



## Foreign Investment Fund in Thailand

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### Abstract

This research paper examines the performance of foreign investment funds (FIF) in Thailand from January 1st, 2015, to December 31st, 2019. The FIF funds, totaling 31, were categorized into two groups based on their dividend policies. The study employed risk analysis and rolling returns, as well as performance evaluation methods such as CAPM, Jensen's Measure, Treynor-Black, or Appraisal Ratio (AR). The findings indicate that, on average, the FIF funds yielded a 4.49 percent annual return over the study period. Among them, 17 funds were identified as defensive stocks with beta ( $\beta$ ) ranging from 0 to 1. Additionally, 26 funds generated returns exceeding the cost of investing, except for five funds: T-GlobalValue, KF-GBLVAL, T-GlobalEQRMF, ONE-GLOBALEQ, and KF-SMCAPD. For investors seeking high returns and are willing to tolerate high risks, Group 1 mutual funds and FIFEQ mutual funds without dividend policies are recommended. Furthermore, investors who believe in the efficiency of most securities should consider using the Treynor-Black Model or Appraisal Ratio (AR). Specifically, funds such as K-GLOBE, PRINCIPAL GEF-A, TMBGQGRMF, UGD, and UGSE offer potentially higher returns as their securities are priced lower than their expected value (Underpriced), indicating a greater investment reward compared to unsystematic risk.

### Keywords

Mutual Funds, Fund Return, Performance Evaluation

### INTRODUCTION

Thailand has been increasingly emphasizing the importance of savings, aligning with the objective of Demand for Money, where the money supply reflects the desired amount of wealth individuals wish to hold in the form of money at any given time. According to a survey by the National Statistical Office, Thai households showed a rise in savings from 6.2% in 2016 to 72.9% in 2018, with a primary focus on saving for retirement, constituting 42.1% of the purpose. Considering the need to combat inflation and seek higher returns, mutual funds managed by experts offer an attractive option, mitigating risks such as exchange rate fluctuations. Data from AIMC revealed a consistent increase in the Net Asset Value (NAV) of special mutual funds from 2008 to 2018, with Foreign Investment Funds (FIF) exhibiting the highest NAV, as indicated in Table 1.

For investors interested in equity instruments but lacking the time for active management, seeking high returns, diversification, and reliability across various global industries, consideration of the 31 funds within the Foreign Equity Fund - Equity (FIFEQ) group, rated by Morningstar, is advisable. Evaluating the systematic risks (beta,  $\beta$ ) and rolling returns of each fund is essential. This paper aims to analyze the systematic risks, rolling returns, and overall performance of mutual funds in Thailand, utilizing frameworks such as CAPM, Jensen's Measure, Treynor-Black Model, or Appraisal Ratio (AR).

### CONCEPTUAL FRAMEWORK

In the initial phase of this study, data collection is undertaken, encompassing various parameters such as Net Asset Value (NAV), risk-free rate, and market return. Subsequently, the second part of the study involves the computation of systematic risks (beta,  $\beta$ ), rolling returns, standard deviation (SD), and formulation of descriptive conclusions based on these calculations. Moving forward, the third section delves into the analysis of expected returns utilizing the Capital

Asset Pricing Model (CAPM), juxtaposing expected returns against actual returns through Jensen's Measure, and evaluating the fund's alpha in relation to unsystematic risks employing the Treynor-Black Model or Appraisal Ratio. Finally, the fourth section entails the rating of mutual funds based on their rolling returns over a three-year period, utilizing metrics from CAPM, Jensen's Measure, and the Treynor-Black Model.

## LITERATURE REVIEW

### Mutual Fund Returns

In this study, mutual funds yield positive returns through their portfolio management. Unitholders benefit from profit sharing in two primary forms: dividends and capital gains. For the purposes of this analysis, dividends are excluded from investors' considerations. The formula for calculating Mutual Fund Returns is as follows:

$$R_{pt} = \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}} * 100$$

where:

$R_{pt}$  is Mutual Fund Returns rate at time t when the asset is sold

$NAV_t$  is NAV of Mutual Fund at time t when the asset is sold

$NAV_{t-1}$  is NAV of Mutual Fund at time t when the asset is sold

### Mutual Fund Risks

Drawing from Campbell Harvey's conceptual framework, a mutual fund's total risk profile encompasses systematic risk, which can be derived from the following equation:

$$\beta_p = \sigma_{pm} / \sigma_m^2$$

where:

