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นายจักรมนต์ นิติพน

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AN ANALYSIS OF PERFORMANCE, PERSISTENCE AND FLOWS OF THAI EQUITY FUNDS

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for the Degree of Master of Science Program in Finance
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วิทยานิพนธ์นี้วิจัยเรื่องผลการดำเนินงานของกองทุนรวมประเภทหุ้นทุนในประเทศไทย จากผลการวิจัยพบว่าโดยเฉลี่ยแล้ว กองทุนหุ้นทุนไม่ได้สร้างผลตอบแทนที่มากกว่าตลาดอย่างมีนัยสำคัญ แม้ว่าจะมีอัตราส่วนของชาร์ป (Sharpe) ที่สูงกว่าของตลาดก็ตาม จากกลุ่มตัวอย่างย่อยของกองทุนหุ้นทุนพบว่า กองทุนให้ผลตอบแทนสุทธิร้อยละ 19.63 ต่อปี โดยร้อยละ 0.79 เป็นผลมาจากความสามารถในการเลือกหุ้นของผู้จัดการกองทุน และร้อยละ 6 มาจากความสามารถในการเลือกจังหวะการลงทุน อย่างไรก็ตาม เมื่อวิเคราะห์ผลตอบแทนที่ไม่ปกติในช่วงประกาศผลประกอบการของบริษัทจดทะเบียนที่กองทุนหุ้นทุนลงทุนอยู่นั้น พบว่าความสามารถในการเลือกหุ้นของผู้จัดการกองทุนหายไป

นอกจากนั้นยังพบว่า ผลตอบแทนในปีที่ผ่านมาของกองทุนไม่ได้เป็นปัจจัยชี้ผลตอบแทนในปีถัดไป อย่างไรก็ดีผลตอบแทนของหุ้นภายในไตรมาสที่ผ่านมาสามารถอธิบายผลตอบแทนของกองทุนหุ้นทุนในระยะสั้นได้ กองทุนหุ้นทุนที่ลงทุนหุ้นตามตลาดในระยะสั้นนั้นให้ผลตอบแทนที่ดีกว่าการลงทุนแบบตรงข้ามตลาด

กองทุนหุ้นทุนในประเทศไทยนั้นไม่มีความสม่ำเสมอ กองทุนหุ้นทุนที่ให้ผลตอบแทนเป็นอันดับหนึ่งในปีหนึ่งอาจเป็นกองทุนหุ้นทุนที่ให้ผลตอบแทนน้อยที่สุดในปีถัดไป การวิเคราะห์ปริมาณเงินที่ไหลเข้าออกของกองทุนพบว่า นักลงทุนไม่สามารถแยกแยะระหว่างผู้จัดการกองทุนที่มีความสามารถกับผู้จัดการกองทุนที่ไม่มีความสามารถได้ นอกจากนั้น ปริมาณเงินที่ไหลเข้าออกของกองทุนยังไม่ได้ขึ้นกับผลตอบแทนในอดีตของกองทุนอีกด้วย กองทุนที่มีปริมาณเงินไหลเข้ามากก็ไม่ได้ให้ผลตอบแทนที่สูงสุด ซึ่งเป็นเครื่องบ่งชี้ว่านักลงทุนอาจไม่ได้ลงทุนด้วยความฉลาดนักหรืออาจขาดข้อมูลที่เพียงพอเพื่อประกอบการตัดสินใจในการลงทุน

ภาควิชาการธนาคารและการเงิน ลายมือชื่อนิสิต.....
สาขาวิชาการเงิน ลายมือชื่ออาจารย์ที่ปรึกษา.....
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This paper studies the performance of Thai equity funds. I find that equity funds, on average, do not provide positive and significant abnormal returns from the market, though they provide higher Sharpe measures. The subsample of equity funds, a unique dataset, suggests that funds provide net returns of 19.63 percent per year. Of the 19.63 percent, 0.79 percent is due to the managers' stock picking talents, whereas the timing abilities account for 6 percent. However, when the abnormal returns earned during the earnings announcement date of stocks held by the funds are analyzed, the stock selection skills of managers diminish.

I also find that momentum on the prior year basis is not a key determinant of funds' returns. Nonetheless, the short-term momentum of up to the previous quarter could explain the funds' returns. The momentum funds, which load up on short-term momentum stocks, perform better than the contrarians.

There is no persistence in Thai equity funds. This year's winning funds are likely to be next year's losers. Flows analysis also suggests that investors could not differentiate good managers from bad managers. Furthermore, flows are not induced by the historical returns of funds. Funds that receive the highest inflows could not generate the highest returns. This indicates that investors are neither smart nor well informed.

Department of Banking and Finance Student's signature.....
Field of study Finance Advisor's signature.....
Academic year 2004

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CHAPTER I
INTRODUCTION

"Wealth", the aspiration of all investors, is created through investment. Prudent investors always invest wisely with the knowledge of diversification, constructing portfolios with a wide range of securities. This process is time-consuming and requires a sound knowledge of finance. Mutual funds were created to provide such functions to investors: providing diversification and generating returns based on the level of risk appetites. Even though the mutual fund industry in Thailand has been created for quite some time, very few people deeply understand the performance of the funds and their managers, which is considered as a "black box". Investors nowadays have been bombarded with advertising gimmicks from the marketers of how much returns they could generate. They could justify a fund based on its prospectus and past returns. What they could not really explain, given the some times misleading fund display of huge positive returns in tempting advertisements, is the skill level of managers.

Despite the fact that the first mutual fund in Thailand was established in 1978, this industry is not considered active compared to other developed markets. Even though several agencies have come up with marketing campaign to promote investing in mutual funds, for example, "Let your money do its job through mutual funds" campaign from The Stock Exchange of Thailand (SET), the total net assets under management of all mutual funds (equity and non-equity) in Thailand account for approximately 600 billion baht[1] which is less than 10% of the country's Gross Domestic Product. This does not include the equity funds whose managed net assets are only 73 billion baht, which accounts for 1.75% of total market capitalization of the Thai stock market.[2]

It is important to identify the reasons why mutual funds are not playing a more significant role in financial markets. Nowadays, most retail investors still strongly believe in their own investing and trading skills based on both fundamental judgments justified by analysts or brokers, and on rumours in the trading rooms. They simply do not trust managers to manage their own assets. This pessimism obstructs the growth of the fund management industry. There are several reasons why retail investors do not invest through mutual funds and impede growth of mutual fund industry. First, some individual investors have prudent stock selection skills that justify good returns. Second, brokers always stimulate investors to trade stocks frequently in order to enjoy higher commission. Third, investors enjoy trading stocks in a gambling manner. Investing through mutual funds could not fulfill this enjoyment. In addition, some investors are in the habit of exploiting excess returns through illegal stock punting and price manipulation using sophisticated techniques or nominees that neither the

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[1] Total net assets under management is as of 29 October 2004.

[2] This figure does not account for other type of funds that invest in stocks e.g. flexible funds, balanced funds and funds of funds.

SET nor the Securities and Exchange Commission (SEC) can easily trace. Moreover, they could also generate excess returns through trades using inside information. Lastly, investors are not well informed of the performance of mutual funds due to the lack of evaluation.

The simplest solution to spur investors' attention toward investing in mutual funds is the performance evaluation of mutual funds. Investors should be informed of the performance of funds and of the variety of products they offer. Currently, the commonly used evaluation method is to calculate net returns before load fees based on Net Asset Value (NAV) of funds. Many evaluators have calculated the returns and publish the results periodically, including The Association of Investment Management Companies (AIMC). However, judging performance using returns calculated based on NAV alone is not a good proxy for determining managers' skills. A good performance evaluation should be able to decompose and attribute fund returns and identify the managers' choice of selecting stocks and loadings on various stock-explaining factors. It should also be able to investigate what is going on inside the "black box", using various methodologies to extract the truth out of it and inform the investors about the managers' skills, including the selectivity skill and timing ability, since returns generated from these skills are what all investors long for.

Many Thai scholars have conducted various studies on the performance of Thai funds, however, those results have not yet pinpointed the skill level of fund managers. The study of Plabplatern (1997) shows that almost all managers can select stocks that beat their benchmarks having the same characteristics. This selection shows the selectivity skill of managers. Whereas less than half of all managers have timing abilities, which is the ability to time the style of stocks that are going to be performing well compared to the market. However, Sakranan (1998) used data series of mutual funds that overlapped with Plabplatern's and the results were totally reversed. She finds slight evidence of selectivity skills of managers while all managers possess timing skills. Pornchaiya (2000) does not find any evidences that managers could create net returns superior to the benchmark. The unreliable study of Srisuchart (2001) misleads us from his findings that managers liquidate their portfolios and hold more cash when the market is performing better than the risk-free investment. Groatong (2001) finds that funds trade stocks based on historical patterns. Nerngchamnong (2003) detects positive correlation between size and performance of funds during the bear market. All of these studies use different dataset and time period for analyzing the performance of mutual funds. Therefore, it is unclear whether the managers have skills or not given the changing conditions of the economy across different time period. A good evaluator should use various methodologies for a particular dataset to extract the truth about the funds' performance out of the "black box". Since performance has many aspects, the analysis on one aspect cannot lead to a precise manifestation of the whole story.

This study comprehensively reveals the astonishing myths and secrets of the performance of mutual funds, particularly equity funds in Thailand, using various methodologies to extract the best out of the mutual funds samples. To explain these

methodologies, the analyses start from the traditional Jensen measure, the conditional benchmark by Ferson and Schadt (1996), the highly appraised 4-factor decomposition method by Carhart (1997), the measurement of mutual fund performance using characteristic-based benchmarks developed by Daniel et al. (1997) to test selectivity and timing abilities of managers, the test of persistence according to the methodologies of Carhart (1997) and Wermers (2003) and the identification of selectivity skills of managers using the earnings announcement date analysis method of Baker, Litov, Wachter and Wurgler (2004). These methodologies simply perform one task: to reveal the truth of the "black box", that is to see how funds perform and explore whether managers of funds provide excess return from a given benchmark.

1.1 Objectives of the study

1.1.1 To study whether managers could outperform the market, creating abnormal returns compared to benchmark, and provide persistence of performance of the equity funds.

1.1.2 To study whether managers exhibit selectivity skills and timing abilities.

1.1.3 To analyze the impact of flows, both inflows and outflows, of the funds.

1.2 Scope of the study

The scope is limited to Thai equity funds that include the open-end type and closed-end type.

1.3 Contributions

The paper thoroughly analyzes all aspects of the performance of Thai equity funds. The contribution is to inform the investors as well as the managers of how the investment really pays off after risk adjustments are made. It also helps develop Thai stock market and Thai mutual fund industry as a whole.

1.4 Organization of the paper

The paper is organized as follows. Chapter 2 discusses relevant literature. Chapter 3 explains methodologies. Chapter 4 discusses the performance of Thai equity funds. Chapter 5 analyzes funds' persistence and flows. Chapter 6 concludes.

CHAPTER II
LITERATURE REVIEW

This chapter discusses related theories and empirical evidence on both international funds and Thai funds. The outline is as follows: concept and theoretical background, empirical evidence and previous empirical studies of Thai mutual funds done by Thai scholars.

2.1 Concept and theoretical background

2.1.1 Traditional regression approach

The foundation of performance evaluation is based on theory of capital asset pricing model developed simultaneously by Sharpe (1963, 1964), Lintner (1965), Treynor (1961) and others which states that equilibrium rates of return on all risky assets are a function of their covariance with the market portfolio. Later, Jensen (1968) extends the Capital Asset Pricing Model (CAPM) application into the area of performance evaluation. He introduces "Jensen alpha" based on CAPM to measure the managers' future security price predicting abilities. Mathematically speaking, Jensen uses equation (1)

$$r_{j,t+1} = \alpha_j + \beta_j r_{m,t+1} + \varepsilon_{j,t+1} \quad (1)$$

where $r_{j,t+1}$ is the excess return of evaluated fund over risk-free return, $r_{m,t+1}$ is the excess return of the market over risk-free return, β_j is the coefficient representing market loadings. $\varepsilon_{j,t+1}$ is the error term of the regression while $E[\varepsilon_{j,t+1}] = 0$ and should be serially independent. If managers have the ability to predict security prices, the α_j from the eq. (1), which is the traditional Jensen measure, should be positive and significant. Managers investing in stocks using random buy and hold policy should yield a zero intercept while managers with negative alpha have worse performance than random buy and hold strategy. Traditional Jensen measure is popular due to its ease of use. The future security price predicting abilities of managers are identified. However, the drawback of the model is that both future price predicting and timing abilities of managers are included in only one component, which is the traditional Jensen alpha.

2.1.2 Conditional regression approach

The traditional Jensen measure could be biased if managers react to market information, changing macroeconomic condition or engaging in dynamic trading strategies. As a consequence, Ferson and Schadt (1996) introduce conditional performance evaluation using conditional benchmark. The basic intuition behind conditional performance evaluation is that there are 2 types of skills: the ability to exploit publicly available macroeconomic information and the ability in selecting stocks. This approach tries to separate market-timing ability from selectivity ability. This measure assumes that portfolio's beta changes dynamically

over time according to changing market conditions and publicly available information about the economy. For example, managers might choose to hold a large cash position during the bear market, thus resulting in low beta value (since the beta represents the loadings on the market). Whereas in the bull market, managers hold a large position in the stock market with a small portion in cash as a safety cushion in case investors redeem. The beta of the portfolio under this condition will be close to 1. If bull and bear market coexist together in the test year, beta estimates from the unconditional model would be biased.

In the conditional model, the beta of a managed portfolio is assumed to be a linear function of public information vector Z_t that captures changing economic conditions

$$\beta_j(Z_t) = b_{1j} + b_{2j} z_t \tag{2}$$

where b_{1j} is the unconditional mean of the conditional beta $E[\beta_j(Z_t)]$. The second coefficient, b_{2j}, is a beta response coefficient that captures the dynamic portfolios according to changing economic conditions. By substituting β_j in eq. (1) with $\beta_j(Z_t)$ yields

$$r_{j,t+1} = \alpha_j + b_{1j} r_{m,t+1} + b_{2j}(z_t r_{m,t+1}) + \varepsilon_{j,t+1} \tag{3}$$

The Jensen alpha (α_j) shows the managers ability in stock selection under the circumstances that the beta of the portfolio changes dynamically in the test period.

2.1.3 Factor model

Fama and French (1992) later discovered that the Capital Asset Pricing Model used earlier is no longer valid due to the minimal relation between either the market betas or the consumption betas of the intertemporal asset pricing model and the cross-section of average returns on U.S. common stocks. In other words, beta does a poor job in explaining cross-section return of stocks. They find that several risk factors, for example, size, book value, leverage and earnings are appropriate for explaining stock returns. However, they suggest that using two empirically determined risk factors together, size and book-to-market equity could best explain the cross-section of stock returns. As a result, Fama and French offer the new pricing model so-called “Fama-French 3 factor model”, and could be written as

$$r_{j,t+1} = \alpha_j + b_j RMRF_{t+1} + s_j SMB_{t+1} + h_j HML_{t+1} + \varepsilon_{j,t+1} \tag{4}$$

This Fama-French 3 factor model involves time-series regression on 3 explanatory factors, $RMRF_{t+1}$ (loadings on the market), SMB_{t+1} (loadings on small capitalization stock) and HML_{t+1} (loadings on growth stock). The b_j , s_j and h_j are factors coefficients. $r_{j,t+1}$ is the fund’s excess return over the market return. $\varepsilon_{j,t+1}$ is the regression residual and $E[\varepsilon_{j,t+1}] = 0$. The

intercept (α_j) is the average abnormal return needed to judge whether the manager can beat the market and generate average returns greater than passive combination of mimicking portfolio from the three risk factors. The reason why adding the extra two factors to the CAPM could explain the stock returns is that the book-to-market and size are proxies for distress, and those distressed firms are more sensitive to certain business cycle factors. Moreover, distressed firms provide higher returns compared to healthy firms during a good solid economic condition. Consistent to the findings of Davis, Fama and French (2000), firms that have high ratios of book value tend to be firms that are weak on fundamentals like earnings and sales. Investors normally overreact and assign irrationally low value to these firms. When the overreaction is corrected, these weak firms tend to provide higher returns than strong firms. Therefore, using together the size and book-to-market equity, these empirical factors can explain the average return or value premium. Daniel and Titman (1997) also find evidence that while market beta has no explanatory power for returns even controlling for size and book-to-market value, the characteristics of stocks can explain variation in returns. However, they do not rule out the validity of the Fama-French factor model.

Later, Jegadeesh and Titman (JT) (1993) discover a new phenomenon, momentum, which is the anomaly against the efficient market hypothesis. They find that relative strength strategies of buying past winners and selling past losers, over an intermediate horizon of up to 3 to 12 months, can generate significant positive returns over 3- to 12-month holding periods but this abnormal return dissipates in the following 2 years, starting around 12 months after the formation date. Past winners also realize consistently higher returns around earnings announcements than do past losers. Chan, Jegadeesh and Lakonishok (1996) relate the momentum effect to the market's underreaction to earnings-related information due to the sluggish response of market participants since true economic earnings are imperfectly measured by accounting numbers and the reluctance of analysts to revise forecasts when firms perform worse than expected. They also find strong evidence that a substantial portion of momentum effect is concentrated around subsequent earnings announcement. Jegadeesh and Titman (2001) find that the return of a zero cost portfolio that consists of a long position in past winners and a short position in past losers has made money in every 5 year period since 1940. Mutual funds in the U.S. make use of this momentum anomaly, as shown by Wermers (1997) that funds which were the best performers during one year outperform other funds during most years but may become the worst performers during the following year whenever the momentum effect in stock is absent.

The momentum issue has also been studied outside the U.S. market. Rouwenhorst (1998) replicates JT (1993) using data from 12 European countries and finds significant profitability of relative strength strategy. Chui, Titman, Wei (2000) study the momentum effect in 8 Asian stock markets and find significant positive return in 7 Asian stock markets, including Thailand. Whereas they find that Japan is the only exception in the largest developed stock market that does not exhibit momentum.

In light of the momentum anomaly, managers usually employ momentum trading strategies to game the Fama-French 3-factor model. Therefore, Carhart (1997) introduces new performance attribution methodology which includes the momentum anomaly in explaining cross-section returns. His foundation is an extension based on Fama-French 3-factor model. He adds another factor to capture the momentum effect as suggested by JT (1993) and finds that using momentum factor, along side with the loadings on stock market, size and book-to-market value, could explain cross-section of stock returns better than Fama-French 3-factor model. The source of returns is attributed further due to loadings on momentum. The correlations between each factor and market proxies are also low which provides validity and explanatory power of the model. This *"Carhart 4-factor model"* is widely accepted for attributing funds performance with market portfolio used as benchmark. Carhart 4-factor model is written as

$$r_{j,t+1} = \alpha_j + b_j RMRF_{t+1} + s_j SMB_{t+1} + h_j HML_{t+1} + p_j PR1YR_{t+1} + \varepsilon_{j,t+1} \quad (5)$$

where $PR1YR_{t+1}$ is the attribution from momentum strategy, p_j is the factor coefficient and the Carhart alpha (α_j) captures the abnormal return of the portfolio.

2.1.4 Portfolio holdings approach

Grinblatt and Titman (GT) (1993) introduce evaluation techniques without using benchmark. GT developped this solution to overcome several criticisms debated about several performance evaluation techniques, including traditional benchmark, conditional benchmark and factor model. For instance, Roll (1978) demonstrates that using traditional measure is sensitive to the choice of benchmark employed. The fund may perform relatively well over one choice of benchmark while it could perform intolerably when compared to other choices of benchmark. Roll suggests that if one could find an efficient ideal benchmark that consists of every investment, for example, stocks, bonds, real assets, private equities, human capital etc., every fund would lie on the security market line plotted using this benchmark. Alphas would be equal to 0, which implies that all managers cannot beat the benchmark portfolio, even though they inherit superior information. For another way around, he could tailor the benchmark according to the desired fund ranking of managers as well.

