

MUTUAL FUND PERFORMANCE AND ITS PERSISTENCE: AN EMPIRICAL STUDY OF EQUITY MUTUAL FUNDS IN THAILAND

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—Abstract—

This study intends to analyze Thailand's performance and durability of equities mutual funds. Unlike earlier studies of mutual funds in Thailand, this investigation examines every component using performance persistence and inversion. The sample consists of information from 274 equity mutual funds with a maturity of at least five years by the end of 2020. Sharpe, Treynor, and Jensen's Alpha were utilized to evaluate risk-adjusted performance. According to Sharpe and Jensen's Alpha metrics, equity mutual funds underperform the market by a wide margin. However, using Treynor's metric, the differences are not statistically significant. Inversion is shown instead of repeated when positive and negative returns are considered. In terms of performance relative to the SETTRI market index, the significant loser is more likely to replicate than the considerable winner. In addition, it is uncommon for losers to become winners. The findings indicate that persistence is a transient phenomenon. Moreover, investors should base their decisions on winner vs loser performance.

Keywords: Equity Mutual Fund, Risk-Adjusted Performance, Persistence, Inversion

1. INTRODUCTION

Investment or wealth management is crucial to organizational and individual financial management. Capital market investors generally have limited time and knowledge for in-depth investigation and analysis. Since investing in financial markets has been accompanied by considerable volatility, investors with such restrictions are fearful, despite being able to take risks for better profits. This is witnessed, for instance, while investing in stocks, bonds, and other financial products. Since qualified asset management businesses handle the mutual fund, it is one of the most attractive

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investment alternatives. Moreover, it has adequate money for diversification. In addition, it is regulated by the Securities and Exchange Commission (SEC), which inspires investor trust. Mutual funds are portfolios of diverse financial instruments compiled by fund managers. These funds ensure that their portfolio's risk elements correspond to the investors' risk preferences. (Samarbakhsh et al., 2021). Mutual funds channel the money of small investors and households into the economy through investments in lucrative business opportunities, such as stocks, bonds, and other financial instruments. Rehman (2016)

Internationally, mutual funds are of tremendous value. Globally, open-end mutual fund assets totalled \$63.1 trillion. (ICI, 2018). The United States (\$23,9 trillion), Australia (\$5.3 trillion), Ireland (\$3.4 trillion), Germany (\$2.5 trillion), Luxembourg (\$2.2 trillion), France (\$2.2 trillion), Japan (\$2.1 trillion), Canada (\$1.9 trillion), the United Kingdom (\$1.9 trillion), and China (\$1.4 trillion) have the largest mutual fund industries, according to ICI (2018). In addition, Burgess et al. (2018) reported that 56% of mutual funds were classed as stock funds, 22% as bond funds, 14% as money market funds, and 7% as hybrid products. Their asset under management (Burgess et al.) values were \$10.6 trillion, \$4.1 trillion, \$2.7 trillion, and \$1.4 trillion.

Regarding mutual funds in Thailand, 1992 was a breakthrough year for the fund business. It has expanded dramatically with a 13% growth rate (Tozer et al., 2019). In 2019, its size, as determined by Net Asset Value (NAV), was 161 billion US dollars. (Tozer et al., 2019). In addition, investors can choose from other types of funds, including fixed income, equities, alternative investments, and mixed funds. With a 10-year growth rate of 7.37 percent, mutual funds in Thailand have expanded dramatically, reflecting their appeal among investors.

With 750 funds out of 1,581, equities funds are Thailand's most prevalent form of the mutual fund (Bhattacharjee et al., 2021). Therefore, the focus of this study was on equities mutual funds. Its performance is also taken into account because of its extreme volatility. This performance is evaluated based on historical performance. Consequently, its persistence is advantageous for decision-making.

Investors can use past performance as an indicator of future performance if persistence exists. However, the tenacity has yet to bear fruit. In addition, there is no indication of the incidence of inversion. As stated previously, equities mutual funds have the most significant market share in Thailand, and this study aims to analyze the performance of equity mutual funds. In addition to examining performance persistence, this study provides empirical information on the opposite occurrence to shed light on performance history. These may offer a deeper understanding of academic and practical ramifications.

Theoretical Background and Previous Studies

Three risk-adjusted measures generally used to evaluate mutual fund performance is as follows:

1. [Treydor \(1965\)](#) measures fund performance by return above the risk-free rate per one unit of systematic risk. Systematic risk is measured by a fund's beta (β).

$$TI_p = \frac{\bar{R}_p - \bar{R}_f}{\beta_p}$$

2. [Sharpe \(1966\)](#) measures fund performance by return above the risk-free rate per one unit of absolute risk. Total risk is measured by standard deviation.

$$SI_p = \frac{\bar{R}_p - \bar{R}_f}{\sigma_p}$$

3. [Jensen \(1968\)](#) measures fund performance by the fund's average return above or below that expected return by the Capital Asset Pricing Model (CAPM). The difference is Jensen's Alpha (α). The positive value indicates that the mutual fund yields a better rate of return than the expected rate. The negative one shows that the fund yields a lower rate of return than the predicted rate.

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

Note that the market index Jensen's alpha equals zero.

Mutual funds are a wide area of research, and many researchers have contributed to the area of in term mutual fund performance. ([Rehman, 2016](#)). Additionally, mutual fund persistence has been conducted. The empirical results and implications are as follows:

[Beaumont et al. \(1970\)](#) reported that equities mutual funds surpassed their median performance. From 1974 through 1984, [Grinblatt et al. \(1989\)](#) analyzed equities mutual funds in the United States. Jensen's alpha was highly associated between the two time periods, indicating persistence. In addition, [Bollen et al. \(2004\)](#) discovered the instability of mutual fund rankings based on annual performance. Persistence was revealed, however, when ranked by quarterly performance. Concerning emerging markets, [Białkowski et al. \(2011\)](#) examined the performance of Polish mutual funds and determined that they underperformed their respective benchmarks. Furthermore, [Su et al. \(2012\)](#) reviewed the permanence of Chinese mutual fund performance. According to their findings, there is no evidence of long-term persistence in the Chinese mutual fund market. In addition, [Ünal et al. \(2015\)](#) used Jensen's alpha to evaluate the success of Polish equities fund managers' selectivity skills. They observed that fund returns were typically lower than those of the stock market and that fund managers could not demonstrate strong performance.

There was also evidence on socially responsible ([Srinakorntham](#)) funds, which included environmental, governance, social, and sustainability characteristics. [Matallín-Sáez et al. \(2019\)](#) examined its performance and persistence, for instance. Utilizing [Carhart \(1997\)](#) technique, performance persistence was measured. The average fund performance was

negative and close to zero, indicating that fund performance was not noteworthy. Regarding fixed income funds, Samarbakhsh et al. (2021) showed that the excess returns of Canadian fixed income funds severely underperformed bond markets.

