Evaluating Performance of Mutual Funds Using Traditional and Conditional Measures: Evidence from Thai Mutual Funds

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Abstract

This paper studies the performance of mutual funds in Thailand during the period 2000-2006, using Jensen's traditional technique and a conditional technique which incorporates predetermined information variables, namely Treasury bills, dividend yield, market return and the January effect. The results show that Thai mutual funds use naïve diversification strategies and follow the stock market very closely but under-perform the market by 1.7 percent per annum. The inferiority of the performance is not statistically significant. Retirement savings scheme funds over-perform the market, whereas general funds under-perform the market. The two models yield fairly similar results but the conditional model makes the performance look worse. Dividend yield, Treasury bills and term structure are individually and jointly significant in most funds, particularly flexible funds and funds in retirement savings schemes.

JEL classification: G11, G23

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1. Introduction

Mutual fund investment is an alternative method of investment. Due to its various benefits, such as diversification, professional management, liquidity, flexibility and convenience, the popularity of mutual fund investment has increased dramatically in many countries. In the U.S., thousands of mutual funds are traded in the financial market. It is claimed that one half of U.S. households invest in mutual funds (Investopedia, 2006). As a result, fund performance measurement has become one of the popular areas in financial literature. In past decades, a number of studies advocated several performance evaluation techniques and tried to measure the performance of funds. However, due to the demand and the availability of data, these studies are mainly based in the U.S. and other developed markets (e.g. Jensen (1968), Cumby and Glen (1990), Ippolito (1989), Ferson and Schadt (1996), Blake and Timmermann (1998), Sawicki and Ong (2000), Kothari (1997) and Bollen (2005)).

Unlike those in the U.S., mutual funds in Thailand were not established until quite recently, although their popularity has risen dramatically. For instance, in 2000, household savings in Thailand totalled approximately THB 4,300 billion, whereas mutual funds holdings were worth approximately THB 140 billion. Six years later household savings were slightly increased, to around THB 6,000 billion, whereas mutual fund holdings were worth more than THB 1,000 billion (Bank of Thailand, 2007). Additionally, the number of funds in Thailand has increased by more than three times in the past six years.

This phenomenon is primarily due to the government campaigns to encourage personal long-term savings and to promote investment in the capital market in order to create long-term sustainability for it. These campaigns include advertising and the offer of tax benefits to investors.

Hitherto, mutual funds in Thailand have been widely welcomed. There has been some research into fund performance in Thailand (e.g. Pornchaiya (2000), Sakavongsivimol (2002), Nitibhon (2004)) but the research scholars concerned still use short period of observations and survey a limited number of funds which means that fund performance in Thailand is still ambiguous.

The main purpose of this paper is to investigate performance of mutual funds in the Thai context. Our contribution is that we fulfil the gap in the fund performance literatures which are mainly based on the U.S. and other developed markets but only few studies have examined whether those findings carry over to the emerging markets. This is important because mutual fund investment in emerging market has become relatively popular nowadays. Besides, emerging markets have different characteristics to developed markets in many aspects (for instance, volume and frequency of trading) which mean performance measurement may need to be adopted for these markets. Thus, in this paper, we extend the fund performance measurement to an emerging market using Thai market as a case study. We use a richer and more updated dataset than the previous studies and employ two well-known risk-adjusted approaches, specifically, Jensen (1968) traditional approach and the conditional approach taken by Ferson and Schadt (1996) which incorporate predetermined variables in the model in order to capture time varying in beta.

We find, first, that Thai mutual funds overall under-perform the market but at an insignificant level. Nevertheless, these inferior performances are generated from general mutual funds. Retirement savings scheme funds, conversely, still perform better than the market. Second, Thai mutual funds strongly follow the stock market which is the evidence of using naïve strategies to diversify their portfolios. Third, incorporating predetermined variables in the model creates rather similar results but slightly lower fund performance and higher model's goodness of fit. Finally, predetermined information variables, particularly dividend yield, short-term interest rate and term structure, are jointly and individually significant in most of the funds, except those in the general equity category.

The remaining of the paper is organised as follows. Section 2 gives empirical evidence of fund performance in the literature. Section 3 describes the data used in this paper. Section 4 explains the rationale of the models. Section 5 presents the empirical results of the research and, finally, section 6 draws some conclusions and makes suggestions for future research.

2. Literature Review

Jensen (1968) investigates the performance of 115 U.S. open-ended mutual funds from 1945 to 1964 using the traditional measure. He finds that, on average, funds perform 1.1% and 0.4% per year less than the market using net returns and gross return, respectively. He suggests that fund managers have no ability to outperform buy-and-hold strategy even before deducting fees and expenses.

Ferson and Schadt (1996) use both traditional and conditional measures. They examine 67 open-ended funds in the U.S. market during 1968-1990 using 5 predetermined information variables, including a 1-month Treasury bills, dividend yield, slope of term structure, quality of spread in the bond market and dummy variable for the January effect. Their results show negative alphas in overall fund performance when using the unconditional model but reveal that the alphas shift and become positive when using the conditional model. They suggest that using unconditional model makes the performance of the funds look better. Furthermore, there is statistical evidence of incorporating information variables, especially in Treasury bill, dividend yield and term structure.

Malkiel (1995) examines fund performance in the U.S. market during 1972-1991 and finds that the performance of funds is not different from zero. Cumby and Glen (1990) also investigate 15 international funds which are based in the U.S. market and find positive alphas in only 3 funds but these are not statistically significant. Gruber (1996) also analyses fund performance using the traditional measure and finds that open-ended funds under-perform the benchmark by 0.03 percent per year. Otten and Bams (2004) provide an assessment of fund performance models. They apply a wide range of models including both unconditional and conditional models, to the U.S. funds over the period 1962 to 2000. They claim that the conditional models are superior to those unconditional models. Their results also reveal an overall negative performance in both models but the alphas do not change much between the 2 models. However, they suggest that the conditional model does improve the performance of funds.

There is also a number of research studies of managed fund performance outside the U.S. Blake and Timmermann (1998) investigate unit trusts in the UK for the period

1972-1995 and find inferior performance of 1.8% per annum. Bird (1983) finds poor performance of funds in Australia during the sample period 1973-1981. In contrast, Sawicki and Ong (2000) who investigated Australian funds between1983 and 1995, found positive performance and they confirm the statistically significance of incorporating lagged information variables in the model, especially dividend yield. They find that the conditional model shifts the alphas to the right and makes funds look better. Dahlquist (2000) explores Swedish fund performance in different fund classifications. He finds superior performance only from equity funds. Roy (2003) and Fauziah (2007) also produce similar evidence of under-performing mutual funds in India and Malaysia, respectively.

In Thailand, there is some existing empirical research on mutual fund performance using a wide range of data and methodologies. Plabplatern (1997) applies a portfolio holdings measure to study the performance of 63 closed-end funds using 4 years of quarterly data. He finds overall positive performance. Pornchiya (2000) applies Jensen's traditional model to equity funds for the period 1996-1999 and concludes that equity funds in Thailand are unable to outperform the market. Srisuchart (2001) Karinchai (2001) and Vongniphon (2002) use Jensen's traditional approach to measure performance and they draw a similar conclusion: that mutual funds in Thailand do not provide abnormal return. Sakavongsivimol (2002) also apply Jensen's traditional measure to investigate the performance of funds at the company level. He finds that 4 companies provide positive return while the returns of another 6 companies are not different from zero. Nitibhon (2004) applies several models, e.g. Jensen's traditional model, the conditional model, factor model and portfolio holding model, to 114 equity funds in Thailand for the period 2000-2004. His results show positive returns of equity funds but not enough to be statistically significant.