The methodology of GT is to utilize the composition of evaluated funds, that is to investigate performance at the funds stockholdings level. Several advantages of using this evaluation technique are demonstrated. First, the choice of benchmark is not affected since no benchmark is needed. Second, hypothetical returns generated from portfolio holdings do not include the fees, expenses and trading costs which could cloud the evaluation measures that utilize net return level. Even though this method overestimates the returns to investors, it is still appropriate for investigating managers' stock selection and timing abilities since they are not contaminated by several expenses. However, GT's methodology creates several

controversies. For example, GT do not fully account for return anomalies, such as size, book-to-market and momentum effects. The fact is that small firms with high book-to-market equity value outperform large firms with low book-to-market equity value periodically.

Daniel et al. (1997) developed another evaluation technique based on GT's approach that justifies these controversial issues. This direct approach is called "measuring performance with characteristic-based benchmark" and is used to compare the returns of the equities held by a fund to the returns of portfolios of stocks with equivalent characteristics in terms of size, book-to-market and momentum. Utilizing the available stockholdings data, this method is superior to factor models in various ways. First, future stock returns could be better explained by characteristics. Second, characteristic-matching provides more statistical power to detect abnormal performance than factor models. The standard error of the estimate of the fund's abnormal performance is lower. Third, fund returns could be decomposed to the components of Average Style (AS), Characteristic Selectivity (CS) and Characteristic Timing (CT). The sum of these measures is the overall hypothetical return of a fund. Although this method requires successive input data, especially the quarterly portfolio stockholdings, it is widely used due to its strong analytical power to provide in-depth information about the managers' skills.

Many academicians have further developed evaluation techniques based on stockholdings data. Baker, Litov, Wachter and Wurgler (2004) introduced an alternative method of measuring managers' stock picking talents. The reasoning behind this method is the fact that managers trade stocks actively as a consequence of the alteration of their portfolios according to a firm's performance expectations. Should the firm be expected to perform relatively well compared to peers, managers would increase weights of stock, and vice versa. This measure is to investigate whether weight-increasing (weight-decreasing) stocks in the portfolio have positive (negative) abnormal returns earned during the subsequent quarterly earnings announcement date. If managers increase (decrease) weights on stocks having positive (negative) abnormal returns, it could imply that they have selective skills.

2.2 Empirical evidence

2.2.1 Traditional benchmark

Jensen (1968) investigates the performance of funds in the period 1945 to 1964 and finds that funds, on average, were not able to predict securities prices well enough to outperform the buy-and-hold strategy, even when measured at a gross return level. Malkiel (1995) investigates mutual fund alphas from 1972 to 1991 and finds that they are indistinguishable from zero. He also suggests that equity funds could at least earn sufficient gross returns to cover their expenses. Gruber (1996) analyzes equity funds existing during the period 1985 to 1994 and finds that open-end funds underperform benchmark by –0.13 percent per month while closed-end funds underperform benchmark by –0.03 percent per

month. The degree of underperformance is greater in non-surviving funds. He suggests that active management adds value, but the value added is swept away by the expenses charged. Ferson and Schadt (1996) study the performance of funds in the period 1968 to 1990 and find that using unconditional Jensen measure, about two-thirds of the point estimates of the alphas are negative.

2.2.2 Conditional benchmark

Ferson and Schadt (1996) regress the conditional benchmark approach using the same dataset and find that, using a conditional model, about half of the estimates have negative Jensen alphas, while the other half have positive Jensen alphas. By making adjustments on the timing efforts of managers, the inference made by traditional Jensen measure that tends toward negative value is fixed. The betas of the conditional model are slightly increased and the R-squared value increased as well. This model therefore successfully captures the timing efforts of managers.

2.2.3 Carhart 4-factor model

Carhart (1997) finds that none of the funds in his survivor bias-free sample from 1962 to 1993 has positive Jensen measure when regressed using his 4-factor model. However, some funds exhibit positive traditional Jensen measure when regressed with CAPM. Winning funds employ momentum strategies as reflected in positive significant value of the coefficients of PR1YR factor. The outperformers tend to hold more small stocks than the underperformers as represented in SMB factor. He shows that the spread in mean monthly return between winners and losers is 67 basis points, the momentum factor explaining 31 basis points, or almost half. Wermers (2000) finds that mutual funds in his sample that exist during the period of 1975 to 1993, when regressed on all funds, have negative Carhart alphas at the net return level.

2.2.4 Portfolio holdings approach

Using stockholdings data, Wermers (2000) finds that mutual funds held stocks that outperformed market index by 1.3 percent per year. Seventy basis points is explained by the managers' talent in picking stocks that beat their characteristic benchmark portfolios and shows that managers slightly have the timing abilities. Baker, Litov, Wachter and Wurgler (2004) find that, on average, stocks that funds buy earn significantly higher returns at subsequent earnings announcements than stocks that they sell. Thus, it can be concluded that managers, to some extent, have selectivity skills.

2.2.5 Persistence issue and its empirical evidence

Should investors chase winning funds? The answer lies in the area of performance persistence. If winning funds continue to repeat (whether due to their "hot-hand

phenomenon"[3] or "momentum strategies"), investors would be better off investing in last year's winners. To some extent, performance does persist. Nonetheless, the mystery of persistence is not whether performance persists, but rather how strong it appears to be.

The issue of persistence has now become an important consideration in performance evaluation. Wermers (1997) observes the strategy of buying last year's best funds works well except for years when stocks with high past returns underperform stocks with low past returns. Carhart (1997) finds that winners are somewhat more likely to remain winners, and losers are more likely to either remain losers or perish. He also points out that persistence of winning funds or funds having "hot hands" phenomenon is due to one-year momentum effect of Jegadeesh and Titman (1993). Winning funds generally perform well in the next year following the ranking year due to the fact that they have already held these momentum stocks in portfolio from the ranking year. Transaction costs incurred from seeking momentum stocks are minimal compared to losing funds that are heavily exposed to transaction costs in search for momentum stocks. However, the degree of persistency is weak because one-year performance persistence is mostly eliminated after one year. Wermers (2003) conducts a persistence test and finds that performance strongly persists more than previous studies have shown. His sample exhibits persistence for at least 2 years. Momentum is also very strong since he finds that last year's winners invest their net inflows in last year momentum stocks in which they have already invested, thus pushing up the stock prices. For persistence of losing funds, he finds evidence of reluctance to sell losers and buy momentum stocks. Therefore, on average, losing funds underperform in the next year.

Brown and Goetzmann (1995) study open-end funds in the period 1976 to 1988 and find evidence of significant persistence in seven or eight out of twelve years. Even though persistence is found, reversals do occur too. Winning funds in 1987 tended to be losing funds in 1988. However, the strongest evidence of persistence is found in the late 1970s and the early 1980s. They also point out that the behavior of chasing winners leads to a higher level of total risk since correlations among winners are high due to significant loadings on macroeconomic factor of funds in the sample period. Risk-averse investors might not be able to handle these risks promptly.

Gruber (1996) explains the persistence intuition. He notes that since open-end funds are traded at their NAVs, the management ability is neither included in the price of open-end funds nor reflected in fees and expenses[4]. Therefore, the performance of funds is predictable. Rational investors would correctly predict performance in the subsequent period and invest rationally in funds having superior performance. As a result, persistency is found.

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[3] "Hot hand" phenomenon means mutual funds that achieved above average returns continue to enjoy superior performance in subsequent period.

[4] Unlike stocks, part of investors' trading rationale is based on sentiment. The management ability is also included in stock price as reflected by premiums (discounts) in the price of outperforming (underperforming) firms.

2.2.6 Impact of flows and its empirical evidence

Fund flows are consequences from the fact that performance does persist. If persistence is found to be strong, that is, winners continue to outperform while losers still remain losers, common sense suggests that investors would be better off by fleeing from losers and investing in winners. The question is whether doing so create positive returns to investors.

As a matter of fact, investors chase past performers. Gruber (1996) finds evidence that funds with decent performance, as reflected by positive Jensen alpha, experience significant positive inflows. He finds that investors are smart in judging funds performance, especially sophisticated clientele[5]. They are able to identify good managers and invest accordingly. This observation is dubbed the "smart money" effect, which means that investors have the ability to identify superior managers and appear to invest in funds that subsequently perform better than funds from which investors divest. Zheng (1999) also finds evidence of chasing past winners and smart money effect might be explained by the forecasting activities of investors to predict the future open-end fund performance using past performance information. She points out that investors make good assessments on short-term future performance of funds. The smart money effect that aggregate newly invested money in equity mutual funds is able to forecast short-term future fund performance. Those money-receiving funds perform better than losing-money funds in the subsequent period. Wermers (2003) finds that money is smart in chasing winning managers and the strategy of "following smart money" creates positive returns.

Sapp and Tiwari (2004) also study the smart money effect. They mimic the investors' strategy by going long in positive cash-flow portfolio and short in the negative cash-flow portfolio. This strategy produces annual alpha of 2.09% over the period 1970-2000. However, after including momentum factor in the benchmark, the adjusted excess return (Jensen alpha) on the flow of money is essentially zero. They explore further and find that cash flows to funds are strongly correlated with recent returns, but not to funds momentum loadings. This effectively demonstrates that investors appear to be chasing funds having recent large returns and incidentally benefit from the momentum effect rather than ability to identify momentum-style funds. This conclusion contrasts with Gruber's explanation that investors could identify superior managers. In fact, they could not. They react to recent performance, and the smart money effect is explained by momentum phenomenon incidentally benefited from chasing past returns.

Search cost is another issue in identifying performing funds and determining fund flows. Investors not only react to funds' past performance but also search cost. Sirri and

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[5]Gruber (1996) explains two types of clienteles: sophisticated clientele and disadvantaged clientele. Sophisticated clientele is able to identify managers with stock picking talent and invest accordingly while disadvantaged clientele are somehow got stuck with losers due to some reasons, for example, tax restrictions to hold funds for a specified period of time or investing based on marketing gimmicks or achieving recommendations from investors' brokers.

Tufano (SF) (1998) relate flows to search costs of investors. They find that investors would invest in funds that are easier or less costly to identify. Funds bombard investors with advertisements and extensive marketing efforts in order to promote their past performance. In fact, investors react to advertisements and invest in funds which are in the spotlight (since non-performing funds would not advertise the performance anyway). These funds normally charge high fees in order to push the advertising cost through to the investors. By the time the inflows are larger and the total net assets under management reach economies of scale, the funds' expense ratios are reduced. Despite the fact that investors search for performing funds periodically, the degree of divesting from underperformers is less than degree of investing in outperformers. SF conclude that flow is sensitive to search costs. This conclusion is in line with Jain and Wu (2000). They find that the advertised funds, having superior performance in the pre-advertisement years, attract significantly more money than non-advertised funds with similar characteristics. Thus, advertisements induce fund inflows and lower the investors' search cost.

2.3 Empirical evidence on Thai mutual funds from Thai scholars' dissertations

Plabplatern (1997) studies the quarterly portfolio holdings of 63 closed-end mutual funds existing from quarter 1,1993 to quarter 2, 1997 and finds that almost all funds have selectivity skills while there are only 26 out of 63 funds that have positive timing ability.

Sakranan (1998) studies the annual portfolio holdings of 34 equity funds of both open-end and closed-end type that exist during the period of December 31, 1994 to December 31, 1997 and finds little evidence of selectivity skill, that is, only 2 funds have positive CS measure or exhibit selectivity skill. However, all mutual funds in her sample have timing ability, especially the closed-end type. She also finds that performance of Thai funds does not persist. Note that the studies from Plabplatern and Sakranan are somehow controversial to each other, which suggest that the data is not clean enough.

Pornchaiya (2000) studies the performance of surviving equity funds (as of June 25, 1999), both open-end and closed-end type, that exist during the period of January 1996 to June 1999 and finds that almost all funds do not have stock selection ability in terms of traditional Jensen measure.

Srisuchart (2001) studies market timing of closed-end funds that listed in The Stock Exchange of Thailand (SET) during the period of January 1990 to May 2000 and finds that funds do time the market but the timing direction is opposite to the market movement. Suspiciously, funds, on average, had less market loadings when the market had a bull run. This finding is irrational. The reason why he finds a misleading result is due to model misspecification. To explain, he includes fixed income funds as input for the Merton-Henriksson model, which is valid only for equity funds. He also underestimates the timing ability of funds captured by Treynor-Mazuy model, which is used to estimate the beta

response during the market upturn, since he includes the fixed income funds in his model input as well.

Groatong (2001) studies momentum investing of 45 closed-end equity funds in 1995 to 2000 by 8 mutual fund management companies and finds that funds have tendency to trade stocks based on their past returns, especially those that provide superior prior month returns.

Nerngchamnong (2003) studies the relationship between the size and performance of 58 open-end equity funds that existed during the period of January 2001 to December 2002 and finds that, for the bear market, size is positively correlated with performance of funds.

These studies cannot be linked together to identify the performance of mutual funds in Thailand since some of the findings are conflicting to each other and the time periods of some studies are different. If one could find a summary to this story at present time, the incomplete summary would be that investing in mutual funds, on average, is indifferent from investing in passively constructed well-diversified portfolios.

CHAPTER III
METHODOLOGIES

3.1 Availability of Data

3.1.1 NAV and TNA data

This dataset contains the monthly Net Asset Values (NAV) per unit and the Total Net Assets (TNA) under management of virtually all equity funds existing from June 2000 to August 2004. The data is supported by The Association of Investment Companies (AIMC). The monthly NAVs per unit are used for calculating monthly net returns of funds. The basic statistics of this dataset are discussed in a later chapter.

3.1.2 Fund holdings data

This dataset contains strictly confidential information and comes from the generosity of 2 anonymous mutual funds management companies. The sample size is 30 equity funds, which are in operation from the end of 1st quarter 2000 to the end of 2nd quarter 2004. This dataset provides quarterly fund stockholdings data. Kindly note that these funds are surviving funds as of November 2004. They are also exposed to both survivorship and selection bias.

3.1.3 Other data

All other data used for analyses include stock prices, size of firm, book-to-market value, market return and SET dividend yield, which have been obtained from the Datastream®. Risk free rate (in this study, I use Bank of Thailand's 14 days repurchase rate - REPO) and yield spread between 14-day REPO and 10-year government bond were obtained from the table of statistics, Bank of Thailand. Earnings announcement dates of stocks were collected manually from the stock news in the SETSMART system (www.setsmart.com).

3.2 Hypotheses

Hypothesis 1 Managers can successfully earn abnormal returns compared to benchmark portfolio with significance.

Hypothesis 2 Winning funds employ momentum strategies, buying stocks that have high returns in the past.

Hypothesis 3 Managers adjust their portfolios according to changing macroeconomic conditions.

Hypothesis 4 Persistence lasts at least one year.

Hypothesis 5 Managers have selective skills. They invest in stocks that outperform their characteristics.

Hypothesis 6 Managers have timing skills, buying and selling stocks at the right time.

Hypothesis 7 Investors chase winning funds. In other words, winning funds earn positive net inflows in the test year while losing funds do not.

3.3 Methodologies

3.3.1 The traditional Jensen measure: CAPM

This model will be used to test whether positive abnormal return exists. Abnormal returns are detected through the traditional Jensen measure in the equation

$$r_{j,t+1} = \alpha_{j_{TRADITIONAL}} + \beta_j r_{m,t+1} + \varepsilon_{j,t+1} \quad (6)$$

where $r_{j,t+1}$ = excess return of evaluated fund over risk-free return during month t to t+1

$\alpha_{j_{TRADITIONAL}}$ = traditional Jensen measure

β_j = coefficient represents market loadings

$r_{m,t+1}$ = excess return of the market over risk-free return during month t to t+1

$\varepsilon_{j,t+1}$ = error term of the regression

The passive portfolio used as a benchmark is the SET index, which comprise all stocks traded on the exchange.

3.3.2 The conditional Jensen measure: Ferson-Schadt model

The Ferson-Schadt model utilizes the fact that managers do time the market. Abnormal returns are detected through the conditional Jensen measure in the equation

$$r_{j,t+1} = \alpha_{j_{CONDITIONAL}} + b_{1j} r_{m,t+1} + b_{DIV_j}(DIV_t \cdot r_{m,t+1}) + b_{RF_j}(RF_t \cdot r_{m,t+1}) + b_{SP_j}(SP_t \cdot r_{m,t+1}) + \varepsilon_{j,t+1} \quad (7)$$

where $r_{j,t+1}$ = excess return of evaluated fund over risk-free return (14-day repurchase rate) during month t to t+1

$\alpha_{j_{CONDITIONAL}}$ = conditional Jensen measure

b_{1j} = coefficient represents market loadings

$r_{m,t+1}$ = excess return of the market over risk-free return during month t to t+1

b_{DIV_j} = coefficient represents shock in dividend yield

DIV_t = dividend yield of SET at time t

b_{RF_j} = coefficient represents shock in risk-free return (1-month T-bill)

RF_t = 14-day repurchase rate at time t

b_{SP_j} = coefficient represents shock in yield spread between 1-month T-bill and 10-year government bond

SP_t = Yield spread between 14-day repurchase rate and 10-year government bond at time t

$\varepsilon_{j,t+1}$ = error term of the regression

The slight difference between the CAPM and the Ferson – Schadt conditional model is that the beta in Ferson – Schadt model is a time varying function to macroeconomic variables whereas in the CAPM, the beta is held constant. For this case, beta is a response function to the shock in macroeconomic variables, namely the dividend yield of the stock market, the risk – free return and the yield spread between the 14-day repurchase rate and the 10-year government bond. All inputs in the model are monthly returns.

3.3.3 The Carhart 4-factor model

This model regresses excess return over 4-factor benchmark. Abnormal returns are detected through the Carhart's Jensen measure in the equation

$$r_{j,t+1} = \alpha_{jCARHART} + b_j RMRF_{t+1} + s_j SMB_{t+1} + h_j HML_{t+1} + p_j PR1YR_{t+1} + \varepsilon_{j,t+1} \quad (8)$$

where $r_{j,t+1}$ = excess return of evaluated fund over risk-free return during month t to t+1

$\alpha_{jCARHART}$ = carhart's Jensen measure

b_j = coefficient represents loadings in market

$RMRF_{t+1}$ = excess return of the market over risk-free return during month t to t+1

s_j = coefficient represents loadings in small capitalization stock

SMB_{t+1} = return of small minus big size portfolio during month t to t+1

h_j = coefficient represents loadings in growth stock

HML_{t+1} = return of high minus low book-to-market portfolio during month t to t+1

p_j = coefficient represents loadings in momentum stocks

$PR1YR_{t+1}$ = return of up minus down portfolio during month t to t+1

$\varepsilon_{j,t+1}$ = error term of the regression

This model compares returns generated by funds to the passive portfolio (or benchmark), which is a value-weighted portfolio of stocks in the SET that have certain

characteristics in terms of size, book-to-market and momentum. The benchmark used in this case is the 4 – factor model. The details of constructing the factors are described as follows.

3.3.3.1 $RMRF_{t+1}$

The $RMRF_{t+1}$ is constructed exactly the same as constructing $r_{m,t+1}$ in the CAPM.

3.3.3.2 SMB_{t+1} and HML_{t+1}

These two factors are constructed according to the suggestions of Fama and French (1993). Each year, on December 31, stocks traded on the exchange are listed and sorted based on their size and book-to-market value. However, any stocks that have no book-to-market value or have negative book-to-market values are excluded. Firstly, stocks are formed into 2 portfolios, namely Big (B) and Small (S) size portfolios. Stocks under the 50 percentile breakpoint are assigned into Small portfolio whereas stocks above the 50 percentile breakpoint are assigned into Big portfolio. Each portfolio is then reclassified into 3 portfolios, namely High (H), Neutral (N), Low (L) book-to-market (BtM) portfolios. The High BtM portfolio consists of stocks above the 70 percentile book-to-market value breakpoint. The Neutral BtM portfolio consists of stocks above the 30 percentile but under the 70 percentile book-to-market value breakpoints. The Low BtM portfolio consists of the remaining stocks.

After this stage, there are 6 portfolios, namely B/H, B/N, B/L, S/H, S/N and S/L. The monthly value-weighted returns of these portfolios are then calculated. The SMB and HML factors are the equal-weighted average returns and are calculated as

$$SMB = ((S/H - B/H) + (S/N - B/N) + (S/L - B/L)) / 3 \quad (9)$$

$$HML = ((S/H - S/L) + (B/H - B/L)) / 2 \quad (10)$$

3.3.3.3 $PR1YR_{t+1}$

This factor captures the momentum phenomena and is constructed as suggested in Carhart (1997). PR1YR is recalculated monthly as the equal-weighted average returns of stocks with the highest 30 percent eleven month returns lagged one month minus the lowest 30 percent eleven month returns lagged one month.

