

Mutual Fund Flow Behavior in Thailand*

พฤติกรรมกระแสเงินสดของกองทุนรวมในประเทศไทย

Teerapan Ungphakorn¹

ABSTRACT

This paper studies mutual fund flow behavior of Thai equity funds from 2002 to 2009 using panel regression analysis. Two research questions are motivated in this study. First, what are determinants of mutual fund flows? Second, do investors have ability in selecting outperforming funds? Results show that investors employ both financial and non-financial information in making decision. Mutual fund flows are positively related to past performance and size of management companies. In contrast, mutual fund flows are negatively related to its size and age. I find no evidence that investors can distinguish outperforming funds from the bad ones. Finally, general and tax-benefit fund investors employ different criteria in selecting equity funds. While general fund investors use past returns as a primary factor, tax-benefit fund investors employ both past returns and fund characteristics for their decisions.

Keywords: Mutual Funds, Fund Flows, Smart Money, Emerging Markets, Performance

บทคัดย่อ

งานวิจัยชิ้นนี้ศึกษาพฤติกรรมกระแสเงินสดของกองทุนรวมหุ้นในประเทศไทยระหว่างปี พ.ศ. 2545-2552 โดยใช้การวิเคราะห์สมการถดถอยพหุคูณ โดยมีวัตถุประสงค์วิจัยสองข้อ ได้แก่ 1. เพื่อศึกษาปัจจัยที่มีผลกระทบต่อกระแสเงินสดของกองทุนรวม 2. เพื่อศึกษาความสามารถของนักลงทุนในการตัดสินใจเลือกลงทุนในกองทุนรวม ผลการวิจัยพบว่า นักลงทุนใช้ทั้งปัจจัยที่เป็นตัวเงินและไม่เป็นตัวเงินในการตัดสินใจลงทุน กระแสเงินสดมีความสัมพันธ์เชิงบวกกับผลตอบแทนในอดีตและขนาดของบริษัทจัดการกองทุน ในทางตรงกันข้ามกระแสเงินสดมีความสัมพันธ์เชิงลบกับขนาดและอายุของกองทุน ผลการศึกษาความสามารถของนักลงทุนในการตัดสินใจเลือกลงทุนพบว่า นักลงทุนไม่มีความสามารถในการเลือกลงทุนในกองทุนที่จะได้รับผลตอบแทนที่ดีในอนาคตได้นอกจากนี้ เมื่อพิจารณาแยกตามลักษณะของกองทุนพบว่า นักลงทุนที่ลงทุนในกองทุนปกติกับนักลงทุนที่ลงทุนในกองทุนรวมที่สามารถลดหย่อนภาษีได้ จะใช้ปัจจัยในการตัดสินใจลงทุนที่แตกต่างกัน กล่าวคือนักลงทุนที่ลงทุนในกองทุนปกติจะใช้ข้อมูลผลตอบแทนในอดีตเป็นหลัก ในขณะที่นักลงทุนในกองทุนรวมที่สามารถลดหย่อนภาษีได้ใช้ทั้งข้อมูลผลตอบแทนในอดีตและปัจจัยด้านคุณลักษณะของกองทุนในการตัดสินใจลงทุน

คำสำคัญ: กองทุนรวม กระแสเงินสด ตลาดเกิดใหม่ ผลการดำเนินงาน

* This study was funded by Mahasarakham Business School, Mahasarakham University (Fiscal year 2011)

¹ Department of Finance, Mahasarakham Business School, Mahasarakham University, email: teerapan.u@acc.msu.ac.th

1. Introduction

The growth of mutual fund investment has been increasing over the past decades due to its various advantages including diversification, flexibility, and managed by professionals. The Investment Company Institute (2014) reports that, by the end of 2013, worldwide mutual fund assets totaled more than 30 trillion U.S. dollars and world wide net cash flow to all funds was over 252 billion U.S. dollars. In emerging markets, mutual fund investment has become more prominent over time even though around 10 percent of mutual fund assets were in Asia and Pacific region compared to 57 percent and 31 percent in American and European countries, respectively. Therefore, mutual fund development in emerging markets is yet lagged behind developed markets. Subsequently, research in mutual fund in emerging markets is limited and negligible. More specifically, mutual fund industry in emerging markets is different from developed markets in many respects. For instance, mutual fund industry in emerging markets is less competitive. Information related to investment policy, past performance as well as other relevant information is not publicly available which contribute to less well-informed investors. Therefore, it would be interesting to know whether theories and results in developed markets can be carried over to emerging markets.