The following empirical investigations have been conducted about equities mutual funds in Thailand: Using return and the Sharpe ratio, Sukcharoensin et al. (2013) examined the performance of equities mutual funds in Thailand. According to their findings, equities mutual funds in Thailand performed better during bear markets than bull ones. For perseverance, top-performing funds may preserve their status in the short term even as some poor performance persists. In addition, Wissawapaisal (2014) revealed that Thailand's active, long-term equity funds did not maintain their ranks regularly. In addition, performance did not endure over time. Using Shape and Treynor metrics, Nimanussornkul (2017) examined and compared the performance of nine long-term equity funds in Thailand with the most significant net asset value as of December 2016. The Stock Exchange of Thailand (SET) index was utilized as the market index. According to the findings, five mutual funds analyzed by Sharpe and Treynor metrics outperformed the market index. In addition, Jenwittayaroje (2017) discovered that active equities fund returns in Thailand could not meaningfully exceed the market. Specifically, the fund's average return was lower than the market index represented by the total return index of the Stock Exchange of Thailand (SET). The fund did not routinely outperform the market. In addition, there was little consistency in fund performance.

According to the research findings, the persistence of mutual funds is uncertain. Two viewpoints can be applied to the results: perseverance and endurance. In other words, there was no consensus among the findings. In addition, the reversal of outperformance to underperformance and vice versa is hardly observed.

To investigate equity fund performance, hypotheses can be generated based on the theoretical foundation and prior studies stated above. The comparative mean t-test is employed to evaluate the difference between the fund and the market index. The null hypotheses include the following:

H1: There are no differences in the equity fund and the market index Sharpe ratio.

H2: There are no differences in the Treynor ratio between the equity fund and the market index.

H3: There are no differences in Jensen's alpha between the equity fund and the market index.

To investigate equity fund's persistence and inversion, the proportions of repeat and inversion are tested through the z-test as follows;

H4: The proportion of positive return from $t-1$ to positive return t equals 0.50

H5: The proportion of negative return from $t-1$ to negative return t equals 0.50

H6: The proportion of positive return from t-1 to negative return t equals 0.50

H7: The proportion of negative return from t-1 to positive return t equals 0.50

H8 to H24 refer to winners' and losers' performance in 4 measurements, namely return, Sharpe ratio, Treynor ratio, and Jensen's alpha ;

The proportion of winner performance from t-1 to winner performance t equals 0.50

The proportion of loser performance from t-1 to loser performance t equals 0.50

The proportion of winner performance from t-1 to loser performance t equals 0.50

The proportion of loser performance from t-1 to winner performance t equals 0.50

2. RESEARCH METHODOLOGY

2.1 Sample and Data Gathering

The sample data comes from 274 equity mutual funds having a maturity date in 2020, which is at least five years in the future. The duration of the study was from January 2016 to December 2020. All funds are listed in the Securities and Exchange Commission, Thailand database (www.sec.or.th), Daily Net Asset Value (NAV) is obtained from www.thaimutualfundnews.com, Dividend from www.wealthmagik.com, The Stock Exchange of Thailand Total Return Index (SETTRI) is obtained from www.set.or.th, and The Stock Exchange of Thailand Total Return Index (SETTRI) is accepted from www.set.or.th. The risk-free rate of return is calculated from the yield on one-year Treasury bills (T-bill 1 Year)

from www.thaibma.or.th

2.2 Return and Risk

The rate of return on funds is calculated from changes in Net Asset Value (NAV) or capital gain and dividend (dividend – adjust return). The average fund rate of return is based on a geometric mean because of the assumption that those who invest will bring returns received during that investment to reinvest all the time.

$$R_p = \frac{NAV_t - NAV_{t-1} + D_t}{NAV_{t-1}} \quad \bar{R}_p = \sqrt[n]{(1+R_{p_1})(1+R_{p_2}) \dots (1+R_{p_t})}$$

Risk is measured as total bet using standard deviation and systematic risk using the beta.

$$\sigma_p = \left[\sum_{t=1}^n (R_p - \bar{R}_p)^2 / n \right]^{1/2} \quad \beta_p = \sigma_{pm} / \sigma_m^2$$

NAV_t = Net Asset Value of Funds as of t

NAV_{t-1} = Net Asset Value of Funds as of t-1

- R_p = fund's rate of return
- \bar{R}_p = Average rate of return of Funds
- D_t = Dividend at t
- R_m = market index, proxied by The SETTRI return
- R_f = Risk-free rate of return, measured as the yield on 1-year Treasury bills.
- σ_m^2 = Variance of the market index
- σ_{pm} = Covariance between mutual fund yields and SETTRI return
- β = beta or systemic risk
- N = Number of days (Trading days) by the year 2016 (244 days), the year 2017 (244 days), the year 2018 (245 days), the year 2019 (244 days), and the year 2020 (243 days).

This study's market index utilized the SETTRI since it is an index that analyzes the return of every investment in stocks as reflected in the index, including returns from price movements (Capital Gain / Loss) and dividends (www.set.or.th). Since equity funds are predominantly invested in stocks whose returns consist of capital gains and dividends, the SETTRI is a suitable proxy.

2.3 Performance, Persistence and Inversion

Equity fund performances are evaluated through risk-adjusted return.

As described in the preceding section, performance metrics include the [Sharpe \(1966\)](#), [Treyner \(1965\)](#), and [Jensen \(1968\)](#). Using a t-test, the performance of three equities funds is compared to the market index across three metrics.

The definition of persistence is a mutual fund replicating its performance from period $t - 1$ to period t . In particular, the fund that outperforms (underperforms) in the previous period will achieve the same performance in the subsequent period. Positive-negative return and winner-loser performance are explored in terms of performance durability.

Winners and losers are determined by comparing the performance of each fund to the market index. A winning mutual fund outperforms the market. In contrast, underperformance is synonymous with failure. To gain insights, the winner-loser is characterized by four metrics, including return, Sharpe ratio, Treynor ratio, and Jensen's alpha. This study adopts [Goetzmann et al. \(1990\)](#) method for measuring persistence. The frequency of occurrence governs persistence;

Return: positive – positive, negative – negative

Performance: winner – winner, loser – loser

The Z – statistics are used to test the statistical significance

$$Z_{calc} = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

Inversion is further investigated to look at all aspects. Therefore, the occurrence is seen in-depth and would be more beneficial. Such inverse occurrences are as follows;

Return: positive-negative, negative – positive

Performance: winner-loser, loser–winner

The z-test mentioned above is used to test the statistical significance.

3. EMPIRICAL RESULTS

Table 1 depicts descriptive statistics for equities mutual funds in Thailand, market index proxies, and risk-free assets for which data is available between 2016 and 2020. Considering the average descriptive outcome over the past five years, the return on an equity fund is 3.625%, with absolute risk assessed by a standard deviation of 18.5596% and systematic or market risk measured by a beta of 0.8097, respectively. In addition, the average market index return, as represented by the SETTRI is 6.551%, while the risk-free rate, defined by the return on Treasury bills, is 1.355%. In terms of recovery, mutual fund and market returns are comparable. In particular, when market returns were favorable in 2016, 2017, and 2019, fund returns were similarly positive. In addition, when the market saw negative returns in 2018 and 2020, the funds likewise displayed negative returns. From 2016 to 2018, funds could not outperform the market in comparison because they had lower positive returns than the market but more significant negative returns.

On the other hand, they will be better off in 2019 and 2020 since their positive returns will be more significant, and their negative returns will be smaller, signalling a favorable investment opportunity. In addition, the fund and market total risks are comparable. Both standard deviations peak in 2020, which may be attributable to COVID–19. 2020, 2016, 2017, 2018, and 2019 have the highest, second-highest, third-highest, and fourth-lowest overall risk, respectively. In contrast, mutual fund betas have been less than 1 in the past five years, showing a decreased systematic risk relative to the market index.

