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Investment Approach by Alpha Value: Case of Firms Listed on the Stock Market in Vietnam Period Before and After the Covid-19 Pandemic

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Abstract. This paper has approached the investment method by alpha value as the excess return to compensate for risks other than the market risk with the data sample of filtered stocks from three major exchanges of the Vietnam stock market HOSE, HNX, and UPCOM from January 2016 to December 2020. Then, we compare the performance of the portfolio through 2021, the year Vietnam fell into the 4th wave of Covid and was the hardest hit. The results of the paper have shown that the portfolio selected by the alpha method has eliminated the beta market risk of the portfolio and has the actual portfolio return higher than the general rate of return of the stock market index, thereby reinforcing and proving the effectiveness of the alpha investment model.

Keywords. Investment method, Alpha value, CAPM, Vietnam stock market, Covid-19 pandemic

1. Introduction

Risk plays a major part in the uncertainty of future cash flow. In general, the risk is the difference between the actual and expected return. The risk could be defined in many different ways depending on each analyst; however, the main purpose of using a risk indicator is to measure the expected return of securities. The modern portfolio theory divides risk into two typical types systematic risk and unsystematic risk. Systematic risk is also known as market risk and is measured by beta which is a gauge of a security's volatility relative to the market's volatility in the capital asset pricing model CAPM, developed by two famous researchers [1], [2].

Besides market risk, there are many other types of risks affecting stock returns that were later discovered by researchers like Ross [3]; Banz [4]; Fama and French [5]; Carhart [6]. Later models when adding risk variables other than market risks such as leverage risk, scale risk, value risk, and liquidity risk, all give a lower model residual variable (ε) than must be satisfied the following. Therefore, it is necessary for additional risk variables other than market risk to be added for a better prediction of return and researchers use alpha value to measure the excess return for other risk factors. In other

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words, non-zero alpha indicates that the stock is not fairly valued in the market and it is predicted that the price will rise or fall in the future.

As a result, the alpha coefficient in the CAPM model is crucial in predicting a stock's rate of return, and by looking at the alpha coefficient, investors can determine whether a stock is reasonably priced in the market or not, and thus predict the expected growth of securities in the future to develop appropriate investment strategies. Based on the objective factors mentioned, this study will research and develop "Investment approach by alpha value: case of firms listed on the stock market in Vietnam".

The rest of the paper is organized as follows: section 2 Literature review which reviews and assesses the limitations of the previous studies related to this study, section 3 explains Data and Methodology, section 4 discusses the empirical results and section 5 concludes and recommends investors and the future research.

2. Literature Reviews

Assessing the risk and return of a security is a complex and lengthy research process. One of the widely used models to study the relationship between risk and return on stocks is the Capital Asset Pricing Model (CAPM), developed by two famous researchers Sharpe and Lintner in the 20th century. According to CAPM theory, the return of stocks is evaluated only based on the impact of the market risk - beta coefficient and this is also a major shortcoming of this model. There have been many research papers supporting the effectiveness of the CAPM model's results in predicting stock returns. Besides, the limitations of CAPM was pointed out in several studies when CAPM was only based on market risk to predict stock required returns comparing with other risks or model, including the studies of Basu [7], Rosenberg, Reid and Lansten [8], Bhandari [9], Hasan Kamil, Mustafa and Baten [10], Zainul & Shintabelle Restiyanita [11], Janata [12], Matteo [13] ,Laura & Fahad [14], Lu [15], Offiong [16], Leslaw [17], Rojo-Suárez & Alonso-Conde [18]. The measurement of stock return based on only one risk variable, market risk according to CAPM, is not correct and not enough basis.

