CHAPTER II

LITERATURE REVIEW

This chapter discusses related theories and empirical evidence on both international and Thai equity funds. The outline is as follows: concept and theoretical background, empirical evidence and

2.1 Concepts and theoretical background

Studies on mutual funds in the early days were mainly about fund performance or fund manager performance whether there is superior abnormal return in any particular strategy or fund characteristic. The topics featured in my study about investor timing and fund selection through information effects such as flows or size have been an extension of mutual fund studies. Net returns and abnormal return by alpha by Jensen (1968), Fama-French (1992), and Carhart (1997) are the measures used. Carhart's discovery of momentum trading strategy also plays a major role in explaining and assumptions of fund flow strategies and performance.

Grinblatt and Titman (1993) introduced a measure to estimate aggregate investors' ability in selecting mutual funds and switching among them. The GT measure employs portfolio holdings and uses its own portfolio holdings in the preceding period as a benchmark. The GT measure represents the dollar return of a zero cost portfolio. It also estimates the covariance between the proportional holdings of a particular fund and its subsequent returns. The GT uses the average over time of the expression as their performance measure and perform a cross-section significance test on mutual funds.

2.1.1 Studies on following the flow of money

Gruber (1996) and Zheng (1999) examined mutual fund performance with different measures to examine abilities of fund managers linking it with abilities of investors whether fund investors can correctly anticipate future fund performance and invest accordingly for higher returns.

Gruber (1996)'s method is later referred as the **Fund Regression method** from its methodology of running a regression of measured performance in these different measures.

1. A measure of return relative to the market

$$R_{it} - R_{mt}$$

2. The excess return from a single index model

$$R_{it} - R_{ft} = \alpha_i^1 + \beta_i^1 (R_{mt} - R_{ft}) + e_i \qquad\qquad --- (1)$$

3. The excess return from a four index model

$$R_{it} - R_{ft} = \alpha_i^4 + \beta_{mi}^4 (R_{mt} - R_{ft}) + \beta_{si}^4 (R_{st} - R_{ft}) + \beta_{gi}^4 (R_{gt} - R_{vt}) + \beta_{di}^4 (R_{dt} - R_{ft}) + e_i$$

$$--- (2)$$

Where R_{it} = the return on fund i in month t

R_{ft} = the return on a thirty day T-bill in month t

R_{mt} = the return on the S&P 500 index in month t

$R_{st} - R_{lt}$ = the difference in return between a small cap portfolio and a large cap portfolio

$R_{gt} - R_{vt}$ = the difference in return between a high growth portfolio and a value portfolio

$R_{dt} - R_{ft}$ = the excess return on a bond index that represents an estimate of aggregate corporate and government bonds

β_{ki} = the sensitivity of the excess return on fund i to portfolio k where k can represent the market, a size factor, a growth factor, or a bond factor. When k represents the market, the superscript on beta indicates whether it came from the single index model or the four index model.

α_i^1, α_i^4 = the risk adjusted excess return measured from the one index and the four index model, respectively.

Apart from running the Fund Regression method, later Zheng (1999) introduced another method of measurement called the **Portfolio Regression method**. Zheng (1999) constructed a test of 8 different portfolios, of different directions of money flow. Different weighting methods of equal weight and weighted by new money as a percentage of

growth are also applied to represent the effect of size of funds when getting influenced by money flow. A zero investment position is created by holding long position on funds with inflows and holding short position on funds with outflows.

The time-series regression for return of the portfolio of mutual funds is run comparable to the cross-section of funds as in Gruber (1996), which estimates the one factor and the Fama-French 3 factor model.

The measures of returns and risk-adjusted returns measured by Zheng are

1. Raw Returns

2. Excess return over the market : $R_{it} - R_{mt}$

3. Abnormal return from the single factor model

$$R_{it} - R_{ft} = \alpha_i^1 + \beta_i^1 (R_{mt} - R_{ft}) + e_{it} \qquad \text{--- (3)}$$

4. Abnormal return from the Fama-French factor model

$$R_{it} - R_{ft} = \alpha_i^3 + \beta_{RMRF}^3 RMRF_t + \beta_{SMB}^3 SMB_t + \beta_{HML}^3 HML_t + e_{it} \qquad \text{--- (4)}$$

