Risk, Return and Performance of Equity Funds in Thailand

[1]Kittipong Lertsettasart
[2]Surang Hensawang
Faculty of Business Administration, Kasetsart University
E–mail: ktp_tony@hotmail.com
Received July 6, 2019; **Revised** January 3, 2020; **Accepted** February 25, 2020

Abstract

The research aims to examine the risk, return, and performance of equity funds in Thailand. The study period was 5 years from 01 January 2013 to 31 December 2017. The results indicated that the equity fund exhibited an average 5 years. Risk measured by standard deviation was 14.45%, which was higher than the Stock Exchange of Thailand (SET), exhibiting of 12.19%. Risk measured by beta was on average of 0.77, which was lower than the Stock Exchange of Thailand (SET) exhibiting of 1. The dividend–adjusted Net Asset Value (NAV) return was on average of 14.45%, which was higher than the Stock Exchange of Thailand (SET) exhibiting of 5.5%. These showed that equity funds outperformed the Stock Exchange of Thailand (SET) in terms of higher returns with lower risk measured by beta. Performance measured by the Sharpe ratio, Treynor ratio, Jensen's alpha, and Information ratio showed an average f 0.05, 17.47, 5.47, and 3.41, respectively. Both Sharpe and Treynor ratios are outperformed the Stock Exchange of Thailand, showing 0.37 and 4.50, respectively. Such outperformance confirms that equity fund is a good alternative for investment.

Keywords: Mutual Fund, Equity Fund, Risk–Return, and Performance

Introduction

Mutual funds are investment schemes made up of a pool of funds from many investors that allow investors earn much higher returns than ordinary savings accounts. A fund manager is responsible for investing the money by procuring equities and commodities to meet he fund targets. They type of investments purchased depends on the prospectus of each fund. As an individual investor, it can be difficult with limited funds, to acquire a diverse portfolio to reduce possible losses, as well as meeting your financial goals. Therefore, having your investment pooled and professionally managed is a better proposition. Mutual funds are also taxed efficiently as you do not pay tax on your gains. As an investor, you can choose to invest by setting regular monthly investments or a lump–sum, and you can cash in your investment at any time.

Presently, invest in mutual funds is the most popular method in the world. Mutual fund was established in the United States in the 1890s. The first mutual funds in the U.S are closed–end funds with a fixed number of shares. In 1924, the Massachusetts Investors Trust was the first company to establish the open–end mutual fund with redeemable shares. Nowadays, the United States of America has more than 10,000 mutual funds. These mutual funds are collectively worth more than 18.7 trillion dollars divided by 100 million investors. "the US mutual fund industry remained the largest in the world at year–end 2017. The majority of US mutual fund assets at year–end 2017 were in long–term mutual funds, with equity funds alone making up 55 percent of US mutual fund total net assets. Bond mutual funds were the second–largest category, with 22 percent of total net assets. Money market funds (15 percent) and hybrid funds (8 percent) held the remainder".

Mutual funds have a very important role in the economy of Thailand as well. In 1975, the first mutual fund in Thailand was established by the Thai Government and the International Finance Corporation (IFC) to mobilize savings from the public for the development of the Thai capital market. In 2002, Mutual funds have gained popularity. Thai investors were interested in mutual funds and obtained favorable responses from investors. Nowadays, Thailand has 26 mutual fund companies offering about more than 200 different kinds of mutual funds depending upon the investor's needs.

Theoretical Background and Previous Studies

Sharpe (1966) concluded that the mutual funds have a lower investment during that time. The results also showed that good managers focus on risk assessment and risk diversification.

Jensen (1968) concluded that stock prices could not be forecasted accurately, therefore, it could not be advantaged to use buy and hold strategy.

Carlson (1970) founded that whether mutual funds outperform the market depends on both market and period.

Arditti (1971) founded that average fund performance was not inferior to Dow Jones Industrial Average (DJIA) performance because the skewness of the Dow Jones Industrial Average (DJIA) return distribution was significantly less than fund skewness.

McDonald (1974) indicated that objectives were significantly related to subsequent measures of systematic risk and total variability.

Miller and Nicholas (1980) indicated a good deal of nonconsistency in risk–return relationships.

Ippolito (1989) concluded that the performance of funds individually or as a whole was not higher than the performance of international equity index.

