

Comparison of Two State-of-art Asset Allocations in Context of Indicators

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Abstract. With the continuing development of the financial investment market and the support of the government, more and more resources and technology are focusing on the investment enterprise. Investors' enthusiasm has surged, but they lack the professional information support for portfolio methods. This paper will investigate the two different well-known types of asset allocation portfolio namely alpha strategy and beta strategy for further interpretation and analysis. For different combinations, this study defined the same quantitative index, for income return ratio, maximum retreat, sharp rate of the three aspects of quantitative indicators compared to produce the better solution. According to the analysis, the study find that alpha strategy will get more positive return but need to bear more risk. On the opposite, the beta strategy presents a trend of stable with low return and low risk. These results shed light on guiding further exploration of selecting the investment strategies into the real life and the more scientific way to get profit.

Keywords: Investment; asset allocation portfolio; alpha strategy; beta strategy.

1. Introduction

Asset investment has existed in a long history of human society. Contemporarily, it has been systematically elaborated and used, evolving into a modern investment theory. As for the origin of asset allocation portfolio, Markowitz put forward the model of mean-variance based on the profit and the risk. This theory is known as the beginning of the contemporary period [1]. Brinson and others found that the investment strategy can explain the fluctuation of the market in 1986 and 1991 [2, 3]. Ibbotson and Kaplan refine the result and deliver that the return over the market is due to the big kind of the asset allocation [4]. Nuttall, Jahnke and Brinson had some shortcomings in their research, but at the same time they give a concept of dispersing the risk [5, 6]. Subsequently, the theory of asset allocation suffers the process of the continuing development. All in all, it has a long history in the national, but this is a new space for the domestic researchers to explore.

Contemporarily, plenty of study in the domestic focus on the study of the findings in the world. Zheng began to research the asset allocation in 2003, he emphasizes the economy period's huge influence to the return [7]. Afterwards, Zhao used the data to verify the market has the characteristic of the periodicity. It has made an empirical study on the allocation, then put forward that in order to better use the investment clock model there should divide the economy period in different sections [8]. There are still some paper to summarize the finding in abroad, e.g., Zhang and Lin give a brief overview to the asset allocation in the international market.[9]

With the asset investment mode constantly being optimized and developed, scholars now have more scientific modeling and analysis methods to maximize the investment disposal. Whereas, under the impact of COVID-19, the economy is in a weak period, and the consumption desire falls to the bottom. The topic of investment is particularly important in this context. The way to understand a more scientific way of asset investment in the slightly depressed social background has become the urgent goal of contemporary people. This article is based on the background of the epidemic, most consumers unfamiliar with investment allocation can provide some feasible schemes at that time. First, the portfolio case is analyzed, and the optimal scheme is obtained under the comparison of the same quantitative indicators. The rest part of the paper is organized as follows. The Sec. 2 will describe some related concepts of the asset portfolio. The Sec. 3 will explain alpha and beta strategy in detail. The Sec. 4 will compare the two strategies and make a conclusion about the investment choice. The Sec. 5 will put forward some limitations. Finally, The Sec. 6 will make a summary to this paper.

2. Concept of an asset portfolio

Portfolio allocation reflects an individual's measurement of asset allocation and their preference for asset use. Cao claimed that the asset portfolio is about a person or a family whether put the wealth in the rational position [10]. For professional corporate companies, a more perfect and suitable portfolio is conducive to the sustainable and profitable development of their businesses, while for individuals, a better portfolio can improve their capital reserves and improve their quality of life. All in all, no matter from which aspect, the asset portfolio will always be a constant hot topic as the basis of consumption, which is worth our in-depth understanding and exploration.

3. Two types of asset portfolio description

3.1 CAPM

As an investment strategy that has been rising for a long time, some scholars study alpha and beta strategy at home and abroad, which refers to the lack of a large gap for the development of beta strategy in China. The theoretical basis is traced back to the CAPM. The CAPM is capital asset pricing model, it is the support of the modern financial market, and is widely used in the investment and company management.

Strategy refers to a quantitative strategy that uses this indicator as a measure for investment selection. This concept refers to the difference between the real rate of return and the equilibrium rate of return of securities. According to the CAPM model, the value of any securities may be represented by:

$$\alpha_i = r_i - R_i = r_i - [r_f + \beta_i ((r_M - r_f))] \quad (1)$$

Here r_i represents the actual return rate of the securities i ; R_i represents the equilibrium yield of the securities i . The r_f and r_m represent risk-free and market portfolio yields, respectively, where the β_i characterizes the correlation between the securities i and the market portfolio. The purpose of investors is to obtain the securities that have been greater than 0 for a long time, and the process of conducting stock securities screening is the application of strategy.

