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The Performance of Open-Ended Funds in Vietnam

Abstract. In this paper, Jensen's Alpha is used to measure the performance of 12 open-ended funds operating in Vietnam during the period from 2013 to 2021. The model found out α_i and $\beta_{i.}$ After risk is taken into account, the alpha shows whether or not the portfolio performance outperforms the market. Jensen's Alpha is interpreted in terms of the sign of alpha as well as the statistical significance of the result. Having a positive α_i with statistically significant indicates higher performance compared to the market, whilst having a negative α_i with statistically significant indicates lower performance. If the value of α_i is statistically insignificant, the portfolio has performed similarly to the market. Pooled model regression of panel data analysis is applied to compare such funds' performance to the VN30index and then use time-series analysis to calculate for an individual fund. The results show that, on average, these 12 open-ended funds are unable to outperform the VN30 index, but only one fund operates better than the VN30 index.

Keywords: Jensen's Alpha, open-ended funds, VN30index.

1. Introduction

The primary goal of mutual fund investments is diversification (Tan, 2015). Mutual funds are a profitable investment option for investors because they provide low-cost access to a diverse portfolio of professionally managed assets (Deepak, 2011). Mutual fund managers accept varying levels of risk in order to achieve a well-diversified portfolio (Rao, 2006).

By the end of 2020, fund management firms would have managed only 5.5% of Vietnam's gross domestic product (The Ministry of Finance, 2021). There are numerous reasons why investors prefer to save and invest their own money rather than entrust it to investment funds managed by financial professionals. The strengthening economy is expected to benefit Vietnamese mutual funds significantly in the near future (Ban, 2015).

By investing in mutual funds, small investors can benefit from a professionally managed diversified portfolio. Open-ended funds are the most common type of mutual fund investment. As a result, they are regarded as a viable investment option for those with little trading experience or capital (U.S. Securities and Exchange Commission, 2017). The effectiveness of asset management companies has been extensively discussed in the finance literature, and a number of studies on the management effectiveness of mutual funds have been conducted (Jensen, 1964; Bogle, 1991; George, 2001; Tan, 2015), whereby researchers examined management effectiveness by comparing mutual fund risk-adjusted returns to those of their indexes.

Despite growing international interest in mutual funds, Vietnam's fund industry has had difficulty attracting academics, resulting in limited fund sector research. To identify development factors, Duong (2016) investigated nine open-ended funds in Vietnam and

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found that market returns have a positive impact on the flow of funds. The author looked at the performance of open-ended funds in Vietnam. This addresses a research gap in emerging market mutual funds whereby portfolio performance is estimated. With the help of research, investors can choose a suitable fund because portfolio performance can be compared to portfolios of similar risk.

In terms of method, Jensen's alpha is widely used because it is simple to calculate and interpret. The Treynor Ratio is used to compare the performance of an investment to a benchmark, whereas Jensen's Alpha is used to measure an investment's performance relative to the market. The Sharpe Ratio, on the other hand, defines risk in terms of standard deviation, which is a measure of total risk. In Vietnam, most mutual funds are created to outperform the market so Jensen's Alpha is the most relevant for this study. The remainder of this paper is structured as follows: Introduction, Literature Review, Data and Methodology, Results and Discussion, and Conclusion.

2. Literature Review

2.1. Theoretical Framework

The performance of a portfolio is evaluated using risk considerations and the capital asset pricing models (CAPM) developed by Sharpe (1964), Lintner (1965a), and Treynor (1961). These three models are based on five common assumptions. The first is that investors are all rational mean-variance optimizers looking for efficient frontier portfolios in a specific time frame. The second is that investors plan for the same time horizon and use the same analytical methods, so their expectations about investment opportunities are consistent. The third assumption is that investors can choose portfolios based solely on expected returns and variance of expected returns because they have access to all risky assets as well as unlimited risk-free assets. The overall portfolio risk includes both systematic and unsystematic risk. A standard deviation represents the total risk of the portfolio. Systematic risk is the susceptibility of a portfolio to changes in market return. It is preferable to take a systematic risk when a portfolio is well-diversified. Although security prices can be predicted, it is still possible for a manager to construct an inefficient portfolio.