3.3.4 Characteristic-based performance measure

According to Daniel et al. (1997), funds hypothetical return, which is equal to the gross return before deducting expenses and transaction costs and is calculated at the holdings level, is decomposed into 3 components: CS, CT and AS measure. These three measures sum up to gross return and could be used for decomposing a fund's return. In order to calculate these measures, first, benchmark portfolios must be formed. The benchmark portfolios are formed on three dimensions: size, book-to-market value and momentum, as the following.

On June 30 every year, the formation date, stocks traded on the exchange are listed and sorted based on their sizes in descending order. Three portfolios are then formed. The first portfolio comprises the largest stocks. The second portfolio comprises medium-sized stocks while the third comprises the smallest. Next, the stocks in each of these portfolios are then sorted based on their book-to-market value in descending order. Each of the three portfolios is then classified into 3 portfolios based on the book-to-market dimension, thus yielding 9 portfolios. Each of the nine portfolios is then reclassified into 3 portfolios based on the momentum dimension. Momentum is calculated from prior eleven months return lagged one month. In order to calculate momentum, newly listed stocks have to be traded for at least 6 months prior to the formation. After the classifications, there will be 27 passive portfolios (3 x 3 x 3 portfolios). Each passive portfolio has equally, or approximately, the same number of stocks. All stocks in a portfolio have the same characteristics in terms of size, book-to-market value and momentum. The quarterly returns of each of these benchmark portfolios are calculated by value-weighting the returns of stocks in the portfolio.

Subsequently, CS, CT and AS measure at each portfolio holdings disclosure date of a fund are calculated.

3.3.4.1 CS measure

The CS measure captures the selectivity skills of managers in selecting stocks that beat their benchmarks that have the same characteristics and is defined as

$$CS_t = \sum_{j=1}^{N} w_{j,t-1}(R_{j,t} - R_t^{b_{j,t-1}}) \tag{11}$$

Where $w_{j,t-1}$ is the portfolio weight on stock j at the end of quarter t-1, $R_{j,t}$ is the quarter t buy-and-hold return of stock j, and $R_t^{b_{j,t-1}}$ is the quarter t buy-and-hold return of the characteristic-based passive portfolio that is matched to stock j during quarter t-1.

3.3.4.2 CT measure

Generally, managers attempt to time styles of stocks that are going to perform well in the next year. The timing attempt, considered a shift in style, will be shown at the portfolio holdings. Style shift is a consequence of either the two things or both. First, stocks that are held by managers have changed the styles themselves. Second, managers tilt their portfolios toward certain styles according to their outlook. The CT measure captures the shift in style as managers' timing ability, which is defined as

$$CT_t = \sum_{j=1}^{N} (w_{j,t-1}R_t^{b_{j,t-1}} - w_{j,t-5}R_t^{b_{j,t-5}}) \tag{12}$$

Note that the portfolio weight of stock j at quarter t - 5 is multiplied by $R_t^{b_{j,t-5}}$, the quarter t return of the characteristic-based benchmark portfolio that is matched to stock j during quarter t – 5.

3.3.4.3 AS measure

The AS measure captures the returns earned by a fund due to that fund's tendency to hold stocks with certain characteristics, or how styles invested last year pay, defined as

$$AS_t = \sum_{j=1}^{N} w_{j,t-5} R_t^{b_{j,t-5}} \tag{13}$$

3.3.5 Momentum investing measure

Due to the fact that funds trade stocks on momentum, therefore, Grinblatt, Titman and Wermers (1995) invented this measure to explore how funds buy and sell stocks on their historical price patterns. The measure utilizes the weights of stocks in the portfolio holdings data. The invented measures are generalized into L0M, L1M and TAL0M (Turnover-Adjusted L0M). L0M captures the momentum trading during the portfolio holdings revision period. The portfolio revision period is the period when managers revise their portfolio during the quarter. For example, as the data discloses portfolio holdings quarterly, i.e. at the end of March, June, September and December, L0M on June 30, 2000 captures the buy and sell revisions based on price pattern of stocks during March 31, 2000 to June 30, 2000. L1M captures the momentum trading during the previous quarter. For example, L1M on June 30, 2000 captures the buy and sell revisions based on price pattern of stocks during January 31, 2000 to March 31, 2000. L0M is decomposed further into BuyL0M and SellL0M. L1M is also decomposed into BuyL1M and SellL1M.

3.3.5.1 BuyL0M measure

BuyL0M captures the buy-on-price-pattern of funds. If a fund buys stocks that have experienced high return, BuyL0M measure will be positive. BuyL0M is calculated as

$$\text{BuyL0M} = \frac{1}{3N} \sum_{t=1}^{T} \sum_{i=1}^{3} \sum_{\tilde{w}_{j,3t} > \tilde{w}_{j,3t-3}} (\tilde{w}_{j,3t} - \tilde{w}_{j,3t-3})(\tilde{R}_{j,3t-3+i} - \overline{R}_j) \tag{14}$$

Where t = portfolio holdings disclosure date

i = month during the portfolio revision period

$\tilde{w}_{j,3t}$ = weight of stock at time 3t

$\tilde{w}_{j,3t-3}$ = weight of stock at time 3t-3

$\tilde{R}_{j,3t-3+i}$ = return of security j from date 3t-3 to 3t-3+i

$\overline{R}_j$ = monthly return from 12 months ahead for security j

3.3.5.2 SellL0M measure

SellL0M captures the sell-on-price-pattern of funds. If a fund sell stocks that have experienced high return, SellL0M measure will be positive. SellL0M is calculated as

$$\text{SellL0M} = \frac{1}{3N}\sum_{t=1}^{T}\sum_{i=1}^{3}\sum_{\tilde{w}_{j,3t}<\tilde{w}_{j,3t-3}} (\tilde{w}_{j,3t} - \tilde{w}_{j,3t-3})(\tilde{R}_{j,3t-3+i} - \overline{R}_j) \quad (15)$$

Note that the sum of BuyL0M and SellL0M equals to L0M measure.

3.3.5.3 BuyL1M measure

BuyL1M measure is designed based on the same intuition as BuyL0M and is defined as

$$\text{BuyL1M} = \frac{1}{3N}\sum_{t=1}^{T}\sum_{i=1}^{3}\sum_{\tilde{w}_{j,3t}>\tilde{w}_{j,3t-3}} (\tilde{w}_{j,3t} - \tilde{w}_{j,3t-3})(\tilde{R}_{j,3t-6+i} - \overline{R}_j) \quad (16)$$

Where $\tilde{R}_{j,3t-6+i}$ = return of security j from date 3t-6 to 3t-6+i

3.3.5.4 SellL1M measure

BuyL1M measure is designed based on the same intuition as BuyL0M and is defined as

$$\text{SellL1M} = \frac{1}{3N}\sum_{t=1}^{T}\sum_{i=1}^{3}\sum_{\tilde{w}_{j,3t}<\tilde{w}_{j,3t-3}} (\tilde{w}_{j,3t} - \tilde{w}_{j,3t-3})(\tilde{R}_{j,3t-6+i} - \overline{R}_j) \quad (17)$$

3.3.5.5 TAL0M measure

The turnover – adjusted measure is the normalized L0M measure so that 100 Baht of stocks are bought and 100 Baht are sold. TAL0M is defined as

$$TAL0M = \frac{1}{3N}\sum_{t=1}^{T}\sum_{i=1}^{3}\frac{\sum_{j=1}^{N}(\tilde{w}_{j,3t} - \tilde{w}_{j,3t-3})\tilde{R}_{j,3t-3+i}}{\sum_{\tilde{w}_{j,3t}>\tilde{w}_{j,3t-3}}(\tilde{w}_{j,3t} - \tilde{w}_{j,3t-3})} \quad (18)$$

3.3.6 Earnings announcement dates analysis

Another method is used to test whether managers exhibit selective skills, by using the new methodology introduced by Baker, Litov, Wachter and Wurgler (BLWW) (2004). The core idea is to associate skill with the tendency to hold stocks that are about to enjoy high earnings announcement returns and avoid stocks that are about to suffer low announcement returns.

Specifically, for each fund holdings observation, merge in the first earnings announcement date that follows that holding's report date. Next, calculate the raw cumulative stock returns for the [-1,+1] trading day interval around each announcement. Three – day raw return is calculated according to the formula

$$\text{Return} = 4 \cdot \frac{1}{T}\sum_{t=1}^{T}\frac{1}{N}\sum_{i}\frac{1}{K_i}\sum_{j} r_{ij,t} \quad (19)$$

Where $r_{ij,t}$ = return of a stock held by a fund during the [-1,+1] trading day interval around each subsequent earnings announcement date

j = number of stocks held by fund at a particular portfolio holdings disclosure

K_i = holdings of fund i from 1 to K_i

N = number of funds at a particular portfolio holdings disclosure

T = number of years the data are available

Also calculate the Market – Adjusted Return (MAR) and Benchmark – Adjusted Return (BAR) according to the formula

(20)

Where $r_{m,t}$ = return of the market during the [-1,+1] trading day interval around each subsequent earnings announcement date of a certain stock held by fund

$$BAR = 4 \cdot \frac{1}{T}\sum_{t=1}^{T}\frac{1}{N}\sum_{i}\frac{1}{K_i}\sum_{j}(r_{ij,t} - r_{b,t}) \quad (21)$$

Where $r_{b,t}$ = return of the benchmark that has the same characteristics in terms of size, book-to-market and momentum as the stock during the [-1,+1] trading day interval around each subsequent earnings announcement date of the stock held by fund

Note that the BAR formula here is slightly different from the BLWW's method since some of the quarterly earnings announcement dates of stocks traded on the exchange are not available.

The selectivity skill is captured by investigating MAR and BAR of stocks that manager "increases weight", "decreases weight", "first buys" and "last sells". If the BAR and MAR returns of weight-increasing stocks are higher than BAR and MAR returns of weight-decreasing stocks, and if the BAR and MAR returns of first buys stocks are higher than BAR and MAR returns of last sells stocks, then it is conclusive that managers have selective skills.

3.3.7 Flows estimation

Net Flows could be estimated from the funds' total net assets values and the returns earned during the period, as discussed in Sirri and Tufano (1998). Flows are estimated from the equation:

$$FLOWS_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}x(1+R_{i,t})}{TNA_{i,t-1}} \quad (22)$$

Where $TNA_{i,t}$ = total net assets of fund at time t

$TNA_{i,t-1}$ = total net assets of fund at time t-1

$R_{i,t}$ = return earned during time t

CHAPTER IV
HOW IS MY MONEY DOING?:
PERFORMANCE OF THAI EQUITY FUNDS

Aristotle once said in his classic quote, “It is possible to fail in many ways...while to succeed is possible only in one way”. In fact, in the world of investment, there are several ways to grow money. Investors who are able to take risks in the stock market, could manage their own money by either investing (or trading stocks) on their own based on their outlook, or by laying their trust upon the hands of fund managers. Interestingly, on average, if fund managers outperform the market, retail investors will definitely underperform. Thus, this relates to the opening statement of this chapter: there is only one possible way to succeed.

It is interesting to find out whether mutual funds (equity funds, to be more specific) generate excess returns to the market. If this is the case, investors will be better off investing with fund managers. However, equity funds are not yet acclaimed unless their performance has been thoroughly analyzed. Therefore, this chapter is designed to prove whether investing in equity funds is truly the best viable option.

4.1 Thai mutual funds industry and their stakeholders

Why should mutual funds be established? One simple explanation is that investors require diversification. Investors with a small sum of money cannot diversify by themselves. Mutual funds are designed for pooling money together to form a large amount. As a result, the managers can invest in a wide range of securities to provide diversification to the investors. Another function mutual funds provide is knowledge. Investors do not need to be acquainted with Markowitz efficient frontier or CAPM to earn substantial returns. It is left to the understanding of the managers. Moreover, the managers are well informed since they have a better access to valuable information. As a consequence, they should generate better returns in relation to uninformed retail investors.

Several entities are responsible for managing and regulating mutual funds. A *Mutual fund management company* is responsible for managing assets. It could sell the unit trusts by itself or assign *selling agents* to provide such a function. There is also the *registrar* to support the administrative work. In addition, three entities are responsible for governing mutual funds. The first is the *supervisor*, who is hired by funds to inspect the funds to conform to the policy set at their inceptions. *The Association of Investment Management Companies (AIMC)* is responsible for setting performance presentation standard. The members of this association are elected from the mutual funds professionals, not from the government. Last is the *Securities and Exchange Commission (SEC)*, which is a government agency. It has the authority to govern the mutual fund industry as a whole.

Mutual funds charge expenses to the investors. Basic expenses charged are management fees, trustee fees, registrar fees and advisory fees. These expenses are deducted from the fund as a percentage of Net Asset Values (NAV). There are also

unitholder's expenses, which are collected directly from the investors. Examples of these expenses are the front-end fees, back-end fees (these two expenses are called "load fees") and switching fees. These expenses are charged as a percentage of investments made. Unit transfer fees and other fees are charged directly from the investors' transactions.

There are two types of mutual funds, namely the closed-end funds and the open-end funds. Closed-end funds are funds that have a constant number of unit trusts. Normally, these funds are traded on the exchange to provide liquidity to the investors. Open-end funds are funds that have a variable number of unit trusts. Investors can invest or redeem directly from the funds, at the quoted bid and ask. Due to the fact that this type of fund is not exchange-traded, it has to provide liquidity to the investors by itself. At present, investors are becoming more interested in investing in the open-end funds; therefore, most of the closed-end funds are transforming themselves into the open-end type.

The Securities and Exchange Commission (SEC) has categorized funds into 3 general types: the equity funds (invest solely in equities), the fixed-income funds (invest solely in fixed-income securities, basically called the "bond funds") and the flexible funds (a combination of both equities and fixed-income securities). There are also the balanced funds, the subset of flexible funds, that invest in both equities and fixed-income securities equally.

As there are several types of mutual funds, the scope of this study is limited to evaluating the performance of Thai equity funds.

4.2 Basic performance of Thai equity funds

Table I shows the basic statistics of Thai equity funds. All equity funds for individual investors under management of 14 companies, both the open-end type and closed-end type, that existed during the period of June 2000 to August 2004 are gathered. However, equity funds that have the policy to invest specifically are excluded, for example, technology funds and small – medium enterprise venture capital fund. Funds that have the policy to invest in the 50 largest firms listed, or SET 50, are also excluded.

Panel A shows the number of funds in operations each year. Throughout the period, there were 114 funds operating, but on August 2004, there were 97 funds in operation. Panel B shows the basic yearly net returns of all funds, which are calculated from annualizing the average net monthly returns (multiplying the average monthly return by 12). Monthly returns are calculated in two ways. First is the equal-weighted average return. It is calculated by averaging monthly return of a fund in a given year, then average the monthly returns of all funds over the entire year. Second is the total net assets average return (value-weighted return), which is calculated similarly to the equal-weighted average return, except that the total net assets of each fund is included in the calculation and is updated at the end of every month.

Table I
Equity Fund Basic Statistics

Basic statistics of all Thai equity funds for individual investors existing during June 2000 to August 2004 are presented. Data, which are survivorship and selection-bias free, are available from the Association of Investment Management Companies (AIMC). The table provides year, number of funds, number of funds created and closed, return of Thai stock market and net return using both total net assets average and equal-weighted average using weights being updated at the end of every month. Panel A shows summary statistics of number of funds in each year. Panel B shows the basic statistics of returns on both total net assets average and equal-weighted average.

Panel A. Summary statistics for equity fund universe

Year	Number of funds	Funds created	Funds closed
2000*	83	1	1
2001	87	7	2
2002	93	9	3
2003	94	6	7
2004**	99	7	3
By August 31, 2004 status:			
Funds in operations	=	97	
Funds closed	=	17	
All funds	=	114	

*June 2000 to December 2000
** January 2004 to August 2004

Panel B. Basic statistics of returns

Year	SET return (% per year)	TNA-Avg net return (% per year)	EW-Avg net return (% per year)
2000*	-29.87	-30.28	-31.08
2001	11.84	14.16	14.65
2002	15.70	26.01	29.03
2003	114.30	71.63	82.47
2004**	-19.03	-23.76	-23.58

*June 2000 to December 2000
** January 2004 to August 2004
Note: Yearly net return of funds is calculated from annualizing the average monthly return.

Note that in Panel B, the net return of funds in a year is an approximate proxy of the buy-and-hold return in a year. The method of calculating yearly returns by annualizing average monthly returns would yield different results compared to the actual investment returns that investors would earn. However, this method is the way to capture all funds that are newly incepted or closed during the calendar year.

An overview of Thai equity fund performance is presented in table II. The returns generated by funds are compared to the return of the market. For comparative purpose, the analyzing period is divided into 3 subperiods, namely June 2000 to December 2002, January 2003 to December 2003 and January 2004 to August 2004. The movement of the market in one subperiod differs from another. The market return is calculated from the SET index. The risk-free return is the 14-day repurchase rate. Mean excess return is the average return of a fund in excess of the average risk-free return. The Sharpe measure, which is a basic performance indicator, is a ratio of mean excess return over standard deviation.

Table II
An Overview of Thai Equity Fund Performance

Equity funds for individual investors in the universe under management of 14 mutual fund companies, both open-end and closed-end type, that exist between June 2000 to August 2004 are divided into 3 subperiods. The first subperiod range is from June 2000 to December 2002, during which the stock market moved sideways. The second subperiod ranges from January 2003 to December 2003, which represents a bull run. The last subperiod, January 2004 to August 2004, represents a bear market. EW-Avg is the equal-weighted monthly return of funds. TNA-Avg is the total net assets average or value-weighted monthly return. The monthly returns and standard deviations of SET index and risk-free return (14-day repurchase rate) are also calculated. Mean excess return is the average return of a fund in excess of the average risk-free return. The Sharpe measure is a ratio of mean excess return over standard deviation.

	Jun. 2000 - Dec. 2002				Jan. 2003 - Dec. 2003				Jan. 2004 - Aug. 2004				Jun. 2000 - Aug. 2004			
	Mean return (% per month)	Standard deviation	Mean excess return	Sharpe measure	Mean return (% per month)	Standard deviation	Mean excess return	Sharpe measure	Mean return (% per month)	Standard deviation	Mean excess return	Sharpe measure	Mean return (% per month)	Standard deviation	Mean excess return	Sharpe measure
EW-Avg	0.75	7.87	0.59	0.08	6.29	5.71	6.16	1.08	-2.14	2.10	-2.25	-1.07	1.62	7.26	1.48	0.20
TNA-Avg	0.83	7.43	0.67	0.09	5.97	5.28	5.85	1.11	-1.98	2.06	-2.08	-1.01	1.62	6.83	1.47	0.22
SET index	0.68	8.72	0.52	0.06	6.73	6.45	6.61	1.02	-2.51	4.54	-2.61	-0.58	1.62	8.19	1.48	0.18
Risk-free	0.16	0.03	NA	NA	0.12	0.02	NA	NA	0.10	0.00	NA	NA	0.14	0.03	NA	NA

As table II shows, for all periods, the Sharpe measures of funds both on the equal-weighted average and on the total net assets average are higher than the Sharpe measure of the market. These results are from the fact that mutual funds provide lower standard deviation compared to the market. On this basic measure, on average, mutual funds provide satisfying returns compared to the market.

The Sharpe measure provides insight that investing in funds using buy-and-hold strategy proves to be effective. The returns not only track the benchmark closely during the sample period, but also provide lower volatility as well. Investors' active trading behavior seems ineffective. This is in line with the findings of Barber and Odean (2000). They found that, during 1991 to 1996, active traders earned 11.4 percent while the market generated 17.9 percent. They also proved that the more investors trade, the more they lose. Emotions also influence active traders' trading behavior. On this issue, Benjamin Graham, renowned as the father of value investing, made an interesting suggestion, "The investor's chief problem – and even his worst enemy – is likely to be himself."