3. Data and Methodology

3.1 Sample

The classification of the Association of Investment Management Companies (AIMC), an organisation which is responsible the supervision of mutual funds in Thailand, is based upon the investment policies and objectives of each fund (AIMC, 2007).

Generally, mutual funds can be broadly classified into 3 style categories. First, an '*Equity fund*' is a fund which invests primarily in equity instruments (more than 35% of the net asset values (NAVs)[1]). Second, a '*Fixed Income fund*' is fund which has the investment policy of investing in debt instruments. Finally, a *'Flexible fund'* is fund which invests in a combination of different classes of asset and its portfolio holding depends on the fund manager's decision. This category has the subset of a '*Balanced fund*', which has to remain an equity instrument holding between 35% and 65% of the NAV at any time.

In Thailand, mutual funds can be further classified as either general funds or retirement savings scheme funds. The latter type requires a long term investment and provides tax benefits to investors. The retirement savings scheme funds was established in 2002 in order to encourage the nation's savings and develop and stabilize its financial market. Currently there are two types of retirement savings scheme, namely, the Retirement Mutual Fund (RMF) and the Long-Term Equity Fund (LTF). These two schemes are fairly similar in their general idea and purpose. As a result, in this paper, we treat both types of retirement savings scheme fund as a single category and call it the RMF fund category.

This study looks at Thai open-end mutual funds from June 2000 to August 2006. We focus our research on only two fund classifications; equity funds and flexible funds. Balanced funds are considered also, as part of the flexible fund classification. Fixed income funds, international funds, funds that changed their policy during study period and funds with specific investment policy (such as index funds, sector funds) are eliminated from this study, since their risk exposure is different and, as a result, they require different benchmarks to measure their performance. In total we consider 182 open-end funds, made up of 84 general equity funds, 30 RMF equity funds, 38 general flexible funds and 12 RMF flexible funds. We have obtained the weekly net asset values (NAVs) from the AIMC. The NAVs account for capital gains dividends (reinvested) and administration fees (subtracted).

[1] Net asset value (NAV) is the total value of the fund's asset at current market value minus current liabilities and any prior charges.

Table 1 presents some characteristics of funds in each classification. In terms of number of funds and total net asset values (TNAs), half of our sample is dominated by general equity funds. Nonetheless, general flexible funds have the largest average size of all the fund categories, even nearly twice as large as the overall fund. Funds in the retirement saving scheme categories (RMF equity and RMF flexible) have much lower numbers of funds, total net asset values, average size and average age than general fund categories, since they were just established only in 2002. In general, funds in our sample have an average life of 4 years.

TABLE 1: Fund characteristics

The table reports characteristics of funds grouped by style. RMF fund refers to funds in the retirement savings scheme. N and TNA refer to the number of funds and the total net assets in THB million, on 25 August 2006, respectively. Size refers to the market capitalisation (in THB million) of the portfolios of funds during its sample period. Age refers to life (in weeks) of funds in the sample period. The table contains means and medians (in parentheses).

Categories	N	TNA	Size	Age
General Equity funds	84	37,748	402	254.3
			(320)	(322)
RMF Equity funds	30	15,517	192	106.4
			(183)	(95.5)
General Flexible funds	38	25,553	750	217.0
			(746)	(230)
RMF Flexible funds	12	6,346	264	165.5
			(342)	(137)
ALL funds	163	85,166	454	214.6
			(395)	(227.5)

Weekly NAV data is then calculated to weekly continuously compounded returns. Descriptive statistics of fund returns in each category are in Appendix A. Names and summary statistics of individual funds for the period 2000-2006 are in Appendix B.

Our sample should not suffer from the survivorship bias as we include all funds, both dead and surviving funds, in our study. The survivorship bias may be expected to occur if the funds which are unable to survive for the whole period of the study are eliminated and causes the performance measurement to be biased upwardly. A number of studies consider the effect of this phenomenon. For instance, Elton et al (1996) estimate the bias in the U.S. mutual fund market as 0.9% per annum. Otten and Bams (2004) document a severe bias of survival in alpha overestimation of up to

0.64% per year, if dead funds are not included. Table 2 presents returns of all funds which include dead funds and surviving funds in column 2 and returns of surviving funds in column 5. Then we compare the difference between these 2 results in column 8.

Table 2: Survivorship bias

The table compares mean returns of all funds and surviving funds in our sample. Fund returns are calculated based on equally weighted portfolio of funds in a particular style. The return data are annualised and net of expenses. SD refers to standard deviation. N refers to number of funds. Columns 2-4 report summary statistics of all funds sample which include dead funds. Columns 5-7 report summary statistics on the surviving sample. Survivor bias, in column 8, is calculated by subtracting mean returns of surviving funds portfolio from mean returns of all funds portfolio.

	All funds			Surviving funds			Survivor
Portfolios	Mean	SD	N	Mean	SD	N	bias
General Equity	0.085	0.031	98	0.089	0.031	84	-0.003
RMF Equity	0.183	0.023	31	0.178	0.022	30	0.005
General Flexible	0.066	0.023	40	0.065	0.023	36	0.001
RMF Flexible	0.148	0.021	13	0.149	0.022	12	0.000
All-fund	0.084	0.029	182	0.085	0.029	162	-0.001

3.2. Methodology

We employ two risk-adjusted single index measures in this study, Jensen's traditional model and conditional model. The Jensen's traditional model, the so-called unconditional model, is the first risk-adjusted performance measurement; it was developed by Jensen in 1968. This univariate regression model is based mainly on the capital asset pricing theory (CAPM) by Sharpe, Lintner, Treynor and Mossin, which states that the expected returns of any security (or portfolio) are a function of systematic risk (β_p) of the market risk premium ($R_{mt} - R_{ft}$). Consequently, if the fund manager is able to forecast the market, the interception of an estimation regression will differ from zero. Jensen's estimated regression equation is as follows.

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + \varepsilon_t \quad (1)$$

Where ($R_{pt} - R_{ft}$) and ($R_{mt} - R_{ft}$) are the excess return on portfolio p and on the benchmark portfolio over the risk-free rate (R_{ft}) at time t, respectively; β_p is the

parameter estimating the unconditional beta of portfolio p; ε_{it} is the random error of portfolio p. The intercept of this model, α_p , is the so-called Jensen's alpha. It measures the ability of the fund manager to forecast future returns. A fund with buy-and-hold strategy is expected to yield a zero intercept. If a fund manager performs better (worse) than the relative benchmark returns, then the Jensen's alpha will be positive (negative).

The unconditional Jensen's alpha is widely used in both academic and practical work due to its applicability. Nevertheless, the major criticism of this approach is that the coefficient (β_p) is assumed to be constant and, if fund managers follows active strategies which make expected returns and risks vary through time, the model becomes biased and unreliable (e.g. Ferson and Schadt, (1996), Dybvig and Ross (1985)).