The expected premium for each unit of risk to be paid is denoted by $[E(R_M)–R_F]$. Although forecasting security prices is possible, a manager can still create an inefficient portfolio. In other words, a manager is unlikely to generate higher returns than a buy-and-hold strategy to compensate for the additional risk faced by the portfolio owner due to the lack of complete diversification. The CAMP model for the expected one-period returns on any portfolio is based on the assumption that the capital market is in equilibrium:

$$E(R_i) = R_{Ft} + \beta_i [E(R_{Mt}) - R_{Ft}] \quad (1)$$

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where $E(R_i)$ = expected return, R_F = risk-free rate, β_i = systematic risk and $E(R_M) - R_F$ = market risk premium

However, the systematic risk associated with each portfolio can be expressed simply in equation (1), which tells us how much money we can expect to make from each one, β_i. Portfolio managers who are successful in forecasting the price of future securities may achieve higher returns than those indicated in equation (1). To demonstrate any portfolio manager's forecasting abilities in terms of expectations for any portfolio and market returns, equation (1) must be adjusted. Furthermore, because investors are spread across different time zone and securities trade around the clock, equation (1) can be rewritten as follows:

$$E(R_{it}) = R_{Ft} + \beta_i [E(R_{Mt}) - R_{Ft}] \quad (2)$$

where t = an arbitrary interval of time.

Additionally, Fama (1968) and Jensen (1967) demonstrate that the measure of systematic risk (β_i) is approximately equal to the coefficient b_i in the market model. Initially, Markowitz (1960) proposed the market model, which Sharpe (1964) thoroughly examined and coined the term "diagonal model" to describe how the market works. To put it another way, the model assumes a linear relationship exists between the returns on any security and some general market variable, as shown by the following equation:

$$R_{it} = E(R_{it}) + b_i \pi_t + e_{it} \quad (3)$$

where b_i = parameter that varies by securities, π_t = unobservable market factors that influence all securities' returns, and e_{it} = random variable uncorrelated with π_t.

The return on the market portfolio might be expressed as following:

$$R_{Mt} = E(R_{Mt}) + \pi_t \quad (4)$$

Substituting model (4) $E(R_{Mt}) = R_{Mt} - \pi_t$ and adding $b_i \pi_t + e_{it}$ in both sides of model (2), the model becomes:

$$E(R_{it}) + b_i \pi_t + e_{it} = R_{Ft} + \beta_i [R_{Mt} - \pi_t - R_{Ft}] + b_i \pi_t + e_{it} \quad (5)$$

According to model (3), the left side is R_{it} and after reducing the right side, the model reads:

$$R_{it} = R_{Ft} + \beta_i [R_{Mt} - R_{Ft}] + e_{it} \quad (6)$$

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A portfolio's realized returns can be characterized as a linear relationship between the market return, systematic risk, and random error (e_{it}) which has an expected value of zero if the asset pricing model is true. This equation can be simplified by subtracting R_{Ft} from both sides of it:

$$R_{it} - R_{Ft} = \beta_i [R_{Mt} - R_{Ft}] + e_{it} \quad (7)$$

If the manager has a strong forecasting ability to increase the return of their portfolio, they will increase the risk of the portfolio by making $e_{it} > 0$. As a result, the portfolio will receive a risk premium that is higher than is typical for its degree of risk. In order to reduce the losses, they may reduce the level of risk by setting e_{it} to below 0. This kind of forecasting can be enabled by not requiring the estimating regression to pass through the origin. In other words, by using equation (8) as the estimating equation to account for the possibility of a non-zero constant in equation (7). Therefore, equation (8) is expanded with a new error term, $\mu_{it,}$ which has an expected value of zero.

$$R_{it} - R_{Ft} = \alpha_i + \beta_i [R_{Mt} - R_{Ft}] + \mu_{it} \quad (8)$$

The α_i denotes the difference between the average return on the portfolio and the predicted return from the CAPM. In contrast to β_i, which gauges the portfolio's return based on its volatility, α_i is based on the fundamental values of the securities in the portfolio. The α_i can be bigger, lower, or equal to zero, depending on the situation. Investing in a portfolio with $\alpha_i > 0$ indicates that the portfolio has outperformed expectations in terms of return (Jensen, 1967). As a result, positive alphas indicate that the portfolio outperformed the benchmark, while negative alphas indicate the opposite.