3.1 Mutual Fund Performance

Regarding the performance of mutual funds, the risk-adjusted return is an appropriate metric. **Table 2** illustrates performance measured by risk-adjusted return in terms of Sharpe ratio, Treynor ratio, and Jensen's alpha. The Sharpe ratio, which indicates extra return per unit of total risk, indicates that the five-year average performance, based on daily return and risk, has a Sharpe ratio of 0.0077. In 2016, 2017, 2018, 2019, and 2020,

the average Sharpe ratio is 0.0387, 0.1029, -0.0722, 0.0217, and -0.0115, respectively. In terms of annual data, the average five-year Sharpe ratio is 0.0635. In 2016, 2017, 2018, 2019, and 2020, the average Sharpe ratio is 0.0671, 1.7796, -1.0465, 0.3872, and -1.4686, respectively. Mutual funds displayed positive Sharpe ratios in 2016, 2017, and 2019 when market performance was favorable. Likewise, they display the negative ones in 2018 and 2020, when market performance is negative.

Table 1: Annual Statistics of Equity Mutual Fund, Market Index and Treasury Bill

	2016	2017	2018	2019	2020	Avg. 2016- 2020
Equity Mutual Fund Return (%)	11.5170	17.1850	-13.5120	6.5710	-3.6360	3.6250
Total Risk: SD (%)	18.5160	9.8285	14.6271	10.9166	28.4037	18.5596
Systematic Risk: Beta	0.7721	0.7871	0.8183	0.8128	0.8173	0.8097
Market Index Return: SETTRI (%)	23.8490	17.2990	-8.0810	4.9290	-5.2410	6.5510
Total risk: SD (%)	13.9572	6.31490	11.8289	9.2330	29.3777	16.2359
Treasury Bill Return (%)	1.4680	1.4790	1.5660	1.6190	0.6460	1.3550

The Treynor ratio and Jensen's alpha are concerned with the performance utilizing systematic risk or beta. The Treynor ratio represents the excess return per unit of systematic or market risk. The average five-year Treynor ratio based on daily return is 0.0002. In 2016, 2017, 2018, 2019, and 2020, these Treynor ratios are 0.0002, 0.0030, -0.0011, 0.0005, and -0.0001, respectively. Regarding annual data, the five-year average is 0.0345. In addition, these ratios are 0.1251, 0.0924, -0.1982, 0.1461 and -0.0172 in 2016, 2017, 2018, 2019 and 2020, respectively. Like the Sharpe ratio, the Treynor ratio reveals positive and negative returns alongside the market.

Another performance metric is Jensen's alpha, which measures the excess return of a mutual fund above its predicted return. Based on daily and annual statistics, the five-year average of Jensen's alpha is -0.008% and -2.221%, respectively. Considering each year individually, they demonstrate negative results in 2016, 2018, and 2020 and positive results in 2017 and 2019. In 2016, 2017, 2018, 2019, and 2020, Jensen's daily alphas are -0.0260%, 0.0110%, -0.0330%, 0.0090%, and -0.0010%, respectively. While annual alpha exhibit values of -7.2315 percent, 3.2540 percent, -7.1329%, 2.7803 percent, and 0.5187 percent, respectively.

The performance gap between mutual funds and the market index results indicates that the average Sharpe ratio and Jensen's alpha deviate significantly from the market index during the past five years. In particular, the average five-year returns based on these two metrics indicate that funds underperform the market. However, the average five-year

Treynor ratios do not differ considerably, suggesting mutual funds' typical performance. Comparing 2016 to 2018, Sharpe ratios drastically underperformed in each year. However, the small disparities between their performance and that of the market index in 2019 and 2020 indicate that they will perform moderately in 2019 and 2020. According to Treynor ratios, funds underperformed severely from 2016 to 2018 and improved to outperform in 2019 and 2020. This suggests a positive trend. Similarly, Jensen's alphas underperformed vastly from 2017 to 2018, then outperformed significantly in 2019. In addition, it does not change considerably from zero in 2020, indicating a moderate performance. These also suggest a positive trend. Note that all performance measurements exhibit a positive direction, despite their five-year averages indicating subpar or ordinary performance.

3.2 Performance Persistence

The Z - a test developed by [Goetzmann et al. \(1990\)](#), is utilized to determine whether the performance of mutual funds continues in terms of positive-negative returns and winner-loser versus the market index. Analyzes if the good (negative) return or winner (loser) repeats in the subsequent year. [Table 3](#) displays positive and negative returns, whereas [table 4](#) displays winning and losing results. Considering persistence in terms of positive or negative return, as indicated in [table 3](#), one-year persistence in positive return suggests that 97.75% of 2016's positive return significantly replicates in 2017. In addition, the entirety of 2017's negative return recounts in 2018. However, from 2018 to 2019 and 2010 to 2020, the percentage of recurring positive and negative returns is reduced and inconsequential.

On the other hand, the proportion of unfavourable returns - positive returns turning harmful returns turning positive - in the subsequent year is determined. The percentages of positive returns going negative from 2017 to 2018 and 2019 to 2020 are 99.25% and 67.27%, respectively. In addition, considerable negative returns become positive the following year. Precisely, 98.08 percent, 80.88 percent, and 96.30 percent of negative returns in 2016, 2018, and 2019 are reversed the following year. Note that the significant repeat and inversion from 2016 to 2017 and 2017 to 2018 resulted in positive and negative returns, respectively. According to the market return, these two years indicate positive - negative returns. Because the bad returns in the subsequent year, whether positive to negative or positive, appear to be more prevalent than the recurring ones, this may suggest that the mutual fund returns from 2016 to 2020 indicate inversion rather than persistence.

[Table 4](#) displays mutual fund performance consistency in terms of winners and losers. Return and risk-adjusted returns are utilized to measure performance. It includes Sharpe ratio, Treynor ratio, and Jensen's alpha. Considering performance persistence, it is revealed that the winner or loser will repeat in the following year. The winners and losers are determined based on their relative outperformance or underperformance relative to the market index.

Table 2: Equity Mutual Fund Performance in Thailand

Performance	2016	2017	2018	2019	2020	Avg. 2016-20
Panel A: Risk-adjusted Performance						
Sharpe Ratio:						
Daily: Fund	0.0387	0.1029	-0.0722	0.0218	-0.0115	0.0077
Market	0.0913	0.1466	-0.0537	0.0180	-0.0131	0.0208
Annual: Fund	0.6705	1.7796	-1.0465	0.3872	-0.1469	0.0635
Market	1.6002	2.5001	-0.8139	0.2888	-0.2000	0.2673
Treynor Ratio:						
Daily: Fund	0.0002	0.0030	-0.00111	0.0005	-0.0001	0.0002
Market	0.0008	0.0006	-0.00041	0.0001	-0.0003	0.0003
Annual: Fund	0.1251	0.0924	-0.1982	0.1461	-0.0172	0.0345
Market	0.2238	0.1582	-0.0965	0.0267	-0.0589	0.0435
Jensen's Alpha						
Daily: Fund (%)	-0.0260	-0.0110	-0.0330	0.0090	-0.0010	-0.0080
Market (%)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Annual: Fund (%)	-7.2315	3.2540	-7.1329	2.7803	0.5187	-2.2210
Market (%)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Panel B: Performance Comparison with the Market Index (Fund & Market Mean Difference: Daily)						
Sharpe	-0.0526***	-0.0438***	-0.0185	0.0038	0.0016	-0.0323***
Treynor	-0.0007***	0.0024***	-0.0008***	0.0005***	0.0003*	0.0000
Jensen's alpha (%)	-0.0262***	0.0111***	-0.0334***	0.0092***	-0.0011	-0.0082***