$\beta_p$  is fund's systematic risk value

$\sigma_{pm}$  is covariance between mutual fund yield and market yield

$\sigma_m^2$  is variance of market yield

### Jensen's Measure

Jensen's Alpha, denoted as  $\alpha_p$ , was initially introduced to financial markets by Michael Jensen in 1968. It aims to elucidate the connection between systematic risk and expected return as defined by the Capital Asset Pricing Model (CAPM). The principle underlying Jensen's Alpha is as follows:

$$E(R_p) = \underline{R}_f + \beta_p (\underline{R}_m - \underline{R}_f)$$

where:

$E(R_p)$  is expected return of investment

$\underline{R}_f$  is risk-free rate for the time period

$\beta_p$  is beta of portfolio

$\underline{R}_m$  is realized return of the appropriate market index

The formula for Jensen's Measure as the following equation:

$$\alpha_p = \underline{R}_i - [\underline{R}_f + \beta_p (\underline{R}_m - \underline{R}_f)]$$

where:

$\alpha_p$  is expected return of investment

$\underline{R}_i$  is realized return of investment

$\underline{R}_f$  is risk-free rate for the time period

$\beta_p$  is beta of portfolio

$\underline{R}_m$  is realized return of the appropriate market index

### Treynor-Black Model

The Treynor-Black Model or Appraisal Ratio (AR) quantifies the relationship between a mutual fund's alpha ( $\alpha_p$ ) and its unsystematic risk. This ratio is calculated by comparing the alpha to the standard deviation (SD) of the mutual fund's error term. The underlying principles guiding this measurement are as follows:

$$AR = \alpha_p / \alpha_{ep}$$

where:

$\alpha_p$  is expected return of investment

$\alpha_{ep}$  is unsystematic risk or cost of portfolio

Performance evaluation of mutual funds is a popular area of research, often employing three main methods: Sharpe Ratio, Treynor Ratio, and Jensen's Measure. Researchers such as Bhagyasree (2016), Anwar (2016), Wiraisiri (2014), and Naliniprava (2004) have contributed to this field. Additionally, the Treynor-Black Model or Appraisal Ratio (AR) serves

as a ratio utilized to assess the effectiveness of a fund manager's investment selection and optimization, often based on the Sharpe ratio. Studies by researchers such as Alex (2004), Zhongzhi (2007), Adri (2018), and Jitapornpinit (2009) have utilized the Treynor-Black Model to analyze mutual funds, determining whether they are priced higher (Overpriced) or lower (Underpriced) than their expected value.

After a thorough review of literature and theories, it is evident that Jensen's Measure and the Treynor-Black Model are particularly suitable for Active Portfolio management, as outlined by Sangkaew (1997). An Active Portfolio entails a selection of securities aimed at achieving returns surpassing a designated benchmark, such as the S&P 500 Index. Both Jensen's Measure and the Treynor-Black Model provide valuable tools for evaluating the performance of such portfolios, offering insights into the ability of fund managers to generate returns exceeding those of the chosen benchmark.

## DATA & METHODOLOGY

The study was conducted by analyzing monthly data of Foreign Equity Funds (FIFEQ) within the global equity category, rated by Morningstar, comprising 31 funds as of October 31, 2019. The sample group was selected using purposive sampling, covering the period from January 1st, 2015, to December 31st, 2019. Mutual funds included in the analysis adhere to an investment policy focused on foreign securities or foreign equity, with at least 80% of the net asset value allocated to such investments.

The data on Foreign Equity Funds (FIFEQ) is sourced from various outlets, including the Thai Mutual Fund News database, which is a collaborative effort between the Stock Exchange of Thailand (SET) and the Association of Investment Management Companies (AIMC), involving 15 asset management companies in Thailand. For the risk-free rate of return, government bonds with the ISIN code TH0623A34C09 issued by the Bank of Thailand (BOT) are utilized. These bonds offer an interest rate of 1.45% per year for a duration of 5 years and 4 months. Additionally, the S&P 500 index serves as the benchmark for comparison within the study.

This research is structured into three main parts. Firstly, the focus lies on determining the necessary information and identifying the sources of this data. This involves sourcing data from various sources, such as the Thai Mutual Fund News database, which is a collaboration between the Stock Exchange of Thailand (SET) and the Association of Investment Management Companies (AIMC), alongside utilizing government bonds with specific ISIN codes from the Bank of Thailand (BOT) for the risk-free rate of return. Secondly, the approach to analyze the data and present the study results is outlined. This includes conducting descriptive analysis to provide an overview of the data, followed by statistical analysis to identify patterns or correlations within the data set. Additionally, quantitative analysis techniques will be employed to delve deeper into the relationships between variables and to derive meaningful insights from the data. Finally, the third part entails summarizing the analysis results and providing ratings for the mutual funds under study. This involves synthesizing the findings from the descriptive, statistical, and quantitative analyses to draw conclusions about the performance of the mutual funds. Based on these conclusions, ratings will be assigned to each mutual fund, providing stakeholders with valuable insights into their relative performance and suitability for investment.