Grinblatt and Sheridan (1992) concluded that the past performance of a fund was helped the investor is considering an investment in mutual funds.

Malkiel (1995) concluded that it was better for the investors to purchase a low expense index fund than to select an active fund manager.

Redman (2000) results showed that under Sharpe's (1966)'s and Treynor (1965) indices the performance of portfolios of international mutual funds was higher than the U. S. market from 1985–1994 and 1985–1989.

Otten and Dennis (2002) indicated that the European mutual funds especially small–cap funds were able to add value and exhibit significant outperformance at an aggregate level. The results also revealed positive relation between risk–adjusted return and fund size and a negative relation between risk–adjusted and funds' expense ratio.

Noulas, John, and John (2005) concluded that the equity funds have neither the same risk nor the same return.

Boudreaux and Suzanne (2007) concluded that Investors may not fully take advantage of possible portfolio risk reduction and higher returns if international mutual funds were excluded.

Arugaslan and Ajay (2007) results showed that the risk has a great impact on the attractiveness of Funds. Higher return funds may lose attractiveness due to higher risk while the lower return funds may be attractive to investors due to the lower risk.

Agarwal, RK. et al. (2010) concluded that funds with good managers will be successful.

Roy, S. and Ghosh, S.K. (2012) evaluated the performance of the open–ended mutual fund for the period of 2008–2009. it was concluded that the performance of the selected open–ended mutual fund was not performed satisfactorily during the recession period.

Kesavraj, G. (2013) founded that eighty–eight percent of respondents agreed that mutual funds could provide a high return and less risky. Seventy–three percent of respondents were aware of different tax benefits by investing in mutual fund and it was also found that eighty percent of respondents were satisfied by investing in a mutual fund.

Adhav and Chauhan (2015) concluded that equity–oriented hybrid funds performed better than the other type of hybrid funds and arbitrage fund & conservative debt hybrid funds showed the worst performance.

Data Collection and Data Analysis

1. Data Collection

To achieve the purposes of the study, this research will use quarterly data of mutual funds in Thailand from the official website of the Securities and Exchange Commission, Thailand (SEC). The period of study is 01 January 2013 to 31 December 2017.

1.1. Selection of equity funds

According to the Stock Exchange of Thailand (SET) Database (2017: Q4), There are different fund types in Thailand such as equity, money market, balanced, bond, sector, LTF, RMF and foreign investment. In this study, we focused on equity fund, equity funds are chosen since they carry company stocks that are riskier and more

vulnerable to volatility in price. there are 176 equity funds in Thailand. In the study period, funds were disregarded if they were closed, newly established or had merged with another fund. We determine the sample size by the percentage of population: they are shown in Table 1. In the end, 27 equity funds were chosen for this study.

Table 1. Sample Size by percentage of population

POPULATION	SAMPLE SIZE
100-999	15-30 %
1000-9999	10-15 %
10000-99999	5-10 %
100000+	1-5 %

2. Data Analysis

In this study, it is tried to evaluate risk, return and performance of Thailand equity funds. A total of 27 equity funds risk, return and performance are analyzed.

2.1. Mutual funds risk

2.1.1. Standard Deviation

$$\text{Standard Deviation}=\sqrt{\frac{\sum(r_i-r_{avg})^2}{n-1}}$$

where:

r_i = the return observed in one period (one observation in the data set)

r_{avg} = the arithmetic means of the returns observed

n = the number of observations in the dataset

2.1.2. Beta

$$\text{Beta } (\beta) = \frac{\text{Cov}_{x,m}}{\text{Var}_m}$$

Where:

x = the investment

m = market

$\text{Cov}_{x,m}$ = correlation of investment's return with market's return

Var_m = variance of market return

2.2. Mutual funds return

2.2.1. Equity funds return

When calculating returns of Thailand equity funds, monthly returns of the price index of funds. For the study, 60 months (01 January 2013 – 31 December 2017) are observed.

$$R_p = \left(\frac{P_t - P_{t-1}}{P_{t-1}}\right)$$

Where:

R_p = return on the fund

P_t = price of the fund at month t

P_{t-1} = price of the fund at month t–1

2.2.2. Risk–free rate

In this study, Thailand 1–month T–Bills are selected as the appropriate risk–free–rate and are sourced from Bank of Thailand (BOT).