Note: *, **, *** Significant at 0.01, 0.05, 0.10, respectively

Table 3: Mutual Fund Persistence: Positive or Negative Return

Repeat	Positive – Positive Return	Negative-Negative Return
2016-2017	97.75%***	1.92%
2017-2018	0.75%	100.00%**
2018-2019	0.00%	19.12%
2019-2020	32.73%	3.70%
Inversion	Positive – Negative Return	Negative – Positive Return
2016-2017	2.25%	98.08%***
2017-2018	99.25%***	0.00%
2018-2019	100.00%	80.88%***
2019-2020	67.27%***	96.30%***

Note: ***, **, * denotes significant at 0.01, 0.05, 0.10 respectively

Taking into account the persistence of the winner and the loser, it is discovered that both the winner and the loser repeat their performances. Winners indicated by Treynor ratio and Jensen's alpha repeat from 2016 to 2017, whilst losers repeat solely for Sharpe ratio. From 2017 to 2018, winners do not significantly repeat. However, losers do significantly repeat across all performance metrics. Winners and losers do not notably repeat from 2018 to 2019, except for the loser defined by the Sharpe ratio. From 2019 to 2020, the perseverance of both winners and losers improves. All measurements indicate strong persistence of winners and losers, except for the return-based height for the loser. However, the percentage of persistent losers is more significant than persistent winners.

The incidence of winner-to-loser or loser-to-winner indicates that almost-losers becoming winners is not statistically significant, regardless of the performance assessment employed. Except for return measurement, 2019 to 2020 is essential. In contrast, the significance of winners changing into losers is prolonged. Return and Sharpe ratio indicate that the percentage of winners who became losers between 2016 and 2017 and 2017 and 2018 is significant. Treynor's and Jensen's alpha estimates the probability of a winner becoming a loser from 2017 to 2018 and from 2018 to 2019, respectively.

3.3 Top Ten Mutual Fund Performances

Table 5 illustrates the top ten mutual fund performances measured by return, Sharpe, Treynor, and Jensen's alpha. There are 5 mutual funds with an average 5-year performance in the top ten for all 4 measurements. Such funds are: TMBCOF, TMBCORMF, TMBGQG, TMBGQGRMF, TUSRMF. Mutual funds have performance repeated in the top ten for two years or more, as shown in Table 6. These are K-ENERGY, TMBCOF, TCHSTARP, and ASP-CHINA. These empirical findings should be beneficial for investors .

Table 4: Mutual Fund Persistence: Winner and Loser in Terms of Return, Sharp, Treynor, and Jensen's alpha

Repeat	Winner - Winner				Loser - Loser			
	Performance				Performance			
	Return	Sharpe	Treynor	Jensen's alpha	Return	Sharpe	Treynor	Jensen's alpha
2016-2017	59.09%	17.65%	63.64%*	63.64%*	51.19%	80.54%***	45.65%	45.22%
2017-2018	22.79%	37.74%	15.03%	14.94%	81.88%***	75.11%***	89.26%***	89.17%***
2018-2019	44.64%	52.00%	25.00%	25.00%	55.05%	61.31%***	47.06%	52.94%
2019-2020	61.79%***	65.52%***	61.16%*	61.16%*	17.22%	84.81%***	87.58%***	87.58%***
Inversion	Winner - Loser				Loser - Winner			
	Performance				Performance			
	Return	Sharpe	Treynor	Jensen's alpha	Return	Sharpe	Treynor	Jensen's alpha
2016-2017	40.91%	82.35%***	36.36%	36.36%	48.81%	19.46%	54.35%	54.78%
2017-2018	77.21%***	62.26%	84.97%***	85.06%***	18.12%	24.89%	10.74%	10.83%
2018-2019	55.36%	48.00%	75.00%***	75.00%***	44.95%	38.69%	52.94%	47.06%
2019-2020	38.21%	34.48%	38.84%	38.84%	82.78%***	15.19%	12.42%	12.42%

Note: ***, **, * denotes significant at 0.01, 0.05, 0.10 Respectively

Table 5: Top Ten Mutual Fund Performances: Average 2016 – 2020

Funds	Measurement			
	Return	Sharpe	Treynor	Jensen's alpha
ASP- S&P 500	✓	✓	✓	✓
ASP-BRIC	✓			✓
ASP-ASIAN		✓		
ABGEM			✓	
B-ASIA		✓		
K-ENERGY	✓			
LHGROWTH	✓			
TMBCOF	✓	✓	✓	✓
TMBCORMF	✓	✓	✓	✓
TMBGQG	✓	✓	✓	✓
TMBGQGRMF	✓	✓	✓	✓
TMBUS500			✓	✓
TMBUS500RMF			✓	✓
TISCOUS	✓	✓	✓	✓
TISCONA		✓		
TSF	✓	✓		
TUSRMF			✓	✓

4. CONCLUSION AND DISCUSSION

The vast quantity of equity mutual funds in Thailand relative to other types of funds demonstrates their sustained popularity. A study was done on 274 equity mutual funds, each with a five-year maturity from 2016 to 2020. The return is examined as a dividend-adjusted return. This is consistent with the usage of SETTRI as a market index surrogate. Sharpe, Treynor, and Jensen's alpha are used to determine performance. The persistence of the fund is evaluated as a repetition of positive or negative returns and winning or losing performance relative to the market index.

Further research is undertaken to examine every area in depth. Specifically, the occurrences of a positive (negative) return becoming negative (positive) and a winner (loser) becoming a loser (winning) were investigated. In the last five years, from 2016 to 2020, equity mutual fund returns averaged 3.625%, while a standard deviation of 18.5596% measured overall risk, according to the empirical findings. Additionally, the average systematic risk, as determined by a fund's beta, is 0.8097. Following the decreased systematic risk, equity mutual funds follow the risk-return trade-off compared to market indices. The fund's decreased risk results in a lesser return. The average five-year Sharpe ratio, Treynor ratio, and Jensen's alpha values for mutual fund performance are 0.0635, 0.0345, and -2.221%, respectively. In addition, a substantial distinction

exists between mutual funds and market indices. Mutual funds underperform severely based on the Sharpe ratio and Jensen's alpha 5-year average performance measurements. The Treynor ratio, however, does not indicate severe underperformance. In addition, Treynor ratios for 2017, 2019, and 2020 surpass the market index by a wide margin.

Table 6: Top Ten Equity Mutual Fund Performances Repeat During 2016 – 2020

Funds	Measurement			
	Return	Sharpe	Treynor	Jensen's alpha
K-ENERGY	2016,2018	2016,2018		2016,2018
TMBCOF	2017,2019	2017,2019,2020		2017,2019
TCHSTARP	2017,2018	2018,2020		
TMBUS500RMF			2016,2017	
ABGEM			2016,2020	
TMBUS500			2017,2019	
ASP-CHINA			2017,2019	2017,2019
TMBRGLRMF			2017,2020	
SCBRMGHC			2017,2019	
BCARE			2017,2019,2020	
BCARERMF			2017,2019,2020	
TMBCORMF				2017,2019

Considering persistence in terms of positive or negative returns, one-year positive return persistence became considerable from 2016 to 2017, whereas one-year damaging return persistence became significant from 2017 to 2018. In terms of winner and loser in four performance measurements, it can be determined that the performance of mutual fund winners and losers is very consistent. Note that the proportion of repeat losers is greater than that of repeat winners. Significant positive turning to negative return and negative turning to positive return are observed more frequently than persistent occurrence. In addition, the reversal meanings of winner becoming loser and loser becoming winner are present. Most of these reversals involve victors becoming losers.