2.2. Empirical Research

Many studies have been conducted around the world to examine fund performance. In 1962, Friend et al. conducted an objective examination of mutual fund performance. Traditional risk-adjusted return indicators for mutual funds were developed by Treynor (1965), Sharpe (1966), and Jensen (1968). Grinblatt and Titman (1989) used positive period weighting to evaluate fund performance. Researchers have looked into mutual fund managers' ability to time the market (Treynor and Mazuy, 1966; Kon, 1979), as well as the benefits of diversification and risk-adjusted performance (Grinblatt and Titman, 1989; Ippolito, 1989; Lehman and Modest, 1991). (1987). According to the findings, several metrics changed over time. Plantinga and Groot (2001) looked into using performance metrics instead of preference functions. Sharpe's alpha, expected return, Fouse index, Sortino's ratio, and upside potential ratio were all used in the analysis. Less risk-averse investors preferred the first three criteria. The investor must select the most relevant performance measure.

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Since the 1960s, academics have been researching developed-country fund performance, such as fund risk-and-return (Treynor, 1965, Sharpe, 1966, Jensen, 1967). Sharpe (1966) examined 34 open-ended mutual funds in the United States between 1954 and 1963, discovering that 11 outperformed the Dow Jones Industrial Average while the remaining 23 underperformed. Jensen (1968) used an alpha indicator to evaluate 115 mutual funds from 1945 to 1964. The study discovered that mutual funds were unable to outperform the S&P 500 price index, implying that mutual fund managers lacked the ability to forecast security prices. Ippolito (1989) examined more recent data to see if active funds provide enough return to offset their higher fees and discovered that 12 funds outperformed the market while four underperformed. To compensate for load fees, he believed mutual funds outperformed passive funds on net, which is consistent with expensive information in a competitive market (Grossman and Stiglitz, 1980). Cumby and Glen (1990) investigated 15 international funds based in the United States between 1982 and 1988. They used Jensen's measure as well as Grinblatt and Titmann's Positive Period Weighting method in this study (1989). They find positive alphas in only three funds, and even those aren't statistically significant. They consider market timing ability when analyzing mutual fund performance. Using Treynor and Mazuy's timing model, they discover evidence of negative market timing abilities. Blake and Timmermann (1998) in the United Kingdom use the three-index method to examine a large dataset of unit trusts from 1972 to 1995, including T-bills, bonds, and dividend yield. They discovered an average 1.8% year-over-year decline in performance. Quigley and Sinquefield (2000) discovered similar results from 1978 to 1997. Matallin-Saez (2006) examines the impact of removing a relevant benchmark on mutual fund performance in Spain. Although he employs a wide range of performance techniques to arrive at this conclusion, there is no statistical significance in his conclusion that the performance of Spanish mutual funds is poorer and that they have a negative market-timing bias. He claims that removing the benchmark has a strange effect on market timing. Cuthbertson et al. (2008) assessed signs of abnormal return using data from the United Kingdom. In contrast to the findings in the US, the higher performance of UK funds is attributed to luck rather than skill, according to their findings. Furthermore, from 2004 to 2014, Reddy et al. (2017) used Jensen's Alpha model for 21 open-ended funds divided into Islamic Funds, SRI Funds, and Conventional Funds in the United States. According to the findings, no funds outperformed their US benchmarks. In general, mutual funds as a group cannot outperform the market in developed markets. Excessive transaction costs and overhead are to blame, not a lack of skill on the part of fund managers. As a result, several academics recommend low-cost passive index funds to investors. Furthermore, some studies assess performance in terms of the ability to forecast market trends. There is little evidence of market timing or even perverse market timing in mutual fund performance. According to research, mutual fund performance is affected not only by the measurement approach, but also by the benchmark and data used.

The performance of emerging market funds lags behind that of developed countries, and a lack of academic interest in Vietnam's fund industry has resulted in a lack of data on the

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industry as a whole. Duong (2016) examined nine Vietnam open-ended development funds and discovered that market returns influenced capital flows. Jensen's alpha is popular for predicting the value of investment portfolios because it is simple to compute and understand. However, due diligence is required before making any investments because portfolio results can be compared, and the financial and statistical health of a business can be assessed using regression analysis. Jensen's Alpha will be used for this purpose, according to the author.