2.2.3. Market return

In this study, The Stock Exchange of Thailand (SET) price index is used to find whether mutual funds beat the market.

$$R_m = \left(\frac{P_{m(t)}}{P_{m(t-1)}}\right)$$

Where:

R_m = returns of SET

$P_{m(t)}$ = value of SET Price Index on month t

$P_{m(t-1)}$ = value of SET Price Index on month t–1

2.3. Mutual funds performance

2.3.1. Sharpe ratio

Sharpe ratio is a measure of the return of a mutual fund that is greater than the risk–free return of a securities adjusted for risk. It can be calculated as:

$$S = \frac{R_p - R_f}{\sigma_p}$$

Where:

S = Sharpe Ratio

R_p = the average rate of return of equity funds

R_f = risk–free rate using 1–month T–Bills

σ_p = standard deviation of the equity fund's excess return

2.3.2. Treynor ratio

Treynor ratio is a measure of return of mutual funds that greater than the rate of return of securities without risk. It can be calculated as:

$$T = \frac{r_p - r_f}{\beta_p}$$

Where:

T = Treynor Ratio

r_p = equity fund's return

r_f = risk–free rate using 1–month T–Bills

β_p = beta of the equity funds

According to Reilly (1992), whenever $r_p > r_f$ and $\beta_p > 0$, a larger T value means a better portfolio for all investors regardless of their individual risk preferences. In two case, a negative T value may result: when $R_p < R_f$ or when $\beta_p < 0$. If T is negative because $r_p < r_F$, then we deduce that the portfolio performance is very poor, whereas if the negativity of T comes from a negative beta, the fund's performance is excellent.

2.3.3. Jensen's alpha

Jensen's alpha is one of the ways to help determine if a portfolio is earning the proper return for its level of risk. If Jensen's alpha is positive, that means, the portfolio is earning excess returns. In other words, a positive Jensen's alpha means a fund manager has beat the market with stock picking skill. It can be calculated as:

$$J_x = R_x - (R_f + \beta_x (R_m - R_f))$$

Where:

J_x = Jensen's alpha

R_x = the equity fund's return

R_m = the market return

R_f = risk free rate using 1–month T–Bills

β_x = the beta of investment

The alpha sign shows whether the manager of the portfolio is superior to the market and a negative alp ha indicates poorer output.

2.3.4. Information ratio

The information ratio (IR) is a ratio of portfolio returns above the returns of a benchmark to the volatility of those returns. The information ratio (IR) is a measures of portfolio manager's ability to generate excess returns relative to a benchmark. It can be calculated as:

$$IR_x = \frac{R_x - R_f}{\text{Tracking Error}}$$

Where:

IR_x = Information ratio

R_x = the equity fund's return

R_f = the benchmark return

Tracking Error = standard deviation of the difference between returns of the equity fund and the returns of the benchmark

FUNDS	AVERAGE S.D	AVERAGE BETA	AVERAGE RETURN
TREASURY BILL	1.70	-	1.78
SET INDEX	12.19	1.00	5.50
1AMSET50-RA	13.25	0.88	11.36
BBASIC	11.61	0.91	7.69
BTP	12.70	0.75	10.16
CIMB-PRINCIPAL (FAM) DEF	13.12	0.82	11.41
CIMB-PRINCIPAL (FAM) EEF	11.69	0.96	11.65
CIMB-PRINCIPAL EPIF	33.83	0.08	12.22
JB25	11.87	0.94	7.47
KAEQ	12.64	0.93	8.87
KFDNM-D	15.34	0.67	11.95
KFDYNAMIC	15.33	0.67	11.91
KFFIN-D	14.57	0.71	11.60
KFGROWTH-D	15.16	0.70	10.72
KFSEQ-D	14.74	0.71	10.93
K-STAR-A(R)	12.62	0.92	10.73
KTEF	16.40	0.66	13.86
M-S50	11.86	0.97	8.82
ONE-EC14	13.61	0.83	8.88
PHATRA ACT EQ	12.89	0.84	9.05
PHATRA DIVIDEND	13.29	0.83	12.30
RKF2	13.06	0.75	9.49
SCBDA	13.22	0.88	8.01
SCBENERGY	15.44	0.56	6.73
SCBPMO	13.83	0.77	7.77
SCBSE	14.09	0.78	11.79
SSB	13.18	0.85	10.34
TISCOEGF	14.16	0.82	8.62
TSF	16.75	0.62	8.81
AVERAGE	**14.45**	**0.77**	**10.12**