The following have implications for philosophy and practice:

The absolute risk of an equity mutual fund, as measured by standard deviation, is greater than that of the market index. However, as measured by beta, its systematic risk is lower than the market. This indicates that a fund would be able to diversify away from unsystematic or unique risk. In addition, the five-year average beta and return suggest that a fund's risk and return are low relative to the market index. This study demonstrates that investment in equities mutual funds conforms to the notion of high (low) risk and high (low) expected to return. As for performance, most mutual fund returns trail the market index. Expenses incurred by the fund, such as management fees, may be the

cause. The Treynor ratio indicates a significant outperformance of mutual funds in 2019 and 2020, whilst the other metrics show minor differences. This massive outperformance occurs in two successive years, including 2019 and COVID 2020. The research establishes a favorable investment opportunity trend. Moreover, different metrics result in other performance rankings. These indicate that each measurement would be appropriate for the features of each investor.

Considering return and performance persistence, this research investigates both performance repetition and future investigation into inverse occurrence, therefore examining each of the following aspects:

Even though mutual fund persistence in terms of the positive and negative repeat cannot be determined with certainty, a favorable trend can be noticed. Focusing on the year of COVID 2020, it is discovered that the positive repetition is greater (32.73%) than the negative repeat (3.70%). As for negative returns, the previous year's return turning positive the following year (96.30%) is greater than the positive return turning negative (67.27%). Despite the market volatility caused by COVID-19 in 2020, positive repeat and negative to positive adversity have better percentage returns. These indicators suggest that the equities mutual fund is more likely to offer a lucrative investment opportunity.

In addition, based on the considerable return persistence and adversity depicted in [Table 3](#), an investor who chooses a persistent positive return from 2016 to 2017 is more likely to acquire negative, positive, and optimistic returns in 2018, 2019, and 2020, respectively. In contrast, an investor who chooses a significant negative return from 2016 to 2017 is likelier to gain negative, positive, and negative returns in 2018, 2019, and 2020, respectively. According to this evidence, investing in a positive return-persistence fund and holding it for an extended period of time results in a positive return. Therefore, it would be advisable to select a mutual fund that maintains its one-year positive persistence and has for the long term despite its return volatility from year to year. The proof of performance demonstrates mutual fund persistence in terms of the four measurements of winners and losers relative to the market index. Note that repeat losers are ranked higher than winners. The percentage of winners who become losers is higher than the percentage of losers who become winners. As a result of the more significant percentage of loser persistence and the lower percentage of losers becoming winners, investors should not maintain loser funds to become winners.

Based on the empirical findings, it is suggested that equities mutual funds are a worthwhile investment. In addition, investors must consider the possibility of inverse returns for both positive and negative returns. A long-term investment is recommended. Regarding the in-depth study, the performance of winners and losers is helpful information. To invest in winners or avoid losing funds would be advantageous because losers are more likely to repeat than winners.

Moreover, it is uncommon to find significant losers converting into winners. The expectation of improved performance may be improbable. TMBCOF, TMBCORMF, TMBGQG, TMBGQGRMF, and TUSRMF represent the five-year average performance of the top ten losers across all metrics. In addition, K-ENERGY, TMBCOF, TCHSTARP, and ASP-CHINA have consistently ranked among the top ten funds for at least two years. These funds are appropriate for investing. This study is a resource for scholars and investors in equities mutual funds.

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Appendix

Appendix 1: Sample: Equity Mutual Funds and Asset Management in Thailand

No	Fund	Asset management
One Asset Management Co., Ltd.: (15 funds)		
1	1AM-GEM	1 A.m. Global Emerging Market Equity Fund
2	1AMSET50	1 A.m. Set 50 Fund
3	1SG-LTF	1 A.m. Selective Growth Long Term Equity Fund
4	1S-LTF	1 A.m. Selective Long Term Equity Fund
5	1SMART-LTF	1SMART Long Term Equity Fund
6	ONE-EQ	ONE Equity Fund
7	ONE-STOXXASEAN	ONE STOXX ASEAN SELECT Dividend Index Fund
8	THANA1	THANA ONE Fund
9	ONE+1	ONE Plus One Fund
10	ONE-CHINA	ONE Chain Auto Redemption Fund
11	ONE-EC14	ONE Equity Fund Corporate 14
12	ONE-G	ONE Multiple Growth Fund
13	ONE-UB 3	ONE-UB 3 Fund
14	SYRUS-M	Syrus Momentum Fund
15	V-RMF	Value Stock Retirement Mutual Fund
Krungthai Asset Management Co., Ltd. (12 funds)		
16	KTLF	The Krung Thai Long -Term Equity Fund
17	KT-mai	Krung Thai mai Equity Fund
18	KTMSEQ	Krung Thai Mid-Small Cap Equity Fund
19	KSET50LTF	The Krung Thai SET50 Long-Term Equity Fund
20	KSLTF	The Krung Thai Shariah Long-Term Equity Fund
21	KSRMF	The Krung Thai Shariah Retirement Mutual Fund
22	KTEF	Krung Thai Smart Equity Fund

23	KT-HiDiv	Krung Thai High Dividend Equity Fund
24	KT-HiDiv RMF	Krung Thai High Dividend Retirement Mutual Fund
25	KTSE	Krung Thai Selective Equity Fund
26	KTSE-RMF	Krung Thai Selective Retirement Mutual Fund
27	KTSF	The Krung Thai Dividend Selected Fund
Krungsri Asset Management Co., Ltd. (26 funds)		
28	KFENSET50	Krungsri Enhanced SET50 Fund
29	KFEQRMF	Krungsri Equity RMF
30	KFSEQ	Krungsri Star Equity Fund
31	KF-SMCAPD	Krungsri Global Small-Mid Cap Equity Dividend Fund
32	KF-BRIC	Krungsri BRIC Stars Fund
33	KFDNM-D	Krungsri Dynamic Dividend Fund
34	KFDYNAMIC	Krungsri Dynamic Fund
35	KF-EM	Krungsri Emerging Markets Equity Fund
36	KF-EUROPE	Krungsri Europe Equity Fund
37	KFEURORMF	Krungsri Europe Equity RMF
38	KFFIN-D	Krungsri Financial Focus Dividend Fund
39	KFHCARERMF	Krungsri Global Healthcare Equity RMF
40	KF-HEUROPE	Krungsri Europe Equity Hedged Fund
41	KF-LATAM	Krungsri Latin America Equity Fund
42	KFLT50	Krungsri LTF SET50
43	KFLTFA50-D	Krungsri Active SET50 Dividend LTF
44	KFLT70	Krungsri LTF Dividend Stock 70/30
45	KFSDIV	Krungsri Dividend Stock Fund
46	KFLT70DIV	Krungsri LTF Dividend Stock
47	KFLT70EQ	Krungsri LTF Equity
48	KFLT70EQ70D	Krungsri Equity Dividend 70/30 LTF