## DISCUSSION AND RESULTS

The results of this research are structured into two main parts, aligning with the research objectives:

1. **Systematic Risks and Rolling Returns Analysis of Each Fund:** This section focuses on analyzing the systematic risks and rolling returns of each mutual fund under study. Systematic risks, often represented by beta ( $\beta$ ), reflect the sensitivity of a fund's returns to overall market movements. Rolling returns provide insights into the performance of the fund over various time periods. By conducting this analysis, the research aims to assess how each fund responds to market fluctuations and how its performance evolves over time.
2. **Analyzing Mutual Fund Performance in Thailand based on CAPM, Jensen's Measure, and Treynor-Black Model or Appraisal Ratio (AR):** In this section, the research evaluates the performance of mutual funds in Thailand using established financial models and measures. The Capital Asset Pricing Model (CAPM) helps assess whether a fund's returns adequately compensate for its systematic risk. Jensen's Measure evaluates a fund manager's ability to generate excess returns beyond what would be expected based on the fund's risk exposure. The Treynor-Black Model or Appraisal Ratio (AR) offers insights into the quality of a fund manager's investment decisions relative to the fund's unsystematic risk. By employing these methodologies, the research seeks to provide a comprehensive assessment of mutual fund performance in the Thai market.

### Systematic risks and rolling returns analyze

The researcher collected mutual fund Net Asset Value (NAV) data at the end of the last business day of each month and analyzed it in a Time Series format. The data was examined over three different timeframes: 5 years, 3 years, and 1 year, providing insights into the fund's performance over varying periods. Additionally, rolling returns for each mutual fund were calculated, offering a dynamic perspective on its performance over time. Furthermore, the researcher categorized the mutual funds into two groups based on their dividend payment policy: Non-Dividend Policy and Dividend Policy. This classification allows for a more nuanced analysis of fund performance and facilitates comparisons between funds with differing dividend distribution strategies. By segregating the funds in this manner, the researcher can explore how dividend policies may impact their overall performance and investor preferences. The systematic risk value can be

determined from the Beta ( $\beta$ ) value of the FIFEQ mutual fund by investors or those interested in considering Beta ( $\beta$ ) with frequencies of 5 years, 3 years and 1 year as table below:

**Table 1** Systematic Risk of Funds under Non-Dividend Policy group

Funds	Beta 5Y	Beta 3Y	Beta 1Y
T-GlobalEQ	0.6966	0.6268	0.3536
TMBGQG	0.8431	0.9451	1.1316
TMBGQGRMF	0.8423	1.0004	1.1410
ONE-UGG	0.4209	0.4299	0.4964
PRINCIPAL GEF-A	0.9021	0.8975	1.1104
T-GlobalEQRMF	0.1385	0.7392	0.6286
TMBWDEQ	0.7867	0.8933	1.0460
B-GLOBAL	0.8733	0.9402	0.9794
B-GLOBALRMF	0.8803	0.9461	0.9884
KT-WEQ	0.7195	0.8633	1.3179
KT-WEQ RMF	0.7238	0.8622	1.3278
PHATRA GNP	0.8680	0.9556	0.9919
PRINCIPAL GSCEQ-R	0.7496	0.7225	0.7924
SCBPGF	0.6288	0.7013	0.6476
TSTARP	0.7786	0.8549	0.9485
UGD	0.9490	0.9879	1.1235
UGSE	0.7368	0.8081	0.8651
ABWOOF	0.8684	0.8700	0.8791
KF-GBLVAL	0.9895	1.0884	1.2164
PRINCIPAL GSA	0.9252	0.9274	1.1223
TSTAR-UH	0.7114	0.8099	0.8036

**Table 2** Systematic Risk of Funds under Dividend Policy group

Funds	Beta 5Y	Beta 3Y	Beta 1Y
SCBGEQ	0.4553	0.3285	0.1147
KFGBRAND-D	0.8053	0.8242	0.6640
K-GLOBE	0.7620	0.5706	0.7026
SCBLEQ	1.1362	1.2147	1.5774
MGA	0.7920	0.9079	0.9365
MGE	0.8437	0.8877	0.8750
T-PREMIUM BRAND	0.5820	0.5366	0.9279
KF-SMCPD	0.6263	0.7661	0.9127
T-GlobalValue	0.8293	0.8093	1.0397
ONE-GLOALEQ	0.6823	0.8129	0.8200

The analysis revealed that for Beta ( $\beta$ ) calculated over a 5-year period, most mutual funds exhibited systematic risk characterized by securities prices moving in the same direction as the market, albeit at a lower magnitude. However, there was an exception with the SCBLEQ Beta Fund ( $\beta$ ), which had a value greater than 1. This indicates that the fund's share price movements are more volatile than the market. This increased volatility can be attributed to the fund's investment strategy, particularly its allocation of 95% to the AB SICAV I - Low Volatility Equity Portfolio, with a significant portion (25.20%) invested in the technology sector. Investing heavily in large technology sectors can amplify volatility compared to the broader market.