Table 2: Risk and Return of Equity Funds

Results and Discussion

1.Risk and Return of Equity Funds

Descriptive statistics of Thailand equity funds, benchmarks and risk–free rates are given in Table 2. The column shows financial measurement tools. Risk measured by standard deviation and beta. The Standard deviation (S.D) column displays the risk of equity funds, benchmarks and treasury bills. The average risks of equity funds (14.45) are higher than the Stock Exchange of Thailand (12.19) and treasury bill (1.70), thereby equity funds carry high risk compared to the benchmark SET Index. CIMB–PRINCIPAL EPIF (33.83), TSF (16.75), KTEF (16.40), SCBENERGY (15.44) and KFDNM–D (15.34) have the highest risk (S.D). On the contrary, BBASIC (11.61), CIMB–PRINCIPAL (FAM) EEF (11.69), M–S50 (11.86), JB25 (11.87) and K–STAR–A(R) (12.62) have the lowest risk (S.D). Investors often use the standard deviation to assess the danger of a stock or portfolio of stocks. the Beta column shows the volatility of a stock versus the market. The average beta of equity funds (0.77) is lower than 1.0 that means equity funds have lower volatility than the market. M–S50 (0.97), CIMB–PRINCIPAL (FAM) EEF (0.95), JB25 (0.94), KAEQ (0.93) and K–STAR–A(R) (0.92) have the highest beta. On the other hand, CIMB–PRINCIPAL EPIF (0.08), SCBENERGY (0.56), TSF (0.62), KTEF (0.66) and KFDNM–D (0.67) have the lowest beta. The return column indicates returns of equity funds, benchmarks and treasury bills. The average returns of equity funds (10.12) are higher than the Stock Exchange of Thailand (SET) (5.50). KTEF (13.86), PHATRA DIVIDEND (12.30), CIMB–PRINCIPAL EPIF (12.22), KFDNM–D (11.95) and KFDYNAMIC (11.91) have the highest returns. In contrast, SCBENERGY (6.37), JB25 (7.47), BBASIC (7.69), SCBPMO (7.77) and SCBDA (8.01) have the lowest return.

FUNDS	AVERAGE SHARPE	RANK
SET INDEX	0.37	
CIMB-PRINCIPAL (FAM) EEF	0.89	1
KFFIN-D	0.81	2
PHATRA DIVIDEND	0.81	3
1AMSET50-RA	0.78	4
CIMB-PRINCIPAL (FAM) DEF	0.78	5
KTEF	0.76	6
KFDNM-D	0.75	7
KFDYNAMIC	0.75	8
K-STAR-A(R)	0.74	9
SCBSE	0.74	10
SSB	0.71	11
BTP	0.70	12
KFSEQ-D	0.67	13
M-S50	0.67	14
KFGROWTH-D	0.64	15
PHATRA ACT EQ	0.62	16
RKF2	0.62	17
KAEQ	0.61	18
JB25	0.57	19
BBASIC	0.56	20
ONE-EC14	0.56	21
SCBDA	0.54	22
TISCOEGF	0.53	23
SCBPMO	0.50	24
TSF	0.46	25
SCBENERGY	0.45	26
CIMB-PRINCIPAL EPIF	0.40	27
AVERAGE	**0.65**	

Table 3: Equity Funds Sharpe Ratio

2. Equity Funds Performance

2.1. Sharpe Ratio

Table 3 shows the performance of the Sharpe ratio. The higher the Sharpe ratio, the more return the investor is getting per unit of risk. The lower Sharpe ratio, the more risk the investor is carrying to earn additional returns. A higher Sharpe ratio implies to have a better performance. CIMB–PRINCIPAL (FAM) EEF (0.89), KFFIN–D (0.81), PHATRA DIVIDEND (0.81), 1AMSET50–RA (0.78) and CIMB–PRINCIPAL (FAM) DEF (0.78) have the highest Sharpe ratios. On the other hand, CIMB–PRINCIPAL EPIF (0.40), SCBENERGY (0.45), TSF (0.46), SCBPMO (0.50) and TISCOEGF (0.53) have the lowest Sharpe ratios. The Average Sharpe ratio of SET INDEX (0.37) lower than average equity funds (0.65). That means, equity funds have better performance than the Stock Exchange of Thailand (SET).