The literature on emerging markets focuses on performance evaluation. Using various approaches and samples, these studies conclude that there are no abnormal returns in mutual fund performance. Because these studies typically use small funds and a short sample period, the conclusions are still unclear. This is also due to the fact that emerging markets are extremely volatile and show signs of systemic breakdown. Second, data show that emerging markets are inefficient and differ in several ways from developed markets. Aside from market risk, other factors that explain stock returns include size, value, and the momentum premium. Nonetheless, most emerging market mutual fund research ignores these effects by using traditional CAPM-based metrics such as Sharpe ratio and Jensen's alpha. As a result, many mysteries surrounding the mutual fund industry in emerging markets remain unsolved (Suppa-Aim, 2010).

In summary, fund performance-related topics have grown in popularity in recent decades. Many researchers have supported a variety of performance metrics and issues in order to gain insight into fund performance. Because of differences in research timing and circumstances, the findings are still mixed.

3. Data and Methodology

3.1. Data Collection

The data set contains a total of 355 observations including Net Asset value at the end of each quarter collected from 12 open-ended mutual funds from 2013 to 2021, obtained from the Annual Financial Statements from the fund's websites. The number of open-ended funds in Vietnam is 28 active funds (VDB, 2019) but only 12 funds have full data form 2013 to 2021. In this study, the VN30 index is benchmarked for the market due to high market capitalization and highest liquidity (Dragon capital, 2022) As much as 80% of the market's total value is held by the VN30 index (Ho Chi Minh Stock Exchange, 2021). Most of funds focus into leading stocks in the market so VN30 will be a better benchmark than VNindex. In addition, the VN index is calculated on full capitalization, not a free float, which greatly affects the accuracy of the market's reflection. Moreover, Vietnam's 10-year Government bond yield represents the risk-free rate.

3.2. Research Model

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The research using data regression method following equation (8) as:

$$R_{it} - R_{Ft} = \alpha_i + \beta_i [R_{Mt} - R_{Ft}] + \mu_{it}$$

Where:

NAV_t = Per share net asset value of the i'th fund at the end of quarter t.
$R_{it} = \log_e (\frac{NAVt}{NAVt-1})$ The quarter continuously compounded rate of return on the i'th fund for quarter t.
r_t = Yield to maturity of 10-years government bond at the beginning of quarter t.
$R_{Ft} = \log_e (1+r_t)$ The quarter continuously compounded risk-free rate of return for quarter t.
V_{Mt} = Level of the VN30 index at the end of quarter t.
$R_{Mt} = \log_e (\frac{VMt}{VMt-1})$ The estimated annual continuously compounded rate of return on the VN30 index for the quarter t.

In order to determine all fund performance, pooled model regression is estimated for 12 funds using quarter data. Each fund-quarter observation is treated as an independent observation in a pooled model regression, which has the advantage of using all the variation in the data. If the performance residuals are corrected within funds over time or across funds within years, the coefficients' standard errors are overestimated, raising the possibility that the coefficient is biased. The author estimates both a fixed effect and a random effect model to address this issue. The results of the Hausman test, along with the characteristics of the data, will be used to determine the best method of analysis. In terms of individual funds, quarterly data provides a sufficient time series for estimating quarterly risk-adjusted performance. This allows one to account for the time effect when analyzing mutual fund performance. According to Jensen (1967), the intercept, α_i will be positive if the portfolio manager is adept at predicting security price movements, which means a fund will have better performance than the market. The α_i will be negative if the manager does not perform as well as a randomly selected buy-and-hold policy. If the value of α_i is statistically insignificant, the portfolio has performed similarly to the market. An important part of evaluating a fund's success is figuring out how risk affects return, and this is where estimating α_i comes in. The β_I coefficient indicates how much systematic risk is present relative to the market portfolio benchmark. A higher β_i coefficient indicates a higher level of systematic risk,and vice versa.