Ferson and Schadt (1996) introduced the conditional model, which attempts to mitigate the drawbacks of the traditional model by time-varying returns and risk. The intuition behind this model is that the active managers may adjust their portfolio dynamically according to any economic conditions which will lead to a change in beta. If the beta coefficient is fixed, the performance measure will be biased. Furthermore, in the semi-strong form efficiency market, using this readily available public information should not be judged a superior performance. As a result, Ferson and Schadt modify traditional model (Equation 1) by assuming that the conditional beta is a linear function of a vector of predetermined variables in order to capture time-varying expectations.

$$\beta_p Z_{t-1} = \beta_{0p} + \beta_p' Z_{t-1} \tag{2}$$

Where Z_{t-1} represents a vector of predetermined variables at time t-1, these variables are public information variables that previous studies have shown evidence of predictability power for returns and risks of stocks and bonds. The Ferson and Schadt's conditional model for the single index model is generated as follows.

$$R_{pt} - R_{ft} = \alpha_p + \beta_{0p}(R_{mt} - R_{ft}) + \delta'_p\,[(R_{mt} - R_{ft})Z_{t-1}] + \varepsilon_t \qquad (3)$$

Where ($R_{pt} - R_{ft}$) and ($R_{mt} - R_{ft}$) are the excess return on portfolio p and on the benchmark portfolio over the risk-free rate (R_{ft}) at time t, respectively; β_p is the parameter estimating the conditional beta of portfolio p. Z_{t-1} is the information vatiables at time t-1 which is the interaction terms to capture the variability in beta. According to the previous literature, there are a number of macroeconomic variables which could potentially be used as predetermined information variables (Z_t), e.g. dividend yields, yield spread and interest rate; δ_p is the vector of parameter that measure how much the conditional beta varies with respect to the vector of public information variables; ε_{it} is the random error of portfolio p.

3.3 Variables

The Stock Exchange of Thailand Index (SET index) is used as a benchmark portfolio. This index is value-weighted, comprising all stocks listed in the Stock Exchange of Thailand (SET). Its returns are extracted from the DataStream database[2].

Bank of Thailand's 7-day repurchase rate (Repo rate) is used as a risk-free rate factor. The data are collected from DataStream which present an annual yield. As a result, the continuously compounded weekly rate ($R_{w,ft}$) can be calculated using the following formula:

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[2] The return index represents the theoretical aggregate growth in value of the constituents of the index. The index constituents are deemed to return an aggregate daily dividend which is included as an incremental amount to the daily change in price index. The calculation is as follows:

$$RI_t = RI_{t-1} * \frac{PI_t}{PI_{t-1}} * \left(1 + \frac{DY}{100 * n}\right)$$

Where: RI_t = return index on day t

RI_{t-1} = return index on previous day

PI_t = price index on day t

PI_{t-1} = price index on previous day

DY = dividend yield of the price index

n = number of days in the financial year (normally 260)

$$R_{w,ft} = \sqrt[52]{(1+R_{a,ft})} - 1 \quad (4)$$

where $R_{a,ft}$ is the 7-day repurchase annual rate

In order to capture changes in economic conditions, this study employs four predetermined information variables which have shown predictability power for security returns and risk and are widely used in the literature. These predetermined information variables are (1) the lagged Treasury bill yield, (2) the lagged dividend yield of value weighted Stock Exchange of Thailand index (SET index) (3) a lagged measure of the slope of term structure (4) a dummy variable for the month of January.

We use 7-day repurchase rate of the Bank of Thailand as the Treasury bill yield since its maturity date is close to our fund data. This data are extracted from the DataStream database in an annualised rate and we then transform the data to the weekly continuous return. The dividend yield is the total dividend amount on the total SET index value. This data are also obtained from the DataStream database. The slope of term structure is a constant maturity 10-year Treasury bond yield less the 3-month Treasury bill yield. The Correlation matrix of market returns and three predetermined information variables are presented in Table 3 below.

Table 3. Correlation matrix of predetermined variables

The table presents correlation matrix of market returns and three predetermined variables. R_m is the market returns which are the returns of SET index. This data are from DataStream database. TB, Treasury bill yield, is Bank of Thailand 7-day repurchase rate which are taken from the DataStream Database and adjusted to the continuously compounded weekly rate. TS is a term structure of interest rate which is estimated by subtracting the 3-month Treasury bill yield from the 10-year Treasury bond yield. This information is taken from the database of the Bank of Thailand.

	R_m	TB	TS	DY
R_m	1.00	-	-	-
TB	-0.03	1.00	-	-
TS	-0.06	-0.64	1.00	-
DY	0.02	0.66	-0.66	1.00

4. Empirical results

The OLS estimation regressions are performed. Because of the different fund styles in our datasets, the models are estimated on 3 levels: first, the aggregated level (all-fund portfolio), which is an equally weighted portfolio of all funds (182 funds); second, the fund style level, for which 4 equally weighted portfolios were surveyed, based on their style (General equity, RMF equity, General flexible and RMF flexible portfolios); and third, the fund level, in which 182 funds were estimated individually.

Panels A and B in Table 4 shows the results of regression estimation at aggregated and style level, using traditional and conditional measures, respectively. The results in panel A suggest that, overall, funds have an inferior performance to the market by 0.0217 percent per week (1.12% per annum). However, this inferior performance is statistically insignificant. This inferior performance results mainly from general fund portfolios. It can be seen that retirement savings fund portfolios, both RMF equity funds and RMF flexible funds, outperform the market, though at an insignificant level. Unlike the general fund portfolios, the general equity fund and general flexible funds portfolio under-perform the market insignificantly. Nevertheless, all portfolios show a very high adjusted R-Squares which consistent to the literature (e.g. Ferson and Schadt (1996), Sawicki and Ong (2000). The high adjusted R-Square implies that these fund portfolios follow the market closely. Besides, this high adjusted R-square indicates the possibility of using naïve diversification strategies.

The beta coefficients in the every portfolio are less than one. This shows that portfolios are more diversify than the market. The general equity fund portfolio has the highest beta coefficient while general flexible fund portfolio has the least beta coefficient. Thus, these are consistent to its fund styles. Additionally, there is no evidence of the autocorrelation problem in any portfolio, except the RMF flexible funds portfolio.

Table 4 (Panel B) shows the results of the regression estimation using a conditional measure. This shows similar results to the traditional measure, although the adjusted R-squares are slightly higher. With the exception of the RMF flexible funds portfolio, performances generated from the conditional model are weaker than those using the

traditional model. The all-fund portfolio shows inferior performance by 1.71% per annum, compared to 1.12% per annum by traditional model. These results are contrast to the previous studies (e.g. Ferson and Schadt (2006) and Sawicki and Ong (2000)) which find that incorporating predetermined information variables shifts performance to the right and make fund performance looks better.

Predetermined information variables provide evidence of the marginal explanatory power in the performance measure. The results show that none of these variables is statistically significant at the aggregated level. At the style level, none of additional variables is statistically significant for the General equity funds portfolio which imply to the passive strategy used in this fund style category. Nevertheless, the Treasury bills yield and dividend yield are statistically significant in the RMF equity funds portfolio and general flexible funds portfolio. Dividend yield and term structure are also highly significant in the RMF flexible funds portfolio. These results show evidence of time variation in beta with respect to the economic conditions which are consistent and comparable to those of Nitiphon (2004), who finds an insignificant result of including publicly information variables in Thai equity funds and those of Sawicki and Ong (2000) and Ferson and Schadt (1996), who report individually statistical significance in the short-term interest and dividend yield although they confirm the improvement in performance relative to the traditional measure.

Table 4: Regression estimates of measure of performance using an equally weighted portfolio of funds

The tables report the results of the estimation Traditional Jensen's measure and Unconditional measure in panel A and B respectively. The measures estimate for each style portfolio and aggregated portfolio for June 2000 to August 2006 using ordinary least square. T-statistics values are in parenthesis ( ). Portfolios are calculated based on equally weighted portfolio of funds with a particular style. α_p represents abnormal returns of portfolio p. $R_{p,t}$ is weekly excess returns of portfolio p at time t, R_m is weekly excess returns of SET index at time t, TB is 7-day treasury bill yield, DY is dividend yield of SET index, TERM is the slope of the term structure of interest rates estimated by the differences between the 30-Day Treasury bill and the 10-year government bond yield and JAN is dummy variable, equal to 1 if t-1 is January, otherwise=0. N refers to number of funds in included in portfolio. OBS refers to observation period of each portfolio. D-W is results for Durbin-Watson autocorrelation test. Partial F-test is under the null hypothesis that additional variables are jointly equal zero. T-statistics in panel B are adjusted for heteroscedasticity using White's (1980). *** significant at the 1% level. ** significant at the 10% level. * significant at the 10% level.