The researchers then began to search for new risk variables to add to the original CAPM in order to test how the residual error of the CAPM (ε) changes in the case before and after adding the risk variables other than the market risk - beta coefficient. In 1993, Fama and French introduced a three-factor model including market risk and proposed two risk variables other than market risk, namely size risk, and value risk. Carhart then also developed a four-factor model based on the three-factor model of Fama & French and added a momentum factor to assess the influence of these risk variables on stock returns. A perfect model CAPM must be satisfied the following test conditions: the alpha coefficient α which represents a risk premium other than market risk and the model residual, ε, must be zero. In other words, if alpha is non-zero and the residual in the CAPM is greater than zero, it could be seen that there are other risks other than the market risk that affect portfolio returns. The larger the model residual (ε) is, the more error the model has. This leads to the model being less reliable. The previous research results indicated that most of the newly added risk factors in addition to market risk are statistically significant in explaining the required rate of returns. Furthermore, this new model exhibits lower variance (i.e., model residuals) than the capital asset pricing model CAPM, indicating that the later models better quantify the connection between return and risk than the CAPM model. It could be concluded that the required rate of return is also affected by risks other than market risks, such as size risk, value risk, liquidity risk,

and leverage risk. Therefore, the premium for market risk can not be able to compensate for risks other than market risk. To compensate for risks other than market risk, it is necessary to have an additional return for investors which is expressed by alpha coefficient α, which means stocks with positive and statistically significant alpha coefficients will become attractive to investors. Beta coefficients, , that measure market risk are also no longer effective for calculating returns because there are stocks that are not affected by market risk but are affected by other risk factors. In fact, investors do not pay attention to how many risks they may get or what those risks are, what investors care about is how much they get in return on the total risk they take, whose alpha is the compensation for the risks that investors have to take in addition to the market risk. It could be seen that, besides market risk, the required rate of returns is also affected by risks other than market risk, and choosing stocks with positive alpha values to counter risks other than market risk is a legitimate and highly relevant investment strategy. Thus, this paper will demonstrate the investment method according to the alpha approach, and collect the latest information and data. Simultaneously, this paper will be the material to contribute to further studies on alpha investment and evaluate the risk and return of securities in the future.

3. Data and Methodology

3.1 Data

The paper aims to build a portfolio according to alpha value, which is a long-term buy-and-hold method. Therefore, instead of daily or weekly data, we chose to collect data on a monthly basis from Thomson Reuters, and Refinitiv and ignore short-term price movements. Accordingly, data are collected for 5 years from January 2016 to December 2020 to compute the monthly return of market indexes and individual stocks listed on Vietnam's stock exchange. Initially, the collected data is 1,655 stocks listed on the whole Vietnam stock market. The selected stocks must ensure full trading conditions and not change the exchange during the 5-year listing period. However, there are some limitations to this paper. In terms of risk-free interest rate data, we chose a 10-year Vietnamese government bond. According to Fitch Ratings [19], Vietnamese government bonds are rated BB by regional and international organizations in terms of creditworthiness. In essence, the BB rating indicates that Vietnamese government bonds are not completely risk-free. However, in terms of the Vietnamese market alone, government bonds are the safest asset, and Vietnamese government bond yields can represent the risk-free rate of the study.

3.2 Methodology

With the alpha investment method, the research team uses the CAPM model Eq. (1) to perform linear regression in Excel, in order to find stocks with statistically significant positive alpha, the linear regression equation has the formula as follows:

$$CAPM: (Ri - Rf) = \alpha + \beta(Rm - Rf) + \varepsilon \tag{1}$$

where:
Dependent variable (Ri - Rf): individual security risk premium

Independent variable (Rm - Rf): market risk premium
α: intercept coefficient (represents alpha)
β: is the coefficient that measures the variation of stock risk premium with the market risk premium
ε: model residuals

