

A Review of Empirical Analysis in Value Investing

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Abstract: Value investing refers to investing in stocks by focusing on the intrinsic value of the business rather than the price. It generally pays attention to two major values of the enterprise, one is to estimate the liquidation value of the enterprise, and the other is to focus on the growth value of the enterprise. When value investing first emerged in the 1920s, insider knowledge and conjecture served as the primary sources of guidance for investors. The first logical foundation for investing decisions was established by its introduction. Since Graham put forward the theory of value investment, foreign research has made great progress, while domestic research has been controversial in practice due to the short history of the securities market and the late start of research, which forces many investors to study, practice and explore. Nowadays, a substantial body of scholarly empirical research on value investing has been published. This paper examines and updates this body of work, go over the many theories explaining the performance of value investing, examine the empirical studies supporting these theories, and offer some fresh findings derived from an updated and enlarged sample. At the end of the article, researchers also point out the gaps in the research and the problems for further discussion.

Keywords: Value Investing, Backtesting, Risk Factors

1. Introduction

Value investment is a widely practiced approach, and the heightened academic fascination with value and growth investment strategies can be attributed to the studies conducted by Lakonishok, et al. and Fama & French [1, 2]. This method involves scrutinizing economic and political variables, industry growth prospects, operational performance of publicly traded companies, financial standings, and other factors influencing securities investment. The focus is on assessing the growth and developmental prospects of listed companies, with the ultimate goal of determining the intrinsic investment value of stocks.

In the 1920s, when speculation and insider knowledge were the main sources of guidance for investors, value investing first emerged. The first logical foundation for investing decisions was established by its introduction. Buying stocks that are undervalued allows you to invest in firms that are worth more than they are currently worth. Key metrics such as equity book value, earnings, cash flow, and dividends serve as reliable indicators for this evaluation. Despite substantial shifts in the

economy and securities markets in recent decades, value investing has consistently emerged as a highly effective investment strategy. Its enduring success attests to its legitimacy and competitiveness in contrast to modern portfolio theory, rooted in the efficient market hypothesis [3].

In the realm of value investing, valuation metrics like price-to-earnings (P/E), price-to-book (P/B), and Dividend Yield play a crucial role in evaluating companies, aiding investors in discerning the overvaluation or undervaluation of a stock. These metrics serve as valuable tools for making well-informed decisions, especially during periods of market turbulence. For instance, in ordinary circumstances, a lower P/E ratio signifies a more favorable market price in relation to the stock's profitability. This suggests a shorter payback period, reducing investment risk and enhancing the investment value of the stock.

The focus of this study is to overall review value investing through four different dimensions: backtesting and analyzing historical data; studying long-term outperformance; finding risk factors, such as higher short-term volatility, drawdowns and having an insight into anomalies in the market. Through a series of reviewing, it is convenient to have a deeper comprehension and application of value investing strategy.

2. Backtesting

This paper shows people use which strategies to choose high returns stokes. Moreover they used experiment to support these strategies is feasible.

2.1. Book-To-Market

Historically, individuals employed the High Book-To-Market ratio for testing and analyzing stocks. This ratio, a derived metric, not only encapsulates past accounting data but also encapsulates future growth information that eludes conventional accounting measures [4]. Previous studies indicate that a portfolio consisting of high Book-To-Market (BM) firms surpasses one comprising low BM firms [5]. The robust return performance is attributed to both market efficiency and inefficiency [5]. Nevertheless, in the year 2000, JD Piotroski challenged this conventional wisdom. In his experiment, he selected the high BM company portfolio and allocated it to either the pseudo-high ESCORE portfolio or the pseudo-low F_SCORE portfolio. Subsequently, he computed the differential mean return of the two pseudo-portfolios. The outcome revealed that a straightforward accounting-based fundamental analysis strategy, when applied to a broad portfolio of high book-to-market firms, can alter the distribution of returns earned by an investor [5]. This represents an innovative approach in strategy implementation.

2.2. GDP Growth

In the past, people use stokes to link the GDP growth. They through analysis GDP growth of on county to determine which stokes have high return. In the year 2000, Jimmy Liew and Maria Vassalou conducted an experiment to substantiate the viability of this concept. Their study involved the application of HML, SMB, and WML factors across various countries, including the United States, Japan, Canada, France, Germany, Italy, the Netherlands, and Switzerland. The monthly returns of stocks in each country were then computed using the respective local currencies. Ultimately, a comparative analysis of the returns from these countries was undertaken. The findings indicated that a risk-based rationale for the returns of HML and SMB is plausible and likely, providing little evidence to support a similar explanation for the returns of WML [6]. This marks the adoption of a secondary strategy by researchers and investors.