Fund flows are net amount of cash that are put into and taken out of the mutual funds. It indicates how investors invest their money in mutual funds. Thus, fund flows represent how investors make decision in buying and selling mutual funds. Nonetheless, due to the distinctive market conditions, fund flows behaviors in emerging markets are potentially different from those of developed markets. Subsequently, the purpose of the present study is to explore fund

flow characteristics of equity funds in Thailand as a case study of an emerging market. My objectives are in two folds. First, we examine factors that investors use in selecting funds by considering both financial and non-financial factors. Second, we investigate ability in selecting superior funds, so-called 'smart money effect'. I employed 147 Thai equity funds from 2002-2009. I found that, first, fund flows are positively related to past returns with regard to any returns measures used. Nonetheless, flows are more sensitive to positive than negative returns. Size of management companies is also positively related to mutual fund flows. Conversely, small and young funds receive higher net cash flows. Secondly, I find no evidence in smart money effect. Nonetheless, results on smart money effect are sensitive to the measure used in the analysis. Finally, general and tax-benefit fund investors employ different criteria in selecting equity funds. While general fund investors rely on past returns, tax-benefit fund investors employ both past returns and fund characteristics in their decisions.

The paper is organized as follows. Section two presents critically review literature on mutual funds flows from both developed and emerging markets. Section three details data and methodology used in the study. Section four presents empirical results. Section five gives robustness of results. Finally, section six presents the conclusions of the study.

2. Determinants of mutual fund flows

Fund flows that are put into or taken out of funds indicate the behavior of investors in selecting funds. Many previous studies investigated determinants of mutual fund flows and revealed that mutual fund flows can be explained by many factors, including past performance, fund specifics,

and characteristics of its management company. In addition, Capon, Fitzsimons and Prince (1996) revealed that U.S. investors use past performance as a primary factor for their decision while other non-financial factors are also considered. Subsequently, this section reviews factors attributing to the mutual fund flows.

2.1 Financial factor

If investors are well informed, they will allocate their money into the outperforming funds and withdraw their money out of the poorly performing funds. Subsequently, we would expect to see a positive relation between past returns and fund flows. A number of studies investigate this relationship. For example, Ippolito (1992) revealed that, during 1965-1984, 143 mutual funds investors in the U.S. disproportionately allocated their money to superior funds and moved away from those underperforming funds. Sirri and Tufano (1998) also employed U.S. mutual funds from 1971-1980 and investigated relationship between fund flows and its performance. They found asymmetric positive relationship between fund flows and fund performance. However, they argued that investors responded more strongly to the high performing funds than poorly performing funds. Del Guercio and Tkac (2002) investigated the

relationship between fund flows and fund returns for both pension and mutual funds. They suggested that pension fund flows are positively related to past risk-adjusted returns while mutual fund flows are positively related to past raw returns. Nevertheless, Berk and Green (2004) argued that the positive relationship between past performance and the mutual fund flows is a result from investors that search for skilled managers which can be perceived by superior returns. As a result, investors will deposit their capital to outperforming funds, and vice versa. Outside the U.S., Sawiki and Finn (2001) examined the performance and fund flow relation in Australia controlling for size and style of funds. The results are in line to the U.S. findings that investors use past performance for making decision. Other studies including Elton, Gruber and Busse (2004), Bollen (2007), and Huang, Wei and Yan (2001) also confirmed positive relation between fund flows and past performance. Nonetheless, these studies are in contrast to Warther (1995) who distinguished cash flows into expected and unexpected cash flows. He suggested that unexpected flows of mutual fund are negatively related to the past return. Thus, the first hypothesis is:

H_{01} : Past returns of funds have a relationship with flows of funds.

