^[9].

In 1938, John B Williams, a famous American investment theorist, first proposed a discounted cash flow model in his book "investment value theory". which has been

regarded as a classical stock value model by later generations. John B Williams think that: The main purpose of investors to invest in stocks is to gain the right to earnings of the future, and the future cash flow is the dividend that the investor can gain in the future. The present value of dividends earned by investors should be the intrinsic value of enterprises. Based on this, John B Williams proposed a mathematical model to identify the stock value by dividend discount:

$$P = \sum_{t=1}^{\infty} \frac{D_t}{(1 + K)^t} \tag{1}$$

Where, K is a riskless interest rate.

In 1961, Modi Glee and Miller put forward the MM theory, and the theory holds that under very strict assumptions,the dividend policy of an enterprise does not affect its stock price, and the stock price is determined entirely by the profitability determined by investment decisions. MM dividend theory is the thought source of modern value evaluation, which has a great effect on the modern value evaluation theory^[10].

After the MM theory,many economists began to find economic indicators which could be more objective than the dividend to measure the future expected returns of enterprises, and through the study of many economists, the free cash discount model was finally proposed.

$$P = \sum_{t=1}^{\infty} \frac{FcFt}{(1 + WACC)^t} \tag{2}$$

Where, WACC is the cost of enterprise weighted capital.

2.2. The thought system of value investment

The core of the value investment is to buy stocks equivalent to buying a company,and buying stocks, holding stocks and risk prediction in value investment strategy are derived from this ideological core, which constitute the ideological system of value investment together. As shown in Figure 1:

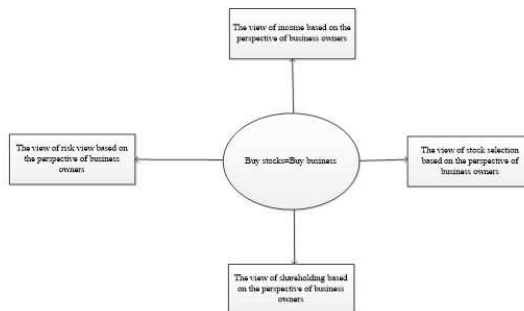


Fig. 1. The ideological system of value investment

From the figure 1, it can be found that the ideological system of value invest-

ment is mainly divided from the perspective of enterprise owner's view of income, stock selection, shareholding and risk view. From the point of the stock selection of enterprise owner's, the value investor should position itself as the owner of the enterprise, and make a comprehensive analysis for the business value of the enterprise, to select those high-quality enterprises that have both marginal and competitive advantages to invest in stocks. From the point of the view of income of enterprise owner's, because the stockholders are owners of the enterprise assets, only when they have good continuous operation ability and profitability can they drive the growth of their stock's intrinsic value, so investors need to find companies that have long-term profitability and prospects for investment. From the point of the view of shareholding, the value investment should determine the problems that whether the investor holds the stock and the length of the holding time according to the current situation of the company's business. When investors hold stocks, they should pay attention to the intrinsic value of enterprises, and mainly focus on tracking business assets to evaluate the intrinsic value of enterprises. From the point of the risk view, value investment should pay attention to the precaution of stock investment risk. Only by buying the stock of high quality enterprises with the price of the margin of safety, can we effectively guard against the risk of stock investment.

3. Selection and Research Method of Sample

From the material selection of Shanghai and Shenzhen 300 index, it is the most representative 300 corporations of all listed stocks in Shanghai Stock Exchange and the Shenzhen Stock Exchange, and as the object of compilation. In the process of compilation, according to scale and liquidity as the two basic criteria of sample selection, it has obvious guiding significance and helps to fully reflect the current situation of securities market.

The research sample of this paper chooses 10-year data of listed companies traded on the A-share market of Shanghai and Shenzhen stock exchanges from January 1, 2006 to December 31, 2017. The data of all stocks at the end of 2006-2017 year in the Shanghai and Shenzhen A stock market are sorted to build the investment portfolio of value stocks and non-value stocks, and removed the data of listed companies with ST and negative P/E value, and the listed companies whose listing time is less than half a year.

The financial data of the listed companies and market transaction data are derived from the wind database. After the opening, the price of the stock is represented by the transaction price of the collection auction, and the closing price is the closing price after the end of the year. Based on these data, the yield of one year, three years and five years is calculated. The formula for calculating the rate of return is as follows:

$$R = \frac{P' - P}{p} \quad (3)$$

R: Rate of return ratio;

P' : Final settlement;

P : Initial settlement;

Based on this, the formula for the return on investment portfolio (R') is calculated as follows:

$$R' = \frac{\sum_{i=1}^n R_i}{N} - R_0 \quad i=1,2,3\dots \quad (4)$$

R_t : rate of return of investment portfolio;

R : rate of return of single stock;

N : Total stock;