It is interesting to find the level of risks associated with returns that funds generate. Figure I plots the risk and return profile of Thai equity funds. Both dimensions are presented in percentage per month. The Markowitz efficient frontier is drawn objectively, which is not mathematically derived.

As figure I shows, most funds lying inside the efficient frontier represent a large number of funds that are not well-diversified. This profile suggests that funds have their own investment policies, e.g. value oriented or growth oriented, and select stocks according to the policies set. Even though the SEC has set the "equity funds" classification for mutual funds that invest solely in equities, in the practical sense, funds could also be further put into several classifications. The reader would find that, in this study, funds are sorted based on their policies, which are detected by using Carhart 4-factor model regression approach. This issue is explained later in both current and later chapters.

Another aspect of basic performance is analyzed. As the returns of funds within the same mutual fund management company are often highly correlated, analyzing the performance at the company level gives some useful insights to performance evaluation. The Sharpe measure of each company is demonstrated in table III and table IV.

Table III presents the overview of returns and risks and the Sharpe measures on an equal-weighted average basis. Monthly returns of funds in a company are calculated and updated every month. Average monthly return in a year is found by averaging monthly returns. Mean excess returns are calculated by subtracting the mean returns with the monthly risk-free returns, which are calculated from the 14-day repurchase rates. Ranking of each company is assigned and is illustrated in the brackets.

Table IV presents the results on a value-weighted average basis. The weights used for calculating a company's monthly returns are the total net assets of funds under

management at the beginning of each month. The table constructing details are similar to what has been done in table III.

The names of the companies in table III and IV are kept anonymous and are assigned based on 2000 mean monthly return in an equal-weighted average return approach. This designation continues in later sections of the chapter.

Table III and IV doubt the skills level and the consistency of managers. For instance, in table IV, company A is ranked first in the year 2000 and is subsequently ranked 7^{th}, 10^{th} and 12^{th} respectively in later years. The performance reverses in the final year in which it is ranked 4^{th}. This result has shown some indications of inconsistency in performance. As consistency is one of the investors' major considerations, this issue will be tackled in a later chapter on the persistence of performance.

One interesting issue that could be drawn from table III and IV is how funds under management of each company perform during all period. The next section deals with attributing performance at the management company level.

4.3 Performance at the fund management company level

This section attributes funds' performance at the fund management company level. The first measure is the unconditional Jensen alpha, which could be drawn from the Capital Asset Pricing Model (CAPM).

To calculate the unconditional Jensen alpha, the regression is performed according to the equation (6). In doing so, fourteen portfolios that consist of funds under management of 14 companies are formed. Each portfolio represents a company and is equally weighted monthly. The monthly returns of each portfolio are then calculated. These monthly returns are dependent variables or inputs in the left hand side of the CAPM regression. For the independent variable, the monthly returns of the market are calculated in reconciliation with the dependent variable. The monthly SET index returns act as proxies for the monthly market returns.

On the other hand, the conditional Jensen alpha is also calculated. The reason why this method should be analyzed is that managers might react to changing macroeconomic conditions. The conditional model would better capture the abnormality that managers create in excess from the benchmark when they tilt their portfolios according to the changing circumstances.

The equation (7), the Ferson-Schadt conditional model, is used for analyzing the conditional Jensen alpha. Nevertheless, the Ferson-Schadt conditional model is the extension of the CAPM by adjusting the beta to be a time varying function. As a consequence, the abnormal term is called the "conditional Jensen measure" that relies on the macroeconomic conditions. The dependent variable on the left hand side of the model is constructed exactly the same as in unconditional Jensen alpha calculation.

Figure I
Risk and Return of Thai Equity Funds

The figure plots average monthly returns and standard deviations of all equity funds for individual investors existing in the period of June 2000 to August 2004. All monthly returns and standard deviations are in percentage per month. The connected line drawn is the Markowitz Efficient Frontier, which is constructed from stocks traded on the SET50 index with the same observation period as the funds. A series of undiversified funds appears inside the Markowitz Efficient Frontier.

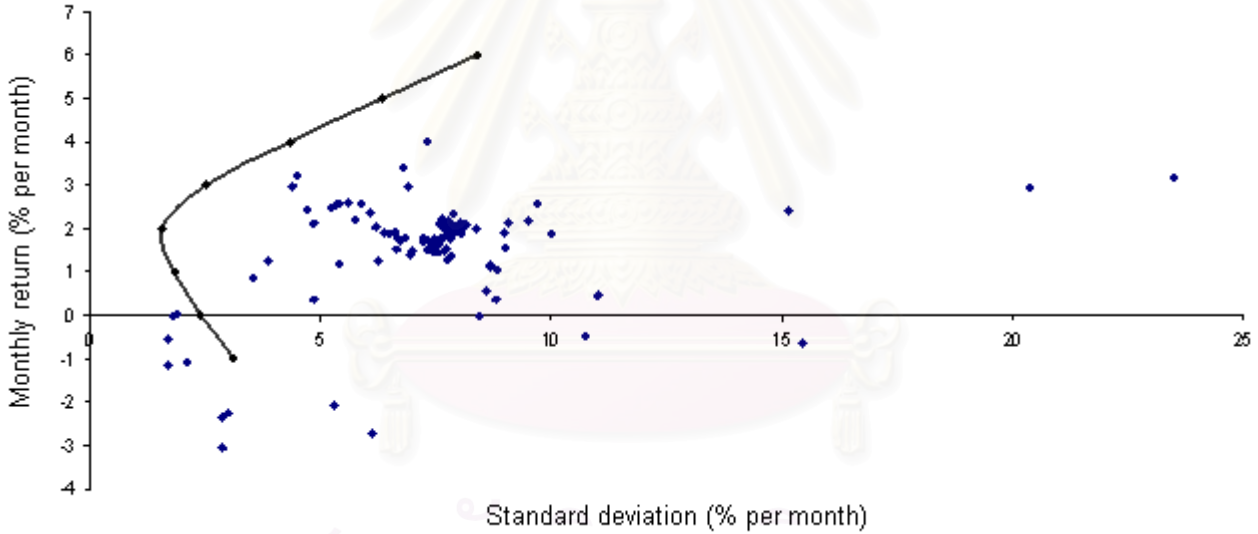


Table III

An Overview of Company Performance and Rankings using Equal-Weighted Average Return

Basic statistics of equity funds for individual investors under management of 14 companies are presented using equal-weighted return on a yearly basis starting from year 2000 to 2004, thus creating 5 test periods. The names of companies are kept anonymous and are assigned based on their mean returns in the year 2000. The sharpe measure is the ratio of mean excess return over standard deviation. The excess return used is the 14-day repurchase rate. Numbers in the brackets [ ] represent rankings of each company in the test period.

	2000*				2001				2002				2003				2004**			
Company	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**
A	-1.78	6.65	-1.90	-0.29 [1]	0.98	8.57	0.81	0.09 [7]	1.10	6.14	0.93	0.15 [10]	4.73	7.91	4.61	0.58 [11]	-2.55	10.84	-2.66	-0.25 [2]
B	-2.42	5.67	-2.54	-0.45 [6]	1.42	8.29	1.26	0.15 [3]	0.91	6.01	0.74	0.12 [11]	6.46	5.48	6.33	1.15 [6]	0.01	2.52	-0.09	-0.04 [1]
C	-2.44	5.75	-2.57	-0.45 [5]	1.14	7.98	0.98	0.12 [5]	2.07	6.16	1.90	0.31 [4]	6.52	5.31	6.39	1.20 [5]	-1.76	3.64	-1.86	-0.51 [8]
D	-2.46	7.69	-2.58	-0.34 [2]	1.37	9.78	1.20	0.12 [4]	2.22	6.67	2.05	0.31 [5]	5.68	5.63	5.55	0.99 [7]	-1.12	2.00	-1.22	-0.61 [9]
E	-2.49	6.94	-2.62	-0.38 [3]	1.97	9.99	1.80	0.18 [2]	2.35	7.94	2.18	0.27 [8]	7.73	6.04	7.60	1.26 [3]	-3.18	4.20	-3.29	-0.78 [12]
F	-2.62	5.11	-2.75	-0.54 [11]	0.68	8.91	0.51	0.06 [10]	1.93	6.17	1.76	0.29 [6]	7.20	8.00	7.08	0.88 [9]	-4.78	11.91	-4.89	-0.41 [6]
G	-2.70	6.88	-2.83	-0.41 [4]	2.44	11.00	2.27	0.21 [1]	9.18	5.25	9.01	1.72 [1]	NA	NA	NA	NA	NA	NA	NA	NA
H	-2.72	5.90	-2.84	-0.48 [9]	1.21	9.17	1.04	0.11 [6]	2.07	6.89	1.90	0.28 [7]	5.45	8.11	5.32	0.66 [10]	-3.69	9.44	-3.79	-0.40 [5]
I	-2.73	6.24	-2.85	-0.46 [7]	0.75	9.42	0.58	0.06 [9]	2.11	7.76	1.94	0.25 [9]	6.19	6.65	6.06	0.91 [8]	-2.60	3.78	-2.70	-0.71 [11]
J	-3.05	6.73	-3.17	-0.47 [8]	0.88	9.95	0.71	0.07 [8]	2.62	7.53	2.45	0.33 [3]	8.05	6.44	7.93	1.23 [4]	-1.66	2.81	-1.76	-0.63 [10]
K	-3.08	6.39	-3.20	-0.50 [10]	0.61	8.98	0.44	0.05 [11]	2.80	7.07	2.63	0.37 [2]	7.25	18.55	7.13	0.38 [12]	-0.70	2.15	-0.80	-0.37 [4]
L	NA	NA	NA	NA	NA	NA	NA	NA	-0.32	5.44	-0.49	-0.09 [12]	5.51	3.77	5.38	1.43 [2]	-0.32	1.62	-0.42	-0.26 [3]
M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.70	6.29	11.57	1.84 [1]	-0.96	2.11	-1.06	-0.50 [7]
N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-2.25	2.99	-2.35	-0.79 [13]

* June 2000 to December 2000

** January 2004 to August 2004

Table IV

An Overview of Company Performance and Rankings using Total Net Assets Average Return

Basic statistics of equity funds for individual investors under management of 14 companies are presented using value-weighted return on a yearly basis starting from year 2000 to 2004, thus creating 5 test periods. The value-weighted returns are calculated by using total net assets of each fund and are updated at the end of every month. The sharpe measure is the ratio of mean excess return over standard deviation. The excess return used is the 14-day repurchase rate. Numbers in the brackets [ ] represent rankings of each company in the test period.

	2000*				2001				2002				2003				2004**			
Company	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**	**Mean return (% per month)**	**Standard deviation**	**Mean excess return**	**Sharpe measure**
A	-1.76	7.08	-1.89	-0.27 [1]	0.93	7.97	0.76	0.10 [7]	1.10	6.31	0.93	0.15 [10]	4.87	6.87	4.74	0.69 [12]	-2.77	6.64	-2.87	-0.43 [4]
B	-2.42	5.90	-2.55	-0.43 [7]	1.43	8.76	1.26	0.14 [5]	0.89	6.20	0.72	0.12 [11]	6.63	5.59	6.50	1.16 [4]	0.09	2.18	-0.02	-0.01 [1]
C	-2.44	6.12	-2.57	-0.42 [5]	1.45	7.95	1.29	0.16 [4]	2.26	6.20	2.09	0.34 [3]	5.97	5.37	5.84	1.09 [6]	-1.62	2.68	-1.72	-0.64 [7]
D	-2.38	8.29	-2.51	-0.30 [2]	1.70	9.30	1.54	0.17 [3]	2.34	6.23	2.17	0.35 [2]	5.58	5.24	5.45	1.04 [7]	-1.23	2.07	-1.33	-0.64 [6]
E	-2.34	7.12	-2.47	-0.35 [3]	2.03	10.88	1.87	0.17 [2]	2.18	8.64	2.01	0.23 [9]	6.83	5.85	6.70	1.15 [5]	-3.35	2.68	-3.46	-1.29 [13]
F	-2.62	5.50	-2.75	-0.50 [10]	0.71	9.21	0.54	0.06 [10]	2.35	6.53	2.18	0.33 [4]	7.14	7.89	7.02	0.89 [10]	-3.49	5.12	-3.59	-0.70 [9]
G	-2.70	6.88	-2.83	-0.41 [4]	2.44	11.00	2.27	0.21 [1]	9.18	5.25	9.01	1.72 [1]	NA	NA	NA	NA	NA	NA	NA	NA
H	-2.68	5.78	-2.81	-0.49 [9]	1.17	9.18	1.01	0.11 [6]	2.03	6.83	1.86	0.27 [8]	5.97	6.06	5.85	0.96 [8]	-2.89	2.49	-3.00	-1.20 [12]
I	-2.71	6.71	-2.83	-0.42 [6]	0.76	9.77	0.59	0.06 [9]	2.75	8.02	2.58	0.32 [6]	6.36	6.79	6.23	0.92 [9]	-2.51	2.59	-2.62	-1.01 [11]
J	-3.05	6.73	-3.17	-0.47 [8]	0.88	9.95	0.71	0.07 [8]	2.63	7.53	2.46	0.33 [5]	8.16	6.63	8.04	1.21 [3]	-1.76	2.89	-1.86	-0.64 [8]
K	-2.42	5.07	-2.55	-0.50 [11]	0.47	5.76	0.30	0.05 [11]	1.41	4.50	1.24	0.28 [7]	5.08	5.73	4.95	0.86 [11]	-0.48	1.54	-0.58	-0.38 [3]
L	NA	NA	NA	NA	NA	NA	NA	NA	0.28	5.92	0.11	0.02 [12]	5.37	3.84	5.24	1.36 [2]	-0.41	1.53	-0.52	-0.34 [2]
M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.70	6.29	11.57	1.84 [1]	-1.10	2.45	-1.20	-0.49 [5]
N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-2.25	2.99	-2.35	-0.79 [10]

* June 2000 to December 2000

** January 2004 to August 2004

For the independent variables, the shocks embedded are the dividend yield of the stock market, 14-day repurchase rate (serves as a risk-free return) and the yield spread between 14-day repurchase rate and 10-year government bond. This analysis is done similarly to the determination of the unconditional Jensen measure.

Table V illustrates the results for both the unconditional and conditional Jensen alphas.

Table V
Company Analysis and Rankings

The unconditional and conditional Jensen measures are calculated from the CAPM and the Ferson-Schadt conditional model respectively. A portfolio, which represents a management company, is comprised of funds under management and is equally weighted. The portfolios are rebalanced monthly to include newly incepted funds and to exclude closed funds. The analyzing periods are July 2000 to December 2002, January 2003 to August 2004, and July 2002 to August 2004. The EW portfolio is the portfolio that consists of all funds in the universe. It is equally weighted and is rebalanced monthly. The figures in the parentheses ( ) are t-statistics that are adjusted for heteroskedasticity. The figures in the brackets [ ] represent rankings of company in each period. The performance is measured in percentage per month.

Panel A. Unconditional alpha				Panel B. Conditional alpha			
Company	**Jul. 2000 - Dec. 2002**	**Jan. 2003 - Aug. 2004**	**Jul. 2000 - Aug. 2004**	**Company**	**Jul. 2000 - Dec. 2002**	**Jan. 2003 - Aug. 2004**	**Jul. 2000 - Aug. 2004**
G	1.320895**	NA	1.320895**	L	7.801821^	1.327685**	1.416336**
	(2.28) [1]		(2.28) [2]		(3.86) [1]	(2.64) [3]	(2.41) [1]
L	1.243215^	1.698862***	1.444407**	E	1.112819	0.129458	0.761966
	(0.57) [2]	(3.02) [2]	(2.29) [1]		(1.55) [2]	(0.15) [11]	(1.44) [4]
E	1.022641*	0.68309	0.8417*	G	0.966754**	NA	0.966754
	(1.75) [3]	(0.87) [10]	(1.79) [5]		(1.35) [3]		(1.35) [3]
D	0.512222	1.036128**	0.593898	C	0.690982	0.43902	0.621917
	(0.99) [4]	(2.11) [7]	(1.61) [11]		(1.13) [4]	(0.67) [10]	(1.49) [9]
I	0.489623	0.817918	0.631545	I	0.642548	0.605999	0.723414
	(0.80) [5]	(1.46) [9]	(1.56) [9]		(0.89) [5]	(0.87) [9]	(1.54) [6]
C	0.458691	0.879824	0.604128	D	0.493841	0.906676	0.643249
	(0.92) [6]	(1.38) [8]	(1.63) [10]		(0.78) [6]	(1.48) [7]	(1.60) [8]
H	0.328128	-0.074196	0.142161	F	0.294198	0.973191	0.731855*
	(0.60) [7]	(-0.11) [12]	(0.36) [13]		(0.51) [7]	(1.35) [5]	(1.78) [5]
J	0.322068	1.372684**	0.749553*	J	0.247122	0.961213	0.593797
	(0.53) [8]	(2.33) [5]	(1.71) [6]		(0.34) [8]	(1.39) [6]	(1.23) [10]
F	0.276712	1.507234**	0.842953**	H	0.233544	-0.14504	0.103867
	(0.55) [9]	(2.39) [4]	(2.10) [4]		(0.34) [9]	(-0.17) [12]	(0.23) [13]
K	0.057417	1.659184**	0.646968	K	0.086434	1.447262	0.587508
	(0.10) [10]	(2.28) [3]	(1.44) [8]		(0.12) [10]	(1.93) [2]	(1.20) [11]
B	0.040399	1.90334***	0.717398*	A	0.071529	0.652355	0.325767
	(0.09) [11]	(3.27) [1]	(1.91) [7]		(0.12) [11]	(0.93) [8]	(0.78) [12]
A	0.035667	0.620588	0.280931	B	-0.124788	1.987986**	0.661106
	(0.07) [12]	(1.26) [11]	(0.77) [12]		(-0.24) [12]	(2.55) [1]	(1.66) [7]
M	NA	1.169907	1.169907	M	NA	1.308801	1.308801
		(1.08) [6]	(1.08) [3]			(0.76) [4]	(0.65) [2]
N	NA	-0.60171	-0.60171	N	NA	-1.828789	-1.828789
		(-0.77) [13]	(-0.77) [14]			(-1.37) [13]	(-0.91) [14]
EW	0.440442	1.111564**	0.656676*	EW	0.428508	0.868226	0.612892
	(0.88)	(2.12)	(1.87)		(0.70)	(1.41)	(1.56)

***Significant at 99% confidence level
**Significant at 95% confidence level
*Significant at 90% confidence level
^Only 6 included observations after adjusting endpoints

Impressively, most companies provide positive abnormal returns to the benchmark, though some are insignificant. Please note that the Jensen alphas of company L during July 2000 to December 2002 are unreliable since they are estimated from only 6 observations, and are thus considered insufficient.

Conversely, the rankings of companies in each analysis differ. For instance, company G is ranked first during the initial period on the unconditional Jensen alpha criterion while it is ranked third on the conditional Jensen alpha criterion. This is the most obvious piece of evidence that funds could be ranked extraordinarily on one criterion but not on the next. Evaluators should be extremely careful when judging the performance. They are advised to look at every aspect of performance before pinpointing the best fund out of the universe.

For the equally weighted portfolio of funds in the universe, on average, the Jensen measures on both criteria suggest that managers provide positive abnormal returns to the benchmark. Though the positive and significant figures are found under the unconditional Jensen alpha criterion only.

4.4 Performance at the fund level

This section analyzes the performance at the fund level. As investors might make their decisions based on the funds' performance, not on the companies', the performance attributions of funds are conducted.

4.4.1 Unconditional and conditional Jensen alpha

The unconditional and conditional Jensen alphas are analyzed. In doing so, funds are categorized into "decile portfolios". The details of constructing the portfolios are as follows.

On December 30 every year, all equity funds that have been operating for at least 3 months are ranked in descending order based on their prior year returns. These funds are classified into 10 portfolios called "decile portfolio". Funds with the highest returns comprise decile 1 whereas funds with the lowest comprise decile 10. These portfolios are regressed with the CAPM and Ferson-Schadt conditional model to detect the unconditional and conditional Jensen alphas. The portfolios are equally weighted and revised monthly so that the closed funds are excluded. Newly incepted funds would be captured into the regression at the next sorting. However, in order to include new funds into the portfolios, those particular funds must be operating for at least 3 months according to the AIMC performance measurement standard. The model inputs are similar to the analysis in prior section. Table VI shows the results.