2.2 Firms specific factors

While outperforming funds attract more cash flows, fund characteristics are also likely to influence fund flows. Capon, Fitzsimons and Prince (1996) interviewed mutual fund investors and revealed that most of the U.S mutual fund investors are uninformed and still consider non-financial factors for their investment criteria. Sirri and Tufano (1998) found that consumers prefer small funds

with low fees and less risk. Sawicki and Finn (2002) examined the effects of fund size and age on the movement of fund flows in Australia. They show that small and young funds are more sensitive to past performance. Similarly, Bergstressers, Chalmers and Tufano (2009) found that broker funds focus on smaller and younger funds although they underperform direct funds. Bauer, Otten and Rad. (2006) found that New Zealand funds are exposed

to the fund size. Benson and Faff (2006) examined the relationship between mutual fund family characteristics and Australian fund flows. They confirm that family size and family age have a positive impact on mutual fund flows. Benson, Tang and Tutticci. (2008). Benson, Tang and Tutticci (2008) also confirmed that Australian fund flows

H₀₂: Fund size has a relationship with flow of funds.

H₀₃: Fund age has a relationship with flow of funds.

H₀₄: Fund family size has a relationship with flow of funds.

2.3 Smart Money Effect

Smart money effect is selectivity ability of investors in selecting superior funds. If investors are able to identify which funds will perform well in the next period, they will allocate their capital into those funds. Thus, smart money effect is indicated by the positive relationship between fund flows and the subsequent returns. Nevertheless, smart money effect is an evidence against efficiency market hypothesis because, in efficient market where past returns information is publicly available, expected returns will depend on the risk level of that particular investment. A number of studies investigated evidence in smart money effect. The first study that suggests evidence in smart money effect is Gruber (1996). He explored the reason why mutual fund industry is still predominant even though mutual fund investment does not generate superior returns to investors. He revealed that returns of new cash flows are relatively higher than average fund returns. Thus, he suggested this is a smart money effect in mutual funds. Zheng (1999) extended Gruber's work using a broader sample size. He confirmed the evidence in smart money effect. However, he argued that this phenomenon is a

are positively related to size, age and return of the fund family. Shu, Yeh and Yamada (2002) studied fund investor behavior in Taiwan and suggested that small individual investors buy large funds while wealthy investors prefer to buy small funds. Thus, the second to fourth hypotheses are:

short-lived and can be explained by fund characteristics.

In contrast, Sapp and Tiwari (2004) pointed out that smart money effect is explained by momentum phenomenon. Momentum phenomenon is a condition when there is a positive relation between past and current returns. Thus, returns are predictable and investor can employ this strategy in selecting funds in order to make superior returns. Sapp and Tiwari demonstrated that when the momentum strategy is controlled, the evidence of smart money effect is ceased to exist. Subsequently, they concluded the evidence in smart money effect because there is a momentum phenomenon in mutual fund returns. This means superior returns are not due to investors' selection ability but simply because they employ past returns information.

Nonetheless, Gharghori, Mudumba and Veeraraghavan (2007) confirmed the smart money effect in Australian mutual funds even when the momentum strategy is controlled. This is comparable to the study of Keswani and Stolin (2008) who also supported the evidence in smart money effect in the UK. Moreover, Keswani and Stolin also pointed out that this evidence is more robust for cash inflows rather than cash outflows.

In contrast, some studies found reverse evidence in smart money effect. Edelen (1999) found that fund flows are negatively related to returns in the subsequent period. He argued that this is due to the liquidity motivated trading. When funds receive large amount of cash inflows, fund managers are unable to adjust their portfolio immediately resulting to the large cash position in their portfolios. Subsequently, portfolio returns are lowered. This is comparable to the study of

Frazzini and Lamont (2008) who asserted that fund flows are negatively related to the future returns and suggested this to the dumb money effect. Nevertheless, Benson and Faff (2006) and Renneboog, Horst and Zhang (2011) found no relationship between flows and returns.

The previous studies showed mixed evidence in smart money effect. Subsequently, the fifth hypothesis is:

H₀₅: flow of funds has a relationship with fund performance in subsequent period.