R_0 : Market return

The income of two kinds of investment portfolio are compared based on the equation (1) and (2), and then the t test is carried out. The formula for t test is as follows:

$$t = \frac{\bar{X} - u}{s/\sqrt{x}} \quad v=n-1 \quad (5)$$

\bar{X} : Sample mean value;

u : Total mean value;

s : Sample standard deviation;

x : Test times

4. Empirical Analysis Based on Financial Indicators (B/M, P/E)

4.1. Empirical analysis based on B/M

This paper examines the B / M effect of the A-share market in Shanghai and Shenzhen from 2006 to 2015, and the conclusion is that if the stock is held for 1 years, that is, the stock is held in the short term, there is no B/M market effect, and if the stock is held for a long time, this paper is set for three years or five years, then the market has an obvious B/M effect. Author calculates the year-end ratio of asset value per share to year-end closing price, and the price earnings ratio is taken out from the wind database, then its reciprocal is the B/M value. The specific calculation formula is as follows:

$$B/M = \frac{1}{\text{Price earnings ratio (PE)}} = \frac{\text{Book assets}}{\text{Stock market value}} \quad (4)$$

Table 1 is the price earnings ratio published in the annual reports of listed companies from 2006 to 2017, and as a statistical sample. Then the stock in the Shanghai and Shenzhen A share market is sorted according to BPS, and get the maximum and minimum values of the price-earnings ratios of the top 100 stocks and the last 100 stocks in the sorted result to calculate the arithmetic mean.

Table 1. The M/B comparison between value share portfolio and non-value share portfolio

Year	Value share portfolio			Non-value share portfolio		
	Maximum value	Minimum value	Average value	Maximum value	Minimum value	Average value
2006	3.84	1.12	2.81	3.72	2.83	2.91
2007	3.18	1.11	2.15	3.06	2.14	2.52
2008	3.12	1.09	2.08	3.01	2.08	2.26
2009	1.29	1.05	0.79	2.88	1.09	1.26
2010	2.39	1.55	1.89	2.16	1.08	1.21
2011	3.88	1.29	2.91	3.79	2.94	3.04
2012	1.69	1.27	1.46	1.57	1.06	1.81
2013	1.18	1.05	1.06	1.06	0.97	1.08
2014	1.46	1.17	1.82	1.38	1.02	1.03
2015	1.35	1.06	1.23	1.46	1.33	1.81
2016	1.29	1.08	1.14	1.19	1.06	1.06
2017	1.12	1.09	1.08	1.27	1.03	1.17

As can be seen from the above table, the B/M value of the portfolio of value and non-value shares is consistent in general, both of which showed a continuous downward trend from 2006 to 2009, and started to pick up after 2010, and reached their peak in 2011, which is exactly same with the trend of stock market price. According within the statistics data of 10 years, it can be found that the average value of value share portfolio in 2011 is the largest, and the value is 2.91, and the minimum was 0.79 in 2009, and the maximum is three times of the minimum. But from the extent of the rise in the index, in 2009, it was up 793.98%, and in 2011 it was down 21.68%, and the latter is four times the former, which indicates that there is a certain difference in the range of changes in the value share portfolio due to the rising index. Therefore, the conclusion is that the trend of the two is basically the same, and the change range is different because of the influence of the market and other factors.

After building the two portfolios, this paper calculates the rate of return of each portfolio in one year, three years, and five years respectively, and the results of the calculation are shown in Table.2.

Table 2. Average rate of return calculated based on B/M (%)

Year	Average rate of return of value share portfolio			Average rate of return of non-value share portfolio		
	One year	Three years	Five years	One year	Three years	Five years
2006	-23.55	-5.03	54.20	-9.65	-44.79	-30.40
2007	-17.20	-23.70	300.25	-12.12	-38.05	171.79
2008	-27.74	56.80	71.68	-2.15	27.50	42.20
2009	-28.45	421.20	365.70	0.75	320.55	326.05
2010	23.79	28.30	224.69	145.50	20.01	210.60
2011	158.50	14.15	-7.80	227.20	-8.99	-20.80
2012	-66.03	158.40	0.00	-35.95	155.60	0.00
2013	98.90	-32.75	0.00	190.10	-10.50	0.00
2014	-22.85	0.00	0.00	80.50	0.00	0.00
2015	-31.02	0.00	0.00	-17.80	0.00	0.00
2016	-32.19	0.00	0.00	-16.29	-9.13	0.00
2017	-20.17	10.08	0.00	0.00	0.00	0.00

The author conducted a t-test on the above value portfolio yield and non-value portfolio yield respectively, then the five years rate of return is obtained, and the maximum value is 5.25, which shows that the five years rate of return of the value share portfolio in the inspection period is significantly better than the non-value share portfolio strategy.

4.2. Empirical analysis based on P/E

Similar to the B/M research method, the author examines the P/E effect in the Shanghai and Shenzhen A stock market from 2006 to 2017, and draws a conclusion similar to that of B/M. The calculation formula of priceearnings ratio based on P/Evalue share portfolio strategy is as follows:

$$\text{Price earnings ratio (P/E)} = \frac{\text{Per share price (P)}}{\text{Per share income (EPS)}} \quad (5)$$

It is similar to the B/M method, the P / E ratio priceearnings ratio published in the annual reports of listed companies from 2006 to 2017, and as a statistical sample. Then the stock in the Shanghai and Shenzhen A share market is sorted according to BPS, and get the maximum and minimum values of the price-earnings ratios of the top 100 stocks and the last 100 stocks in the sorted result to calculate the arithmetic mean. and the results of the calculation are shown in Table.3.