2.2. Treynor Ratio

Table 4 shows the performance of the Treynor ratio. A fund with a higher Treynor ratio indicates that fund has a better risk–adjusted return compared to a fund with a lower Treynor ratio. A higher Treynor ratio implies that funds have better performances. CIMB–PRINCIPAL EPIF (168.00), KTEF (18.97), KFDNM–D (17.25), KFDYNAMIC (17.25) and KFFIN–D (16.59) have the highest Treynor ratios. On the other hand, BBASIC (7.18), JB25 (7.26), SCBDA (8.09), M–S50 (8.20) and KAEQ (8.30) have the lowest Treynor ratios. The Average Treynor ratio of SET INDEX (4.50) lower than average equity funds (17.47). That means, equity funds have better performance than the Stock Exchange of Thailand (SET).

FUNDS	AVERAGE TREYNOR	RANK
SET INDEX	4.50	
CIMB-PRINCIPAL EPIF	168.00	1
KTEF	18.97	2
KFDNM-D	17.25	3
KFDYNAMIC	17.25	4
KFFIN-D	16.59	5
KFSEQ-D	13.89	6
KFGROWTH-D	13.79	7
SCBSE	13.40	8
PHATRA DIVIDEND	13.05	9
TSF	12.52	10
SCBENERGY	12.41	11
CIMB-PRINCIPAL (FAM) DEF	12.40	12
BTP	11.81	13
1AMSET50-RA	11.68	14
SSB	11.05	15
CIMB-PRINCIPAL (FAM) EEF	10.82	16
RKF2	10.77	17
K-STAR-A(R)	10.18	18
PHATRA ACT EQ	9.48	19
ONE-EC14	9.18	20
TISCOEGF	9.09	21
SCBPMO	8.96	22
KAEQ	8.30	23
M-S50	8.20	24
SCBDA	8.09	25
JB25	7.26	26
BBASIC	7.18	27
AVERAGE	17.47	

Table 4: Equity Funds Treynor Ratio

2.3. Jensen's Alpha

Table 5 displays us the results of Jensen's alpha measure that indicates the selectivity skills of fund managers. Fund managers have either a higher performance or a lower performance relative to the market. CIMB–PRINCIPAL EPIF (10.14), KTEF (9.62), KFDNM–D (7.68), KFDYNAMIC (7.64) and PHATRA DIVIDEND (7.43) have the highest Jensen's alpha. On the other hand, JB25 (2.19), BBASIC (2.52), SCBENERGY (2.87), SCBDA (2.96) and SCBPMO (3.13) have the lowest Jensen's alpha. The Stock Exchange of Thailand

2.4. Information Ratio

Table 6 shows the results of Information Ratio. The information ratio identifies how much a fund has exceeded a benchmark. Higher information ratios indicate a desired level of consistency, whereas low information ratios indicate the opposite. A high ratio means that, on a risk–adjusted basis, a manager has produced better returns consistently compared to the benchmark index. K–STAR–A(R) (21.79), BTP (17.37), KAEQ (17.16), PHATRA ACT EQ (11.37) and CIMB–PRINCIPAL (FAM) DEF (10.94) have the highest Information ratios. On the other hand, M–S50 (–24.09), JB25 (–21.31), CIMB–PRINCIPAL (FAM) EEF (–20.78), BBASIC (–11.26) and CIMB–PRINCIPAL EPIF (0.62) have the lowest Information ratios.