Appendix 1: Continued

No	Fund	Asset management
49	KFS100RMF	Krungsri SET100 RMF
50	KFSEQ-D	Krungsri Star Equity Dividend Fund
51	KF-US	Krungsri US Equity Fund
52	KF-HCHINAD	Krungsri Greater China Equity Hedged Dividend Fund
53	KFVALUE	Krungsri Value Stock Fund
Kasikorn Asset Management Co., Ltd. (12 funds)		
54	K-BANKING	K Banking Sector Index Fund
55	K-ENERGY	K Energy Sector Index Fund
56	KSDLTF	K Strategic Defensive LTF
57	KAEQ	K Strategic Defensive LTF
58	KEQRMF	K Equity RMF
59	K-MIDSMALL	K Mid Small Cap Equity Fund
60	KS50RMF	K SET50 RMF
61	K-SELECT	K Select Equity Fund
62	K-SET50	K SET 50 Index Fund
63	K-STEQ	K Strategic Trading Equity Fund
64	KMSRMF	K Mid Small Cap Equity RMF
65	RKF4	THE RUANG KHAO 4 FUND
Kiatnakin Phatra Asset Management Co., Ltd. (3 funds)		
66	KKP DIVIDEND FUND	KKP DIVIDEND EQUITY FUND
67	KKP EQRMF	KKP EQUITY RETIREMENT MUTUAL FUND
68	KKP LTFD	KKP LONG TERM EQUITY DIVIDEND FUND
TMB Asset Management Co., Ltd. (funds)		
69	JBP LTF	JUMBO PLUS Dividend Long Term Equity Fund
70	TMBAGLRMF	TMB EASTSPRING Asia Active Equity Retirement Mutual Fund
71	TMBCORMF	TMB China Opportunity Retirement Mutual Fund
72	TMBGER	TMB German Equity Fund
73	TMBGQG	TMB Global Quality Growth Fund
74	TMBGQGRMF	TMB Global Quality Growth Retirement Mutual Fund
75	TMBJE	TMB Japan Equity Fund

76	TMBJERMF	TMB Japan Equity Retirement Mutual Fund
77	TMBUS500RMF	TMB US500 Retirement Mutual Fund
78	JB25	JUMBO 25 Fund
79	JB25 LTF	JUMBO 25 Dividend Long Term Equity Fund
80	JB25RMF	JUMBO 25 Retirement Mutual Fund
81	TMB50	TMB SET50
82	TMB50DV	TMB SET50 Dividend Fund
83	TMB50RMF	TMB SET50 Retirement Mutual Fund
84	TMBAGLF	TMB EASTSPRING Asia Active Equity Fund
85	TMBCHEQ	TMB China Equity Index Fund
86	TMBCOF	TMB China Opportunity Fund
87	TMBEG	TMB European Growth Fund
88	TMBEGRMF	TMB European Growth Retirement Mutual Fund
89	TMBEMEQ	TMB Emerging Markets Equity Index Fund
90	TMBUS500	TMB US500 Equity Index Fund
91	TMBWDEQ	TMB World Equity Index Fund
92	TAPRMF	TISCO Asia Pacific ex Japan Retirement Fund
Tisco Asset Management Co., Ltd. (32 funds)		
93	TCHRMF	TISCO China H-Shares Equity RMF
94	TCHSTARP	TISCO China Stars Plus Fund
95	TEURMF	TISCO Europe Equity RMF
96	TGHRMF	TISCO Global Healthcare RMF
97	TGHSTARP	TISCO Global Healthcare Stars Plus Fund

Appendix 1: Continued

No	Fund	Asset management
98	TISCOC19	TISCO China Trigger 8% Fund 19
99	TISCOC20	TISCO China Trigger 8% Fund 20
100	TISCOC21	TISCO China Trigger 8% Fund 21
101	TISCOEQF	TISCO Thai Equity Fund
102	TSTAR-UH	TISCO Global Stars Plus Fund - Unhedged
103	TCIRMF	TISCO China India Retirement Fund

104	TDLTF	TISCO Dividend Long Term Equity Fund
105	TEGRMF	TISCO Equity Growth Retirement Fund
106	THDRMF	TISCO High Dividend Equity RMF
107	TISCOAP	TISCO Asia Pacific ex Japan Fund
108	TISCOCH	TISCO China H-Shares Equity Fund
109	TISCOCID	TISCO China India Dividend Fund
110	TISCOEDF	TISCO Equity Dividend Fund
111	TISCOEGF	TISCO EQUITY GROWTH FUND
112	TISCOEU	TISCO Europe Equity Fund
113	TISCOGY	TISCO German Equity Fund
114	TISCOHD	TISCO High Dividend Equity Fund
115	TISCOJP	TISCO Japan Equity Fund
116	TISCOLAF	TISCO Latin America Fund
117	TISCOLTF	TISCO Long Term Equity Fund
118	TISCOMS	TISCO Mid/Small Cap Equity Fund
119	TISCONA	TISCO North Asia Equity Fund
120	TISCOUS	TISCO US Equity Fund
121	TJPRMF	TISCO Japan Equity RMF
122	TSF	TISCO Strategic Fund
123	TSTARP	TISCO Global Stars Plus Fund
124	TUSRMF	TISCO US Equity RMF
Siam Commercial Bank Asset Management Co., Ltd. (31 funds)		
125	SCBINDIAFUND	SCB INDIA EQUITY FUND
126	SCBLT2FUND	SCB STOCK PLUS LONG TERM EQUITY FUND
127	SCBLTS	SCB SMART LONG TERM EQUITY FUND
128	SCBMSEFUND	SCB Mid/Small Cap Equity Fund
129	SCBNKY225	SCB JAPAN EQUITY FUND
130	SCBRMEU	SCB EUROPEAN EQUITY RMF
131	SCBRMGHC	SCB GLOBAL HEALTH CARE RMF
132	SCBRMGIF	SCB GLOBAL INFRASTRUCTURE RMF
133	SCBRMJP	SCB JAPAN EQUITY RMF
134	SCBSETFUND	SCB SETINDEX FUND
135	SCBAEMFUND	SCB ASIAN EMERGING MARKETS OPEN END FUND
136	SCBBANKINGFUND	SCB SET BANKING SECTOR INDEX FUND
137	SCBCEHFUND	SCB CHINA EQUITY THB HEDGE

138	SCBDAFUND	SCB DHANA ANANTA OPEN END FUND
139	SCBDVFUND	SCB DIVIDEND STOCK OPEN END FUND
140	SCBEMEQFUND	SCB EMERGING EQUITY FUND
141	SCBENERGYFUND	SCB SET ENERGY SECTOR INDEX FUND
142	SCBEUEQFUND	SCB EUROPEAN EQUITY FUND
143	SCBGEQFUND	SCB GLOBAL EQUITY FUND
144	SCBKEQTGFUND	SCB KOREA EQUITY FUND
145	SCBLT1FUND	SCB DIVIDEND STOCK 70/30 LONG TERM EQUITY FUND
146	SCBLT3FUND	SCB LONG TERM EQUITY FUND
147	SCBLT4FUND	SCB INTER LONG TERM EQUITY FUND
148	SCBLTTFUND	SCB TARGET LONG TERM EQUITY FUND
149	SCBPGFUND	SCB PLATINUM GLOBAL OPEN END FUND