Since the Vietnamese stock market has three separate exchanges, the collected data set is performed linearly according to the CAPM formula on each individual stock of 3 exchanges HOSE, HNX, UPCOM corresponding to the return of three different markets (Rm) are VN–INDEX, HNX-INDEX, and UPCOM-INDEX. After performing linear regression on Excel for all stocks listed on the Vietnam stock market and meeting the set criteria, a set of stocks with positive alpha with statistical significance was selected. In this set of data, continue to find stocks with positive and negative beta that are statistically significant to combine into an alpha portfolio. A Solver algorithm is used to determine the proportion of capital allocation of stocks in the portfolio according to alpha in order to minimize the market risk of the portfolio (Portfolio beta = 0). Markowitz's efficient portfolio capital allocation theory is applied to construct the optimal portfolio in terms of alpha of this study. After building an alpha portfolio from Excel's Solver algorithm, the paper studies the practical application of the alpha portfolio in 2021, thereby measuring the actual return of the portfolio using the alpha method in 2021 and comparing it with the stock market index VNINDEX 2021. The study also compares the return forecast of the alpha investment method with the CANSLIM method, thereby proving the effectiveness of the alpha investment method.

4. Result and finding

After performing linear regressions according to the CAPM model on a total of 784 eligible stocks listed on the Vietnam stock market, the results show that there are 6 stocks with statistically significant positive alpha. However, there is only one stock - ABI, that carries both a statistically significant positive alpha and a statistically significant beta. That is an ABI stock with alpha value equal to 0.04095, and an alpha p-value of 0.00042; ABI also has a positive beta and a beta p-value of 0.01283, showing that ABI stock meets the alpha and beta requirements with statistical significance. Since there is only one stock (ABI) that meets the alpha and beta conditions to be statistically significant, the initial objective of finding a portfolio of statistically significant positive alpha and positive/negative beta stocks is not possible. Therefore, the research team decided to proceed with the construction of two portfolios in the following ways:

- The first portfolio is the combination of stock ABI - statistically significant positive alpha and positive beta, with four stocks carrying statistically significant negative beta, alpha has no statistical significance.
- The second portfolio is a combination of all 6 statistically significant positive alpha stocks with statistically significant positive/negative beta stocks but no significant alpha.

In order to construct the Markowitz portfolio optimization, the Solver algorithm on Excel was used with the following conditions: portfolio annual standard deviation is less than or equal to 20%, portfolio beta equal to zero, total capital disbursement to the portfolio is 100%.

However, the results of capital allocation according to Solver to the second portfolio include only 6 stocks with statistically significant positive alpha. Stocks with statistically significant positive and negative beta have no weight in the portfolio. Therefore, the second portfolio is excluded because it does not satisfy the market risk minimization condition (beta = 0), as the betas of the stocks in the portfolio are not statistically significant. Otherwise, the capital allocation result of stocks in the first investment projects is shown as follows:

Table 1. Solver results of capital allocation to the first optimal portfolio

Weights of Stocks		Stock Beta	Weighted Beta
ABI	43.51%	0.55	0.24
ALT	26.56%	-0.33	-0.09
L18	27.33%	-0.45	-0.12
CT3	2.60%	-1.02	-0.03
Total weights	**100.00%**	**Portfolio Beta**	**0.00**

Source: Authors' analysis

Solver results of capital allocation to the first portfolio show that the individual positive beta stock has offset the negative beta stock. Hence, the portfolio has a beta equal to zero, indicating that the portfolio has minimized market risk. Accordingly, this alpha-based investment is expected to yield an annual return of 26.68% with a standard deviation (or risk) of 20.17%/year. Additionally, this portfolio has a Sharpe ratio of 1.0652 based on the risk-free rate of 5.19% annually.

Therefore, only the first optimal portfolio is selected for simulation with the empirical return in 2021 (We compare the portfolio performance through 2021, which is the year Vietnam fell into the 4th wave of the Covid epidemic and was hardest hit), and the actual return on the investment portfolio alpha in 2021 is shown as follows:

Table 2. Actual profitability of the first optimal portfolio

Stock Symbol	Stock Exchange	Name	Closing price at the end of 2020	Closing price at the end of 2021	Gain/ Loss (Ri)	Portfolio weights (Wi)	Proportional rate of return (Ri*Wi)
ABI	UPCom	Agriculture Bank Insurance JSC	86.6%	375	294	78.4%	414
ALT	HNX	Tan Binh Culture JSC	80.5%	384	294	76.6%	694
CT3	UPCom	Project 3 Construction & Investment JSC	74.3%	376	294	78.2%	804
L18	HNX	Investment & Construction JSC No.18	73.3%	367	294	80.1%	872
Actual rate of return of the first optimal portfolio: $R_P = \sum_{i=1}^{n} w_i r_i$							**215.86%**
VNINDEX (Benchmark)			1103.87	1498.28	+/- %		**35.7%**

Source: Authors' analysis

The empirical comparison shows that the first optimal portfolio offers superior performance compared to the VN-INDEX as a benchmark, which is 180.16% higher than the market return (VN-INDEX). Alpha investing is a long-term buying and holding method in search of a yield that outperforms the general market. However, the actual return in 2021 of the alpha-based investment portfolio shows that this is a highly effective investment method, yielding 6 times the return compared to the market return within just one year.

In addition, to verify the effectiveness of the alpha investment method, the research team also built an investment portfolio based on the CANSLIM stock selection method to compare the performance with the alpha investment portfolio. CANSLIM method *("C" - Current quarterly earnings per share; "A"- Annual earnings increases; "N" - New Products, New Management, New Highs; "S" - Supply and Demand; " L" - Leader of Laggard; "I" - Institutional Sponsorship; "M" - Market Direction)* which is the well-known stock selection method developed by William J. O'Neil. Screening stocks on the Vietnam stock market according to some criteria of the CANSLIM stock selection method, the results show that there are 3 stocks that meet the above criteria: DGC (HOSE), VND (HOSE), ORS (HOSE). The Solver algorithm in Excel was used to find the portfolio weights with the following conditions: portfolio annual return is 26.68% (equal to the annual return of the alpha-based portfolio), minimizing the standard deviation of the portfolio, portfolio beta equal to zero, total capital disbursement to the portfolio is 100%; the results of the investment portfolio according to CANSLIM include the proportions of stocks as shown in the table below:

Table 3. Solver results of capital allocation to the portfolio according to CANSLIM

Weights of Stocks		Stock Beta	Weighted Beta
DGC	53.57%	0.84	0.45
ORS	18.01%	1.04	0.19
VND	28.42%	1.28	0.36
Total weights	**100.00%**	**Portfolio Beta**	**1.00**

Source: Authors' analysis

Comparing the actual profitability in 2021 shows that the investment by CANSLIM gives a higher return of 62.41% than the one by alpha (278.27% > 215.86%). However, alpha-based investment is more efficient due to its higher Sharpe ratio, the figures are 1.0652 and 0.8015 respectively. In other words, the ratio between return and risk of the former and the latter are 1/0.939 and 1/1,248 respectively, that is, for one additional unit of profit applied to both investment portfolios, investors following the alpha-based portfolio only incur an additional 0.938 units of risk, while the CANSLIM-based portfolio incurs an additional 1,247 units of risk.

Table 4. Comparison of the indicators of the alpha-based portfolio and the CANSLIM-based portfolio

	Annual rate of return	Annual standard deviation	Sharpe ratio	One unit of profit/ risk
Alpha-based portfolio	215.86%	20.17%	1.0652	1/0.939
CANSLIM-based portfolio	278.27%	31.52%	0.8015	1/1.248

Source: Authors' analysis

5. Conclusion and recommendation

A special feature of the topic is that the study expands and suggests a new investment method for investors, which is the method of investment according to quantitative models. The investment model proposed by the authors is an alpha investment model, giving quite acceptable and superior results of assessing the relationship between stock risk and return even when compared with the stock market index VNINDEX and the CANSLIM stock selection method model. From the research results presented in section 4, it can be concluded that the investment portfolio proposed by the authors based on the alpha investment method is suitable, brings outstanding returns and applies in Vietnam's

stock market. However, due to the volatile and illiquid nature of the selected stocks in the portfolio, the research results are only really useful for investors who have long-term investment purposes. In other words, investors tend to buy and hold securities investment strategies.

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