The results show that only funds that generate the highest top 10% prior year return have positive and significant alphas. The difference between the performance of the winners and the losers is explained by the attribution of the 1-10 spread regression on Ferson-Schadt model. Winning managers load up more on beta when dividend yield increases and the yield spread between the 10-year government bond and the risk-free return widens. They also tilt

their portfolios away from the market when the risk-free rate rises. On the other hand, the losing managers do the opposite.

For the portfolio of all funds, on both criteria, the alphas are positive but not significant. As a result, the presumption of zero alphas cannot be rejected. This serves as an indicator that equity funds, on average, do not provide positive abnormal return from the benchmark.

Table VI
Portfolios of Equity Funds Formed on Prior Year Return
Regressed Using CAPM and Ferson-Schadt Conditional Model

Equity funds for individual investors are sorted on December 31 each year from 2000 to 2003 into decile portfolios based on their previous year return. The portfolios are equally weighted and revised monthly so that the closed funds are excluded. Newly incepted funds would be captured into the regression at the next sorting. Funds with the highest returns are assigned "decile 1" and funds with the lowest are assigned "decile 10". Funds are regressed using the CAPM and Ferson-Schadt conditional model, both of which are adjusted for heteroskedasticity. RMRF is the excess return on the SET index return. DIV*RMRF represents shock from the SET dividend yield, RF*RMRF represents shock from the risk-free return, SP*RMRF represents shock from the spread between the 10-year government bond and the risk-free rate (14-day repurchase rate). Alphas are intercepts of the models. T-statistics are provided in the parentheses.

	CAPM			Ferson - Schadt Conditional Model					
Portfolio	Alpha	RMRF	Adj R-sqr	Alpha	RMRF	DIV*RMRF	RF*RMRF	SP*RMRF	Adj R-sqr
1	0.946197**	0.808955***	0.846	1.009803**	0.602944**	0.153594	-1.560784	0.034621	0.842
	(2.28)	(16.12)		(2.12)	(2.15)	(1.51)	(-1.17)	(0.59)	
2	0.353845	0.853836***	0.883	0.431298	0.530922**	0.071255	0.822277	0.017245	0.877
	(0.92)	(22.82)		(1.00)	(2.28)	(0.86)	(0.80)	(0.35)	
3	0.444102	0.893799***	0.899	0.438319	0.935135***	-0.0851	1.096984	-0.005773	0.894
	(1.16)	(25.26)		(1.04)	(4.62)	(-1.27)	(1.22)	(-0.13)	
4	0.91332	0.862736***	0.763	0.823247	1.00162***	-0.023491	0.58432	-0.059159	0.747
	(15.42)	(0.00)		(1.41)	(3.86)	(-0.19)	(0.31)	(-0.92)	
5	0.550388	0.855135***	0.805	0.79316	0.265024	0.174654	-1.133216	0.12935*	0.798
	(1.16)	(13.88)		(1.45)	(0.91)	(1.22)	(-0.58)	(1.89)	
6	0.536728	0.828171***	0.853	0.51091	0.803179***	-0.031718	1.283758	-0.031671	0.845
	(1.28)	(21.96)		(1.09)	(3.44)	(-0.36)	(1.11)	(-0.61)	
7	0.286696	0.828804***	0.847	0.428703	0.434913*	-0.028449	2.059186	0.053734	0.849
	(0.66)	(18.09)		(0.92)	(1.78)	(-0.32)	(1.57)	(0.96)	
8	0.388422	0.836682***	0.882	0.410563	0.847548***	-0.085365	0.90782	0.01422	0.877
	(1.03)	(22.88)		(0.96)	(3.38)	(-1.06)	(0.95)	(0.25)	
9	0.538557	0.826829***	0.877	0.519056	0.84798***	-0.049625	0.972167	-0.018827	0.870
	(1.37)	(21.29)		(1.21)	(3.53)	(-0.60)	(0.91)	(-0.31)	
10	0.251573	0.815805***	0.727	0.066921	1.156961***	-0.169855	2.641027**	-0.122398	0.720
	(0.39)	(16.59)		(0.09)	(2.95)	(-1.44)	(2.21)	(-1.44)	
1-10 spread	0.694624	-0.00685	-0.024	0.942881	-0.554018	0.323449**	-4.201811***	0.157018*	0.062
	(1.28)	-(0.11)		(1.48)	(-1.39)	(2.69)	(-4.17)	(1.95)	
All funds	0.520983	0.841075***	0.882	0.543198	0.742623***	-0.00741	0.767354	0.001134	0.874
	(1.33)	(23.93)		(1.25)	(3.32)	(-0.10)	(0.76)	(0.02)	

***Significant at 99% confidence level
**Significant at 95% confidence level
*Significant at 90% confidence level

4.4.2 Carhart alpha

This section analyzes abnormal return using a more restrictive model: the Carhart 4-factor model. The reason why this model is more restrictive is that 3 more factors, which are added to the CAPM, steal away the positive alpha. The same methodology done in the previous section is conducted. Decile portfolios are analyzed. The results are presented in table VII.

Table VII
Portfolios of Equity Funds Formed on Prior Year Return
Regressed Using Carhart 4-factor Model

Equity funds for individual investors are sorted on December 31 each year from 2000 to 2003 into decile portfolios based on their previous year return. The portfolios are equally weighted monthly and the weights are rebalanced monthly to exclude closed funds. New born funds would be captured into the regression at the next sorting. Funds with the highest returns are assigned "decile 1" and funds with the lowest are assigned "decile 10". Funds are regressed using the Carhart 4-factor model and are adjusted for heteroskedasticity. RMRF is the excess return on SET index return. SMB and HML are factors mimicking portfolios according to Fama and French (1993). PR1YR is factor representing momentum constructed according to Carhart's suggestion as the equal-weighted average of stocks with the highest 30 percent previous eleven-month returns lagged one-month minus the equal-weighted average of stocks with the lowest 30 percent previous eleven-month returns lagged one month. The portfolios include all stocks in the SET except foreign board-traded securities and warrants. Alphas are intercepts of the models. T-statistics are provided in the parentheses.

Portfolio	Alpha	RMRF	SMB	HML	PR1YR	Adj R-sqr
1	-0.125626	0.777747***	0.039884	-0.115985**	0.004285	0.863
	(-0.18)	(17.62)	(0.57)	(-2.64)	(1.56)	
2	-0.114432	0.83731***	-0.009436	-0.036817	0.002238	0.878
	(-0.15)	(18.07)	(-0.15)	(-0.96)	(0.59)	
3	-0.146526	0.87684***	-0.040173	-0.018613	0.003338	0.897
	(-0.20)	(22.43)	(-0.73)	(-0.52)	(0.96)	
4	-0.826573	0.886208***	0.142272	-0.102585	0.007133	0.776
	(9.58)	(1.33)	(-1.44)	(1.29)	(0.00)	
5	-0.823947	0.818358***	0.00597	-0.109938	0.006262*	0.820
	(-1.09)	(15.42)	(0.08)	(-1.34)	(1.98)	
6	-0.012618	0.844545***	0.050727	-0.019454	0.00233	0.844
	(-0.02)	(16.87)	(0.56)	(-0.31)	(0.63)	
7	-0.358331	0.819093***	-0.113302	0.046606	0.004897	0.853
	(-0.47)	(16.85)	(-1.22)	(0.92)	(1.39)	
8	-0.431412	0.839136***	-0.019803	-0.002119	0.004558*	0.879
	(-0.68)	(21.28)	(-0.36)	(-0.06)	(1.94)	
9	-0.778384	0.850302***	0.007307	0.005688	0.007077**	0.881
	(-1.16)	(20.91)	(0.12)	(0.14)	(2.23)	
10	-0.837858	0.835361***	0.02372	-0.007785	0.00558	0.713
	(-0.79)	(17.79)	(0.33)	(-0.15)	(0.90)	
1-10 spread	0.712232	-0.057614	0.016165	-0.1082**	-0.001295	-0.034
	(0.90)	(-1.31)	(0.31)	(-2.30)	(-0.28)	
All funds	-0.445571	0.83849***	0.008717	-0.0361	0.00477	0.882
	(-0.63)	(21.35)	(0.14)	(-0.99)	(1.40)	

***Significant at 99% confidence level
**Significant at 95% confidence level
*Significant at 90% confidence level

Looking at the alphas, the negative figures are not surprising. This outcome is in line with the findings of Carhart (1997). When looking at the attributions of the portfolios, the winning funds in decile 1 invested in growth stocks significantly whereas none of the other portfolios had. This attribution is much more obvious when looking at the 1-10 spread portfolio. The difference between the mean monthly returns of decile 1 and decile 10 portfolios is explained by the difference of 11 basis points of the book-to-market value dimension. Nonetheless, the other dimensions do not play an important role in distinguishing winners from losers.

Further, prior one-year momentum does not significantly explain Thai funds returns. Unlike in the US, there is no certain pattern that winners load up on prior one-year momentum

heavily while losers do not. This indication is that one-year momentum does not drive returns. Nevertheless, momentum dimension on a shorter horizon of up to the previous quarter is an important factor to distinguish winners from losers, as shall be explained later in the chapter.

Additional analysis to show that funds, on average, do not provide significant positive alpha is conducted. All equity funds that are in operations during June 2000 to August 2004 are analyzed by regressing on Carhart 4-factor model. The results are presented in table VIII.

Table VIII
Thai Equity Funds Risk-Adjusted Performance

Monthly returns of all Thai equity funds for individual investors that exist during the period of January 2001 to August 2004 are regressed using Carhart 4-factor model. Panel A shows the performance of each fund when Panel B summarizes the distribution of alphas. Some funds might not be shown in the table due to the insufficiency in the number of observations. Dead funds are indicated at remarks. The t-statistics are not shown here but will be provided upon request.

Panel A. Risk-Adjusted Performance of Equity Funds						
Fund number	**Alpha**	**RMRF**	**SMB**	**HML**	**PR1YR**	**Remarks:**
1	4.987372	0.870555***	-0.037496	-0.13414	-0.034872	
2	2.543744*	0.417252***	0.060921	-0.073952	-0.004179	
3	2.314286	0.868358***	0.018034	-0.088723	-0.012693	
4	1.810911	0.513321***	-0.028456	0.012393	-0.001464	
5	1.750244	0.778136***	0.146719	-0.139566**	-0.0027	
6	1.674521	0.745018***	0.042818	-0.157083***	-0.003248	
7	1.457278	0.775276***	-0.053632	-0.072859	-0.005832	
8	1.457225	0.630308***	0.106053	-0.072036	-0.001999	
9	1.183782	0.862576***	-0.076568	-0.023913	-0.001905	
10	1.127377	0.688064*	-0.597387	-0.416714	0.004434	
11	1.024483	0.888492***	0.027457	-0.133697	-0.006545	
12	0.934085	0.795994***	-0.008854	-0.07737	-0.002081	
13	0.902576	0.645812***	0.172101*	-0.062566	0.000592	
14	0.868598	0.545111***	0.064923	-0.043552	0.003043	
15	0.786215	0.890099***	0.054097	-0.121658**	-0.003999	
16	0.785069	0.644602***	0.147974	-0.008704	0.002028	
17	0.60321	0.861089***	0.113214	-0.067768	0.001636	
18	0.538377	0.647896***	0.17782*	-0.07583	0.001192	
19	0.52864	0.635653***	0.009643	-0.029663	0.001579	
20	0.365303	0.88012***	-0.014777	-0.08176	-0.002083	
21	0.345629	0.830046***	-0.054607	-0.065521	-0.000204	
22	0.323609	0.857653***	-0.099535	0.009476	0.003998	
23	0.315923	0.878404***	0.037142	-0.125723**	-0.00121	
24	0.288384	0.678013***	-0.326231	0.131147	0.001308	
25	0.281726	0.865983***	-0.095026	0.010754	0.004079	
26	0.280561	0.912773***	-0.045777	-0.056062	-0.000396	
27	0.248988	0.84603***	-0.023431	-0.040085	0.000642	
28	0.238968	0.933246***	0.07022	-0.056688	0.002732	
29	0.231486	0.8532***	-0.086418	0.004089	0.00415	
30	0.229048	0.802524***	0.055002	-0.108845**	0.002765	
31	0.176403	0.845021***	-0.082547	-0.001639	0.004275	
32	0.150967	0.863725***	-0.093812	0.010412	0.004059	
33	0.145871	0.863655***	-0.08652	0.003957	0.004288	
34	0.132915	0.857763***	-0.082499	0.00382	0.004241	
35	0.093062	0.880128***	-0.086866	0.013719	0.004713	
36	0.089919	0.860176***	-0.078341	0.005447	0.00443	
37	0.044987	0.879207***	-0.040228	-0.005883	0.003068	
38	0.015192	0.878685***	-0.012603	0.020626	0.004016	
39	-0.010047	0.838366***	0.018381	-0.048552	0.001754	
40	-0.055809	0.899558***	-0.01952	-0.060172	0.002589	
41	-0.084107	0.878137***	0.136284	-0.104119	-0.003086	
42	-0.112532	0.878434***	-0.07684	0.011628	0.005241	
43	-0.14009	0.834942***	0.041449	-0.021949	0.00323	
44	-0.159506	0.911011***	-0.007399	-0.046222	0.004668	
45	-0.163508	0.897511***	0.006842	-0.070938	0.001613	
46	-0.167441	0.887122***	0.045105	0.024426	0.002667	
47	-0.173969	0.835689***	0.053031	-0.061191	0.001264	
48	-0.218758	0.788505***	0.019915	-0.049906	-0.000043	
49	-0.222283	0.830356***	0.061744	-0.042623	0.002239	
50	-0.233127	0.841363***	0.011256	-6.23E-04	0.004113	

Fund number	Alpha	RMRF	SMB	HML	PR1YR	Remarks:
51	-0.233757	0.872955***	0.049218	-0.017558	0.001941	
52	-0.233947	0.720923***	0.035559	-0.071611	0.00277	
53	-0.235344	0.593793**	0.229205	-0.136353	0.004146	
54	-0.241472	0.858106***	0.001672	0.006369	0.004282	
55	-0.26591	0.859467***	0.269557	-0.225889*	-0.006108	
56	-0.284422	0.850188***	-0.007857	-0.035735	0.003916	
57	-0.390506	0.853888***	0.041975	-0.061183	0.003149	
58	-0.399880	0.623642***	0.081546	-0.101339	0.005405	
59	-0.404772	0.772817***	0.081769	-0.031626	0.005973	
60	-0.406933	0.857007***	-0.007673	0.010355	0.004803*	
61	-0.470882	0.905648***	0.061727	-0.024975	0.001414	
62	-0.512253	0.912232***	0.071836	-0.025485	0.001203	
63	-0.545732	0.627602***	0.155009*	-0.049851	0.009887**	
64	-0.57487	0.768482***	-0.012647	-0.045866	0.004254	
65	-0.576291	0.722984***	-0.228555	0.161218	0.006879	DEAD
66	-0.605773	0.762213***	0.081559	-0.030253	0.008043**	
67	-0.684684	0.743961***	0.094096	-0.049241	0.007784*	
68	-0.719882	0.753655***	0.08966	-0.029969	0.008372**	
69	-0.721006	0.895095***	0.104813	-0.053583	0.002186	
70	-0.722159	0.821041***	-0.059006	-0.007604	0.007971**	DEAD
71	-0.731234	0.814798***	-0.043612	0.011659	0.008525	DEAD
72	-0.737459	0.833049***	-0.047927	-0.005354	0.008015**	
73	-0.741463	0.759144***	0.090428	-0.020292	0.006302	
74	-0.774647	0.846449***	-0.054801	0.000080	0.008204**	
75	-0.790264	0.769135***	0.084783	-0.027671	0.008759**	
76	-0.795723	0.833197***	-0.072598	-0.000954	0.008264**	DEAD
77	-0.813553	0.765066***	-0.267399	0.013395	0.013115	DEAD
78	-0.820124	0.827488***	-0.065145	0.006135	0.009441**	DEAD
79	-0.827291	0.884503***	0.060913	-0.045309	0.004402	
80	-0.889671	0.591684***	0.029657	-0.135708	0.004958	
81	-0.909645	0.845617***	-0.019555	-0.00498	0.00838**	
82	-0.923139	0.719485**	0.657096**	0.662102	0.001602	
83	-0.953632	0.852179***	-0.008621	-0.050492	0.004886*	
84	-1.188272	0.993897***	0.189229	-0.014341	-0.001944	
85	-1.239742	0.87453***	-0.115987*	0.014231	0.017156	DEAD
86	-1.251818	0.777067***	0.024838	-0.105801	0.001159	
87	-1.278161	0.933492***	0.095394	-0.043692	0.00512	
88	-1.333501	0.913658***	0.065857	-0.043795	0.004569	
89	-1.373439	0.380235	-0.061099	-0.255498	0.004563	
90	-1.386944	0.484631***	-0.029897	0.057273	0.014431	DEAD
91	-1.40117	1.050087***	-0.085812	0.060633	0.008983**	
92	-1.467662	0.810551***	0.12163	-0.20715*	0.001643	
93	-1.835914	0.844254***	-0.03042	0.013622	0.018764	DEAD
94	-1.865005	0.942803***	0.326395	-0.07607	0.011309*	
95	-2.339399	0.805846***	-0.071645	0.053411	0.022169	DEAD
96	-2.556146	0.993016***	-0.027179	0.084118	0.036193	DEAD
97	-3.094389	1.074988***	0.768915	-0.236884	0.015286	
98	-3.169962	0.856198***	-0.085012	0.029371	0.028225*	DEAD
99	-3.66883	0.921901***	0.526379	0.132649	0.009382	
100	-4.319445	1.212***	1.181838	-0.415069	0.019463	
101	-4.444555**	0.435508***	-0.143261**	0.159359***	0.040009**	DEAD

***Significant at 99% confidence level
**Significant at 95% confidence level
*Significant at 90% confidence level

Panel B. Distribution of Alphas

	Positive alpha	Zero alpha	Negative alpha
Insignificant values			
Number of funds	38	0	63
Percentage	38%	0%	62%
Significant values			
Number of funds	1	99	1
Percentage	1%	98%	1%

As table VIII shows, the majority of equity funds do not provide positive alphas. Without considering for significance, only 38% of all equity funds provide positive alphas while the rest do not. When the criterion is limited to the significant values, the majority of 98% have

zero alphas. As a result, it is found that equity funds, on average, do not provide superior returns when compared to the passively constructed market portfolio.

4.4.3 Determinants of alphas

As funds that have positive alphas are what investors long for, it is tempting to see how alphas are generated. The analysis in this section conducts a cross-sectional regression of alpha based on the results presented in table VIII. The alphas are assumed to have a relationship with total net assets of funds and the book-to-market value of stocks held. The results are shown in table IX.

Table IX
Sources of Alpha

The cross-section regression of alphas from the Carhart 4-factor model of Thai equity funds for individual investors existing from January 2001 to August 2004 is conducted using the regression equation

$$\alpha_i = c_1 + c_2 TNA_i + c_3 D_{G_i} + c_4 D_{V_i} + \varepsilon_{i,t}$$

Where TNA is the total net assets of funds in million baht. D_G is the growth dummy and is assigned 1 for funds in the bottom 30% of HML factor according to table VIII, and is assigned 0 otherwise. D_V is value dummy and is assigned 1 for funds in the top 30% of HML factor according to table VIII, and is assigned 0 otherwise. The t-statistics of the intercept and coefficients are provided in the parentheses.

	C_1	C_2	C_3	C_4
Estimate	-0.741062***	0.000969**	0.479006	-0.977754**
t-statistic	(-3.69)	(2.24)	(0.90)	(-2.19)

***Significant at 99% confidence level

**Significant at 95% confidence level

The size of funds and the book-to-market value of stocks held affect funds' alphas. To explain, alphas are correlated with funds' size. Once the funds have reached their economies of scale, they are more flexible in managing the assets. When funds attract more money, they seem to generate higher positive abnormal returns. The characteristics of stocks held also play an important role in determining the alphas. Funds that invest significantly in growth stocks tend to provide higher positive abnormal returns, as shown by the positive coefficient of D_G and the negative coefficient of D_V.