According to Fama (1970), there are three types of efficient markets based on the amount of information contained in prices: weak, semi-strong, and strong. Weak form efficiency is demonstrated when prices reflect past information, making it impossible to outperform the market using historical data. Prices in semi-strong form reflect not only previous prices, but also other public information. As a result, fundamental analysis is unusable. When prices reflect all publicly and privately available information, and investors are unable to gain an advantage over the market, there is strong form efficiency. As a result, outperforming a market index would be difficult. Previous research indicates that the funds did not outperform their index. Cumby and Glen (1990), Manjezi (2008), Mbiola (2013), and Reddy et al. (2017), for example, support this expectation. Other studies, such as Ippolito (1989), found that the mutual industry had a higher estimated risk-adjusted return even after accounting for transaction costs and tax. Furthermore, Karrupasamy and Vanaja (2013) examined and evaluated the performance of large, mid, and small-cap equity mutual funds over a three-year period using Sharpe, Jensen, and Treynor's measures. According to research, three types of funds outperformed their respective benchmark indexes. As a result, the comparison of the fund's performance to its benchmark remains ambiguous.

4. Results and Discussion

4.1. Descriptive Statistics

The mean column in Table 1 shows the average returns of funds, benchmarks, and risk-free rates. The VCBF Tactical Balanced Fund, DC Dynamic Securities Fund, VCBF Blue Chip Fund, VinaWealth Equity Opportunity Fund, SSI Sustainable Competitive Advantage Open-Ended Fund, and DC Blue Chip Fund all outperform the Vn30 index in terms of average returns. The most impressive average return was 13.79038% for the SSI Sustainable Competitive Advantage Open-Ended Fund. Furthermore, the average yield to maturity of 10-year government bonds from 2013 to 2021 was 5.34281%. From the first quarter of 2013 to the end of 2021, the Vietnam 10Y Bond Yield fell significantly, from 9.835% to 2.121%.

The volatility of mutual funds, the VN30 index, and 10-year government bonds is represented by the standard deviation. The highest variation was seen in the Manulife Equity Fund, with 0.5566379 or 55.66379%, followed by the DC Blue Chip Fund, with 27.67114%. If the data is dispersed widely, the deviation will be greater. As a result, based on historical volatility, investors can forecast future volatility fluctuations. Using magnitude standard deviation, it was clear that diversity performance on a sample of both such mutual funds had a high value between 2013 and 2021 because the average value was less than the standard deviation values. The standard deviation of the 10-year government bond and the VinaWealth Enhanced Fixed Income Fund, on the other hand, were the lowest, at 1.96245% and 1.56255%, respectively.

Table 1. Descriptive statistics of returns of open-ended funds in Vietnam

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Name	Obs	Mean	Std. dev.	Skew	Kurtosis
Viet Capital Balanced Fund	30	0.0225609	0.057388	-0.9582322	3.867908
VCBF Tactical Balanced Fund	23	0.0289886	0.0792329	-1.233376	4.152795
DC Dynamic securities Fund	32	0.0442053	.115883	-1.039088	4.558614
VCBF Blue Chip Fund	23	0.0369199	.1137332	-1.14031	4.579719
VinaWealth Equity Opportunity Fund	29	0.0334958	.1056066	-.9484932	4.378884
Manulife Equity Fund	28	0.0276959	.1267064	-.9999274	3.956974
BaoViet Equity Dynamic Open-Ended Fund	31	0.0271544	.0880126	-.3268797	3.937726
MB Capital Value Fund	30	0.0195968	.0571866	-.4227001	5.54224
SSI Sustainable Competitive Advantage Open-Ended Fund	30	0.1379038	.5566379	4.809715	25.56899
DC Blue chip Fund	32	0.0396232	.2767114	-.0679508	9.784349
VinaWealth Enhanced Fixed Income Fund	34	0.0184338	.0156255	.8957212	8.762994
DC Bond Fund	34	0.0235509	.0244853	-.1322467	5.785523
Vn30 index	34	0.0284663	.1276509	-.6542951	4.147464
10-years government bond	34	0.0534281	.0196245	-.053695	2.055046

Source: Author's calculation

Skewness and kurtosis are two metrics used by investors to assess a return distribution rather than just the average. Kurtosis measures extreme values in both tails, as opposed to skewness, which distinguishes between extreme values in one tail and extreme values in the other. The SSI Sustainable Competitive Advantage Open-Ended Fund had the highest average return, standard deviation, skewness, and kurtosis, so it was expected to be the best performing fund.