Panel A: Unconditional Jensen's measure $R_{p,t} = \alpha_p + \beta_p(R_{m,t}) + \varepsilon_{p,t}$

	Fund Style Portfolios	N	Obs.	α_p	β_p	Adj. R^2	D-W	F-Stat
1	General Equity	98	323	-0.000347	0.89980***	0.9381	2.3744	4880.751***
				(-0.80)	(69.86)			
2	RMF Equity	31	242	0.000697	0.69393***	0.8736	2.2354	1667.276***
				(1.34)	(40.80)			
3	General Flexible	40	323	-0.000166	0.65856***	0.9201	2.2725	3710.360***
				(-0.46)	(60.91)			
4	RMF Flexible	13	243	0.000101	0.68366***	0.9412	2.5717	3871.521***
				(0.30)	(62.22)			
5	All-fund	182	323	-0.000217	0.83189***	0.9481	2.3447	5878.406***
				(-0.60)	(76.67)			

Panel B: Conditional Jensen's measure $R_{p,t} = \alpha_{cp} + \beta_{0p}(R_{m,t}) + \beta_{1p}(R_{m,t} * TBt\text{-}1) + \beta_{2p}(R_{m,t} * DYt\text{-}1) + \beta_{3p}(R_{m,t} * Termt\text{-}1) + \beta_{4p}(R_{m,t} * JANt\text{-}1) + \varepsilon_{p,t}$

	Fund style portfolios	N	Obs	α_{cp}	β_{0p}	β_{1p}	β_{2p}	β_{3p}	β_{4p}	Adj. R^2	D-W	F-stat	Partial F-test
1	General Equity	98	322	-0.0005	0.9***	-2.0109	0.0467	-0.0120	0.0456	0.9386	2.39	981.9***	1.60296
				(-1.18)	(4.7)	(-1.52)	(1.22)	(-0.35)	(0.87)				
2	RMF Equity	31	242	0.0006	0.1057	-4.8***	0.3***	0.0272	-0.0313	0.9008	2.47	438.7***	17.43***
				(1.26)	(0.66)	(-4.1)	(5.2)	(1.16)	(-0.17)				
3	General Flexible	40	322	-0.0004	0.4***	-2.192*	0.1***	0.0138	-0.0618	0.9301	2.29	854.9***	12.39***
				(-1.1)	(3.6)	(-1.90)	(4.7)	(0.63)	(-0.80)				
4	RMF Flexible	13	243	0.0002	0.169*	0.1360	0.1***	0.1***	0.0181	0.9476	2.00	875.1***	8.34***
				(0.67)	(1.83)	(0.18)	(4.6)	(5.5)	(0.51)				
5	All-fund	182	322	-0.0003	0.8***	-1.6471	0.0310	-0.0067	0.0158	0.9483	2.36	1178.3***	1.35068
				(-0.92)	(5.0)	(-1.37)	1.22	(-0.23)	(0.36)				

Regression estimation was also performed on the individual level. A summary of positive and negative alphas on the individual level is presented in Table 5. Although most funds are statistically undistinguished from zero, negative performance funds are twice those of positive funds. Comparing the two models shows that the conditional model creates more negative funds while reducing positive funds. However, when we examine the details more closely, we can see that this conclusion is not identical in every fund style category. Notably, the conditional model seems to improve performance in retirement savings funds, while worsening the performance of general funds.

Table 5: Summary of numbers of positive and negative alphas at the individual level

The tables summarise number of funds with positive and negative alphas at the individual level using Traditional Jensen model and Conditional model in panel A and B, respectively. N refers to number of funds in particular style category. NEG refers to number of funds with negative performance. POS refers to number of funds with positive performance. Column3-4 report number of funds which have negative and positive returns, respectively, with regard to any significant level. Column 5-7 show results at 5% significant level of negative, zero and positive abnormal returns respectively.

Panel A: Traditional model

Categories	N	ALL		5% Significant level		
		NEG	POS	NEG	ZERO	POS
General Equity	97	54	43	3	86	8
RMF Equity	31	22	9	2	27	2
General Flexible	40	29	11	4	34	2
RMF Flexible	13	9	4	1	12	0
Total	181	114	67	10	159	12

Panel B: Conditional model

Categories	N	ALL		5% Significant level		
		NEG	POS	NEG	ZERO	POS
General Equity	94	60	34	3	96	5
RMF Equity	29	20	9	2	24	3
General Flexible	38	30	8	7	29	2
RMF Flexible	12	7	5	2	10	0
Total	173	117	56	14	149	10

Individual regression estimations indicate that 48 and 39 funds (approximately 28% and 22% of the total) are significant at a 5% level in dividend yield and Treasury bills yield, respectively. Additional variables seem to be more important in explaining return in Flexible funds than Equity funds. Table 6 summarises the number of funds for which predetermined variables are individually significant. This result is consistent to that of Sawicki and Ong (2000), who find that the dividend yield is a significant variable in most of the funds in their sample.

Table 6: Summary of numbers of significant betas

The table presents the summary of the number of funds and its percentage in each style category which are significant in the predetermined variables. N refers to number of funds in each style category. TB refers to Treasury-bill yield. DY refers to Dividend yield. TERM refers to term structure of interest. JAN refers to the dummy variable for the month of January.

Categories	N	TB		DY		TERM		JAN	
		5%	(%)	5%	(%)	5%	(%)	5%	(%)
General Equity	95	14	(14.74)	14	(14.74)	3	(3.16)	7	(7.37)
RMF Equity	29	8	(27.59)	13	(44.83)	8	(27.59)	5	(17.25)
General Flexible	38	30	(78.95)	16	(42.11)	11	(28.95)	9	(23.69)
RMF Flexible	12	7	(58.34)	5	(41.67)	5	(41.67)	2	(16.67)
Total	174	39	(22.42)	48	(27.59)	27	(15.52)	23	(13.22)

Table 7 shows evidence to test whether the alphas of the traditional model differ from the conditional model, using both the parametric t-test and the non-parametric Wilcoxon test. The results suggest no evidence of statistical difference between the two models.

Table 7: Comparison of abnormal performance within fund style categories

The table shows the comparison of abnormal performance of each style categories in the individual level. T-Stat refers to the parametric t-test. Wilcoxon refers to non-parametric Wilcoxon test. Prob refers to probability of the particular test.

Categories	T-Stat		Wilcoxon	
	Value	Prob	Value	Prob
General Equity	0.29577	0.76770	0.81953	0.41250
RMF Equity	0.34120	0.73420	0.62129	0.53440
General Flexible	0.41040	0.68270	0.62979	0.52880
RMF Flexible	0.63350	0.53270	0.51673	0.60530
Total	0.24314	0.80800	0.63884	0.52290

In order to determine whether the explanatory power of the conditional model differs from that of the traditional model, a Loglikelihood-ratio test was performed. The null hypothesis of this test is that this additional set of regressors is not jointly significant. The results, shown in Table 8, reveal that, apart from the general equity funds portfolio, all predetermined variables are jointly significant at 1% level in every fund portfolio. A Loglikelihood-ratio test was also performed individually and its summarised results are shown in Table 9. This shows that, at the individual level, the predetermined variables are jointly significant in only 64 out of 174 funds or approximately one-third of the whole sample. However, up to 67% of RMF flexible funds show evidence of being jointly significant in the predetermined variables compared to only 26% of the general equity funds. This yields similar results, although not so strong, to those of Ferson and Schadt (1996), who find levels of joint significance in the information variables.