4.5 A closer look at performance: Portfolio holdings analysis

Another approach to judge the performance is to analyze the portfolio holdings. This study utilizes quarterly portfolio holdings snapshots, which are not publicly available. As a consequence, it reveals the secrets of Thai equity funds performance, for both the closed-end and open-end type, as no one has ever done before. I hereby thank and am truly grateful to those mutual fund professionals who have provided such in-depth data for this analysis.

4.5.1 Characteristic-adjusted performance: Managers' selectivity skills

The most important performance measure to judge managers is the CS measure since it captures selective skills. This CS measure, which is defined at equation (11), captures the stock selection skill out of a certain benchmark that has the same characteristics in terms of size, book-to-market and prior one-year momentum. The CS measures of funds are analyzed and presented in table X.

Table X
Thai Equity Fund Characteristic-Adjusted Performance

Characteristic Selectivity measures (CS), representing characteristic-adjusted performance measures, are calculated from quarterly portfolio holdings of 30 Thai equity funds under management of 2 mutual fund companies that existed during January 2000 to June 2004. Twenty-three out of thirty funds are funds for individual investors and are subset of Thai equity fund universe while the remainders are funds for institutional investors. Quarterly portfolio holdings are reported at the end of each quarter, e.g. end of March, June, September and December every year. Characteristic Selectivity measure represents talents of managers in picking outperforming stocks out of their benchmarks that have the same characteristics as the stocks. The measures are calculated from multiplications of weight of stocks with the subtractions of quarterly stock return from quarterly benchmark return having the same characteristic in terms of size, book-to-market value and momentum, thus, creating quarterly measure. This measure utilizes weights of exchange-traded stocks held by funds; hence, proper adjustments are made for some funds by excluding non-exchange traded securities and private equities from the holdings. Weights of cash held by funds and newly issued exchange-traded stocks that have not yet entered into the passive benchmarks are treated as missing values and are excluded from the holdings. Weights of the remaining exchange-traded stocks in the holdings, excluding warrants and foreign board-traded securities, are recalculated so that they sum up to 1. A fund having reported quarterly portfolio holdings would yield 4 measure estimates in a year. Yearly measures are calculated from compounding quarterly measures with the weights being updated at the beginning of each quarter. T-statistics for the period of January 2000 to June 2004 are provided in the parentheses.

Year	Number of funds	TNA-Avg CS measure (% per year)	EW-Avg CS measure (% per year)
2000	26	3.59	2.51
2001	27	0.13	-1.57
2002	27	7.75	9.32
2003	27	-15.70	-16.27
2004*	30	8.19	6.04
2000-2004	30	0.79	0.01
		(0.18)	(0.00)

* January 2004 to June 2004

High and positive CS measure is what investors long for since it indicates the stock picking talents. As table X shows, over the entire period, managers pick stocks that beat their benchmarks by 0.79 percent per year on a value-weighted basis and by 0.01 percent per year on an equal-weighted basis. This implies that managers who manage large funds have picking talents that exceed managers of small funds. In contrast, the insignificance positive

measures suggest that the superior stock picking talents are not consistently detected every year, meaning that luck plays an important role in determining managers' stock picking abilities. The superior stock selection does not persist.

4.5.2 Returns decomposition

Returns generated from stocks held could be decomposed into 3 components, namely CS measure, CT measure and AS measure. CS measure was explained in the prior section. CT measure captures the timing abilities of managers in selecting styles of stocks that are going to perform well this year, by looking from last year's point of view. AS measure identifies how certain styles of stocks invested last year pay off this year.

Table XI shows returns decomposition. CS measures are also reproduced. Please note that CT and AS measures could not be calculated in the first year since they utilize prior year portfolio holdings data, which is not available.

When comparing the average yearly net returns of all period between panel A and panel B, large funds generate higher returns than small funds (note that the net returns represent one-year buy-and-hold returns of funds). This finding is consistent with the determinants of alpha analysis that large funds do a better job in generating returns than small funds. Funds also generate satisfying returns that beat the benchmark on both criteria. Further, one might observe that the net returns are somehow different from the gross returns calculated. This is due to the slight adjustments made by excluding non-exchange traded securities out of the holdings report.

Speaking of timing abilities, managers generate returns from their timing skills of 6 percent per year on a value-weighted basis and 7.66 percent per year on an equal-weighted basis. However, the returns from timing skills are not consistently generated from time to time. This might possibly due to the fact that if the market moves in an upward trend, all managers will exhibit positive CT measures in the next year, no matter what styles they invest, and vice versa. For example, Thai stock market had an astonishing bull run during 2003. As a consequence, CT measures on both criteria are positive. On the other hand, when the market had a disappointing bear movement such as seen in 2004, CT measures are negative. Therefore, managers' timing abilities are highly correlated with the movement of the market as a whole.

On the aspect of how styles invested have paid off, large funds still do a better job in providing higher returns than small funds do. The AS measure on a value-weighted basis on all periods is 26.53 percent per year while it is only 17.85 percent per year for the equal-weighted basis.

Table XI
Thai Equity Fund Return Decomposition

Return decompositions of funds are calculated from quarterly portfolio holdings of 30 Thai equity funds under management of 2 mutual fund companies existing during January 2000 to June 2004. Quarterly portfolio holdings are reported at the end of every quarter, e.g. end of March, June, September, December every year. At the holdings level, gross return generated by every stocks in the holdings is decomposed into 3 components: Characteristic Selectivity measure (CS), Characteristic Timing measure (CT), and Average Style measure (AS). Characteristic Selectivity measure represents talents of managers in picking outperforming stocks out of their benchmarks with the same characteristics. Characteristic Timing measure captures the ability to time the style that will be paying off (style is the characteristics in terms of risk factors considering size, book-to-market value and momentum). Average Style measure explains returns generated from style invested last year. These three measures utilize weights of exchange-traded stocks held by funds; hence, proper adjustments are made for some funds by excluding non-exchange traded securities and private equities from the holdings. Weights of cash held by funds and newly issued exchange-traded stocks that have not yet entered into the passive benchmarks are treated as missing values and are excluded from the holdings. Weights of the remaining exchange-traded stocks in the holdings, excluding warrants and foreign board-traded securities, are recalculated so that they sum up to 1. Gross return, for both total net assets average and equal-weighted average, is calculated from compounding quarterly buy-and-hold returns of any given year using updated weights at the beginning of each quarter. Net return of a given year, for both total net assets average and equal-weighted average, is calculated from reported Net Asset Values (NAV) using weights that are recalculated at the end of prior year. SET returns are calculated from the return of Thai stock market, adjusted for dividends paid. Panel A shows the performance measure of funds using total net assets average while Panel B shows the equal-weighted average. A fund having reported quarterly portfolio holdings would yield 4 measure estimates in a year. Yearly measures are calculated from compounding quarterly measures with the weights being updated at the beginning of each quarter.

Panel A. Return decomposition of equity funds in the sample using total net assets average

Year	Number of funds	SET return (% per year)	Net return (% per year)	Gross return (% per year)	CS (% per year)	CT*** (% per year)	AS*** (% per year)
2000*	26	-44.95	-41.55	-40.58	3.59	NA	NA
2001	27	11.84	13.05	15.10	0.13	3.36	2.57
2002	27	15.70	28.01	28.04	7.75	0.07	26.88
2003	27	114.30	111.00	89.76	-15.70	35.45	101.41
2004**	30	-32.45	-12.38	-13.12	8.19	-14.86	-24.73
2000-2004	30	12.89	19.63	15.84	0.79	6.00	26.53

* Yearly estimates are calculated from 3 calendar quarter estimates at June, September and December 2000.

** Yearly estimates are calculated from 3 calendar quarter estimates at March, June and September 2004.

*** The CT and AS measures use prior year weight of stocks in the holdings, therefore, calculations are first conducted in 2001.

Panel B. Return decomposition of equity funds in the sample using equal-weighted average

Year	Number of funds	SET return (% per year)	Net return (% per year)	Gross return (% per year)	CS (% per year)	CT*** (% per year)	AS*** (% per year)
2000*	26	-44.95	-41.83	-41.66	2.51	NA	NA
2001	27	11.84	10.88	13.17	-1.57	4.45	1.87
2002	27	15.70	25.62	29.14	9.32	1.63	17.38
2003	27	114.30	109.60	92.30	-16.27	32.78	62.67
2004**	30	-32.45	-39.68	-14.60	6.04	-8.23	-10.53
2000-2004	30	12.89	16.86	15.67	0.01	7.66	17.85

* Yearly estimates are calculated from 3 calendar quarter estimates at June, September and December 2000.

** Yearly estimates are calculated from 3 calendar quarter estimates at March, June and September 2004.

*** The CT and AS measures use prior year weight of stocks in the holdings, therefore, calculations are first conducted in 2001.

Nevertheless, another dimension worth analyzing is the short-term momentum. As seen in prior section that prior one-year momentum does not really drive returns of stocks, the next section utilizes portfolio holdings data to explore how managers trade based on short-term momentum that is up to the previous quarter portfolio revision period.

4.5.3 Momentum investing of managers

Due to the fact that managers' trade sometimes relies on the historical price movement or pattern, momentum measures are introduced to detect such behavior. L0M captures the momentum trade of managers during the quarterly portfolios revisions while L1M captures the momentum trade during the previous quarter portfolios revisions. Positive L0M and L1M indicate that managers' revisions generate higher returns than when no revisions have been made. TAL0M is the normalized L0M measure so that the investing and divesting amount are equal. The momentum investing of managers is investigated in table XII. The CS measures are also reproduced for comparison purpose. All momentum measures could be calculated during the period of 2000 – 2003, excluding 2004, since they also utilize next year's stocks returns, which are not available at the time the analysis was done.

Managers' quarterly portfolios revisions generate higher returns than buy-and-hold without revisions, as seen by L0M of 10 basis points per month, which is insignificant. One interesting issue is that managers buy and sell winning stocks at the same time during the quarterly revisions. Even though the BuyL0M is the insignificant 2 basis points per month, stating that managers buy stocks that enjoy high returns during the quarter, the SellL0M of 7 basis points per month is significant, as it indicates that managers sell winners too. Further, after adjusting for the investment amount that is bought and sold, the pay off of portfolios is inflated, as reflected by positive and significant TAL0M of 3.74 percent per month. This observation is in line with the findings of Grinblatt, Titman and Wermers (1995).

Managers also buy stocks based on the previous quarter's historical price pattern. This is concluded from the negative and significant BuyL1M of 19 basis points per month, indicating that managers use contrarian strategy of buying the previous quarter's losers. It is somehow inconclusive whether managers sell winners, as suggested by positive and insignificant SellL1M of 4 basis points per month.

However, when the momentum measures are compared to the CS measure, the superior quarterly portfolios revisions tend to diminish. CS measure of -1.43 percent per year during 2000-2003 states that managers do not possess stock picking abilities. The inferiority mainly comes from the lack of skills in 2003, the year that the market had a tremendous gain. This finding indicates that momentum is not the only factor that drives stocks return. The situation is unlike in the US where momentum plays a very important role in determining the future's pay off.

Table XII
Momentum Investing Investigation

Momentum investing of 27 equity funds, with quarterly portfolio holdings, existing during January 2000 to December 2003 is investigated. The L0M measures trading activities of funds based on momentum during the period of quarterly portfolio revisions and could be decomposed into BuyL0M, the buy-on-winners of weight-increasing stocks and SellL0M, the sell-on-losers of weight-decreasing stocks. The L1M measures trading activities of funds based on momentum on previous quarter and could be decomposed into BuyL1M and SellL1M. The TAL0M is the adjusted L0M measure so that the buying amount each quarter (in Baht) is equal to the selling amount (in Baht). All momentum measures are equally-weighted and presented in percentage per month. T-statistics are presented in the parentheses. The percentage of positive measures are also provided. Equal-weighted CS measures of funds are also presented for comparison in percentage per year by compounding quarterly measures.

	Year				
	2000	**2001**	**2002**	**2003**	**2000-2003**
L0M (% per month)	-0.02	0.15***	0.52***	-0.17	0.10
t-statistic	(-0.65)	(5.04)	(19.74)	(-0.82)	(1.61)
percent positive	37.04	81.48	100	66.67	74.07
BuyL0M (% per month)	-0.43***	0.05**	0.31***	0.21	0.02
t-statistic	(-18.12)	(2.63)	(11.98)	(0.99)	(0.35)
percent positive	0	55.56	100	70.37	70.37
SellL0M (% per month)	0.41***	0.09***	0.22***	-0.37***	0.07**
t-statistic	(19.10)	(6.99)	(10.39)	(-4.52)	(2.82)
percent positive	100	88.89	100	0	92.59
L1M (% per month)	-0.03	0.00	0.40***	-0.82**	-0.15
t-statistic	(-0.66)	(0.07)	(16.92)	(-3.05)	(-1.77)
percent positive	48.15	48.15	100	59.26	59.26
BuyL1M (% per month)	-0.17***	-0.10***	0.27***	-0.67**	-0.19*
t-statistic	(-5.03)	(-3.86)	(15.36)	(-2.53)	(-2.37)
percent positive	18.52	22.22	100	59.26	48.15
SellL1M (% per month)	0.14***	0.10***	0.12***	-0.15***	0.04
t-statistic	(3.28)	(8.25)	(5.82)	(-4.18)	(2.01)
percent positive	77.78	88.89	95.65	0	77.78
TAL0M (% per month)	1.42***	3.20***	5.23***	5.19***	3.74***
t-statistic	(4.29)	(8.63)	(33.56)	(43.86)	(23.31)
percent positive	88.89	96.30	100	100	100
CS (% per year)	2.51***	-1.58***	8.63***	-15.30***	-1.43***
t-statistic	(3.89)	(-4.33)	(17.37)	(-22.97)	(-6.05)
percent positive	70.37	22.22	100	0	11.11

***Significant at 99% confidence level
**Significant at 95% confidence level
*Significant at 90% confidence level

4.5.4 Performance of momentum funds versus contrarian funds

This section explores the performance of momentum managers versus contrarian managers. Momentum managers are the managers who buy stocks that enjoy high returns in the past and sell stocks that do not impressively perform well. Contrarian managers do the opposite. In order to distinguish between the two, momentum measures are used.

Funds with positive momentum measures are assigned “momentum funds” while funds with negative measures are “contrarian funds”. The risk-adjusted performance of these funds is presented in table XIII.

Table XIII
Characteristic-Adjusted Performance of Momentum Funds Versus Contrarian Funds
Twenty-seven equity funds with reported quarterly portfolio holdings that existed during January 2000 to December 2003 are categorized into "Momentum funds" for positive momentum measure and "Contrarian funds" for negative momentum measure. Funds on both categories are equally weighted. Momentum measures are presented in percentage per month while CS measures, representing characteristic-adjusted performance, are presented in percentage per year and are calculated by compounding quarterly measures. Panel A presents the characteristic-adjusted performance based on L0M statistic. Panel B presents the characteristic-adjusted performance based on L1M statistic. T-statistics are provided in the parentheses.

Panel A. Characteristic-adjusted performance based on L0M statistic			
	All funds	**Momentum funds**	**Contrarian funds**
Number of funds	27	20	7
L0M (% per month)	0.10	0.26***	-0.38***
	(1.61)	(12.92)	(-5.92)
CS (% per year)	-1.43***	-1.37***	-1.62**
	(-6.05)	(-5.52)	(-2.65)
Panel B. Characteristic-adjusted performance based on L1M statistic			
	All funds	**Momentum funds**	**Contrarian funds**
Number of funds	27	16	11
L1M (% per month)	-0.15*	0.14***	-0.57***
	(-1.77)	(8.06)	(-4.84)
CS (% per year)	-1.43***	-1.30***	-1.63***
	(-6.05)	(-4.96)	(-3.63)

***Significant at 99% confidence level
**Significant at 95% confidence level
*Significant at 90% confidence level

As table XIII shows, momentum managers, who trade stocks that enjoy high returns during the portfolios revisions and during the previous quarter, perform better than contrarian managers. Based on stocks’ price pattern during the quarterly revisions period, momentum managers have CS measure of -1.37 percent per year while contrarian managers have CS measure of -1.62 percent per year. On the other hand, based on the price pattern during the previous quarter, momentum managers have CS measure of -1.30 percent per year while contrarian managers have CS measure of -1.63 percent per year.

This finding supports the argument that momentum is one of the factors that explains stock returns. Even though momentum on the prior year basis does not significantly explain stocks return, in the case of Thailand, it is the short-term momentum that determines stock returns.

4.5.5 Earnings announcement date analysis

Another look at the performance is to analyze the stocks' earnings announcement date. Managers who have the stock picking abilities should be able to select which stocks are going to perform well, thus, reflecting in positive abnormal returns of their portfolios during the quarterly earnings announcement dates of the stocks held. In addition, the pay off of the stocks invested is likely to be partly realized by abnormal returns that occur around the earnings announcement date. As a consequence, analyzing the stocks' earnings announcement dates could help explain another view of managers' stock picking abilities.

In this method, earnings announcement dates of stocks held by funds in subsequent quarter are hand-collected. The abnormal returns are observed during the 3-day window around the announcement dates. Table XIV shows the raw returns of stocks held in the managers' portfolios during the 3-day window. MAR and BAR are also calculated according to the equation (20) and (21). The equal-weighted returns are presented in panel A while the value-weighted returns are presented in panel B.

As table XIV shows, on an equal-weighted basis, managers pick stocks that underperform the market and their benchmarks by 20 and 23 basis points during the 12-day window. On a value-weighted basis, managers pick stocks that underperform the market by 12 basis points. This finding indicates that managers do not have stock picking talent. Although it is conclusive that managers who manage large funds could pick stocks better than managers who manage small funds.

Next, the raw returns and BAR are further decomposed based on the properties of stocks held, namely weight increasing stocks, weight decreasing stocks, new buy stocks and liquidated stocks. These scenarios could judge how the investing choice of managers affects returns. Table XV reports the result.

In table XV, panel A, which reports the equal-weighted returns, the raw return of weight increasing stocks is higher than the return of the weight decreasing stocks (-65 basis points versus -85 basis points). On the other hand, new buy stocks have disappointing performance in relation to the performance of the liquidated stocks (-51 basis points versus -38 basis points). After adjusting for the returns of the benchmarks, the situation reverses. Stocks that managers decrease weights have better performance than stocks that they increase weights (-11 basis points versus -20 basis points). The new buy stocks also perform better than liquidated stocks (-20 basis points versus -23 basis points).

In table XV, panel B, which reports the value-weighted returns, the story is pretty much the same except that after adjusting for the returns of the benchmarks, new buy stocks perform almost as well as the liquidated stocks.

Table XIV
Return around Earnings Announcement Dates

This table reports the analysis of quarterly earnings announcement dates of firms listed in the Stock Exchange of Thailand. At each portfolio holdings report date of a fund, subsequent quarterly earnings announcement dates of stocks held are hand-collected. The average raw return, MAR (market-adjusted return) and BAR (benchmark-adjusted return) during the 3-day earnings announcement date windows are calculated. Should a fund report its portfolio holdings quarterly, yielding 4 average return estimates in a year, a return estimate of any given year is calculated by annualizing those average return estimates, that is multiplying by 4. This estimate is therefore the 12-day return around earnings announcement dates. Panel A shows the equal-weighted average 12-day return of funds. Panel B shows the value-weighted average 12-day return. The weights used for value weighting are the total net assets of funds and are recalculated at the end of every calendar year. T-statistics are provided in the parentheses for all year 12-day return.

Panel A. Equal-Weighted Twelve-Day Return around Earnings Announcement Dates

Year	Raw Return	MAR	BAR
2000	0.61%	0.77%	0.84%
2001	-0.50%	0.51%	-0.13%
2002	1.61%	0.31%	-0.02%
2003	-0.79%	0.28%	-0.30%
2004*	-5.33%	-2.88%	-1.56%
2000-2004	-0.88%	-0.20%	-0.23%
t-statistic	(-0.74)	(-0.30)	(-0.61)

* Measures are annualized from 2 quarterly holdings date at the end of March and June 2004.