3.2 Beta strategy

As an investment strategy that has been rising for a long time, some scholars study beta strategy at home and abroad, which refers to the lack of a large gap for the development of beta strategy in China. The theoretical basis is traced back to 1953, American economist H. In the basis of profit-based hedging theory proposed by Working, China's financial market provides a great space for the development of the strategy, because its market volatility is large, the return is closely related to the changes of the market, and it is difficult for the strategy to obtain the ideal income situation.

It is determined through the capital asset pricing model, which refers to the correlation between securities stocks and the market, greater than 1 means that the stock fluctuates more than the market, and the opposite is the opposite. A Beta strategy refers to an investment strategy used by buying and holding a high beta portfolio while shorting a low beta portfolio.

Here, an empirical analysis of beta investment strategy is presented [11]. In this case, the performance of the beta strategy in the conditional model and the non-conditional model is compared and analyzed. Here, only the beta strategy performance obtained from the research is used to grasp and analyze the strategy in a macro way. The case calculates the beta value of all stocks in China's Shanghai and Shenzhen markets, and implements the beta strategy, and finds the possible negative correlation between the beta investment strategy and the market performance which helps to verify the huge influencing factors of market fluctuations in the change of stock prices in the Chinese market to some extent. In addition, this case has deeply explored and studied the beta strategy through the different analysis of the sample data and its rationality test for its application in various models.

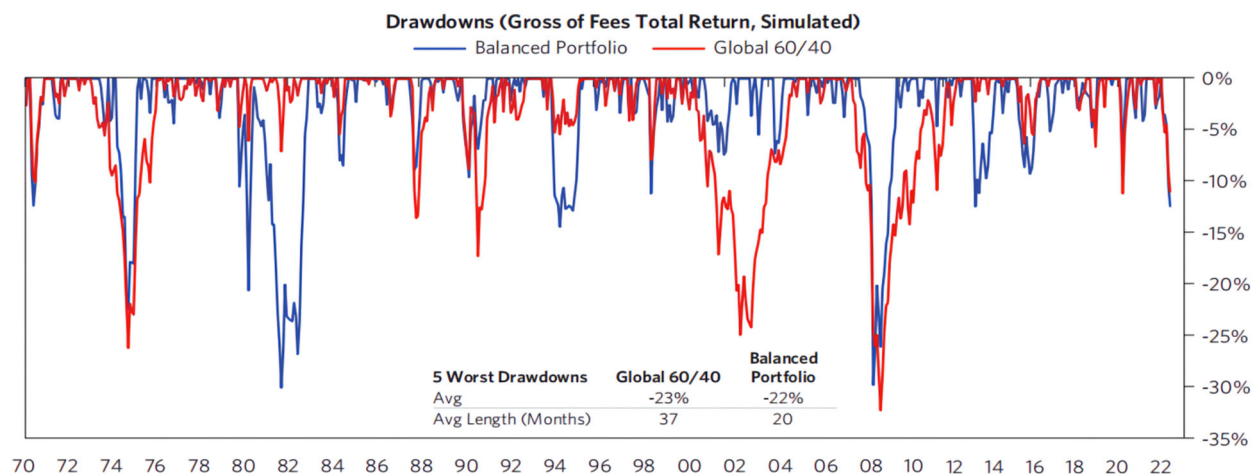


Fig. 1 Drawdowns of portfolio at a similar expected volatility to a global 60/40 portfolio.

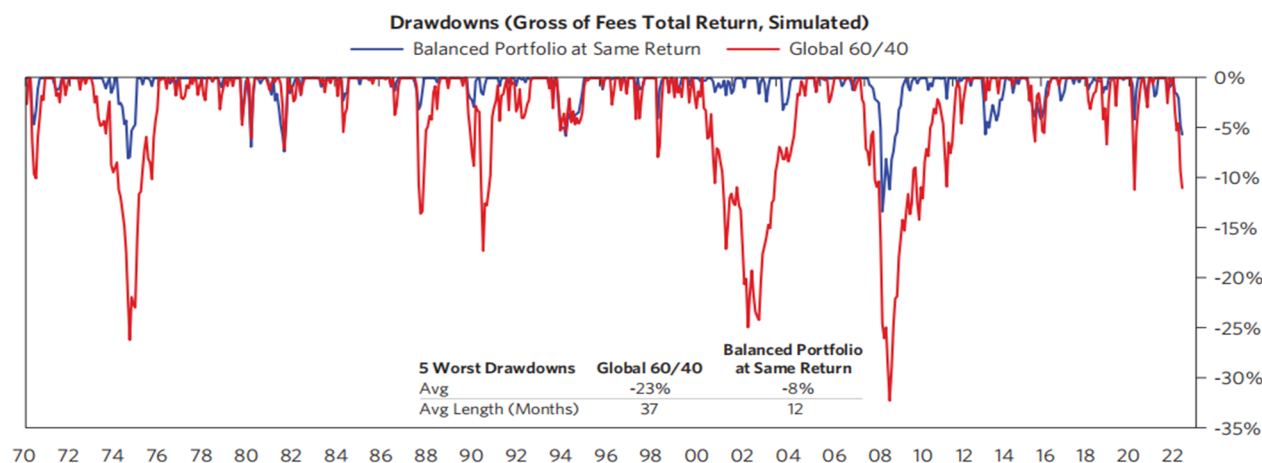


Fig. 2 Drawdowns of portfolio at the same long-term return as a global 60/40.