Table 8: Log Likelihood ratio test (LR test)
The table show results of F-test and Log Likelihood-ratio test of each style portfolio. Null hypothesis of these two tests is that the additional set of predetermine variables are not jointly significant. *** is significant at the 1% level .

Portfolios	F-Stat	LR Test
General Equity	1.602958	6.468174
RMF Equity	17.433***	62.647***
General Flexible	12.393***	46.922***
RMF Flexible	8.326***	31.948***
All-fund	1.350638	5.458604

Table 9: Summary number of funds which have significance in the LR test
The table shows a summary of number of funds and its percentages of each style category in the individual level which have significant in the Log Likelihood-ratio test. Null hypothesis of these two tests is that the additional set of predetermine variables are not jointly significant. N refers to number of funds.

Category	N	5% Sig	(%)
General Equity	95	25	26.32
RMF Equity	29	13	44.83
General Flexible	38	18	47.37
RMF Flexible	12	8	66.67
Total	174	64	36.79

5. Conclusion

This study examines the performance of Thai mutual funds using Jensen's traditional model and conditional model which are widely known in the literature and also compares the results of using the two measures. The traditional model was developed by Jensen in 1968. This model is based on the well-known CAPM theory and gives the systematic risk as fixed over time. In contrast to the traditional approach, although also based on CAPM theory, the conditional model of Ferson and Schadt (1996) allows risk exposure in the model to vary over time. The intuition behind this model is that the active fund manager may adjust the portfolio in response to changing economic conditions. However, using readily available economic information should not be considered evidence of superior performance. As a result, Ferson and Schadt propose their conditional model, which incorporates predetermined information variables into the model.

Like the U.S. findings, the findings in Thailand show insignificant negative abnormal returns for mutual funds. However, when we examine the details more closely, we find that funds in the general fund categories, both equity and flexible funds, are unable to earn superior returns in the market. In contrast, funds in retirement savings schemes provide positive returns. Besides, the high adjusted R-square shows that funds managers follow the market very closely and infers to the naïve diversification strategies being used. Although there is nothing wrong with this strategy and the portfolio is still well diversified, this strategy is costly and could consequently diminish the performance of funds.

When predetermined information variables are incorporated, the conditional model yields similar results to the traditional model, although there is an increasing number of funds with negative performance. While none of the predetermined variables is significant in the all-fund portfolio, dividend yield, Treasury bills yield and term structure appear to be highly statistically significant in the general flexible fund portfolio, the RMF flexible fund portfolio and the Equity fund portfolio. As in the literature, the present study finds the dividend yield and Treasury bills to be primarily significant among most of the funds, although it is not as strong as claimed by the conclusions in the literature. Furthermore, we find that incorporating information

variables is statistically jointly significant in every fund portfolio except the general equity fund portfolio.

Our results, then, show both similarities and contradictions to the literature. The similarity is that the evidence of inferior performance of mutual funds in Thailand, although at an insignificant level. Additionally, there is individual and joint significance in the predetermined variables, particularly in Treasury bills and dividend yields, although the evidence is not so strong as in the literature. Interestingly, these results are in contrast to those of Nitiphon (2004), who also investigates the performance of Thai mutual funds and finds positive results. This is potentially due to the difference in the length of the period of observation, which makes the changes in performance apparent. Another contradiction is that we find that adding predetermined variables increases the number of under-performing funds, whereas previous studies claim that the predetermined variables shifted funds to make performance look better. We also find that retirement savings funds, which are assumed to be passive funds (buy-and-hold portfolios), react more to the lagged information variables than do those general funds, which are likely to use a more active strategy.

These contradictions call for further study, in order to find out what causes them. Furthermore, it is clear that the results of the general fund category contrast with those of the retirement savings funds. This implies differences in the characteristics, and perhaps strategies being used of these two fund categories, which should also be further investigated. Some likely possibilities are the difference in the length of the observation period between the retirement savings funds and general funds, as well as the inappropriate benchmark being used. Hence, we suggest that more work should be done by taking a closer look at the differences between these two types of fund. The model validation should be performed and, a more sophisticated and appropriate model should be developed. Finally, an additional exploration of fund strategy and the factors which influence fund performance should also be undertaken.

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Appendix A: Descriptive Statistics of Weekly Returns for fund style portpolios

Table 2: Descriptive statistics of weekly returns for fund style portfolios, Treasury bills and market returns

The table reports descriptive statistics of the funds in our sample, T-bill and returns of market, between June 2000 and August 2006. We group funds by investment style. Fund returns are calculated based on equally weighted portfolio of funds in a particular style. 7-day T-bill, in column 7, is the Thai Treasury bill with maturity date of 7 days. Column 8, SET refers to returns of SET index (the Stock Exchange of Thailand). N refers to number of funds included in portfolio. SD refers to standard deviation. Jarque-Bera is a test statistic for the normal distribution under null hypothesis of normally distributed errors. *** significant at 1% level

	All-fund	General Equity	RMF Equity	General Flexible	RMF Flexible	7-day T-bill	SET
Mean	0.001942	0.001957	0.003640	0.001623	0.003074	0.000386	0.002518
Median	0.002977	0.002982	0.005570	0.002322	0.004661	0.000328	0.003536
Maximum	0.094651	0.100816	0.067953	0.069898	0.057839	0.000939	0.101836
Minimum	-0.119628	-0.128664	-0.071619	-0.086197	-0.062121	0.000191	-0.175463
SD	0.028668	0.031173	0.022604	0.023032	0.021443	0.000204	0.033560
Skewness	-0.207900	-0.186722	-0.244811	-0.272757	-0.152610	1.445820	-0.365726
Kurtosis	4.135337	4.127076	3.384784	3.537946	3.152126	4.073001	5.175469
Jarque-Bera	19.674***	18.973***	3.910198	7.8997**	1.177556	128.028***	70.894***
N	182	98	31	40	13	--	--