2.3. Residual Income Valuation Model

Historically, individuals employed the Residual Income Valuation Model for scrutinizing companies and their stocks. The Residual Income Valuation Model is akin to the clean surplus relation, signifying that, as stated, any alterations in assets and liabilities not tied to dividends must traverse the income statement [7]. Patricia M. Dechow, Amy P. Hutton, and Richard G. Sloan expounded on this in their 1999 essay. They do a experiment to attest this model is feasible. Firstly, they examined the coefficient of auto-regressive, u , and differs from the extremes of 0 and 1. Secondly, they tested the first auto-regressive step is sufficient to satisfy the anomalous return by adding an addition anomalous return lag. Next, they relaxed the constraints of the auto-regressive process placed on the book value component of earnings and abnormal earnings. Fourthly, they estimated that u income would change as the condition variable changes by allowing the auto-regressive process coefficient on the anomaly. Finally, they examined the coefficient of auto-regressive, u , and differs from the polar extremes of 0 and 1. When they finished this model, they use this model to predict the next period abnormal earning and stokes' price. A result is that the model provides a useful framework for empirical research [8]. This is the third successful strategy. In the calculation, three of solvent that Book-To-Market, GDP growth and Residual income valuation model are useful strategies. Three essay attest three strategies are feasible by three different experiments. In other word, three strategies can successful to predict the stokes' price and able people to invert stoke with high returns.

3. Long-Term Outperformance

Some empirical value investing has historically outperformed growth inventing over the long term. One research tool for understanding this trend is the Fama-French three-model. which provides an analysis of stock return by considering market risk, size (SMB), and value (HML) factors [9]. Firstly, the value factor (HMT) within this model represents the spread between the return of portfolios with high book-to-market ratios and low. book-to-market ratios. It emphasizes that stocks with a relatively high book-to-market ratio tend to have a higher return. Thereby, value stocks can have a higher return due to their high book-to-market ratio. Moreover, small minus big, or SMB for short, is a metric used to quantify the extra returns or "size premium" that investors have traditionally reaped from funding small-market enterprises. According to this theory, a company with a small scale tends to have a higher investment rate compared to other large companies. Value stocks are often small businesses since investors are relatively hard to notice and they are assessed as below-value. Apart from these above, examining the Fama-French three-factor model in detail reveals that the market factor (M) is a crucial component influencing value companies' superior performance. It examines the response of growth and value (HML) equities to market excess returns by using past market data. Value equities tend to perform well in favorable market situations, as indicated by positive correlations found between the M factor and value stock returns. This association highlights the strength of value equities, as does their ability to withstand market downturns. Another theory can also show the outperformance in the investment of valued stocks. According to human behavior and the efficiency of the financial system developed by Shiller R. J., the price of a stock may not always be set at an appropriate and accurate value since the market is not always efficient. The inefficiency is caused by psychological factors, investor sentiment, and irrational behavior [10]. For example, when most investors think the stock price will experience an increase in the future, many investors will follow this opinion with little self-thought and buy these stocks. After that, the price may be relatively higher than its real value, which may lead to a lower return for investors as the price will fall with the efficiency of the stock market. Most stocks in these situations are growth stocks because they tend to have a low book-market ratio. On the other hand, for growth stocks with low book-market ratios, they tend to be below-valued since they have been neglected. Therefore, although they may have a fall in price in the short

run due to a few purchases, they have higher expected returns since, in the future, their value will be noticed by all investors and their price will go back to the right level. This opinion can also be supported by contraction theory. This theory demonstrates that investors who are contrarians purchase assets that are presently out of favor by going against the general attitude of the market. Value stocks are often viewed as cheap due to their low valuation and out of favor, which fits in with a contrarian strategy. Undervalued stocks may revalue when sentiment changes. As a consequence, it would result in outperformance. In conclusion, the point that investing has historically outperformed growth inventing over the long term can be supported and proved by many theories.

4. Risk Factors

Value investment is an investment concept sought after by many investors. Its core idea is to find high-quality companies with low valuations and hold them for a long time by analyzing the intrinsic value of enterprises, so as to obtain excess returns. The growth of individual investor knowledge and the development of stock markets and the investment information system give rise to new approaches and methods for drawing in and making use of free savings [11]. Buffett, Munger and other masters are the representatives of value investment, they prove the effectiveness of value investment with their own practice. However, value investing is not a simple, easy, and risk-free way to invest. After learning some theory of value investing, many novices rush to practice in the stock market, only to find that they always lose money or even get stuck. From this point of view, value investment also has certain risks. Some empirical analyses have shown that value investing may involve higher short-term volatility and drawdowns, as undervalued assets can take time to appreciate.