Fig. 1 and 2 present typical drawdown for different setups of portfolio by bridgewater. Seen from Fig. 1, it shows a balanced portfolio at a similar expected volatility to a global 60/40 portfolio, so the balanced portfolio has a better return, this is a typical used of beta portfolio. Fig. 2 illustrate a strategy that runs a balanced portfolio at the same long-term return as a global 60/40. Its drawdown year-to-date would have been significantly smaller (roughly half the size)

3.3 Alpha strategy

Contemporarily, with the development of social productivity, the economic upward rapidly, increasingly perfect asset market, to a certain extent, promote the development of the economic and financial industry, inspired people's investment boom, people's investment desire and investment mode increasingly rationalization, various investment types have sprung up, and the emergence of hedge funds immediately attracted a large number of investors. Consumers who take profit as the purpose will certainly more rationalize the choice of coexisting risk and return, that is, to obtain the maximum return under the condition that the risk is controllable to the minimum, and after continuous research and testing, the investment strategy comes into being.

First, the case makes the following assumptions:

- Stock and futures contracts are infinitely divided. The existence of this assumption has continuity significance, which avoids the problem that funds can not divide the actual trading units.
- Negligible transaction costs. In this case, one month is used as a trading cycle, the time cycle is not long, the impact of the transaction cost is small, and the impact on the research purpose and the results is small, and the research process is simplified.

- There is no liquidity risk in the market. Buy and sell immediately, and the market price can be traded immediately according to the consumer's preset price.
- 4 The arbitrage portfolio is positions near the closing price of the last trading day of each holding period, while establishing new positions for the next holding period.

The construction steps of the arbitrage strategy based on momentum effect are as follows. In the first step, obtain the values and values of all stocks in the 12 months before each holding period; in the second step, sort the values and select the top 50. Only stocks, build an equally weighted stock portfolio, as the long parts of the arbitrage portfolio. The value of the stock portfolio is $= (1 + 2 + \dots + 50) / 50$; Step 3, select the CSI 300 stock index futures contract for the next month as the short part of the arbitrage portfolio. Since the CSI 300 stock index futures can be approximately represented by the market portfolio, the value is 1; the fourth step is to allocate long and short positions. For the convenience of calculation, about 25% of the funds are reserved for stock index futures margin each time, so the capital ratio of stock portfolio and stock index futures funds is about 3:1. Afterwards, the monthly data of the small and medium-sized board market from May 2010 to September 2014 was selected. The momentum ordering period is 12 months, and the holding period is 1 month. The CSI 300 stock index futures contract selects the next month contract for each holding period.

As shown in Fig. 3, the research experimental results of this case show that the cumulative yield of this arbitrage portfolio has been growing since May 2010, with a steady upward trend. The final yield reached 106.15%, far exceeding the equilibrium yield of the same period, and obtaining the return results in the ideal state. But investment is both risk and return, at the same time we need to pay attention to about 1 / 3 of the single yield appeared negative, prove that the change of the market influence also exists and can not be ignored, overall positive situation also need us to be alert in individual cases risk influence caused losses, control the risk factor is also important. The experiment then tests the significance and stability and volatility of the yield of the strategy, and confirms the effectiveness of the strategy and the feasibility of the arbitrage strategy to obtain the positive yield.