Based on the analysis of Beta ( $\beta$ ) calculated over a 3-year period:

- 28 mutual funds were classified in the defensive stock group, indicating that their price movements are generally less volatile than the market. However, TMBGQGRMF had a Beta ( $\beta$ ) value equal to 1, indicating a representation of the market, where price changes align with market movements.
- SCBLEQ Fund and KF-GBLVAL had Beta ( $\beta$ ) values greater than 1, suggesting one-directional price movements compared to the market.

When considering Beta ( $\beta$ ) calculated over a 1-year period:

- 20 mutual funds were categorized as defensive stocks, indicating price movements with lower volatility compared to the market.
- However, 11 funds were classified as highly volatile groups, including TMBGQG, TMBGQGRMF, PRINCIPAL GEF-A, SCBLEQ, TMBWDEQ, KT-WEQ, KT-WEQ RMF, UGD, KF-GBLVAL, PRINCIPAL GSA, and T-GlobalValue. These funds exhibit greater volatility in their price movements compared to the broader market.

Based on the systematic risk table analysis, it can be inferred that the FIFEQ mutual fund is conducive for investment in a bear market scenario. This is because the fund exhibits systematic risk characteristics where its price movements are generally less volatile than the market. In such market conditions where stock values are declining, investing in a fund with lower volatility can help investors preserve their investments or mitigate losses compared to the broader market. Therefore, FIFEQ mutual fund may be suitable for investors who are seeking to maintain their investments during bearish

market conditions or those who are willing to accept the risk of price fluctuations in securities that exhibit lower volatility relative to the market.

In this research, the researcher uses the data on changes in the investment unit value of the fund by considering the excess profit or excess loss only. Excluding the dividend of the fund in the historical yield analysis of mutual funds according to the fiscal year with frequency of 5 years, 3 years, and 1 year. The researcher divided the mutual fund into 2 groups according to the dividend payment policy are Group 1: Funds under Non-Dividend Policy group and Group 2: Funds under Dividend Policy group, the results are as follows:

**Table 3** Five-year average of rolling returns of mutual funds

Group	Average Rolling Return 1 Y	Average Rolling Return 3 Y	Rolling Return 5 Y
Grand total	4.49	14.95	20.99
Group 1	5.36	18.07	25.75
Group 2	2.67	8.40	10.99

Based on the analysis of rolling returns with frequencies of 5 years, 3 years, and 1 year, it was observed that Group 1 mutual funds, which have no dividend policy, exhibited the highest historical returns. Specifically, the rolling returns for Group 1 mutual funds were as follows:

- 5-year rolling returns: 25.75%
- 3-year rolling returns: 18.07%
- 1-year rolling returns: 5.36%

These findings suggest that mutual funds with no dividend policy may be particularly suitable for investors or individuals interested in gaining profits from capital gains, as they have historically provided higher returns. However, it's important to note that these funds also entail risks associated with price fluctuations. Therefore, investors considering such funds should be willing to accept these risks in pursuit of potentially higher returns.

From Table 5, it can be observed that there are 15 mutual funds with 5-year returns higher than the average return of other groups of funds. These funds are:

1. ONE-UGG
2. TMBGQGRMF
3. TMBGQG
4. PRINCIPAL GEF-A
5. T-GlobalEQ
6. SCBPGF
7. TMBWDEQ
8. SCBGEQ
9. PRINCIPAL GSCEQ-R
10. UGD
11. UGSE
12. KT-WEQ
13. K-GLOBE
14. TSTARP
15. PHATRA GNP

Moreover, when considering the 1-year average return, the top five funds with the highest returns are also from the non-dividend payment policy group, consistent with the findings from the 5-year return analysis. These funds are:

1. ONE-UGG (13.65%)
2. TMBGQGRMF (9.13%)
3. TMBGQG (9.03%)
4. TMBWDEQ (7.18%)
5. PRINCIPAL GEF-A (6.97%)

This further emphasizes the trend observed in the analysis, indicating that the non-dividend payment policy group tends to have higher rolling returns compared to the dividend policy group.