Appendix 1: Continued

No	Fund	Asset management
150	SCBPMOFUND	SCB PERMPOL MUNKHONG OPEN END FUND
151	SCBRM4	SCB EQUITY RMF
152	SCBRMS50	SCB SET50 INDEX RMF
153	SCBS&P500FUND	SCB SET50 INDEX RMF
154	SCBSEFUND	SCB SELECTS EQUITY FUND
155	SCBSET50FUND	SCB SET50 INDEX FUND
Thanachart Fund Management Co., Ltd.(12 funds)		
156	T-FinanceTH	Thanachart Thai Financial Sector Equity Fund
157	T-BigCapLTF	Thanachart Big Cap Long Term Equity Fund
158	T-EQUITY	Thanachart Equity Fund
159	T-LowBeta	Thanachart Low Beta Fund
160	T-LowBetaRMF	Thanachart Low Beta Retirement Mutual Fund

161	T-LTFD	Thanachart Long Term Equity Dividend Fund
162	T-NERMF	Thanachart Equity Retirement Mutual Fund
163	T-NFPLUS	Thanachart Fundamental Plus
164	T-PPSD	Thanachart Perm Poon Sab-Dividend Fund
165	T-Privilege	Thanachart Privilege Equity Fund
166	T-SET50	Thanachart SET50 Fund
167	T-SM Cap	Thanachart Small Medium Cap Equity Fund
Principal Asset Management Co., Ltd.(10 funds)		
168	PRINCIPAL SET100RMF	Principal SET100 Retirement Mutual Fund
169	PRINCIPAL 70LTFD	Principal 70 Long Term Equity Dividend Fund
170	PRINCIPAL DEF	Principal Dividend Equity Fund
171	PRINCIPAL EEF	Principal Enhanced Equity Fund
172	PRINCIPAL ELTF	Principal Enhanced Long Term Equity Fund
173	PRINCIPAL EPIF	Principal Energy and Petrochemical Index Fund
174	PRINCIPAL EQRMF	Principal Equity Retirement Mutual Fund
175	PRINCIPAL iDIV	Principal Equity Dividend Income Fund
176	PRINCIPAL LTF	Principal Long Term Equity Fund
177	PRINCIPAL SET50	Principal Daily SET 50 Index Fund
Manulife Asset Management Co., Ltd. (3 funds)		
178	MS-CORE EQ	Manulife Strenght-Core Equity Fund
179	MS-CORE LTF-M	Manulife Strength-Core Long-term Equity Fund
180	MS-EQ DIV	Manulife Strength - Equity Dividend Fund
UOB Asset Management (Thailand) Co., Ltd. (20 funds)		
181	70/30-D LTF	70/30 - Dividend Long Term Equity Fund
182	BIG CAP-D LTF-M	Big Cap Dividend Long Term Equity Fund
183	CG-LTF-M	Good Corporate Governance Long Term Equity Fund
184	UOBSHC-M	UOB Smart Global Healthcare Fund
185	UTSME	United Thai Small and Mid Cap Equity Fund

186	ERMF	Equity Retirement Mutual Fund
187	KKF	KIATNAKIN FUND
188	KPLUS	Kamrai Permpoon Open-ended Fund
189	KPLUS2	Kamrai Permpoon Open-ended Fund 2
190	TDF	Thai Dragon Fund
191	TEF	Thai Equity Fund
192	TEF-DIV	Thai Equity – Dividend Fund

Appendix 1: Continued

No	Fund	Asset management
193	UOBEQRMF	UOB EQUITIES RMF
194	UOBLTF-M	UOB LONG TERM EQUITY FUND
195	UOBSAS100	UOB Smart Active SET 100 Fund
196	UOBSAS100D	UOB Smart Active SET 100 Dividend Fund
197	UOBSCI	UOB Smart China India Fund
198	UOBSDF	UOB Smart Dividend-Focused Equity Fund
199	VALUE-D LTF-M	Value Plus - Dividend Long Term Equity Fund
200	VFOCUS-D	Thai Value Focus Equity-Dividend Fund
BBL Asset Management Co., Ltd. (23 funds)		
201	B-ASIA	Bualuang Asia Equity Fund
202	BBASIC	Bualuang Basic Open-end Fund
203	BBASICRMF	Bualuang Basic RMF
204	BCAP	BUALUNG CAPITAL OPEN-END FUND
205	BCARE	Bualuang Global Health Care Fund
206	BCARERMF	Bualuang Global Health Care RMF
207	B-GLOBAL	Bualuang Global Equity Fund
208	B-GLOBALRMF	Bualuang Global Equity RMF
209	B-INFRA	Bualuang Infrastructure Open-end Fund
210	BKA2	Buakaew 2 Open-end Fund
211	B-LTF	Bualuang Long - Term Equity Fund
212	BLTF75	Bualuang Long - Term Equity Fund 75/25
213	BSIRICG	Bualuang Siriphol Corporate Governance
214	BSIRIRMF	Bualuang Siriphol Corporate Governance RMF
215	B-SM-RMF	Bualuang Small-Mid Cap RMF
216	BTK	Bualuang Thanakom Open-end Fund

217	IN-RMF	Bualuang Infrastructure RMF
218	BERMF	Bualuang Equity RMF
219	BKA	Buakaew Open-end Fund
220	BKD	Buakaew Income Fund
221	BKIND	BKIND FUND
222	B-NIPPON	Bualuang Nippon Equity Fund
223	BTP	Bualuang Top-Ten Fund
Aberdeen Standard Asset Management (Thailand) Co., Ltd. (7 funds)		
224	ABGEM	Aberdeen Standard Global Emerging Growth Fund
225	ABLTF	Aberdeen Standard Long Term Equity Fund
226	ABSC-RMF	Aberdeen Standard Smart Capital Retirement Mutual Fund
227	ABSL	Aberdeen Standard Siam Leaders Fund
228	ABSM	Aberdeen Standard Small Cap Fund
229	ABTED	Aberdeen Standard Thai Equity Dividend Fund
230	ABG	Aberdeen Standard Growth Fund
MFC Asset Management PLC. (27 funds)		
231	AGF	Adkinson Growth Open-end Fund.
232	BMBF	Bangkok Metropolitan Open-end Fund
233	DE-1	Dynamic Eastern One Open-end Fund
234	HI-DIV	MFC Hi-Dividend Fund
235	HI-DIV PLUS	MFC Hi-Dividend Plus Fund
236	M-MIDSMALL	MFC Mid Small Cap Fund
237	SCDF	Sinchada Open-end Fund
238	SCIF2	Siam City Two Open-End Fund
239	M-ACTIVE	MFC Active Equity Fund
240	MA-LTF	MFC ACTIVITY LONG TERM EQUITY FUND
241	MG-LTF	MFC GLOBAL LONG TERM EQUITY FUND
242	MIF-LTF	MFC ISLAMIC LONG TERM EQUITY FUND
243	M-S50	MFC SET 50 Fund
244	MV-LTF	MFC VALUE LONG TERM EQUITY FUND