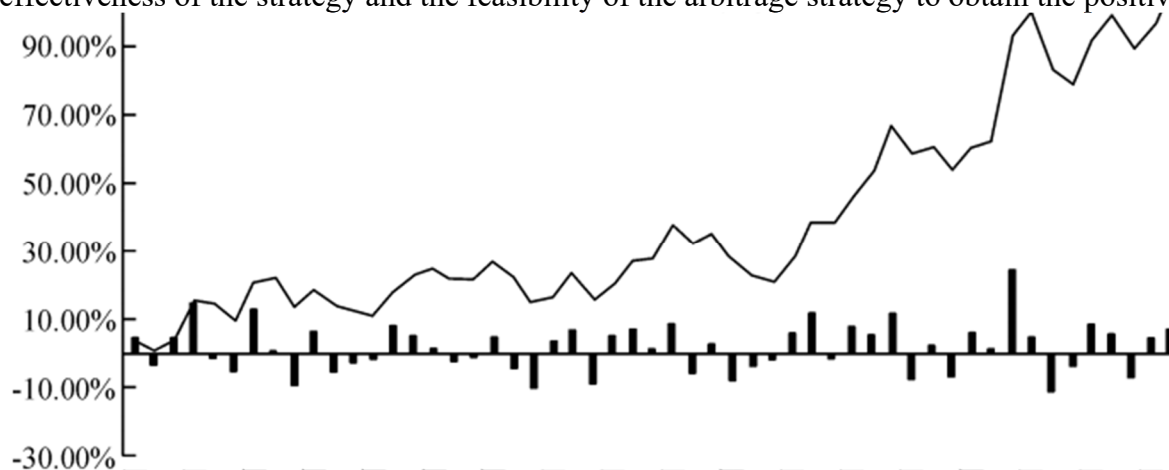


Fig. 3 single period yield and cumulative yield of alpha portfolio [12].

4. Comparison

4.1 Policy nature

Both Alpha strategy and beta strategy are the mainstream strategies in today's market, which have relatively ideal results in the pursuit of revenue. The Alpha strategy, as an initiative strategy, screens the alpha coefficient to proactively obtain the stocks that are performing well and obtain their excess returns above the market price. The beta strategy is as a passive tracking of the beta coefficient strategy, to take to buy a high beta short low beta way to obtain market returns. In the trade-off, Alpha strategy has greater risks and will also obtain more generous excess returns higher than the market price, while beta strategy adopts the way of holding high and low giving up is relatively small risk, more stable and safe. However, for the Chinese market, market fluctuations have a huge impact on

the price, and the choice of timing is not decisive enough, which will also miss the best window period so as to expand the risk loss.

4.2 Data Comparison

Table 1 is derived from the yield data collection in the beta example analysis. According to the comparison of figure 1 and table 4 can be found in terms of excess yield, beta strategy both low beta or high beta market excess return is positive 0.086 and 0.039, can obtain stable positive returns, but compared with alpha strategy market excess returns one can find that alpha strategy annualized yield reached 17.8%, for the CSI 300 benchmark index alpha strategy reached 2.24% average excess return. In terms of excess returns, the Alpha strategy has a greater advantage and more considerable returns. Apparently, portfolio returns are faced with both returns and risks, and the artificially selected investment window period is particularly important. Seen from the results, one can observe the implementation of alpha strategy is facing great investment retreat, and beta strategy lower overall yield but also lower limit, the maximum loss is less than 1%, thus alpha strategy in the face of high risk returns, maximum retracement data is relatively large. In addition, beta strategy in this aspect is relatively stable, will not cause large asset losses. Another important indicator of the asset investment strategy is the sharp ratio. The specific formula refers to the standard deviation of the investment (expected return-risk-free rate) / portfolio. Different investment environment portfolios and scenarios are inconsistent with the Sharp rates of the two strategies, and the Sharp rate is only used as a quantitative indicator.

Table 1. the portfolio return based on the data in the beta strategy

	Low beta yield	High beta yield
mean	0.086	0.039
standard error	0.216	0.151

4.3 Overall statement

In essence, both Alpha strategy and beta strategy are used to provide investors with more profitable ways to minimize risk through iterative analysis of data. Seeking greater returns and can bear the risk of investors can tend to choose alpha strategy, and for the target for stable income investors, beta strategy more safe, but low risk simultaneously in the face of market volatility and stock prices have obvious relationship in the Chinese market, also need clear investment timing, seize the bull market of the bull market, avoid a bear market investment returns.

5. Limitations & Prospects

Although this paper investigates two popular and widely-adopted strategies (i.e., alpha and beta), the research just stays on the surface of the theoretical basis on account of the limitation of the technology and the capital. Therefore, no more cases provided to verify the effective of the strategies. In addition, many other small but useful strategies still not be found and summary in a systematic model. In the future, with the maturity of the financial market and the investment field, the more practical policy will be found and refine further. There will be other strategies show better performances in the investment market, this change will provide more possible to the investors to get more profit and control the risk at the same time.

6. Conclusion

In summary, this paper investigates alpha and beta strategy based on the CAPM model and then comparing these two strategies in further. Asset allocation portfolio is a historic topic and will continue to cover more investment fields since today. For the research on this aspect, the way to grasp the investment strategy and investment time more scientifically and accurately, the investment allocation field is still moving forward. As the two mainstream investment strategies, Alpha strategy and beta strategy are worth exploring. In addition, for investors who lack professional knowledge and knowledge, this paper provides a simple and easy to understand investment analysis to help investors

to make better investment choices. Nevertheless, this paper also lacks other different kinds of strategies to improve the correction of investment choices. In the future, the investment market will find more strategies and find their similarities in order to summarize more systematic and professional strategy. Overall, these results offer a guideline for scientific investments based on the explanation of the strategy principles.

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