### Analyzing Mutual Fund Performance

The researcher's focus on analyzing the performance of FIFEQ mutual funds aims to identify funds that can generate appropriate returns relative to their associated risks. To achieve this, two key metrics are utilized: Jensen's Measure and Treynor-Black Model or Appraisal Ratio (AR). Jensen's Measure, introduced by Michael Jensen in 1968, evaluates the actual performance of mutual funds over a specified period by comparing it to the expected results predicted by the Capital Asset Pricing Model (CAPM). It calculates Jensen's Alpha, which represents the excess rate of return achieved by the fund compared to what would be expected based on its systematic risk. On the other hand, the Treynor-Black Model or Appraisal Ratio (AR), developed by Treynor and Black, assesses investment performance by considering the unsystematic risk associated with the investment. This proactive analysis helps in evaluating the cost of obtaining the



normal excess rate of return or Jensen's Alpha. For the period from January 1, 2017, to December 31, 2019, spanning three years, these metrics are applied to compare and rate the returns on risk management of FIFEQ mutual funds. By leveraging Jensen's Measure and Treynor-Black Model, investors can gain insights into the performance of these funds and make informed investment decisions based on their risk-return profiles.

For beginner investors seeking suitable funds to invest in, considering the following factors can be helpful:

1. **Return over 3 Years:** Evaluating the fund's performance over a 3-year period provides a solid indication of its historical performance and stability.
2. **Morningstar Rating:** Morningstar ratings offer a comprehensive assessment of a fund's past performance, risk level, and overall quality. Investors can use these ratings as a benchmark for comparing different funds.
3. **Systematic Risk (Beta) Rating:** Understanding the systematic risk, represented by the Beta coefficient, helps investors gauge how a fund's returns correlate with market movements. Lower Beta values indicate lower volatility relative to the market.
4. **CAPM Analysis:** Investors seeking higher expected returns than the market risk premium can utilize the Capital Asset Pricing Model (CAPM). By comparing the return of the fund's investment relative to the expected rate of return calculated by CAPM, investors can assess whether the fund offers adequate returns for the level of risk taken.
5. **Treynor-Black Model:** The Treynor-Black model assesses the reward of investment relative to the unsystematic cost or risk. This model helps investors analyze whether securities are priced higher (Overpriced) or lower (Underpriced) than their expected value based on the reward-to-risk ratio.

By considering these factors in conjunction with their investment goals, risk tolerance, and time horizon, investors can make informed decisions and select funds that align with their financial objectives.

**Table 4** Results of Performance Analysis of Group 1 Non-Dividend Funds

Funds	Morningstar Rank	Rolling Returns 3 Y	SD	Beta 3Y	CAPM	Jensen's Measure	Treynor-Black	Analysis
T-GlobalEQ	★★★★★	33.3555	1.73	0.0051	1.6706	31.6849	27.4711	Underpriced
TMBGQG	★★★★★	44.6521	1.79	0.0046	1.6486	43.0034	34.0030	Underpriced
TMBGQGRMF	★★★★★	45.5696	1.64	0.0046	1.6487	43.9210	36.9902	Underpriced
ONE-UGG	★★★★	59.1818	2.76	0.0023	1.5491	57.6328	29.7002	Underpriced
PRINCIPAL GEF-A	★★★★	29.2228	1.28	0.0088	1.8288	27.3940	37.5462	Underpriced
T-GlobalEQRMF	★★★★	1.8008	0.61	0.0223	2.4046	-0.6039	-2.6509	Overpriced
TMBWDEQ	★★★★	14.5522	1.03	0.0215	2.3728	12.1794	22.6530	Underpriced
B-GLOBAL	★★★	13.9853	0.80	0.0259	2.5616	11.4237	24.1562	Underpriced
B-GLOBALRMF	★★★	13.0872	0.74	0.0273	2.6197	10.4675	23.4870	Underpriced
KT-WEQ	★★★	14.7834	0.91	0.0212	2.3583	12.4251	22.9233	Underpriced
KT-WEQ RMF	★★★	12.1619	0.76	0.0237	2.4679	9.6940	19.8552	Underpriced
PHATRA GNP	★★★	20.3703	0.92	0.0153	2.1073	18.2630	30.9376	Underpriced
PRINCIPAL GSCEQ-R	★★★	17.5128	1.06	0.0155	2.1141	15.3987	21.9356	Underpriced
SCBPGF	★★★	15.6854	1.42	0.0177	2.2082	13.4772	18.2733	Underpriced
TSTARP	★★★	20.2636	0.95	0.0210	2.3500	17.9136	31.2938	Underpriced
UGD	★★★	26.5273	0.80	0.0147	2.0808	24.4465	36.1068	Underpriced
UGSE	★★★	26.3413	0.85	0.0154	2.1112	24.2301	35.9023	Underpriced
ABWOOF	★★	6.2987	0.63	0.0281	2.6524	3.6462	8.3928	Underpriced
KF-GBLVAL	★★	1.7935	0.47	0.0254	2.5381	-0.7445	-1.9267	Overpriced
PRINCIPAL GSA	★★	16.6188	0.69	0.0227	2.4240	14.1948	28.9727	Underpriced
TSTAR-UH	★★	7.2010	0.56	0.0349	2.9457	4.2553	11.9994	Underpriced