Appendix 1: Continued

No	Fund	Asset management
245	RPF2	Ruam Pattana Two Open-end Fund
246	RRF1	Roongroj One Open-end Fund
247	SAN	Sub Anan Open-End Fund
248	SF4	Sinpinyo Four Open-end Fund
249	SF5	Sinpinyo Five Open-end Fund
250	SF7	Simpinyo Seven Open-end Fund
251	SF8	Sinpinyo Eight Open-end Fnd
252	STD	Satang Daeng Open-end Fund
253	STD2	Satang Daeng Two Open-end Fund
254	TNP	Thana Phum Open-end Fund
255	TS	Theerasub Open-end Fund
256	UNF	United Open-end Fund
257	SCIF	Siam City Open-End-Fund
Asset Plus Fund Management Co., Ltd. (12 funds)		
258	ASP-ASIAN	Asset Plus Asian Special Situations Fund
259	ASP-ERF	Asset Plus Equity RMF
260	ASP-EUPROP	Asset plus Europe Property Fund
261	ASP-EUROPE QUALITY	Asset Plus Europe Quality Fund
262	ASP-GDF	Asset Plus Growth Dividend Fund
263	ASP-GLTF	Asset Plus High Growth LTF
264	ASP-LTF	Asset Plus Long-Term Equity Fund
265	ASP-NGF	Asset Plus Nippon Growth Fund
266	ASP-S&P500	Asset Plus S&P 500 Fund
267	ASP-THEQ	Asset Plus Thai Equity Fund
268	ASP-BRIC	Asset Plus BRIC Fund
269	ASP-CHINA	Asset Plus China Fund
Phillip Asset Management Co., Ltd. (2 funds)		
270	PEQ	Phillip Equity Fund
271	P-LTF	Phillip Long Term Equity Fund
Land And House Fund Management Co., Ltd. (1 funds)		
272	LHGROWTH	LH GROWTH FUND
XSpring Asset Management Co., Ltd. (2 funds)		
273	X-EQRMF	XSpring Equity RMF
274	EP-LTF	EQUITY PRO LTF

Appendix 2. Top Ten of Equity Mutual Fund: Return

RANK		Panel A: Return					
		2016	2017	2018	2019	2020	2016-2020
Top 10	1	K-ENERGY	LHGROWTH	1SMART-LTF	TMB CORMF	SCBKEQTG FUND	TMBCOF
	2	PRINCIPAL EPIF	ASP-CHINA	KSDLTF	TMBCOF	TMBAGLF	TMBCORMF
	3	SCBENERGY FUND	TMB COF	PRINCIPAL EPIF	KF-HEUROPE	TMBAGLRMF	TSF
	4	UTSME	TMBCO RMF	SCBRMGHC	ASP-EUPROP	TMBCHEQ	K-ENERGY
	5	SCBMSE FUND	ASP-BRIC	TSF	TISCO EU	ABGEM	TMBGQG
	6	HI-DIV PLUS	TCHSTARP	K-ENERGY	TMBGQG	TSTAR-UH	ASP-S&P500
	7	K-MID SMALL	KFDYNA MIC	TGHSTARP	TMBGQGRMF	TSTARP	TMBGQGRMF
	8	KTMSEQ	B-ASIA	SCBLTS	TMB US500	KF-US	TISCOUS
	9	KMSRMF	SCBK EQTG FUND	TGHRMF	TMBEG	SCB AEM FUND	LHGROWTH
	10	BTP	ASP-ASIAN	JB25	SCB RMEU	TMBCOF	ASP-BRIC

Appendix 3. Top ten of Equity Mutual Fund: Performance Classified by Measurement

RANK		Panel A: Sharpe Ratio					
		2016	2017	2018	2019	2020	2016-2020
Top 10	1	BBASIC RMF	ASP-ASIAN	PRINCIPAL EPIF	SCBRMGIF	TMB COF	TMBCOF
	2	BTP	B-ASIA	SCBRMGHC	KF-HEUROPE	TMBCHEQ	TMBCORMF
	3	SCBMSE FUND	KFDYNAMIC	K-ENERGY	ASP-EUPROP	TMBCORMF	TMBGQGRMF
	4	KMSRMF	TMB COF	TSF	ASP-EUROPE QUALITY	TSTAR-UH	TMBGQG
	5	K-ENERGY	TMBCORMF	TGHRMF	SCBRMEU	TMBAGLF	B-ASIA
	6	K-MID SMALL	ASP-BRIC	KSDLTF	TMBGQG	ABGEM	ASP-S&P500
	7	SCB ENERGY FUND	TCHSTARP	TGHSTARP	TMBCORMF	TMBAGL RMF	TISCOUS
	8	UTSME	KFSEQ	1SMART-LTF	TMBCOF	TCHSTARP	ASP-ASIAN
	9	PRINCIPAL EPIF	ASP-CHINA	KFHCARE RMF	TMBGQGRMF	KFHCARE RMF	TISCONA
	10	BLTF75	KFL TFEQ	JB25	TEURMF	TSTARP	TSF
RANK		Panel B: Treynor Ratio					
		2016	2017	2018	2019	2020	2016-2020
Top 10	1	TMBUS500 RMF	TMB GQG	PRINCIPAL EPIF	ASP-EUROPE QUALITY	ABGEM	ABGEM
	2	TMBUS500	TMBGQG RMF	K-ENERGY	ASP-EUPROP	TMBCHEQ	TMBCOF
	3	1AM SET50	TMBUS500 RMF	TSF	SCBRMGIF	TMBCOF	TMBCORMF
	4	ONE-EC14	TMBUS500	JB25	ASP-CHINA	TMBCORMF	TMBGQGRMF
	5	ABGEM	ASP-CHINA	JB25RMF	SCBRMGHC	TSTAR-UH	TMBGQG
	6	KFLATAM	TGH RMF	M-S50	TMBGQG	KFHCARE RMF	ASP-S&P500
	7	TISCOUS	TMBAGL RMF	TMB50	TMBGQG RMF	BCARERMF	TISCOUS
	8	SCBPGFUND	BCARE	SCBSET50 FUND	BCARE	BCARE	TMBUS500
	9	HI-DIV PLUS	SCBRMGHC	K-SET50	BCARERMF	TMBAGLF	TMBUS500RMF
	10	TMBCORMF	BCARERMF	T-SET50	TMBUS500	TMBAGL RMF	TUSRMF
RANK		Panel C: Jensen's Alpha					
		2016	2017	2018	2019	2020	2016-2020
Top 10	1	1AMSET50	ASP-CHINA	PRINCIPAL EPIF	TMBCORMF	SCBKEQTG FUND	TMBCOF
	2	HI-DIV PLUS	TMBCOF	K-ENERGY	TMBCOF	TMBAGLF	TMBCORMF
	3	K-ENERGY	TMBCORMF	TSF	KF-HEUROPE	TMBAGL RMF	TMBGQG
	4	KF-LATAM	LHGROWTH	JB25	ASP-EUPROP	TSTAR-UH	TMBGQGRMF
	5	BTP	ASP-BRIC	JB25RMF	TISCOEU	TMBCHEQ	ASP-S&P500
	6	TISCOLAF	TCHSTARP	TMB50	TMBGQG	TSTARP	TISCOUS
	7	UTSME	SCBKEQTG FUND	SCBSET50 FUND	TMBGQGRMF	KTMSEQ	TMBUS500
	8	SCBMSE FUND	ASP-ASIAN	K-SET50	TMBUS500	SCBAEM FUND	TUSRMF
	9	SCBENERGY FUND	B-ASIA	KFLTF50	ASP-CHINA	ABGEM	TMBUS500RMF
	10	KMSRMF	TISCONA	T-SET50	TISCOUS	KF-US	ASP-BRIC