3. Data and Methodology

3.1 Mutual fund sample selection

This study examined behavior of Thai equity funds. Data were obtained from the Association of Investment Management Companies (AIMC). AIMC is an organization which is responsible for supervising all asset management companies in Thailand as well as setting guidelines for reporting standards. This organization provides the most comprehensive data on mutual funds operating in Thailand. I collected data on Thai equity funds over the period 2002-2009. I included both surviving and terminated funds in the sample in order to avoid survivorship bias as pointed out by Brown et al. (1992) and Otten and Bams (2002). Subsequently, over the sample period, there were 494 equity funds in the initial sample. I excluded

125 closed-ended funds; 127 special funds; 12 funds which changed their investment policy over the study period; and 19 funds which operated less than 3 months; 64 funds which incomplete data. Thus, the sample size was narrowed down to 147 funds. The total number of 147 equity funds is made up to 122 general funds and 35 tax-benefit funds².

AIMC provides data on net asset values (NAV) as well as total asset values (TNA). Subsequently, annual returns and net flows for each fund are calculated as following equations.

² Thailand has two tax-benefit fund schemes called Retirement Mutual Fund (RMF) and Long-Term Mutual Fund (LTF). Both tax-benefit fund schemes give up to 15% income tax relief with some restriction requirements. RMF funds are offered in all investment policies and required minimum of 5,000 Baht (or three percent of annual income) for five years. Investors can only redeem the funds after the age of 55. LTF funds are available only as equity funds. It does not require a continuous investment but it can only be redeemed after five years of the investment.

$$R_{p,t} = \ln \left(\frac{NAV_{p,t}}{NAV_{p,t-1}} \right) \quad (1)$$

Where: $R_{p,t}$ = Return of fund p in period t
 $NAV_{p,t}$ = Net asset value of fund p in period t
 $NAV_{p,t-1}$ = Net asset value of fund p in period t-1

$$NCF_{p,t} = \frac{TNA_{p,t} - [TNA_{p,t-1} \times (1 + R_{p,t})]}{TNA_{p,t-1}} \quad (2)$$

Where: $NCF_{p,t}$ = Net flows of fund p in period t
 $TNA_{p,t}$ = Total asset value of fund p in period t
 $TNA_{p,t-1}$ = Total asset value of fund p in period t-1
 $R_{p,t}$ = Return of fund p in period t

Table 1 Fund characteristics 2002-2009

	N	Size	Return	NCF
Panel A: All funds				
All sample	147	464.08 (634.89)	0.098 (0.382)	53.58 (185.33)
Panel B: Classified by Fund type				
General	112	477.83 (638.13)	0.099 (0.114)	14.81 (113.42)
Tax-benefit	35	420.10 (631.57)	0.112 (0.084)	177.66 (291.03)

Notes: Standard deviations are in parentheses ().

Table 1 provides characteristics of mutual funds in the sample. Panel A provides descriptive statistics of all equity funds in the sample. There were 147 funds in the sample. The average return (Return) is well below 10 percent. Average size (Size) and net flows (NCF) are 464.08 million baht and 53.58 million baht, respectively. Nevertheless, standard deviations for fund size, returns and net cash flows are relatively high. Panel B provides descriptive statistics of equity funds which are classified by tax-benefit plan. It shows that, although

the size of tax-benefit funds is relatively smaller, it generates higher returns as well as higher flows over the study period.

3.2 Methodology

This study employs multidimensional analysis (panel regression) to examine characteristics of fund flows and smart money effect in Thai equity funds. In order to investigate fund flows behavior, I include both financial and non-financial factors in my analysis. The estimation model is:

$$NCF_{p,t} = \alpha_{p0} + \beta_{1p}RTN_{p,t-1} + \beta_{2p}RTN_{p,t-1} * DNEGRTN_{p,t-1} + \beta_{3p}NCF_{p,t-1} + \beta_{4p}TNA_{p,t} + \beta_{5p}AGE_{p,t} + \beta_{6p}DFAM_{p,t} + \epsilon_{p,t} \quad (3)$$

Where: $NCF_{p,t}$ = Net flows of fund p in period t

$RTN_{p,t-1}$ = Returns of fund p in period t-1

$DNEGRTN_{p,t-1}$ = A dummy variable corresponding for negative return; equal to one if RTN_{t-1} is negative, otherwise=0