4.2. Econometric Results

The panel data regression model can be used to examine the performance of the funds. Panel data, according to Baltagi (2005) and Hsiao (2003), is superior to cross-sectional and time-series data because it allows for better control of individual heterogeneity, provides more information, has greater variability, and reduces collinearity. The Breusch and Pagan test is used in this study to determine the pooled regression, fixed effect, or random effect, which are three important ways to look at the panel model.

First of all, the general model is as following:

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$$R_{it} - R_{Ft} = \alpha_i + \beta_i [R_{Mt} - R_{Ft}] + \mu_{it}$$

In a pooled model, the observations of each fund over time would simply be placed on top of each other. Because the intercepts and slope coefficients must be consistent across all funds cross sections and time periods, this model is somewhat stringent. Furthermore, the pooled model ignores the data's temporal and spatial dimensions, discarding valuable information.

Individual differences are what the fixed effects model focuses on the most. A two-way error component model is another name for this model. In this case, the disturbance term is composed of a cross-sectional component (α_i) as well as a time series component and a cross-sectional component that are combined (μ_{it}). Data from time series is combined with data from cross-sections.

The author used the F test to compare the pooled and fixed effect models. It is possible to use a pooled model for regression analysis if the hypothesis H_0 is true: all coefficients of the variables in the regression model are equal to a constant. The alternative hypothesis (H_1) is that the fixed effect model is correct. Since the F-test result (11, 342) = 0.25 with Prob> F = 0.9930 (higher than 0.05), it shows that the hypothesis H_0 is not rejected. In other words, the pooled model is appropriate at the 5% level of significance.

Table 2. Regression result of funds

	Pooled model	Fixed effect model	Random effect model
β_i	0.5500005***	0.549726***	0.5500005***
α_i	-0.102226**	-0.0102273**	-0.102226**
F-test		0.25	

Source: Author's calculation

Note: *, ** and *** are significant at the 10%, 5% and 1% levels, respectively.

Individual intercepts can be included in a random effect model. Individual intercepts are distinguished by random deviations from the mean intercept. Because each unit has its own intercept, the total error is ignored when drawing the intercept. The random effects model, as opposed to the fixed-effect model, assumes that variation across entities is random and unrelated to the predictor or independent variable.

The Breusch and Pagan method is applied to compare the pooled model and the random effect model with the hypothesis H_0 the pooled model is correct and H_1 the random effect

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model is correct. Since Prob > chibar2 is 1, it does not reject the null hypothesis at a 5% level of significance. Therefore, the pooled model is better than the random effect model.

In the pooled model, the R^2 is 0.3857. R^2 indicates that 38.57% of the variation in the risk premium earned on the funds during the period 2013-2021 can be explained by the market risk premium. 61.43% is apparently explained by other factors.

From the regression table, the model is that:

$$Ri_t - RF_t = -0.0102226 + 0.5500005 * [RM_t - RF_t]$$

The results show that α equals -0.0102226 and is significant at a 5% level, indicating that open-ended mutual funds in Vietnam underperform the Vn30 index by approximately 1.02226%. On average, since β is 0.5500005 and significant at a 5% level, these funds held portfolios that were less risky than the market's portfolio. As a result, the result supports the hypothesis that the performance of open-ended funds in Vietnam underperforms the VN30 index.

The t ratio for correlation on variables indicates that when testing the null hypothesis that the true coefficient is zero (H_0), the ($R_{Mt} - R_{Ft}$) and α are 14.89 and -2.05 standard errors from the hypothesized value, respectively. The p-value of ($R_{Mt} - R_{Ft}$) and α variables is lower than 0.05, so H_0 is rejected. This result is consistent with theoretical expectations.

On the basis of the data that has been collected, the pooled model appears to be the most appropriate. The authors, on the other hand, conduct defect tests on the model before analyzing the performance of the funds. The research used a one-tailed test because theory indicates that the expected direction of the relationship is given by the model, which yields a coefficient with an expected sign.

The Breusch-Pagan test is used to perform the heteroscedasticity test for the model. The results of the Breusch-Pagan test show no evidence of heteroscedasticity. It can not reject the null hypothesis (H_0) of homoscedasticity based on p=0.24 (0.0000<0.05), so there is no chance of rejecting H_0 at a significance level of 5%.