**Table 5** Results of Performance Analysis of Group 2 Dividend Funds

Funds	Morningstar Rank	Rolling Returns 3 Y	SD	Beta 3Y	CAPM	Jensen's Measure	Treynor-Black model	Analysis
SCBGEQ	★★★★★ ★	23.4168	1.05	0.0135	2.0282	21.3885	33.0454	Underpriced
KFGBRAND-D	★★★★	9.0101	0.39	0.0318	2.8113	6.1988	17.5989	Underpriced
K-GLOBE	★★★★	13.1802	0.52	0.0247	2.5090	10.6712	46.6527	Underpriced
SCBLEQ	★★★★	18.5524	0.64	0.0207	2.3386	16.2139	33.1953	Underpriced
MGA	★★★	6.3104	0.50	0.0310	2.7802	3.5301	9.4602	Underpriced
MGE	★★★	9.0971	0.52	0.0409	3.2012	5.8959	18.4027	Underpriced
T-PREMIUM BRAND	★★★	11.0626	0.76	0.0096	1.8627	9.1999	12.7729	Underpriced
KF-SMCPD	★★	-2.6172	0.65	0.0115	1.9416	-4.5588	-6.6608	Overpriced
T-GlobalValue	★★	2.3598	0.31	0.0331	2.8704	-0.5105	-1.7220	Overpriced
ONE-GLOBALEQ	★	-1.5684	0.72	0.0121	1.9684	-3.5368	-5.6347	Overpriced

**Table 6** Top 5 things to consider investing through mutual funds FIFEQ

Rank	Rolling Returns 3 Y	CAPM	Jensen's Measure	Treynor-Black model
1	ONE-UGG	MGE	ONE-UGG	K-GLOBE
2	TMBGQGRMF	TSTAR-UH	TMBGQGRMF	PRINCIPAL GEF-A
3	TMBGQG	T-GlobalValue	TMBGQG	TMBGQGRMF
4	T-GlobalEQ	KFGBRAND-D	T-GlobalEQ	UGD
5	PRINCIPAL GEF-A	MGA	PRINCIPAL GEF-A	UGSE

Based on the results of this study, investors should consider investing in the following five mutual funds, which have demonstrated strong performance based on Jensen's Measure and rolling returns over a 3-year period:

1. ONE-UGG
2. TMBGQGRMF
3. TMBGQG
4. T-GlobalEQ
5. PRINCIPAL GEF-A

All five funds are classified as non-dividend policy funds and are rated by Morningstar in the range of 4 stars to 5 stars. The Morningstar Risk Adjusted Return (MRAR) for these funds is calculated based on Total Return compared with the Risk-Free Rate.

Additionally, for investors considering securities that are priced lower than they should be (Underpriced), the following mutual funds, based on the performance measurement of the Treynor-Black model, are recommended:

1. K-GLOBE
2. PRINCIPAL GEF-A
3. TMBGQGRMF
4. UGD
5. UGSE

Among these, K-GLOBE is classified as a dividend policy fund, while the remaining four funds are classified as non-dividend policy funds. These funds present opportunities for investors seeking securities that may be undervalued relative to their expected value.

## CONCLUSION

The researcher conducted a comprehensive analysis aimed at objectively evaluating the systematic risk, return, and performance of each fund. The study focused on analyzing Thai mutual funds using established financial models including the Capital Asset Pricing Model (CAPM), Jensen's Measure, and the Treynor-Black Model or Appraisal Ratio (AR). Here are the summarized results of the study: **Systematic Risk and Return Analysis:** The systematic risk and return of each fund were carefully analyzed to assess their performance relative to market movements. This analysis provided insights into how each fund responds to changes in market conditions and their ability to generate returns. **Performance Analysis based on CAPM:** The study utilized the CAPM to evaluate the performance of Thai mutual funds by comparing their expected returns with their actual returns. This analysis helped assess whether the funds provided returns commensurate with the level of systematic risk undertaken. **Jensen's Measure Analysis:** Jensen's Measure was employed to measure the actual performance of mutual funds over a specified period, comparing it to the expected results predicted by CAPM. This analysis helped identify funds that outperformed or underperformed relative to their systematic risk. **Treynor-Black Model or Appraisal Ratio Analysis:** The Treynor-Black Model or Appraisal Ratio (AR) was used to assess investment performance by considering the unsystematic risk associated with the investment. This proactive analysis helped evaluate the cost of obtaining excess returns compared to the unsystematic risk.