5. Abnormal return from the conditional single factor model

$$R_{it} - R_{ft} = \alpha_i^1 + \delta_{1i}^1 (R_{mt} - R_{ft}) + \delta_{1i}^1 [z_{t-1}(R_{mt} - R_{ft})] + e_{it} \qquad \text{--- (5)}$$

6. Abnormal return from the conditional Fama-French three-factor model

$$R_{it} - R_{ft} = \alpha_i^3 + \delta_{1iRMRF}^3 RMRF_t + \delta_{1iSMB}^3 SMB_t + \delta_{1iHML}^3 HML_t$$
$$+ \delta_{2iRMRF}^3 (z_{t-1} * RMRF_t) + \delta_{2iSMB}^3 (z_{t-1} * SMB_t) + \delta_{2iHML}^3 (z_{t-1} * HML_t) + e_{it}$$
$$\text{--- (6)}$$

Where δ = factor loadings of the conditional regression factors and z_{t-1} = a vector of laggard predetermined instruments

The lagged information variable is used in the conditional measured as described by Ferson and Schadt (1996) to capture the time-varying property of portfolio risk and whether the smart money effect is due to a rational response to macroeconomic variables.

Gruber (1996) and Zheng (1999) did not consider the momentum factor which was later tested by Sapp and Tiwari (2004).

2.1.2 Studies on relationships between flows and fund characteristics

Sirri and Tufano (1998) studied flows of funds into and out of equity funds whether consumers base their fund purchase decisions on prior performance information, characteristics, and search costs.

$$\text{FLOW}_{i,t} = (\text{Return}_{i,t-1}, \text{Riskiness}_{i,t-1}, \text{Expenses}_{i,t-1}, \text{OBJFLOW}_t, \text{LogTNA}_{i,t-1})$$

$$\text{--- (7)}$$

Where return is measured as a percentage of change in NAV. Riskiness is represented by the standard deviations of past monthly returns. Expenses measures the costs charged on fund unit holders. Fund category objective (OBJFLOW) and fund size (LogTNA) was also considered.

2.1.3 Studies on aggregate fund flow to mutual funds

From a macro perspective, Warther (1995) studies the aggregate cash flow level into all mutual funds and market-wide returns. Flows in the micro level include flows from one fund to another fund – one fund's gain is another's loss. At the macro level, flows between funds net out. Aggregate funds into the fund market remains. Flows are divided into expected and unexpected by autocorrelation of net sales in a time-series model. Warther used monthly flow data.

Edelen and Warner (1999) used semi-weekly and daily flow data as high-frequency analysis. Relationship between Flow and Returns, vice versa, is examined. Alternative estimation techniques such as vector autoregression, non-linear, or system-of-equations procedures were used.

Further studies by Brown, Goetzmann, Hiraki, Shiraishi, Watanabe (2002) examined international market exposure of US and Japanese markets. Mutual fund flows may be interpreted as a market sentiment of investors. Derivative funds as bulls and bear funds are used for this observation. Alternative stories such as information and liquidity are also considered.

2.2 Empirical evidence

Empirical results explained a lot about the mechanics that drive mutual fund returns although different methods and different datasets sometimes lead to somewhat different outcomes.

2.2.1 Fund flows and fund characteristics

Sirri and Tufano (1998) study on equity fund flows over two decades indicates that consumers disproportionately flock to high performing funds while fleeing from low performing funds at a lower rate. Flows are also sensitive to fee rates and fee increase/decreases also at an asymmetric response. Fund volatility also has an effect in investing decisions but not eliminating managers' incentives to tradeoff bearing more risk in search for more return.

2.2.2 Smart Money

Gruber (1996) explains that open-end funds, unlike stocks, are traded at their NAV's so the price does not include premium or discount for management skills. Rational investors would then predict future performance and invest into past winners. Persistence persists. Funds with positive Jensen's alpha receive significantly higher inflows. Smart investors invest in them and earn subsequent superior return. Money is smart in chasing winning managers and "Following smart money" is a strategy that creates positive return according to Wermers (2003). A "copycat" strategy of mimicking winning fund stocks to take advantage of flow-related returns appears to be the smartest strategy.