Appendix B: Descriptive Statistics of Weekly Returns for Individual funds

No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
General Equities Funds								
1	EQN001	UOB SMART ACTIVE 100	67	0.00152	0.00012	0.06237	-0.07272	0.02431
2	EQN002	ING Thai Balance Fund	323	0.00320	0.00529	0.55990	-0.55078	0.06620
3	EQN003	Asia Panpol Fund	323	-0.00006	0.00591	0.08344	-0.86431	0.05766
4	EQN004	Aberdeen Growth Fund	323	0.00406	0.00562	0.09253	-0.17567	0.03102
5	EQN005	Thai-Euro Open-End Fund	12	-0.00475	0.00289	0.02959	-0.07939	0.03093
6	EQN006	SUB THAWEE TWO FUND	172	0.00292	0.00396	0.10360	-0.14019	0.03773
7	EQN007	SYRUS MOMENTUM FUND	323	0.00241	0.00404	0.10362	-0.12014	0.03187
8	EQN008	TCM Equity Fund	323	0.00009	0.00311	0.11120	-0.31078	0.03867
9	EQN009	TCM Equity 2 Fund	50	-0.00080	0.00165	0.11150	-0.09204	0.03546
10	EQN010	Thai Dragon Fund	323	0.00156	0.00561	0.08510	-0.20938	0.03502
11	EQN011	The TFAM Equity Fund	196	0.00481	0.00809	0.06912	-0.07729	0.02891
12	EQN012	Thana One Fund	323	0.00256	0.00416	0.10239	-0.11860	0.03190
13	EQN013	TISCO EQUITY DIVIDEND FUND	272	-0.00076	0.00407	0.10876	-0.89962	0.06317
14	EQN014	TISCO Equity Growth Fund	323	0.00217	0.00443	0.09652	-0.13343	0.03131
15	EQN015	THANAPHUM OPEN-ENDED FUND	323	0.00251	0.00438	0.10911	-0.15659	0.03508
16	EQN016	THEERASUB OPEN-ENDED FUND	323	-0.00032	0.00204	0.10642	-0.61598	0.04902
17	EQN017	THE THUN VIVATANA FUND	323	0.00079	0.00319	0.10132	-0.24757	0.03503
18	EQN018	UNITED OPEN-ENDED FUND	323	0.00236	0.00393	0.11193	-0.13852	0.03483
19	EQN019	UDOM SAB - DIVIDEND FUND	323	0.00150	0.00385	0.09367	-0.15150	0.03354
20	EQN020	UDOM SAB - DIVIDEND 2 FUND	323	0.00182	0.00385	0.09696	-0.14171	0.03276
21	EQN021	Krungsri-PrimaVest Equity Fund	124	-0.00110	0.00072	0.06354	-0.10700	0.02814
22	EQN022	THE RUANG KHAO EQUITY DISTRIBUTION CLASS	323	0.00214	0.00387	0.10800	-0.16218	0.03338
23	EQN023	THE RUANG KHAO 2 FUND	323	0.00200	0.00366	0.10892	-0.16585	0.03445
24	EQN024	THE RUANG KHAO 3 FUND	323	0.00191	0.00376	0.10890	-0.16675	0.03427
25	EQN025	ROONG ROJ OPEN-ENDED FUND	323	0.00222	0.00316	0.09799	-0.14428	0.03412

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No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
26	EQN026	The Ruang Khao SET50 Fund	71	0.00057	0.00014	0.06146	-0.08101	0.02676
27	EQN027	SCB DHANA ANANTA OPEN-ENDED FUND	323	0.00245	0.00389	0.11210	-0.14628	0.03309
28	EQN028	SCB DIVIDEND STOCK OPEN END FUND	152	-0.00072	0.00085	0.07774	-0.09501	0.02233
29	EQN029	SCB MUNKHONG OPEN-ENDED FUND	323	0.00274	0.00415	0.11062	-0.14247	0.03219
30	EQN030	SCB MUNKHONG 2 OPEN-ENDED FUND	323	0.00257	0.00326	0.11502	-0.14740	0.03257
31	EQN031	SCB MUNKHONG 3 OPEN-ENDED FUND	323	0.00264	0.00408	0.11069	-0.14470	0.03240
32	EQN032	SCB MUNKHONG 4 OPEN-ENDED FUND	323	0.00267	0.00415	0.10864	-0.14402	0.03220
33	EQN033	SCB MUNKHONG 5 FUND	323	0.00253	0.00416	0.11294	-0.14947	0.03244
34	EQN034	SCB PERMPOL MUNKHONG OPEN-ENDED FUND	323	0.00262	0.00411	0.10981	-0.15048	0.03278
35	EQN035	SCB RUAMTUN OPEN-ENDED FUND	172	0.00342	0.00500	0.10648	-0.14225	0.03496
36	EQN036	SCB SET INDEX OPEN-ENDED FUND	323	0.00220	0.00448	0.08706	-0.17359	0.03113
37	EQN037	SINTAWEE KAMRAI OPEN END FUND	316	0.00344	0.00451	0.09982	-0.16605	0.03293
38	EQN038	SCB TAWEESUB OPEN-ENDED FUND	323	0.00273	0.00452	0.10985	-0.14725	0.03251
39	EQN039	SCB TAWEESUB 2 OPEN-ENDED FUND	323	0.00275	0.00457	0.11616	-0.14857	0.03296
40	EQN040	SCB TAWEESUB 3 OPEN-ENDED FUND	323	0.00274	0.00465	0.11208	-0.14598	0.03278
41	EQN041	SINCHADA OPEN-ENDED FUND	323	-0.00339	0.00299	0.10746	-1.33016	0.08769
42	EQN042	SIAM CITY FUND	316	0.00019	0.00301	0.10328	-0.38588	0.04108
43	EQN043	SINPINYO FOUR OPEN-ENDED FUND	323	0.00208	0.00341	0.14488	-0.14381	0.03719
44	EQN044	SINPINYO FIVE OPEN-ENDED FUND	323	0.00234	0.00364	0.11620	-0.13733	0.03508
45	EQN045	SINPINYO SEVEN OPEN-ENDED FUND	323	0.00139	0.00346	0.11550	-0.33355	0.03886
46	EQN046	SINPINYO EIGHT OPEN-ENDED FUND	323	0.00152	0.00291	0.12051	-0.29690	0.03800
47	EQN047	SINPATTANA OPEN-ENDED FUND	323	0.00056	0.00218	0.10800	-0.27704	0.03911
48	EQN048	SIN PAITOON FUND	323	0.00155	0.00460	0.09946	-0.20115	0.03365
49	EQN049	SIAM CITY RUAM THOON OPEN-ENDED FUND	172	-0.00787	0.00409	0.27871	-2.24286	0.17719
50	EQN050	STANG DAENG OPEN-ENDED FUND	323	0.00158	0.00286	0.10695	-0.30959	0.03832
51	EQN051	STANG DAENG TWO OPEN-ENDED FUND	323	0.00199	0.00294	0.10438	-0.15338	0.03488
52	EQN052	SUB SOMBOON FUND	323	0.00263	0.00456	0.12754	-0.14821	0.03579

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No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
53	EQN053	Kiatnakin Fund	323	0.00008	0.00571	0.08353	-0.81379	0.05548
54	EQN054	Kamrai Permpoon Open-ended Fund	323	0.00197	0.00564	0.08370	-0.16060	0.03367
55	EQN055	Kamrai Permpoon Open-ended Fund 2	108	0.00023	0.00094	0.05558	-0.08934	0.02584
56	EQN056	MFC GLOBAL EQUITY FUND	218	0.00071	0.00197	0.06047	-0.06609	0.01895
57	EQN057	MFC SET 50 FUND	116	0.00078	0.00257	0.06031	-0.09069	0.02756
58	EQN058	Thanachart Fundamental Plus	131	0.00054	0.00206	0.06072	-0.07852	0.02510
59	EQN059	NPAT PROGRESSIVE FUND	185	0.00368	0.00672	0.10163	-0.11859	0.03421
60	EQN060	N-SET FUND	152	0.00244	0.00460	0.07829	-0.07556	0.02762
61	EQN061	One Plus One Fund	323	0.00257	0.00418	0.10184	-0.11871	0.03180
62	EQN062	One High Yield Fund	185	0.00371	0.00601	0.10207	-0.11999	0.03476
63	EQN063	ONE-FAS Prosperity Fund	323	0.00253	0.00449	0.10467	-0.11904	0.03159
64	EQN064	One Fundamental Fund	1	0.00231	0.00231	0.00231	0.00231	NA
65	EQN065	One Multiple Growth Fund	323	0.00235	0.00299	0.10237	-0.11912	0.03145
66	EQN066	One Prosperous Fund	85	-0.00141	-0.00242	0.10089	-0.10403	0.03467
67	EQN067	One Prime Fund	323	0.00254	0.00378	0.10274	-0.12001	0.03209
68	EQN068	One Progressive Fund	300	0.00280	0.00413	0.10396	-0.12258	0.03212
69	EQN069	One-UB2 Fund	193	0.00373	0.00509	0.10442	-0.11985	0.03569
70	EQN070	One-UB3 Fund	323	0.00254	0.00409	0.10560	-0.12128	0.03230
71	EQN071	One-UB4 Fund	204	0.00285	0.00470	0.10562	-0.11748	0.03587
72	EQN072	One-UB Growth Fund	2	-0.01423	-0.01423	0.00239	-0.03085	0.02350
73	EQN073	One Wealth Builder Fund	204	0.00292	0.00373	0.10335	-0.11573	0.03533
74	EQN074	OM-SIN PROVINCIAL DEVELOPMENT CAPITAL FUND	72	0.00019	-0.00049	0.05110	-0.06203	0.02120
75	EQN075	PERM POON SAB - DIVIDEND FUND	323	0.00185	0.00348	0.09614	-0.15435	0.03235
76	EQN076	THE RUANG KHAO EQUITY CLASS	323	0.00307	0.00453	0.10637	-0.16694	0.03366
77	EQN077	1 A.M. SET 50	142	0.00248	0.00232	0.07532	-0.08361	0.02868
78	EQN078	1 A.M. VALUED STOCK FUND-DIVIDEND FUND	64	-0.00018	0.00084	0.04337	-0.06672	0.01968
79	EQN079	Aberdeen Siam Leaders Fund	129	0.00257	0.00589	0.04371	-0.05834	0.02068