Exactly. The researcher's objective in conducting these analyses was to empower investors with valuable insights into the performance of Thai mutual funds. By providing a thorough assessment of systematic risk, return metrics, and performance measures such as CAPM, Jensen's Measure, and the Treynor-Black Model, the study aimed to equip investors with the information needed to make informed investment decisions. Investors can use these insights to align their investment choices with their risk-return preferences and financial goals. Whether seeking funds with lower volatility, higher returns, or those that outperform market expectations, the study's findings enable investors to navigate the complex landscape of mutual fund investments more confidently. Ultimately, the goal is to support investors in making choices that are well-suited to their individual investment objectives, thus enhancing their potential for long-term financial success.

The study identifies Group 1 mutual funds as suitable for investment, aiming to achieve returns higher than the group average. Among the 31 mutual funds analyzed, the top 5 funds based on the average rolling return over 3 years are identified as ONE-UGG, TMBGQGRMF, TMBGQG, TMBWDEQ, and PRINCIPAL GEF-A. Investors seeking potentially higher returns may consider allocating their investments to these funds. Regarding systematic risk, the study concludes that the FIFEQ mutual fund is conducive for investing in bear market conditions, where stock prices generally decline. This is because the FIFEQ fund helps maintain investors' investments, with stock values falling less than the market. It is suitable for investors who are willing to accept the risk of price fluctuations in securities that invest less than

the market. By considering both the performance metrics of specific mutual funds and the broader market conditions, investors can make more informed decisions tailored to their risk tolerance and investment objectives.

For investors seeking high returns and are willing to accept high risks, the following strategy is recommended: **Invest in Group 1 Mutual Funds:** Group 1 mutual funds have demonstrated the potential to offer returns higher than the group average. Investing in these funds can potentially yield higher returns. **Consider FIFEQ Mutual Funds:** FIFEQ mutual funds are suitable for investors who can accept higher risks and seek potentially higher returns. These funds may exhibit higher volatility but can offer attractive returns, especially during bullish market conditions. **Select Funds with No Dividend Policy:** Funds with no dividend policy are preferable for investors seeking capital appreciation rather than regular income through dividends. These funds reinvest profits into the fund, potentially leading to higher returns over time. **Utilize Treynor-Black Model or Appraisal Ratio (AR):** Investors who believe that securities are priced efficiently should utilize the Treynor-Black Model or Appraisal Ratio for analysis. Funds such as K-GLOBE, PRINCIPAL GEF-A, TMBGQGRMF, UGD, and UGSE, which are classified as underpriced based on this analysis, may present opportunities for higher returns relative to unsystematic risk. By following this strategy, investors can potentially optimize their investment portfolio for high returns while managing the associated risks effectively. However, it's essential for investors to conduct thorough research and consider their individual risk tolerance and investment objectives before making investment decisions.

In the next study, it would be beneficial for students to incorporate the analysis of dividends into the evaluation of mutual funds. By including dividends, researchers can provide a more comprehensive assessment of the real return generated by the funds, as dividends contribute significantly to investors' total returns. Additionally, researchers should expand their comparison of returns beyond the CAPM model using only the S&P 500 index and the interest rate on government bonds of Thailand. While CAPM provides valuable insights into the expected return of investments based on systematic risk, considering additional benchmarks or factors can offer a more nuanced understanding of fund performance. For example, researchers could explore the performance of mutual funds relative to broader market indices, sector-specific indices, or alternative asset classes. Moreover, incorporating macroeconomic indicators, such as inflation rates or GDP growth, could provide context for fund performance in different economic environments. By broadening the scope of analysis and incorporating dividends into the evaluation, researchers can enhance the rigor and relevance of their study, ultimately providing investors with more valuable insights for decision-making.