FUNDS	AVERAGE JENSEN	RANK
CIMB-PRINCIPAL EPIF	10.14	1
KTEF	9.62	2
KFDNM-D	7.68	3
KFDYNAMIC	7.64	4
PHATRA DIVIDEND	7.43	5
KFFIN-D	7.18	6
SCBSE	7.11	7
CIMB-PRINCIPAL (FAM) DEF	6.58	8
KFSEQ-D	6.51	9
KFGROWTH-D	6.34	10
1AMSET50-RA	6.31	11
CIMB-PRINCIPAL (FAM) EEF	6.30	12
BTP	5.59	13
K-STAR-A(R)	5.53	14
SSB	5.40	15
RKF2	4.92	16
TSF	4.72	17
PHATRA ACT EQ	4.15	18
ONE-EC14	4.01	19
TISCOEGF	3.79	20
KAEQ	3.63	21
M-S50	3.43	22
SCBPMO	3.13	23
SCBDA	2.96	24
SCBENERGY	2.87	25
BBASIC	2.52	26
JB25	2.19	27
AVERAGE	**5.47**	

Table 5: Equity Funds Jensen's Alpha

FUNDS	AVERAGE IR	RANK
K-STAR-A(R)	21.79	1
BTP	17.37	2
KAEQ	17.16	3
PHATRA ACT EQ	11.37	4
CIMB-PRINCIPAL (FAM) DEF	10.94	5
PHATRA DIVIDEND	9.85	6
1AMSET50-RA	9.70	7
SSB	9.48	8
RKF2	9.29	9
SCBDA	6.91	10
SCBSE	5.50	11
ONE-EC14	5.37	12
KFFIN-D	4.95	13
SCBPMO	4.21	14
KFSEQ-D	3.87	15
TISCOEGF	3.78	16
KFDYNAMIC	3.68	17
KFDNM-D	3.67	18
KFGROWTH-D	3.25	19
KTEF	2.97	20
SCBENERGY	2.14	21
TSF	1.70	22
CIMB-PRINCIPAL EPIF	0.62	23
BBASIC	-11.26	24
CIMB-PRINCIPAL (FAM) EEF	-20.78	25
JB25	-21.31	26
M-S50	-24.09	27
AVERAGE	**3.41**	

Table 6: Equity Funds Information Ratio

Conclusion and Suggestion

In this study, Thailand equity funds risk–return and performances are analyzed over the period from 01 January 2013 to 31 December 2017. Thailand is one of the most popular in Asian markets and during the study period 5 years, The Stock Exchange of Thailand yielded 5.50% compounded on average, per annum. Thailand equity fund risk–return and performances were analyzed by using Standard deviation, Beta, Net Asset Value (NAV), Sharpe ratio, Treynor ratio, Jensen's alpha and Information ratio. The average of Thailand equity funds risk (standard deviation) is 14.45% and the Stock Exchange of Thailand is 12.29%, The average of Thailand equity funds returns are 10.12% and the Stock Exchange of Thailand is 5.50%. Thailand equity funds have higher risk and return than the Stock Exchange of Thailand. How to select a better funds' performance, higher Sharpe ratio and Treynor ratio implies funds have better performance. CIMB–PRINCIPAL (FAM) EEF (0.89) and CIMB–PRINCIPAL EPIF (168.00) have the highest Sharpe and Treynor ratio. Jensen's alpha explains an investment has performed better or worse than it's beta value would suggest. CIMB–PRINCIPAL EPIF (10.14) has the highest of Jensen's

alpha. The Information ratio is used to evaluate the skill of a funds manager, K–STAR–A(R) (21.79) has the best Information ratio.

Table 7: Average Risk, Return and Performance of Thailand Equity Funds

	AVERAGE RETURN	AVERAGE S.D	AVERAGE BETA	PERFORMANCE			
				SHARPE	TREYNOR	JENSEN	IR
EQUITY FUNDS	10.12	14.45	0.77	0.65	17.47	5.47	3.41
SET	5.50	12.19	1.00	0.37	4.50	-	-

Table 8: Top Three Equity Funds Performance

TOP THREE EQUITY FUNDS			
CIMB-PRINCIPAL (FAM) EEF (0.89)	CIMB-PRINCIPAL EPIF (168.00)	CIMB-PRINCIPAL EPIF (10.14)	K-STAR-A(R) (21.79)
KFFIN-D (0.891)	KTEF (18.97)	KTEF (9.62)	BTP (17.37)
PHATRA DIVIDEND (0.81)	KFDNM-D (17.25)	KFDNM-D (7.68)	KAEQ (17.16)

Discussion

Based on the results, different performance measurements result in different funds. However, all funds are professionally managed, and any potential losses are minimized by investment diversification. What fund you invest in will depend on your attitude to risk. If you have zero tolerance for any loss, then mutual funds are probably not for you. Low–risk funds, as well as having a lower chance of making a loss, will also give you a smaller return on your investment. Likewise, a high–risk fund has a greater chance of making bigger losses but also has the potential to make much higher profits.