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No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
80	EQN080	Aberdeen Small Cap Fund	64	0.00344	0.00466	0.03528	-0.04239	0.01548
81	EQN081	ADKINSON GROWTH OPEN-ENDED FUND	323	0.00163	0.00342	0.09884	-0.15318	0.03575
82	EQN082	AJF Star Capital Fund	323	0.00094	0.00314	0.10774	-0.20679	0.03756
83	EQN083	AJF Star Equity Fund	135	-0.00007	0.00220	0.06146	-0.07201	0.02709
84	EQN084	BUALUANG CAPITAL OPEN-END FUND	323	0.00146	0.00259	0.10204	-0.10989	0.03148
85	EQN085	BUALUANG INFRASTRUCTURE OPEN-END FUND	323	0.00382	0.00463	0.09917	-0.09805	0.02607
86	EQN086	BUAKAEW OPEN-END FUND	323	0.00336	0.00279	0.10205	-0.10769	0.02949
87	EQN087	BUAKAEW 2 OPEN-END FUND	323	0.00325	0.00287	0.10068	-0.10991	0.02959
88	EQN088	BUAKAEW INCOME FUND	323	0.00189	0.00222	0.09993	-0.15741	0.03130
89	EQN089	BANGKOK METROPOLITAN OPEN-ENDED FUND	323	0.00135	0.00402	0.10118	-0.40079	0.04090
90	EQN090	SUB BUALUANG OPEN-END FUND	323	0.00325	0.00296	0.09963	-0.10919	0.02941
91	EQN091	BUALUANG THANAKOM OPEN-END FUND	323	0.00216	0.00213	0.17119	-0.18792	0.03688
92	EQN092	BUALUANG TOP-TEN FUND	323	0.00354	0.00385	0.10697	-0.09654	0.02859
93	EQN093	DYNAMIC EASTERN ONE OPEN-ENDED FUND	323	0.00207	0.00311	0.10880	-0.13361	0.03423
94	EQN094	AJF Star Dynamic Fund	144	-0.00054	0.00010	0.07549	-0.07529	0.02737
95	EQN095	AJF Star Dynamic Fund 2	139	-0.00068	-0.00014	0.06365	-0.07195	0.02494
96	EQN096	FINANSA SET 50 DIVIDEND PLUS FUND	57	0.00142	0.00050	0.06176	-0.08245	0.02775
97	EQN097	IB Premier Fund	149	0.00170	0.00277	0.11017	-0.08975	0.02958
98	EQN098	Ruang Khao High Income Fund 2	278	0.00198	0.00520	0.09783	-0.17759	0.03614
RMF Equity Funds								
1	EQT001	ABN AMRO Equities RMF	106	0.00676	0.00778	0.06990	-0.08540	0.02998
2	EQT002	UOB Equities RMF	109	0.00153	0.00214	0.05760	-0.07357	0.02357
3	EQT003	TISCO EQUITY GROWTH RETIREMENT FUND	202	0.00339	0.00541	0.07856	-0.07735	0.02797
4	EQT004	Valued Stock Retirement Mutual Fund	242	0.00383	0.00560	0.07801	-0.08229	0.02545
5	EQT005	The Ruang Khao LTF	96	0.00133	0.00059	0.06197	-0.07769	0.02467
6	EQT006	The Ruang Khao Dividend LTF 70:30	38	0.00063	0.00162	0.04325	-0.05728	0.01957

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No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
7	EQT007	SCB DIVIDEND STOCK 70/30 LONG TERM EQUITY FUND	96	0.00071	0.00140	0.03905	-0.05278	0.01468
8	EQT008	SCB STOCK PLUS LONG TERM EQUITY FUND	96	0.00111	0.00184	0.05244	-0.07417	0.02030
9	EQT009	SCB MAI STOCK LONG TERM EQUITY FUND	45	0.00060	0.00076	0.04657	-0.06997	0.02397
10	EQT010	SCB EQUITY RMF	235	0.00309	0.00406	0.05601	-0.07614	0.02264
11	EQT011	Krungsri-PrimaVest Long Term Equity Fund	94	0.00073	0.00038	0.06026	-0.08488	0.02384
12	EQT012	The Krung Thai Long-Term Equity Fund	92	0.00007	0.00098	0.06325	-0.08782	0.02351
13	EQT013	MFC ACTIVITY LONG TERM EQUITY FUND	56	0.00005	-0.00048	0.05892	-0.07585	0.02377
14	EQT014	MAX DIVIDEND LONG TERM EQUITY FUND	96	0.00080	0.00182	0.02942	-0.04478	0.01306
15	EQT015	MAX EQUITY RETIREMENT MUTUAL FUND	90	0.00084	0.00181	0.05903	-0.09058	0.02572
16	EQT016	MAX LONG TERM EQUITY PERFECT	43	0.00121	0.00273	0.05757	-0.09073	0.02871
17	EQT017	MFC VALUE LONG TERM EQUITY FUND	94	0.00095	0.00181	0.05725	-0.06945	0.02265
18	EQT018	NASSET Equity Retirement Mutual Fund	229	0.00351	0.00561	0.06211	-0.08187	0.02424
19	EQT019	The Ruang Khao Dividend LTF	96	0.00079	0.00042	0.06198	-0.07774	0.02497
20	EQT020	1 A.M. Selective Growth Long Term Equity Fund	64	0.00022	-0.00060	0.05238	-0.08200	0.02347
21	EQT021	1 A.M. Selective Long Term Equity Fund	98	0.00077	0.00060	0.05278	-0.08139	0.02324
22	EQT022	Aberdeen Long Term Equity Fund	95	0.00337	0.00530	0.04107	-0.05878	0.01961
23	EQT023	Aberdeen Smart Capital RMF	195	0.00478	0.00532	0.06489	-0.05771	0.02048
24	EQT024	AJF SET50 Long Term Equity Fund	92	0.00142	0.00088	0.06003	-0.08159	0.02557
25	EQT025	AJF Dividend Stock Long Term Equity Fund	92	0.00100	0.00218	0.03030	-0.06949	0.01779
26	EQT026	Asset Plus Equity RMF Fund	87	-0.00027	0.00124	0.03766	-0.05607	0.01654
27	EQT027	Asset Plus Long-Term Equity Fund	91	-0.00041	0.00178	0.03644	-0.08291	0.01828
28	EQT028	AYF Equity RMF	6	0.00725	0.01019	0.03551	-0.02505	0.01958
29	EQT029	Ayudhya Equity LTF Fund	6	0.00731	0.00992	0.03472	-0.02453	0.01911
30	EQT030	BUALUANG EQUITY RMF	194	0.00464	0.00472	0.08904	-0.06866	0.02433
31	EQT031	BUALUANG LONG-TERM EQUITY FUND	93	0.00059	0.00020	0.04535	-0.07071	0.01775