In the upcoming study, students should expand their analysis to include additional related indexes beyond the S&P 500 and government bond interest rates of Thailand. Considering indexes such as the UK 100 INDEX, Nikkei 225, SHCOMP, HIS, and STI can provide a more comprehensive view of global market performance and its impact on the FIFEQ mutual fund. Since the FIFEQ mutual fund invests in different countries, selecting indexes related to those countries can offer insights into the fund's performance in each market. For instance, if the FIFEQ fund has investments in the UK, Japan, China, Hong Kong, and Singapore, corresponding indexes like the UK 100 INDEX, Nikkei 225, SHCOMP, HIS, and STI would be relevant benchmarks. Moreover, incorporating the interest rates of government bonds from the countries where the FIFEQ fund invests is essential for accurately assessing the fund's performance. Government bond interest rates serve as a key indicator of the prevailing interest rate environment in each country, influencing investment decisions and fund returns. By including these additional indexes and government bond interest rates in their analysis, students can offer a more robust evaluation of the FIFEQ mutual fund's performance across different markets and ensure the accuracy and relevance of their findings. This approach will provide investors with a more comprehensive understanding of the fund's performance dynamics in various geographic regions and interest rate environments.

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## APPENDIX

**Table 1** NAV which is classified by special mutual funds from 2008 to 2018

Year	Retirement Mutual Fund	Long Term Equity Fund	Foreign Investment Fund	Capital Protection Fund
2008	39,529.61	45,462.56	295,555.49	46,130.80
2009	58,551.31	85,497.68	558,623.04	9,890.38
2010	79,284.71	129,580.90	449,854.91	22,722.85
2011	92,791.14	148,276.50	329,834.81	100,767.21
2012	123,147.22	199,605.80	610,529.39	22,557.32
2013	136,855.81	213,912.60	649,383.86	15,559.25
2014	166,290.14	271,023.46	870,779.24	3,682.45
2015	178,083.14	277,312.72	809,424.01	2,035.64
2016	211,604.10	337,392.31	958,375.63	1,729.19
2017	251,443.65	397,125.73	1,103,883.06	1,076.84
2018	257,826.19	382,163.50	1,056,906.75	5,298.44

References: AIMC (2562) from <http://oldweb.aimc.or.th>

**Table 2** Rolling Returns of FIFEQ Mutual Fund

No.	Funds	Policies Dividend	Average Rolling Return 1 Y	Average Rolling Return 3 Y	Rolling Return 5 Y
1	ONE-UGG*	Non-Dividend	13.65	59.18	52.30
2	TMBGQGRMF*	Non-Dividend	9.13	36.05	48.02
3	TMBGQG*	Non-Dividend	9.03	35.67	46.98
4	PRINCIPAL GEF-A	Non-Dividend	6.97	25.93	41.54
5	T-GlobalEQ	Non-Dividend	5.57	24.26	38.40
6	SCBPGF	Non-Dividend	5.47	25.26	35.04
7	TMBWDEQ	Non-Dividend	7.18	17.65	34.52
8	SCBGEQ	Dividend	5.46	19.00	32.45
9	PRINCIPAL GSCEQ-R	Non-Dividend	6.01	19.14	28.38
10	UGD*	Non-Dividend	6.25	15.76	26.80
11	UGSE*	Non-Dividend	5.22	15.88	26.13
12	KT-WEQ	Non-Dividend	4.66	14.74	26.07
13	K-GLOBE	Dividend	5.47	17.19	25.16
14	TSTARP	Non-Dividend	4.37	16.34	24.92
15	PHATRA GNP*	Non-Dividend	5.72	16.84	21.07
16	SCBLEQ*	Dividend	3.19	18.55	20.71
17	KT-WEQ RMF	Non-Dividend	3.89	11.84	20.36
18	KF-GBLVAL	Non-Dividend	4.31	7.22	17.43
19	B-GLOBAL*	Non-Dividend	3.95	10.96	16.33
20	MGE	Dividend	4.45	10.68	15.46
21	B-GLOBALRMF*	Non-Dividend	3.78	10.07	15.26
22	PRINCIPAL GSA*	Non-Dividend	2.58	10.16	14.41
23	ABWOOF	Non-Dividend	2.97	9.08	10.65
24	KFGBRAND-D*	Dividend	2.34	9.01	10.39
25	TSTAR-UH*	Non-Dividend	3.46	4.02	7.34
26	MGA	Dividend	3.28	7.51	7.00
27	T-GlobalValue	Dividend	0.88	1.88	5.47
28	KF-SMCAPD	Dividend	2.75	-1.26	2.06
29	ONE-GLOBALEQ	Dividend	-0.82	3.51	-4.37
30	T-PREMIUM BRAND	Dividend	-0.34	-2.08	-4.44
31	T-GlobalEQRMF	Non-Dividend	-1.63	-6.56	-11.20
	รวม		4.49	14.95	20.99

Note: \* This is a fund that has been in operation for less than 5 years.

References: summary by the researcher. (2020)