Table 3. The P/E comparison between value share portfolio and non-value share portfolio

Year	Value share portfolio			Non-value share portfolio		
	Maximum value	Minimum value	Average value	Maximum value	Minimum value	Average value
2006	21.84	7.12	14.16	20.95	6.94	13.13
2007	21.52	8.04	14.15	19.85	5.08	12.12
2008	21.21	5.65	13.05	16.17	5.02	10.32
2009	20.90	4.4	12.03	15.16	4.92	10.17
2010	21.17	1.55	11.62	20.95	11.96	16.23
2011	22.80	0.50	11.12	25.28	12.25	18.25
2012	10.05	1.51	5.63	25.30	15.27	20.12
2013	21.1	2.89	11.26	26.95	19.95	22.06
2014	1.67	0.75	1.16	21.56	11.40	16.24
2015	1.12	0.60	0.81	11.5	5.50	8.5
2016	1.13	0.71	0.91	22.32	5.12	18.14
2017	1.24	0.62	0.90	20.16	5.08	17.26

As can be seen from the above table, the average value of the value share portfolio continues to decline from 2006 to 2009, in 2010, it began to move steadily, and reached their peak in 2011, which is exactly same as the trend of stock prices in the A stock market. The average value of a non - value share portfolio is the largest in 2013, but the A shares index at the time of the Shanghai Stock Exchange was 4276.7 points and the index of the Shanghai Stock Exchange was 6103.8, which shows that the trend of the non-value share portfolio PE change and the price trend of the stock market may be disagreed, as a result, the stock market cannot be accurately predicted. After building the two portfolios, this paper calculates the income of each portfolio in one year, three years, and five years respectively, and the results of the calculation are shown in Table.4.

Table 4. Average rate of return calculated based on P/E (%)

Time	Average rate of return of value share portfolio			Average rate of return of non-value share portfolio		
	one year	three years	five years	one year	three years	five years
2006	-13.15	12.03	99.20	-18.65	-39.79	-24.40
2007	13.70	-13.70	425.25	-20.12	-38.05	151.79
2008	-5.74	76.80	79.68	-20.15	21.50	38.20
2009	-15.45	521.20	400.70	-22.75	370.55	336.05
2010	63.79	20.30	199.69	63.50	15.01	230.60
2011	208.50	-4.15	-37.80	200.20	0.99	-11.80
2012	-62.03	150.40	0.00	-57.95	165.60	0.00
2013	147.90	-29.75	0.00	152.10	19.50	0.00
2014	-15.85	0.00	0.00	25.50	0.00	0.00
2015	-21.02	0.00	0.00	-31.80	0.00	0.00

Year	Average rate of return of value share portfolio			Average rate of return of non-value share portfolio		
	one year	Three years	five years	one year	three years	five years
2006	-13.15	12.03	99.20	-18.65	-39.79	-24.40
2007	13.70	-13.70	425.25	-20.12	-38.05	151.79
2008	-5.74	76.80	79.68	-20.15	21.50	38.20
2009	-15.45	521.20	400.70	-22.75	370.55	336.05
2010	63.79	20.30	199.69	63.50	15.01	230.60
2011	208.50	-4.15	-37.80	200.20	0.99	-11.80
2012	-62.03	150.40	0.00	-57.95	165.60	0.00
2013	147.90	-29.75	0.00	152.10	19.50	0.00
2014	-15.85	0.00	0.00	25.50	0.00	0.00
2015	-21.02	0.00	0.00	-31.80	0.00	0.00
2016	-19.08	0.00	0.00	24.02	0.00	0.00
2017	-20.13	0.00	0.00	-19.13	0.00	0.00

From the analysis of the above table, it can be found that the rate of return of the value investment portfolio in one year is not obvious, while the income gap between the three and the five years is larger, and especially in fiveyears period,it has the largest difference with non-value stocks, which shows that the P/E stock selection still requires investors to make long-term investment to gain revenue.

5. Conclusion

The A share market has a certain inefficiency, and the starting point of the value investment theory is to obtain the profit by using the market price produced by the market inefficiency. If the market price is reasonable, then the value investment will be invalid. Through the empirical analysis of this paper, it can be found that the investment portfolio strategy using B/M and P/M is applicable and effective in the Chinese stock market, and the value investment strategy is applied to long-term investment can achieve greater profits. In addition, from the short-term effect, if the A stock market is in big bull market, the effect of its short-term income is also obvious. Therefore, China's A share market should actively advocate the theory of value investment, so that investors can fully understand the importance of value investing strategy, and master their specific investment strategies and methods, so that they can get higher investment returns.

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