Different market fluctuations will have more or less impact on assets, among which the stock market, debt market, foreign exchange market, commodity market are easy to be affected by fluctuations. Various factors in the market, such as economic data, political events, natural disasters, etc., can cause stock price fluctuations. A rising market may lead to an increase in asset value, while a falling market may lead to a loss in asset value. A highly volatile stock like this can increase an investor's mood swings and make him or her vulnerable to making bad decisions based on market sentiment. Fluctuations in the bond market are usually linked to interest rates. When interest rates rise, the market value of existing bonds tends to decline because newly issued bonds offer higher interest rate returns. Conversely, when interest rates fall, the bond market typically rises because the fixed rate returns on existing bonds are relatively high. Commodity market fluctuations are closely related to supply and demand, seasonal factors, geopolitical events and so on. For example, weather changes can have an important impact on agricultural prices, while geopolitical events can have an impact on energy and metal prices. These fluctuations may directly affect investors holding underlying commodity assets. In addition, due to international trade, economic policies, and political and geopolitical events, the forex market is usually highly volatile. These factors can lead to changes in currency exchange rates, which can have an impact on those who hold foreign currency assets. Market volatility may cause asset prices to rise or fall. It may increase market liquidity risk, so that investors face greater trading risk. Some researchers have mentioned that the intuition of a strong correlation between risk and return seems to contradict empirical evidence, which shows that expected stock returns are only tangentially related to volatility at the market level, and that high volatility means high market risk, and investors may face a greater risk of loss, but at the same time will receive a higher return [12].

The stock price in the stock market is determined by the market supply and demand relationship, so it will also face the situation of undervaluation. First of all, many companies may release some negative news, leading to the market's pessimistic expectations about the company's future prospects, which makes the stock price undervalued. Second, the sentiment swings mentioned above can also cause stocks to be undervalued, such as during the financial crisis, when the overall stock market

sentiment was low and investors generally took a pessimistic view, and stock prices also experienced a large decline. Finally, there is great uncertainty in some emerging industries or new industries, which makes the market controversial about the future development potential of these enterprises, which may also lead to undervalued stocks. When investing in stocks, investors need to pay attention to whether the stocks are undervalued. Through the above analysis, it can find that there are many reasons for stocks to be undervalued. Investors need to find undervalued stocks in different ways and develop suitable investment strategies.

5. Value Investing Anomalies

The researchers discovered and studied many market abnormalities, and speculations and interpretations of market movements were generated. Of course, market anomalies are not accidental, and there must be some inherent linkages and trends. QFII (Qualified Foreign Institution Investor) can be used in value investing to bring better risk – adjusted returns. Under QFII, the transitional system, capital markets are opened and limited foreign investment is allowed when capital projects and currencies are not yet open and completely convertible. It is generally acknowledged that the implementation of QFII will certainly encourage value investment, even if it is seen in China as an external component when applying the value-investment idea. For instance, big foreign investment institutions operate under the tenet that only conventional long-term investments are worthwhile ventures. Moreover, in China, QFII capital increases are far greater than gross increases. This is undoubtedly proof that QF II is an effective strategy to promote value investment. There is no exemption for the OFI company's performance base. However, there is still space for improvement. The terrible period of investment ideas that started in 2001 has come to an end with QFII's inability to match the fund's selection of equity ideas, and new investment ideas have begun to emerge. In the not-too-distant future, value investing will be mainstreamed in the market thanks to OFI and Sunshine funds [13]. After the epidemic, value investment faced a huge impact. Restricted by the epidemic, economists found through research that this impact is long-term and cannot be eliminated in a short time. This also emphasizes the application of new strategies to value investment. importance. Monge Manuel, Lazcano Ana and Parada José Luis employed methods based on fractional integration and cointegration to examine the persistence and trend of the series, as well as their relationship across time. Furthermore, they employed multivariate wavelet analysis to examine the correlation between the two-time series, indicating that a growth-based investment plan outperforms a value-based investment approach. Their findings also show that the value-investment combined with growth-oriented investment strategies can result in better risk-adjusted returns [14]. In the context of such an era, value investment will be inevitably impacted and affected, there are many anomalies in the market today, to bring better risk adjustment returns, improve value investment strategy, should let other strategies combine with value investment, bring the highest economic benefits, also to value investment injected a new era of meaning.

6. Conclusion

Overall, the core idea of value investing is to obtain surplus profits by analyzing the intrinsic value of a company, finding a low-value, high-quality company, and holding it for the long term. The prices of stock market are determined by market supply and demand linkages and thus face undervaluation. Moreover, the market supply and demand relationship play an important role in the price of shares on the stock market, due to this, these prices may be undervalued in a certain extent. There are many reasons why stocks are undervalued, and investors need to find the underestimated stocks in different ways and develop the investment strategy that suits them. Besides, people can learn the trend that some empirical value investing has historically outperformed growth inventing over the long term by

using the Fama-French three-model. With this model, even a undeveloped company can have a relatively higher investment rate than some large companies. It is noteworthy that the Book-to-Market ratio, GDP growth and residual income valuation model can be used to predict the price of stocks and help people to get a higher return.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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