Panel B. Value-weighted Twelve-Day Return around Earnings Announcement Dates

Year	Raw Return	MAR	BAR
2000	1.07%	0.95%	1.09%
2001	-0.07%	0.73%	-0.11%
2002	1.65%	0.29%	0.24%
2003	-0.58%	0.39%	-0.16%
2004*	-5.38%	-2.98%	-1.04%
2000-2004	-0.66%	-0.12%	0.00%
t-statistic	(-0.53)	(-0.17)	(0.01)

* Measures are annualized from 2 quarterly holdings date at the end of March and June 2004.

The finding in table XV leads to a paradox of managers' stock picking abilities. As the CS measures in the previous section explain the superior stock picking abilities of managers (even though the CS measures are insignificant), the earnings announcement date analysis states that no such thing as superiority exists. Nevertheless, the characteristics of the Thai stock market is different from other developed markets, such as in the US, and the pattern of abnormality in returns during the announcement date window also differs. As a matter of fact, after interviews with several Thai stock analysts, they do not believe that looking at the 3-day window around earnings announcement date is an optimum method to capture the abnormal returns in Thai stock market. As a matter of fact, some stocks enjoy abnormal returns during the prior 7-day before earnings announcement date. The earnings announcement date analysis of Thai market is yet to be explored by other researchers.

Table XV
Breakdown of Return around Earnings Announcement Dates

For each quarterly portfolio holdings report date, stocks held by funds are categorized into 4 criteria based on managers' revision: weight increasing stocks, weight decreasing stocks, new buy stocks and liquidated stocks. At each portfolio holdings report date of a fund, subsequent quarterly earnings announcement dates of stocks held are hand-collected. The average raw return and BAR (benchmark-adjusted return) during the 3-day earnings announcement date windows for each category are calculated. Should a fund report its portfolio holdings quarterly, yielding 4 return estimates in a year, a return estimate of any given year is calculated by annualizing those average return estimates, that is multiplying by 4. This estimate is therefore the 12-day return around earnings announcement dates. Panel A shows the equal-weighted average 12-day return of every fund existing in a year. Panel B shows the value-weighted average 12-day return whereas the weights are recalculated at the end of every calendar year. T-statistics are provided in the parentheses for all year 12-day return.

Panel A. Breakdown of Twelve - Day Return around Earnings Announcement dates of Equal - Weighted Portfolio

	Weight Increasing Stocks		Weight Decreasing Stocks		New Buy Stocks		Liquidated Stocks	
Year	Raw Return	BAR	Raw Return	BAR	Raw Return	BAR	Raw Return	BAR
2000*	-0.35%	-0.47%	-1.14%	0.09%	0.42%	0.21%	-0.15%	0.16%
2001	-0.80%	-0.46%	0.05%	0.56%	0.09%	-0.07%	-0.05%	-0.17%
2002	0.55%	-0.12%	0.16%	-0.22%	0.57%	0.40%	0.02%	-0.20%
2003	0.02%	-0.13%	0.07%	0.27%	-0.46%	-0.18%	-0.45%	-0.24%
2004**	-2.65%	0.20%	-3.37%	-1.23%	-3.16%	-1.37%	-1.29%	-0.72%
2000-2004	-0.65%	-0.20%	-0.85%	-0.11%	-0.51%	-0.20%	-0.38%	-0.23%
t-statistic	(-1.18)	(-1.57)	(-1.25)	(-0.35)	(-0.74)	(-0.65)	(-1.61)	(-1.65)

* Measures are annualized from 3 quarterly holdings date at June, September and December 2000.

** Measures are annualized from 1 quarterly holdings date at March 2004.

Panel B. Breakdown of Twelve - Day Return around Earnings Announcement dates of Value - Weighted Portfolio

	Weight Increasing Stocks		Weight Decreasing Stocks		New Buy Stocks		Liquidated Stocks	
Year	Raw Return	BAR	Raw Return	BAR	Raw Return	BAR	Raw Return	BAR
2000*	-0.09%	-0.34%	-0.85%	0.13%	0.18%	0.05%	0.31%	0.51%
2001	-0.87%	-0.25%	-0.38%	0.29%	-0.05%	-0.08%	0.40%	-0.08%
2002	0.17%	-0.08%	0.10%	-0.08%	0.20%	0.19%	-0.33%	-0.28%
2003	0.19%	-0.06%	-0.12%	0.11%	-0.33%	-0.06%	-0.33%	-0.15%
2004**	-0.83%	0.14%	-1.18%	-0.50%	-1.12%	-0.46%	-0.50%	-0.30%
2000-2004	-0.28%	-0.12%	-0.48%	-0.01%	-0.22%	-0.07%	-0.09%	-0.06%
t-statistic	(-1.21)	(-1.43)	(-2.07)	(-0.07)	(-0.91)	(-0.68)	(-0.48)	(-0.40)

* Measures are annualized from 3 quarterly holdings date at June, September and December 2000.

** Measures are annualized from 1 quarterly holdings date at March 2004.

CHAPTER V
IS THERE ANY RULE OF THUMB FOR INVESTORS?: EVIDENCE FROM PERSISTENCE AND FLOWS TESTS

Benjamin Franklin once said, “Energy and persistence conquer all things”. This saying seems ironic but unbelievably true in the world of finance. Speaking of mutual funds, persistent managers are what all investors long for, especially the great ones. Should investors invest in great managers that consistently provide positive abnormal return, for example, funds in the first decile portfolio explained in the prior chapter, the outcomes will be worthwhile. Nonetheless, it would be greatly beneficial if there were someone who stepped in and handed the investors the “rules of thumb” for investing in persistent managers. This chapter tries to formulate such rules from empirical evidence and several tests so that the fallacies of investors will be corrected.

5.1 Persistence of Thai Equity Funds

The very first issue to tackle in this chapter is persistence. Investors could relax peacefully in a soft, warm and cozy couch in light of persistence. Given the existence of persistence, investors would invest in best performing funds for one time and wait for investments to pay off in the years to come. Chasing best performing funds every year is unnecessary because it erodes returns that investors get due to transaction costs.

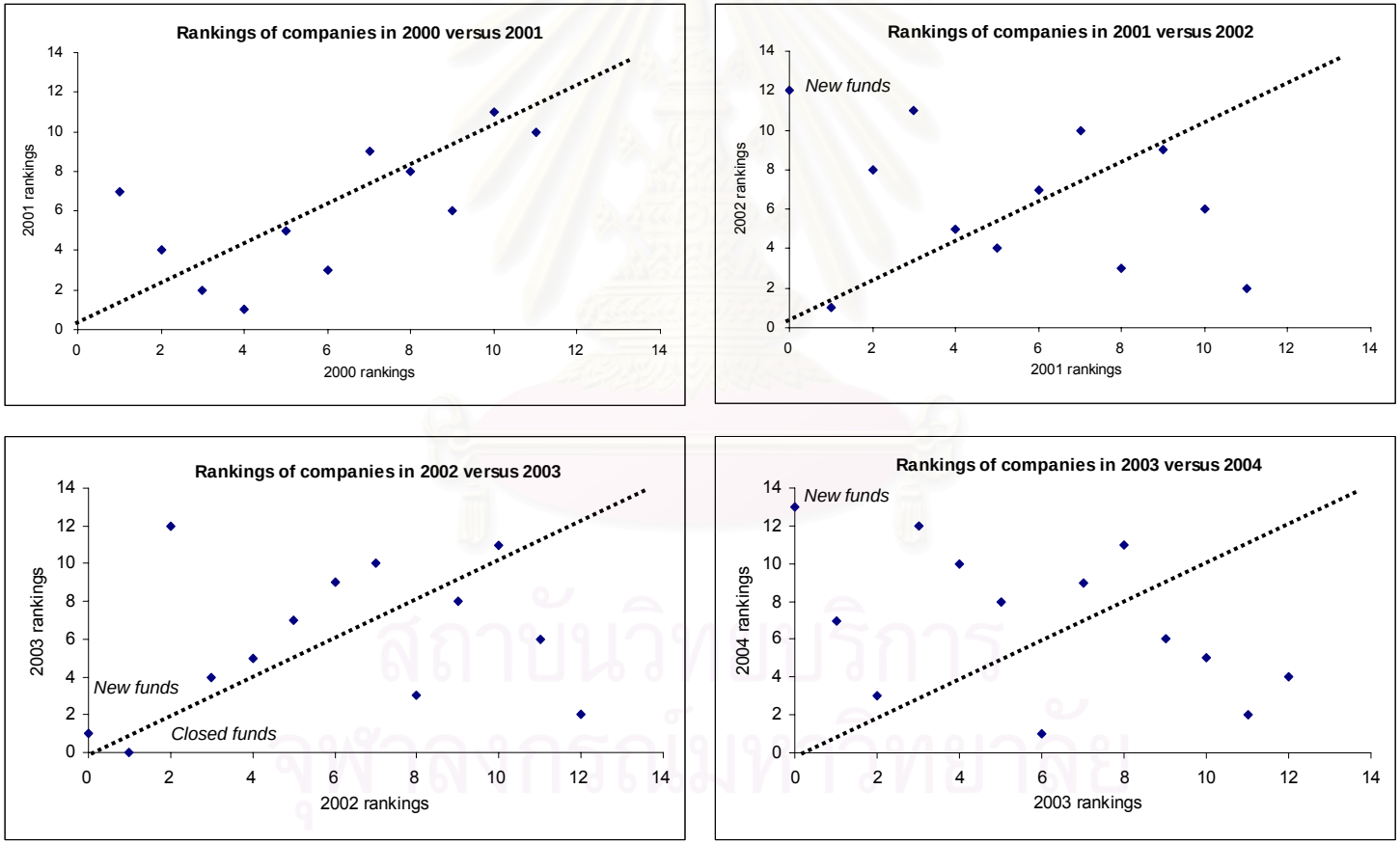
Persistence differentiates winners from losers. When persistence is found to be strong, performance repeats. Winners of this year will likely to be winners in the next year, and vice versa. However, weak persistence sometimes creates reversals. Given the appearance of reversals, winners of any given year are likely to be losers in the following years and vice versa. The strategy of chasing winners during the period reversals that occur, will be unarguably ineffective (since this year’s winners will be next year’s losers). Instead of switching funds yearly, investors will be better off holding funds for their entire investment horizons. They should not liquidate their investments unless the managers are proven to be incompetent.

5.1.1 Persistence at the fund management company level

To begin with, persistence at the fund management company level is analyzed. As the performances of funds in a company are often correlated, it is tempting to explore how the performance of each company persists. Figure II plots the rankings of each company on year t against year t+1. Returns of any company are calculated on an equal-weighted approach which is rebalanced yearly. Persistence in rankings is found to be strongest when all plots lie on the 45 degree line. Newly incepted funds and closed funds are remarked on the plot. There was some slight evidence of persistence when moving from year 2000 to 2001 and year 2002 to 2003. Persistence is found to be weak in year 2001 to 2002. However, reversals tend to occur in year 2003 to 2004.

Figure II
Persistence of Thai Mutual Fund Companies

Every end of calendar year, monthly returns of all equity funds for individual investors under management of each mutual fund company of the test year are calculated. Returns of each mutual fund company, comprised of funds under management of that year, are then calculated using equal-weighted approach. The ranking of a company in each year is assigned based on its return in that year. The graphs plot the rankings of each mutual fund company on year t (x-axis) against year t+1 (y-axis), thus demonstrating persistence in company rankings. Persistence is found to be strongest when estimates lie around the dashed 45 degree line.



5.1.2 Persistence at the fund level

Another view of persistence is explored, as I analyze the persistence at the fund level and present the graphical finding in figure III. On December 31 each year from 2000 to 2003, all equity funds that have been in operation for the entire year (this year is called “formation year”) are sorted based on their yearly net returns. This yearly net return is the holding period return of investors calculated from NAVs at the beginning and the ending of the year. Funds are formed into 10 portfolios, called “decile portfolios”, based on the funds’ prior year net returns. Any funds that are newly incepted during the formation year are excluded. In addition, funds that do not survive the next year are also excluded from being calculated in next year’s net returns. Accordingly, this approach does not capture the performance of newly incepted funds during the formation year, and of non-surviving funds in the latter year. Funds with the highest prior year returns are assigned "decile 1" and funds with the lowest are assigned "decile 10". At every sorting, each portfolio has approximately the same number of funds. The value-weighted excess returns from the stock market returns of decile portfolios in the formation year, year +1 and year +2 are observed. The funds’ total net assets at the end of every calendar year are used as weights in calculating average returns and are updated yearly.

As shown in figure III, the funds have significantly underperformed their benchmark, which is the Thai stock market, in the formation year. This is due to the significant underperformance of the funds’ buy-and-hold yearly returns, calculated from NAVs at the beginning and the ending of the year, in the year 2001 and 2002 (not shown here). There was overwhelmingly observable evidence of reversals between winners and losers. Winning funds that comprise decile 1 in the formation year are almost considered losing funds in the next year, while losing funds in the formation year perform extraordinarily as winning funds in the next year. This reversal pattern is also seen in other decile portfolios and still continues in Year +2.

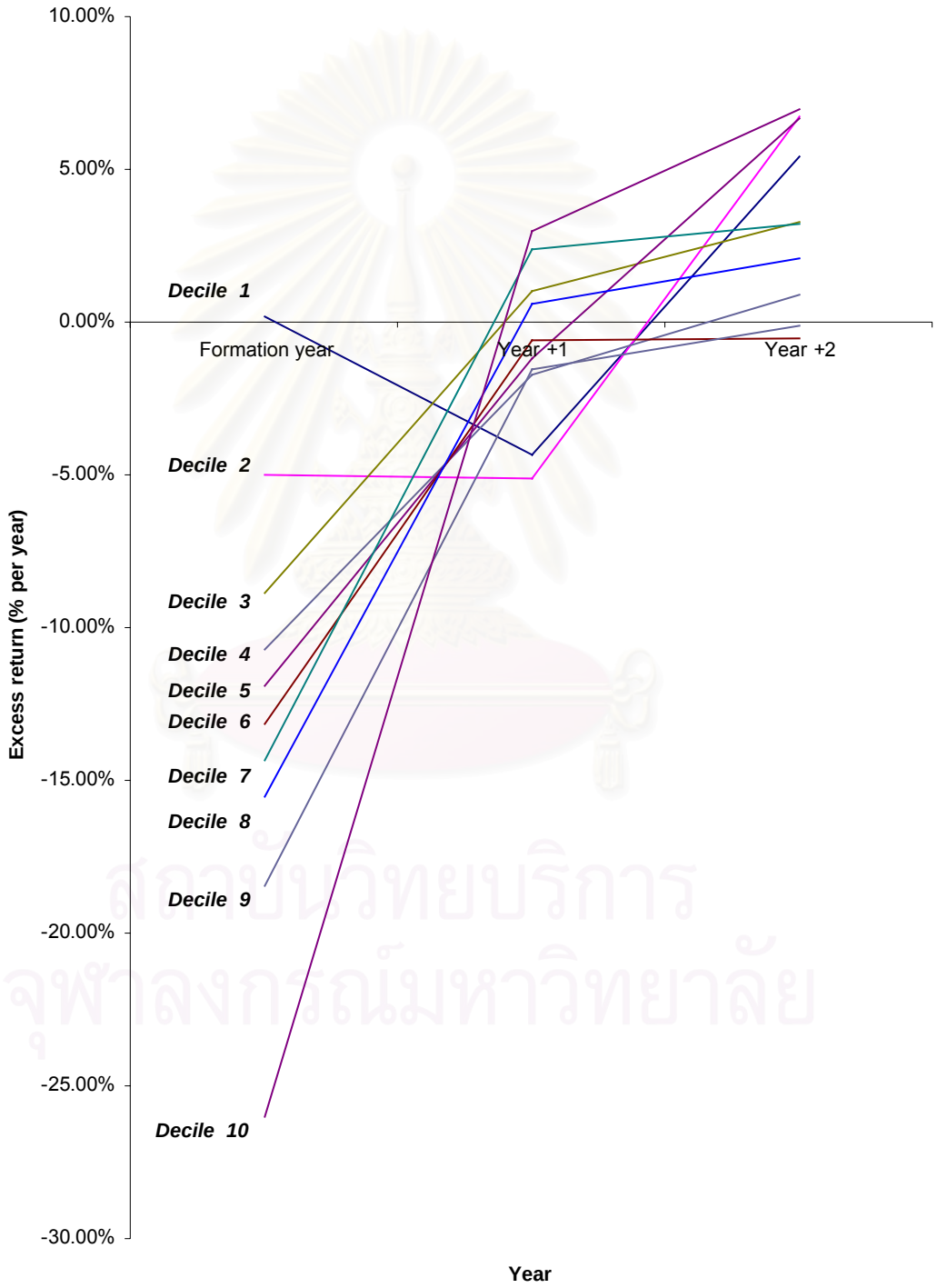
Possible explanation for this reversal pattern is that performance of managers relies heavily on luck. Since most of the managers take big bets, their investments are not well diversified (see figure I). Consequently, the style of stocks invested might pay off well this year but not on the next. Another conclusion by Carhart (1997) states that it is the managers’ gambling behavior that partly accounts for the inconsistency in funds rankings.

5.1.3 Persistence of funds categorized on the policy

This section verifies the claim that a certain style of stock, e.g. small capitalization, large capitalization, growth and value stock, does not consistently perform well. This year’s winning style might drastically change in the next. Funds have a certain investment policy set at their inceptions by managers and sponsors; therefore, if there is no persistence in a certain style, the reversal pattern is partly explained by the inconsistency of the pay off.

Figure III
Performance of Decile Portfolios in Subsequent Years

Equity funds for individual investors are sorted on December 31 each year from 2000 to 2003 into decile portfolios based on their previous year returns. Funds with the highest returns are assigned "decile 1" and funds with the lowest are assigned "decile 10". In order to be included in decile portfolios, a fund must be in operation for the entire prior year. The value-weighted excess returns from the stock market returns of decile portfolios in the formation year, year +1 and year +2 are observed. The weights are updated at the end of every calendar year.



Even though the SEC has set only one type of mutual funds that is invested solely in equities, i.e. equity fund, this study further categorizes the funds based on the investment policy. Referring to table VIII, funds are regressed using the Carhart 4-factor model. Therefore, funds are categorized into 3 groups based on their loadings on SMB and HML factors. The first is *"small cap funds"*, where the SMB coefficient is positive. The second is *"large cap/value funds"*, where the SMB coefficient is negative and HML coefficient is positive. The last is *"large cap/growth funds"*, where the SMB and HML coefficients are negative. These 3 groups are then formed into 3 value-weighted portfolios. The details of constructing the portfolios are similar to what has been done in the prior section.

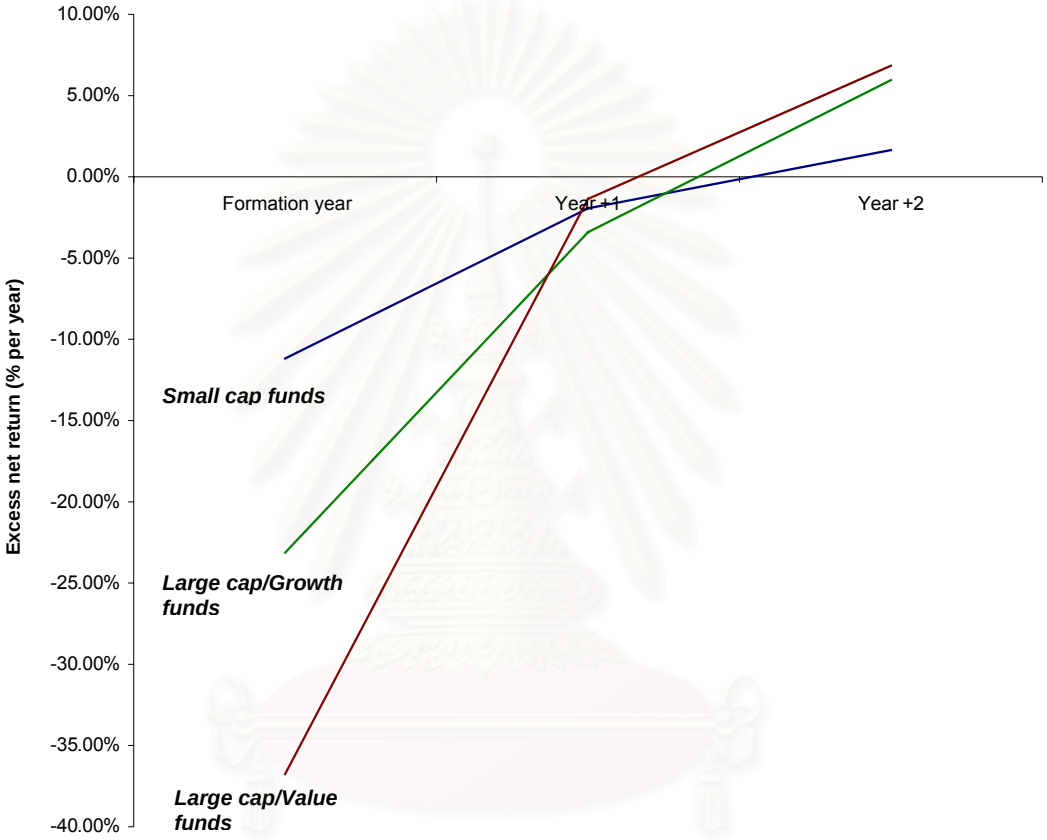
This persistence test is presented in figure IV. On average, during the period of 2000 to 2004, small cap funds perform better than their peers in the formation year. However, performance reverses in latter years when they have disappointing performance in relation to others. Large cap/Value funds come through in year +1 onwards after struggling with significant underperformance in the formation year. These findings confirm that there is no particular style that dominates all funds in each year.