When we test for first-order serial correlation, the null hypothesis is that no serial correlation exists, H_0. The alternative is that there is first-order serial correlation, H_1. If H_0 were true, we should expect to get a p-value close to zero. The bigger the value of the p-value, the stronger the evidence in favor of the alternative hypothesis. The Wooldridge test is used to test for serial correlation. The p-value shows that the null hypothesis of no first-order serial correlation, H_0, cannot be rejected at the 5% level for the models since p-value = 0.1300 > 0.05, which indicates that serial correlation is not a serious issue for the model.

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To check for model specification errors, the RESET (regression specification-error test) was run. The result of p-value=0.0223 is lower than 0.05, providing enough evidence that the null hypothesis of the model that has no omitted variables is rejected. So, this indicates that the model captures the effects of omitting relevant variables.

In conclusion, the pooled model is not the optimal model, easily passing the test for serial correlation but having problems with omitting relevant variables and heteroscedasticity.

In order to find out the performance of individual funds through time-series analysis, first of all, it is necessary to determine whether the data is stationary or non-stationary. The unit-root test for each fund's data set. Since the null hypothesis assumes the presence of a unit root, the p-value is less than 0.05, the null hypothesis is rejected. The result of the unit root test shows that the time series data in each variable is stationary.

4.3. Empirical Results

There are some summary statistics in Table 2 for all 12 mutual fund regression estimates of the parameters in Equation (3) in the period from 2013 to 2021, based on all the sample data available for each fund. The table gives information about the mean and extreme values of the 12 estimates of α_i, β_i, R^2, ρ (μ_t, μ_{t-1}).

Table 3. Summary of estimated regression statistics of funds

Item	Mean	Min	Max
α	-0.0107004	-0.0335157	0.0099588
β	0.5558551	0.0654038	0.9146123
R^2	0.6465083	.0939	0.9555
ρ (μ_t, μ_{t-1})	0.43145	0.1289	0.9492

Source: Author's calculation

With a maximum value of 0.0099588 and a minimum value of -0.0335157, the table shows that the average intercept value (α) was -0.0107004. Since β averaged only 0.5558551, on average, these funds held portfolios that were less risky than the market's portfolio. It is therefore impossible to compare these funds to a market index without explicitly taking into account the differences in riskiness. The average R^2 is 0.6465083, which is a good fit. The market premium explains 64.65083% of the variation in risk premium earned on the fund's portfolio. However, the min value of R^2 is 0.0939 or 9.39% in both the DC Blue chip Fund and the DC Bond Fund. The variation in market risk has not been explained in the variation of risk premium earned on the fund's portfolio. ρ (μ_t,

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μ_{t-1}) is p-value for testing first order autocorrelation of residuals. In equation (3), $\mu_t = \rho_{\mu t-1} + \varepsilon_t$, where ε_t is a random error term with expected value is zero, assuming residuals to be free from serial correlation, and ρ is a parameter measuring the strength of the relationship between μ_t and μ_{t-1}. Normally, ρ is expected as $0 < \rho < 1$, Breusch–Godfrey $\chi 2$ test is used in such cases. The average p-value is 0.43145, which means that there is a chance of 43.145% of wrongly rejecting the null hypothesis of no serial correlation in the error term. Even the minimum value of ρ (μ_t, μ_{t-1}) is 0.1289, which meets the conventional $p > 0.05$, thus the evidence strongly suggests that there is no problem with first order autocorrelation of residuals in this model.

The main goal of this paper is to figure out intercepts. Data on intercepts of mutual funds, their t-value and sample size are shown in Table 4. Based on α, the observations are ranked in increasing order of value. The range of estimates is between -0.03351 and 0.00995.

Table 4 shows a list of the p-values and the intercepts for each of the funds. Most funds have a negative α, but it is necessary to consider its significance. The average value was -0.0107004, indicating that on average, the funds earned approximately 1.07004% less per year than they should have earned based on their level of systematic risk. It is undeniable that measurement errors in any independent variable will result in an attenuation of the variable's estimated regression coefficient toward zero (Johnson, 1963). There are probably some mistakes in both the riskless rate and the estimated returns on the market portfolio, so the coefficients β are likely to be a little more biased than they should be. Ferson and Schadt (1996) as well as Ferson and Warther (1996) have found that conditional measurements may improve measured results. When market returns are large, managers may be reduced β of fund and vice versa. They propose two possible explanations, the first is that when the predicted market return is high, the funds get large inflows of cash that are not immediately invested, causing β to decrease. Secondly, the β of underlying assets may change in an inverse relationship to the performance of the stock market or other financial markets.