Empirical results by Zheng (1999) shows that the Smart money effect that aggregate newly invested money in equity is able to forecast short term future performance, which reverses in 30 months time, that funds which receive money performs better than funds which lose money. In the general sample, there is no proof that investors can beat the market by investing in funds with new money inflows. For small funds, however, investing in funds with positive money flow can earn abnormal income. Evidence support that there is an information effect as new money flow has

information that can be used to outperform the market. After closely examining the smart money strategy, a significant performance variation can be represented by the repeat winner or momentum strategy. Fund-specific information is not the only information that reveals that smart money can be invested through small size equity funds to make abnormal returns. Potential reasons for the smart money and size effect are interesting to be explored.

When Sapp and Tiwari (2004) controlled for stock return momentum, the Smart money effect disappears. Investors do not identify managers by their superior ability but rather just their style in chasing recent winning stocks. Why do investors put their money in actively managed portfolios when their objective is naively chasing past returns remains unanswered.

2.2.3 Market sentiment

Warther (1995) found that aggregate security returns are highly correlated with unexpected cash flows into mutual funds. Flows follow returns and returns follow flows, confirmed by Edelen and Warner (1999). The source of this lagged relationship is possibly by a third unknown variable yet to be discovered. With the investor sentiment index created by Brown, Goetzmann, Hiraki, Shiraishi, Watanabe (2002), foreign vs. domestic sentiment appears in Japan as flows from domestic funds does not relate with flows from foreign funds. US mutual fund investors, by contrast, appear to regard domestic and foreign equity mutual funds as economic complements.

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

Although mutual funds has been part of the Thai equity market for many years. A handful of recent studies have been done with datasets from the Thai mutual fund market.

Plabplatern (1997) found from his study on performance of closed-end funds investing in equity that almost all of the 63 closed-end funds observed during a 54 month period between Q1 of 1993 until Q2 of 1997 have selectivity skills. He evaluated these portfolios with benchmark portfolios that was constructed based on market

capitalization, book-to-market ratio, and prior-year –return characteristics. However less than half actually have timing skills towards the market.

Luangruangthong (1997) studied on Mutual Fund Herding and found that different funds have a tendency to invest in the same stocks regardless of the stock's previous performance. This herding behavior help stabilize prices to the fundamental equilibrium sooner. Herding was also found by Vanaprasert (2000) which this herding behavior drives prices up during excess buying demand only for medium and small stocks. For selling demand, mutual fund excess demand moves down prices for large, medium, and small stocks.

Sakranan (1998) tested by using the performance measures developed by Daniel, Grinblatt, Titman, and Wermers (1997) consisting of size, book to market ratios, and momentum. The results were a complete contradiction of Plabplatern's previous study. It shows that most Thai funds do not have selection skills but instead have timing skills. Closed-end funds, in particular, strongly exhibits timing ability. Possible causes for the contradiction is the difference in dataset as Sakranan uses only 34 equity funds covering a 36 month period from Dec 31,1994 to Dec 31,1997. Both open-end and closed-end funds were used in this observation. Performance persistence is not found.

Pornchaiya (2000) did a test on equity funds during the Thai financial crisis from Jan 1996 to June 1999 of both closed-end and opened-end funds which operated for no less than 15 months and is still active as of June 25, 1999. The study was done by measuring traditional Jensen's alpha through the CAPM model. Results show that all but 2 out of 77 funds do not have positive alpha, implies that managers do not have selective skills during the crisis period. For Srisuchart (2001), the scope of funds included fixed income and other mixed funds as well.

Study on whether momentum trading strategy is used by mutual fund managers was conducted by Groatong (2001). Of the 45 closed-end Thai equity funds, most would invest based on the stock's past returns. The level of fund performance, however, is not related to this momentum trading strategy. This result disagrees with Gritblatt (1995) which shows US mutual funds create excess return on momentum trading strategy.

Nerngchamnong (2003) did a study that shows that size does matter. Of 58 open-ended Thai equity funds for 2001 and 2002, regression analyses show that size has positive correlation with returns but size and characteristics alone are unable to predict return as market conditions dominate returns.

The studies done on mutual funds among Thai scholars are mainly on manager's ability and strategy. No study to date has focused on how investors choose funds to invest nor has examined the flow of money in and out of mutual funds and its relationship with returns. The observation on Smart money also has not previously been analyzed.