As several tests have verified that, unlike in the US, performance of Thai equity funds does not persist, one intriguing factor that helps explain this whole story is momentum. In the US, prior year return momentum is an important factor that differentiates winners from losers (see Carhart (1997), Wermers (2003)). Winning funds are heavily exposed to momentum stocks which continue to generate high return in the future, therefore, persistence in performance is observed. On the other hand, losing funds are less exposed to momentum stocks. As a matter of fact, Wermers (2003) finds that losing managers are reluctant to sell losing stocks and buy winning stocks. Consequently, returns generated from last year's losing funds in the next year are lower than last year's winners. Performance of winning funds and losing funds are likely to repeat itself.

For Thai stock market, as shown in preceding chapter, it is the short-term momentum of up to the last quarter, not prior year return, that drives greater return. Stocks that enjoy high returns during the past 12 months do not continue to generate superior returns in the next 12 months. With the lack of one year momentum phenomena, it is much more difficult for winning managers to generate impressive returns in the next year. Furthermore, under the circumstance of volatile market, managers who have the exposure to specific style of stocks explicitly face serious challenges in providing performance consistency. These managers include value managers, growth managers, small cap managers and large cap managers who have specific preferences to a certain investing style. For example, small cap stocks might enjoy marginally higher return than others this year but not the next. As a result, persistence of Thai equity funds is hard to find.

Figure IV
Performance of Category Portfolios in Subsequent Years

Equity funds for individual investors in the universe are categorized into 3 groups, namely Small cap funds, Large cap/Value funds and Large cap/Growth funds. The portfolio of each category is formed based on the funds' investment policy, which is classified by using Carhart 4-factor model. In order to be included in portfolios, a fund must be in operation for the entire prior year. The value-weighted excess returns from the stock market returns of each category in the formation year, year +1 and year +2 are observed. The weights are updated at the end of every calendar year.



5.2 How investors judge funds: Flows analysis

How do funds attract money? Flows analysis is conducted to answer such a question. There are several factors to induce fund flows. The most common and intuitive factor is the prior year return, which is a rough proxy for performance of funds in the past. In the US, investors react strongly to prior year return because it is the easiest way to judge managers. Funds which provide substandard return will be filtered out of the investors' shortlist. As a result, funds with the highest past returns enjoy positive inflows while funds with the lowest do not. Moreover, investors are able to judge the best managers and invest according to the information they have (see, for example, Gruber (1996), Zheng (1999) and Wermers (2003)).

On the other hand, another puzzling question that could be answered by observing the flows is, "Are Thai investors smart?" Flows could also be used to judge the investors. If investors are smart, funds with positive inflows should provide superior returns in subsequent

period in relation to funds with negative inflows. Moreover, flows could indicate how well investors are informed. Before making investment decisions, investors gather relevant publicly available information about funds and analyze their performance. Therefore, flows are induced by the performance of funds which investors have analyzed based on the information they perceived. If the investing behavior of investors does not correlate with performance of funds, a somewhat unsatisfying outcome, the conclusion of lack of funds' information disclosure could not be argued.

5.2.1 Are flows induced by prior year return?

This section analyzes how funds' prior year returns attract flows. In doing so, funds are sorted and categorized into decile portfolios based on their prior year returns. The details of constructing these portfolios are described in section 4.4.1. Next year's flows of each fund is determined from the formula in equation (22), then, the value-weighted flows of decile portfolios in the next year (year +1) are observed. Funds' total net assets at the end of every calendar year are used as weights in calculating flows and are updated yearly. Table XVI summarizes the result. Flows estimations are exhibited in percentage per year. T-statistics are also provided in the parentheses.

Table XVI
Estimated Flows in Year +1 of Decile Portfolios Formed Based on Prior Year Return
Equity funds for individual investors are sorted on December 31 each year from 2000 to 2003 into decile portfolios based on their previous year returns. Funds with the highest returns are assigned "decile 1" and funds with the lowest are assigned "decile 10". In order to be included in decile portfolios, a fund must be in operation for the entire prior year. The value-weighted flow estimations of year +1 are observed. The weights are updated at the end of every calendar year. T-statistics are provided in the parentheses.

Portfolio	Flows (% per year)	t-statistic
1	16.96%	(0.96)
2	49.92%	(0.79)
3	-1.79%	(-1.34)
4	0.88%	(0.08)
5	-10.12%	(-0.54)
6	-14.41%	(-1.77)
7	-12.99%	(-1.25)
8	-11.69%	(-1.74)
9	102.79%	(0.90)
10	-2.21%	(-0.70)

As shown in table XVI, another puzzling investing behavior of investors is exposed. Flows are not induced by prior year return. If flows were induced by prior year return, flows in portfolio 1 would be the greatest and would be the lowest in portfolio 10. Graph plotted between flows and portfolio number would also be a linear relationship. However, for the case of Thai equity fund, flows and prior year return are surprisingly not related.

5.2.2 So, are flows induced by variability in monthly return?

My supervisors and I are puzzled by the dazzling findings stated in the previous section. After a brief discussion, my advisor, Professor Sunti Tirapat, suggested that I look at the variability in monthly returns of equity funds. The reason why this factor should be analyzed is because one of the fund managers he is familiar with told him that investors also react to the variability in funds' monthly returns. The manager claimed that the marketing crews of his fund could sell the product easier by pointing out that his fund had stability in return, therefore, creating sustainable and acceptable returns to investors. Consequently, this section is designed and aimed to prove whether the claim of that manager is rationally backed up by numerical evidence.

The test is designed as follows. At December 31 each year from 2000 to 2003, decile portfolios of funds are formed by ranking funds based on their prior year standard deviation of monthly returns in ascending order. Funds with the lowest standard deviations are assigned "decile 1" while funds with the highest are assigned "decile 10". Any funds that are newly incepted during the formation year are excluded. In addition, funds that do not survive the next year are also excluded from the calculation of next year's net returns. At every sorting, each portfolio has approximately the same number of funds. The value-weighted flows of decile portfolios in the next year (year +1) are observed. Funds' total net assets at the end of every calendar year are used as weights in calculating flows and are updated yearly. The result is shown in table XVII.

Table XVII
Estimated Flows in Year +1 of Decile Portfolios
Formed Based on Prior Year Standard Deviation of Monthly Return

Equity funds for individual investors are sorted on December 31 each year from 2000 to 2003 into decile portfolios based on their prior year standard deviations of monthly returns. Funds with the lowest standard deviations are assigned "decile 1" and funds with the highest are assigned "decile 10". In order to be included in decile portfolios, a fund must be in operation for the entire prior year. The value-weighted flow of funds estimations of year +1 are observed. The weights are updated at the end of every calendar year. T-statistics are provided in the parentheses.

Portfolio	Flows (% per year)	t-statistic
1	28.30%	(1.04)
2	-2.96%	(-0.42)
3	-8.17%	(-2.16)
4	5.39%	(0.73)
5	-10.71%	(-2.18)
6	-14.57%	(-2.54)
7	-7.07%	(-0.70)
8	31.61%	(0.78)
9	-8.55%	(-4.23)
10	68.54%	(0.89)

No conclusions could be drawn from the result found above. There is no certain relationship between flows and standard deviation of monthly returns. The reason why

variations do not affect flows may be due to the exposure to the market all funds have. Equity funds invest solely in equities, therefore, it is inevitable for funds not to have different variations in returns compared to the market. As a result, investors are not concerned about the variation issue considerably. For this reason, the claim that stability in return induces flows is not well supported by numerical evidence.

5.2.3 Are Thai investors smart?

One simple but powerful tool to judge whether investors are smart is to look at the next period return of positive inflow funds and negative inflow funds. In doing so, another test is designed. Funds are ranked based on their flows in descending order. Two portfolios are formed based on their flows, namely top 10% flows portfolio and bottom 10% flows portfolio. The top 10% flows portfolio consist of funds in the top 10% of the sorting while the bottom 10% flows portfolio consist of funds in the bottom 10%. Value-weighted returns of these two portfolios in the next year, representing buy-and-hold returns, are observed. The weights used for calculating value-weighted returns are the total net assets of funds at the beginning of formation date. Table XVIII summarizes the result.

Table XVIII
Return Comparison Between Investing in Top 10% and Bottom 10% Flows Portfolio
Flow of funds into equity funds are ranked each year. Two portfolios are formed based on fund flows of each equity fund, namely top 10% flows portfolio and bottom 10% flows portfolio. Value-weighted returns, representing buy-and-hold returns of portfolio, of these two portfolios in the next year are observed. The weights used for calculating value-weighted returns are the total net assets of funds at the beginning of formation date. T-statistics are provided in the parentheses.

	Value-Weighted Return (% per year)	t-statistic
Top 10% Flows Portfolio	22.53%	(0.75)
Bottom 10% Flows Portfolio	26.61%	(1.09)

Another surprisingly odd phenomenon is revealed. Investment in the top 10% flows does not earn higher return than investment in the bottom 10% flows. This finding contrasts with several findings in the US that top 10% flows portfolio earns superior return in relation to the other one. “Following the money” does not generate impressive return.

At the present stage, the most appropriate question to ask is, “Are Thai investors well informed?” Investors should be able to gather and synthesize funds related information and invest according to their comprehension. This finding proves such thing that investors are not smart in judging funds performance based on the publicly available information.

In contrast, investors might realize that funds’ performance is not consistent, therefore, they invest in funds that are easier to access. As shown in persistent tests that the performance of funds varies every year and that no managers are consistent in providing abnormal return, it is useless to invest in the best fund. Even though investing in funds that

generate return in the top 10% of the funds universe provides positive and significant abnormal return on the CAPM and Ferson – Schadt conditional model, no one knows which funds are going to perform well and be in the top 10% ranking in the next period.

Interesting issues that determine what other factors induce flows are the service level of fund companies and the ease of access to investment and redemption. In fact, other factors could induce flows as well. To name a few, we should mention marketing efforts by mutual fund management companies and personal acquaintance with a particular fund company. However, the dilemma in flows induction of Thai equity funds still begs for answers. These issues are yet to be explored and left as research questions for others.

5.3 Insufficient disclosure of mutual fund information

Insufficiency in information disclosure could mislead investors. Thai mutual funds must be encouraged to disclose more information to the public to reduce asymmetric information between investors and fund managers. As the current level of disclosure is low compared to other developed markets, for example the US, therefore, Thai investors are not well informed of the performance of funds. As a consequence, most of the investors cannot judge whether managers have skills and invest according to their comprehension. Increasing the level of disclosure would efficiently develop the mutual fund industry and would attract investors' attention toward investing in mutual funds.

Funds have to disclose their detailed information regularly. Current regulations require mutual funds to report their net asset values and total net assets under management to the Association of Investment Management Companies (AIMC) on a weekly basis. They must also report their portfolio holdings to the Securities and Exchange Commission (SEC) on a semi-annual basis. These regulations are considered to be the least restrictive compared to other developed and efficient markets, such as the US, since all funds in the US have to report their portfolio holdings on a quarterly basis.

One reason why funds are urged to disclose their holdings more frequently is to prevent window-dressing. Funds buy a wide range of securities, from tech-savvy to commodity stocks. Some of their stock selections might not perform as well as they had expected. When the disclosing date approaches, managers tend to window-dress their portfolios by selling losers and buying winners. Investors would be deceived by the apparently prudent stock selection by managers, which in fact does not exist. The problem of window-dressing is found to be lower when funds disclose their portfolio holdings frequently.

In contrast, it is argued that encouraging funds to disclose their portfolio holdings on a quarterly basis creates negative consequences to fund management companies since investors could replicate the portfolios and gain substantial return without having to pay management fees to mutual funds. Winning funds would lose the opportunity to gain new money inflows from investors. As a result, the mutual fund industry might become sluggish and this development would greatly affect the industry as a whole.

Nonetheless, in order to develop this emerging mutual fund industry, it is necessary to disclose information. Disclosing portfolio holdings data on a quarterly basis also conforms to the standard code of practice in the US. Moreover, this would stimulate both the Thai mutual fund industry and the Thai stock market to be more efficient as well.

5.4 Investment rules of thumb

Even though persistence conquers all things, there is no such thing as persistence in equity fund performance. However, as the name of this chapter suggests, we have now reached the pinnacle of this chapter, “Is there any rule of thumb?” Consequently, this section is dedicated to deriving “rules of thumb for investing in equity funds” in the form of DOs and DON’Ts practical solutions instead of deriving “rules of thumb for pinpointing persistent managers”. Though these solutions are not the “fix-it-all” type, they provide a rough guide for both rookies and experienced Thai investors.

Rule 1: Even if you think you have already diversified, DO diversify further. Investors invest in funds mainly due to one reason: diversification. The fact that most funds invest in a wide range of stocks, it offers diversification to investors. Moreover, funds also provide liquidity. For open-end type funds, the funds themselves provide liquidity for investors whereas for closed-end type, liquidity is provided through trading in the exchange. Most investors believe that funds allow perfect diversification and are exposed to exactly the same risk as the market. This belief is somewhat wrong. Even if the funds’ policy is set to investing in all types of securities listed, the managers select what type of stocks to invest in. Managers invest based on their expertise. For example, small cap managers invest heavily in small cap stocks while large cap/growth managers invest in large cap/growth stocks. As certain styles of stocks may win this year but not the next, a certain type of funds wins this year but not the next as well. Unless the funds are passively constructed, perfect diversification cannot be obtained through investing in only one fund. Investors are advised to split their investment and invest in variety of fund types so that the exposure will be close to investing in the market portfolio.

Another piece of evidence to support this argument is that persistence in performance does not actually exist. Investing in only one fund does not assure you that the expectation of gaining positive excess return to the market will be pleasantly fulfilled every year. Although there is some evidence that losing funds become winning funds in the next period, there is no certain assurance that this pattern repeats itself every year. Therefore, investments in either a wide range of funds or in a passively well constructed portfolio are the most prudent strategies.

Rule 2: DO NOT chase winners As persistence tests prove that there is no such thing as a consistent “cream of the cream” pattern, there is no use to chase winning funds. Moreover, winning funds tend to be losing funds in the next period. Chasing winners will not

only erode return due to transaction costs but will also provide substandard return in the next period.

Rule 3: DO NOT follow the money Investors are not smart in judging funds' performance either due to the lack of information available, or the mixed result in fund returns stability. Most investors cannot analyze and pinpoint the best fund given the current available information. Stability in returns is also not found given the fact that excess returns of funds to the market portfolio do not have a certain pattern every year. Moreover, the top 10% flows portfolio provides lower return than the bottom 10% flows portfolio. Therefore, the rationale for using "follow-the-money" rule does not actually work in a practical sense.

CHAPTER VI
CONCLUSION

The performance of Thai equity funds has long been an unsolved puzzle of Thai financial market. What all stakeholders should concentrate on is the skills level of fund managers. The skills of managers could not be simply judged by looking at the funds' past returns. Several evaluation techniques are needed for revealing the truth in funds' performance. This paper reveals the paradox of the performance of Thai equity funds by analyzing numerous aspects.

To begin with, over the entire test period, June 2000 to August 2004, Thai equity funds generate satisfying returns in relation to the market with lower volatilities. The Sharpe measure of funds exceeds the Sharpe measure of the market. This indicates that mutual funds are outperforming while other stakeholders, namely, the retail investors, are underperforming the market. It suggests that investing in mutual funds is prudent when compared to investing on investor's own judgments.

In terms of exploiting for abnormal returns, successive analyses using asset pricing models and other factor model regression techniques suggest that Thai equity funds do not generate positive and significant alphas. On average, the returns earned by investing in funds are corresponding to the market return, though, superiority exists for funds that provide prior year return in the top 10% on the least restrictive models: CAPM and Ferson-Schadt conditional model. Therefore, as the returns earned are in line with the market, investing in funds is considered as a decent option that provides diversification to those investors who do not have large sum of money to invest in wide range of stocks on their own.

The rankings of funds differ across measures. The basic performance measures, such as the equal-weighted and value-weighted Sharpe measure, are some times not consistent with one another. For example, company B is ranked sixth in 2000 on the equal-weighted Sharpe measure criterion but it is ranked seventh on the total net assets average Sharpe measure criterion. In fact, Roll (1978) suggested that funds' ranking is affected by the choice of benchmark. Any fund could be ranked first on a specific tailor-made benchmark. Evaluators must keep in mind that the choice of evaluative method affects funds' rankings inevitably.

This study also utilizes the portfolio holdings data, which disclose the names and proportion of stocks held by funds, in analyzing managers' performance. During the entire period, on composition of the value-weighted net return of 19.63 percent per year, return generated from the managers' stock selection skills are 0.79 percent. Timing abilities also accounts for 6 percent. Nevertheless, the selective skills are diminished on the equal-weighted basis. The finding suggests that good managers are managing large funds.

Momentum on the prior-year basis does not significantly drive returns of funds. It is the short-term momentum of up to the previous quarter that helps boost returns. Momentum

funds provide higher returns than the contrarians. Evidence also suggests that managers trade stocks based on historical price pattern.

As the exquisite managers' stock selection abilities analysis is revisited, the method of analyzing the earnings announcement date of stocks held reveals ambiguous results. Managers picked stocks that underperform both the market and their matched benchmarks. The conclusion could be led in either ways. First, managers do not possess stock picking talents. Second, abnormal returns earned during the 3-day window around earnings announcement dates do not fully capture the managers' stock picking abilities.

For the persistence and flows tests, surprisingly odd phenomena are revealed. Most funds do not provide consistency in their rankings and next year returns. The winning funds tend to be losing funds in the next period. This inconsistency is probably due to lucks. As a result, performance varies year by year. Further, investors are not smart in judging funds' performance. The best performing funds in the prior year do not gain considerable amount of money inflows when compared to others. Funds that gain the highest flows do not provide the highest returns in the next period. Therefore, unlike in the US, investors are not smart in judging funds' performance. Nevertheless, there must also be other factors to induce flows, such as marketing efforts, and so forth. This dilemma is left as research questions for other researchers.

Mutual funds are urged to disclose more information to the public to reduce asymmetric information. As several tests have shown that investors could not judge funds' performance. The main reason is the lack of data available. Frequent disclosure could also help prevent window-dressing behavior of managers. In order to develop both Thai stock market and the mutual fund industry efficiently, government should play important role in forcing funds to disclose information frequently, especially the funds' portfolio holdings. Such act would be greatly beneficial to the development of the Thai economy as a whole.

Future research studies on funds' performance should emphasize on the expense ratios and funds' turnover ratios. The expense ratios could be collected manually from the funds' annual reports while the turnover ratios could also be estimated from the yearly stock trading expenses. As long as the data are not systematically collected, enormous efforts are required to accomplish such tasks.

The issues on the passive versus active management should also be discussed in the future. As the findings state that no superiority is detected on the actively managed funds, passively constructed funds should also yield the same result with lower expenses charged to the investors. The discussion is yet to be debated.

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