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No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
General Flexible Funds								
1	FLN001	UOB Select SET 50/1	2	0.00072	0.00072	0.00077	0.00067	0.00007
2	FLN002	TISCO BALANCED GROWTH FUND	161	0.00216	0.00372	0.04565	-0.05016	0.01953
3	FLN003	THE RUANG KHAO BALANCED CLASS	323	0.00198	0.00295	0.06440	-0.09731	0.02074
4	FLN004	THE RUANG KHAO BALANCED DISTRIBUTION CLASS	323	0.00147	0.00263	0.06475	-0.09753	0.02049
5	FLN005	THE RUANG KHAO FLEXIBLE EQUITY FUND	323	0.00307	0.00554	0.43504	-0.48687	0.04850
6	FLN006	TCM Flexible Portfolio Fund	323	0.00208	0.00316	0.70535	-0.73090	0.06409
7	FLN007	TISCO Flexible Fund	323	0.00188	0.00336	0.08542	-0.12476	0.02993
8	FLN008	Max Balance Fund	106	0.00037	-0.00007	0.02739	-0.02628	0.00959
9	FLN009	SCB CAPITAL STABLE PROTECTION 1 OPEN END FUND	7	0.00188	0.00046	0.00780	-0.00265	0.00358
10	FLN010	SCB PRIME OPEN-ENDED FUND	323	0.00316	0.00321	0.10240	-0.14281	0.02938
11	FLN011	AYS-Primavest Flexible Fund	150	0.00035	0.00213	0.08579	-0.11855	0.02955
12	FLN012	Krungsri-PrimaVest Value Fund	124	0.00044	0.00221	0.06459	-0.08436	0.02460
13	FLN013	Primavest Flexible Fund	224	0.00070	0.00170	0.07493	-0.14095	0.02838
14	FLN014	Primavest Flexible Fund 2	155	-0.00047	0.00349	0.08244	-0.29890	0.03938
15	FLN015	1 A.M. FLEXIBLE AUTO REDEMPTION FUND	167	0.00360	0.00486	0.08017	-0.08218	0.02778
16	FLN016	ONE FLEXIBLE FUND	323	0.00063	0.00319	0.09576	-0.14544	0.03409
17	FLN017	PAI-BOON SAB DIVIDEND FUND	304	0.00129	0.00309	0.06423	-0.09829	0.02131
18	FLN018	SA-THIEN SAB DIVIDEND FUND	323	0.00110	0.00208	0.06583	-0.12541	0.02146
19	FLN019	AMNUAY SAB - DIVIDEND FUND	290	0.00178	0.00504	0.08398	-0.12002	0.02907
20	FLN020	CHAROEN SAB - DIVIDEND FUND	323	0.00152	0.00501	0.09453	-0.13255	0.03055
21	FLN021	KASEM SAB - DIVIDEND FUND	323	0.00208	0.00361	0.10185	-0.11798	0.02979
22	FLN022	KARNCHANA ANAN FUND	323	0.00106	0.00203	0.05578	-0.13675	0.02167
23	FLN023	IFCT RUAM THOON FUND	323	0.00260	0.00296	0.11255	-0.11578	0.03218
24	FLN024	LUMKA OPEN-ENDED FUND	323	0.00011	0.00128	0.04209	-0.05854	0.01380
25	FLN025	MFC-BT Income Growth Fund	31	0.00459	0.00000	0.17325	-0.05488	0.04300
26	FLN026	MFC FLEXIBLE FUND	323	0.00252	0.00179	0.07114	-0.08216	0.02361
27	FLN027	MFC Islamic Fund	87	0.00034	0.00169	0.04388	-0.04898	0.01820

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No.	Code	Mutual Fund Name	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
28	FLN028	The Krung Thai Flexible Auto-Redemption Fund	88	0.00282	0.00222	0.06042	-0.04221	0.02315
29	FLN029	The Krung Thai Selected Flexible Portfolio Fund	318	-0.00016	0.00206	0.07224	-0.10386	0.02424
30	FLN030	The Krung Thai Thana Wattana Fund	199	0.00219	0.00343	0.08299	-0.07873	0.02615
31	FLN031	The Thai Opportunity Fund	234	0.00240	0.00294	0.07773	-0.08824	0.02516
32	FLN032	Kiatnakin - K-ASSET Equity Fund	96	0.00193	0.00381	0.05970	-0.04500	0.02448
33	FLN033	The Ruang Khao Target 1 Fund	129	0.00082	0.00217	0.06486	-0.07573	0.02701
34	FLN034	The Sinwattana Fund	137	0.00018	0.00049	0.00667	-0.00934	0.00264
35	FLN035	ING Thai Equity Fund	323	0.00051	0.00307	0.51971	-0.54604	0.05992
36	FLN036	SICCO FLEXIBLE PORTFOLIO OPEN END FUND	60	0.00087	0.00071	0.00428	-0.00086	0.00084
37	FLN037	Asset Plus Growth Dividend Fund	87	-0.00111	-0.00047	0.06799	-0.08759	0.02648
38	FLN038	BUAKWAN OPEN-END FUND	323	0.00222	0.00203	0.35927	-0.33932	0.03261
39	FLN039	B-ACTIVE OPEN-END FUND	116	0.00086	0.00027	0.07955	-0.04159	0.01510
40	FLN040	B-FLEX OPEN-END FUND	219	0.00124	0.00020	0.35577	-0.34363	0.03386
RMF Flexible Funds								
1	FLT001	FINANSA MIXED RETIREMENT MUTUAL FUND	73	0.00101	0.00038	0.03921	-0.03313	0.01450
2	FLT002	TISCO FLEXIBLE PORTFOLIO RETIREMENT FUND	202	0.00293	0.00533	0.07780	-0.07610	0.02728
3	FLT003	The Ruang Khao Flexible Balanced Retirement Mutual Fund	243	0.00181	0.00266	0.03628	-0.03118	0.01184
4	FLT004	The Ruang Khao Flexible Equity Retirement Mutual Fund	243	0.00447	0.00818	0.09628	-0.08592	0.03093
5	FLT005	MAX BALANCE RETIREMENT MUTUAL FUND	98	-0.00023	-0.00043	0.02289	-0.02685	0.00904
6	FLT006	SCB FLEXIBLE FUND RMF	235	0.00210	0.00239	0.05162	-0.05508	0.01655
7	FLT007	Primavest Flexible Retirement Mutual Fund	200	0.00312	0.00414	0.07238	-0.08476	0.02639
8	FLT008	Flexible Plus Retirement Mutual Fund	141	0.00126	0.00116	0.06429	-0.08121	0.02577
9	FLT009	MFC Retirment Value Fund	208	0.00357	0.00301	0.06558	-0.07064	0.02580
10	FLT010	The Krung Thai Tax Planning RMF 1	204	0.00293	0.00374	0.06816	-0.07453	0.02342
11	FLT011	FINANSA RETIREMENT MUTUAL FUND	12	-0.00147	-0.00115	0.02166	-0.03814	0.01629
12	FLT012	Asset Plus Mixed Income RMF Fund	87	-0.00001	0.00094	0.06171	-0.08067	0.02387
13	FLT013	BUALUANG FLEXIBLE RMF	194	0.00288	0.00251	0.07655	-0.06439	0.01741