Table 4. Estimated Intercepts (α) and p-values of Individual Fund

Name Fund	α	p-value
VinaWealth Enhanced Fixed Income Fund	-0.03351***	0.000
DC Bond Fund	-0.02833***	0.000
MB Capital Value Fund	-0.02291***	0.002
Viet Capital Balanced Fund	-0.01990***	0.007

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VCBF Tactical Balanced Fund	-0.01417**	0.011
BaoViet Equity Dynamic Open-Ended Fund	-0.01207	0.258
Manulife Equity Fund	-0.00697	0.197
VCBF Blue Chip Fund	-0.00614	0.348
VinaWealth Equity Opportunity Fund	-0.00096	0.890
DC Blue chip fund Fund	0.00085	0.986
SSI Sustainable Competitive Advantage Open-Ended Fund	0.00579	0.481
DC Dynamic securities Fund	0.00995*	0.067

Note: *, ** and *** are significance at the 10%, 5% and 1% levels, respectively.

Source: Author's calculation

The return to investors was calculated after deducting the fund's operating costs and the management fee from the original investment. The question is whether mutual funds outperform or underperform the market. This is evaluated by examining the estimating equation for the presence of significance and statistically negative or positive α. All estimated coefficients have expected signs, so one-tailed t tests can be used to assess statistical significance. Assuming a true equal to zero for all 100 funds, it is expected that 5% of them (or 5 funds) will provide t values significant at the 5% threshold of significance. The p-value is used to test the null hypothesis that the true intercept α is zero. If p-value < 0.05 rejects H_0, it is reasonable to accept that the intercept α is a relevant explanatory variable. There were 5 funds in the period from 2013 to 2021 that had α was significantly negative at 5%, which were the VinaWealth Enhanced Fixed Income Fund, DC Bond Fund, MB Capital Value Fund, Viet Capital Balanced Fund and VCBF Tactical Balanced Fund. Fortunately, at 10% level of significance, the α of the DC Dynamic securities Fund is significantly positive.

The results showed that DC Dynamic securities Fund outperformed the VN30 index, while the other six funds performed similarly to the market. In contrast, five funds underperformed the VN30 index, indicating that fund managers are unable to predict the price of a security. The reason leading to positive α could be that the fund's returns are sufficient to compensate for the average market return based on the fund's β. Another factor that can contribute to positive α is that the manager took appropriate risks and achieved marginal outperformance relative to the benchmark.

Active management for mutual funds in general, or open-ended funds in particular, is always attempting to outperform the market. However, history shows that most of active

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funds have been unable to outperform the market (Reilly, 2018), with some exceptions. This study's findings are consistent with those of other markets. Because of forecasting ability, sustainability and extreme values, DC Dynamic Fund may outperform the market.

5. Conclusion

This study examines the performance of 12 Vietnam open-ended mutual funds using Jensen's Alpha from 2013 to 2021. There were 5 funds that had α was significantly negative at 5%, which were the VinaWealth Enhanced Fixed Income Fund, DC Bond Fund, MB Capital Value Fund, Viet Capital Balanced Fund and VCBF Tactical Balanced Fund. Fortunately, at 10% level of significance, the α of the DC Dynamic securities Fund is significantly positive. Based on this finding, the authors recommend that investors select DC Dynamic Securities Fund to invest in when there is evidence that such funds outperformed the VN30 index from 2014 to 2021.

There are some limitations in this study. Because there were only 12 open-ended funds in the last nine years, the sample size is relatively small. Second, the model used to calculate Jensen's alpha across all funds contains flaws. There are some new research ideas to explore in light of the findings of this study and prior literature. First, research into the fund's performance should be conducted in other emerging markets beside Vietnam. Moreover, further research is needed to investigate some of the factors that influence performance such as size, momentum, liquidity, and net asset value, which could be useful for a better understanding of open-ended funds.

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