Suggestion

Based on results, invest in equity funds is a good alternative because it has a lower risk (beta), a higher return than the Stock Exchange of Thailand (SET). Mutual funds have better performance (Sharpe ratio and Treynor ratio) than the Stock Exchange of Thailand (SET).

References

Adhav, Sunil M., & Chauhan, Dr. Pratap M. (2015). "Comparative Study of Mutual Funds of Selected Indian Companies". *International Journal of Science, Technology & Management*, 4(2), 44–51.

Arditti, Fred D. (1971). "Another Look at Mutual Fund Performance". *The Journal of Financial and Quantitative Analysis,* 6(3), 909–912.

Arugaslan, Onur., Edwards, Ed., & Samant, Ajay. (2007). "Evaluating large US–based equity mutual funds using risk–adjusted performance measures". *International Journal of Commerce and Management,* 17(1/2), 6–24.

Aggarwal, Rajesh K., & Jorion, Philippe. (2010). "The performance of emerging hedge funds and managers". *Journal of Financial Economics, Elsevier,* 96(2), 238–256.

Boudreaux, Denis O. et al. (2007). "Empirical Analysis of International Mutual Fund Performance". *International Business & Economics Research Journal,* 6(5), 19–22.

Carlson, Robert S. (1970). "Aggregate Performance of Mutual Funds". *The Journal of Financial and Quantitative Analysis,* 5(1), 1–32.

Grinblatt, Mark., & Titman, Sheridan. (1992). "The Persistence of Mutual Fund Performance". *The Journal of Finance,* 47(5), 1977–1984.

ICI Investment Company Institute. (2019). *Investment Company Fact Book*. Retrieved July 1, 2019, from: https://www.icifactbook.org/ch3/18_fb_ch3,

Jensen, Michael C. (1968). "The Performance of Mutual Funds in the Period 1945–1964". *The Journal of Finance,* 23(2), 1–36.

Kesavraj, Dr. Geeta. (2013). "A Study on Customer Perception Towards Various Types of Mutual Funds in Chennai". *Asia Pacific Journal of Research,* 1(10), 17–26.

Ippolito, Richard A. (1989). "Efficiency with Costly Information: A Study of Mutual Fund Performance, 1965–1984". *The Quarterly Journal of Economics,* 104(1), pp. 1–23.

Malkiel, Burton G. (1995). "Returns from investing in equity mutual funds 1971 to 1991". *The Journal of Finance,* 50(2), 549–572.

McDonald, John G. (1974). "Objectives and Performance of Mutual Funds 1960–1969". *The Journal of Financial and Quantitative Analysis,* 9(3), 311–333.

Miller, Tom W., & Gressis, Nicholas. (1980). "Nonstationarity and Evaluation of Mutual Fund Performance". *The Journal of Financial and Quantitative Analysis,* 15(3), 639 –654.

Noulas, Athanasios G., Papanastasiou, John A., & Lazaridis, John. (2005). "Performance of Mutual Funds". *Managerial Finance,* 31(2), 101–112.

Otten, Roger., & Bams, Dennis. (2002). "European Mutual Fund Performance". *European Financial Management,* 8(1), 75–101.

Redman, Arnold L., Gullet, N. S., & Manakyan, Herman. (2000). "The Performance of Global and International Mutual Funds". *The Journal of Financial and Strategic Decisions*, 13(1), 75–85.

Roy, Subrata., & Ghosh, Shantanu K. (2012). "A Comparative Study of Mutual Fund Performance during Recession in India". *International Journal of Financial Management*, 2(2), 53–64.

SEC. (2017). *"The Securities and Exchange Commission, Thailand".* Retrieved July 1, 2019, from http://www.sec.or.th/

Sharpe, William F. (1966). "Mutual Fund Performance". The Journal of Business, 39(1), 119–138.

ThaiBMA. (n.p.). *"The Thai Bond Market Association".* Retrieved July 1, 2019, from: http://www.thaibma.or.th/

Thai mutual fund. (n.p.) "About Mutual Fund". Retrieved July 1, 2019, from: https://www.thaimutualfund.com /AIMC/aimc_about.jsp