$TNA_{p,t}$ = Total asset values of fund p in period t

$AGE_{p,t}$ = Age of fund p since its inception date in period t

$DFAM_{p,t}$ = A dummy variable corresponding to family size; equal to 1 if fund p belongs to the five largest management companies, otherwise=0

We investigate smart money effect controlling for momentum phenomenon as pointed out by Sapp and Tiwari (2004). The estimation model is:

$$RTN_{p,t} = \alpha_{p0} + \beta_{1p}NCF_{p,t-1} + \beta_{2p}TNA_{p,t} + \beta_{3p}NCF_{p,t-1} * TNA_{p,t-1} + RTN_{p,t-1} + \epsilon_{p,t} \quad (4)$$

Where: $RTN_{p,t}$ = Returns of fund p in period t

$FLWS_{p,t-1}$ = Net flows of fund p in period t-1

$SIZE_{p,t}$ = Total asset values of fund p in period t

This study estimates fund returns ($RTN_{p,t}$) in two methods, raw returns and risk adjusted returns measures. Raw return measure is the difference in the natural logarithms of NAV at the end of the year and the previous year as explained in

Equation 1. Risk adjusted return measure is the difference between actual fund return and the return explained by the market model. The mathematics model for risk adjusted return is in Equation 5 below.

$$E(R_{p,t}) - RF_t = \alpha_p + \beta_p [E(RM_t) - RF_t] + \epsilon_{p,t} \quad (5)$$

Where: α_p = Risk adjusted return of portfolio p.

$E(R_{p,t})$ = Expected return on portfolio p at time t

RF_t = Risk-free rate of return at time t

β_p = Systematic risk for portfolio p

$E(RM_t)$ = Expected return on the market portfolio at time t

$\epsilon_{p,t}$ = Random component of the portfolio return at time t

Table 2 reports descriptive statistics and correlation matrix of variables used in the study. NCF is the net flows estimated using Equation 2. RTN(1) is the average raw returns of funds estimated using Equation 1. RTN(2) is the risk adjusted returns

estimated using Equation 5. TNA refers to funds' the total asset value (TNA). AGE is age of mutual fund since the operation (in week). DFAM is a dummy variable which equals to 1 if it operates under five largest management companies. Panel

A shows descriptive statistics. Over the study period, the average raw returns of funds were 9.8% per annum. However, when risk adjusted return measure is used; the positive return is diminished to zero percent suggesting that equity funds in the sample have no abnormal return. The average net flows exceed 50 million bath despite high variation in them. Mutual fund size also has a relatively high variation form three million to over 4,200 million

baht. The average DFAM is 0.365 indicating that most funds are operated in small management companies.

Panel B presents the correlation between our variables. The high correlation is only found between the raw returns and risk adjusted return which equals to 0.507. Other than this, the correlations are relatively small. Thus, the estimation is less likely to suffer from multicollinearity.

Table 2 Descriptive Statistics

	NCF	RTN(1)	RTN(2)	TNA	AGE	DFAM
Panel A: Descriptive Statistics						
Mean	53.58	0.098	0.000	464.08	97.144	0.365
Std. Dev.	185.33	0.382	0.003	634.89	63.620	0.482
Min	-268.30	-3.568	-0.062	3.43	3.000	0.000
Max	1,392.05	1.438	0.006	4,215.06	262.000	1.000
Panel B: Correlation Matrix						
	NCF	RTN(1)	RTN(2)	TNA	AGE	DFAM
NCF	1.000					
RTN(1)	0.023	1.000				
RTN(2)	0.044	0.507	1.000			
TNA	-0.308	0.159	0.075	1.000		
AGE	-0.037	0.043	-0.066	-0.094	1.000	
DFAM	0.028	-0.037	-0.028	0.185	0.122	1.000

4. Empirical Results

4.1 Determinants of Cash Flows

In order to investigate mutual fund flow behavior, we estimate determinants of fund flows as explained in Equation 3 using panel regression estimation. We regress flow of funds on past year returns (RTN(t-1)), fund size (TNA), fund longevity (AGE), and Size of fund management company (DFAM). The variable RTN(t-1)*DNEG(t-1) is past year return multiplied by a dummy variable that is equal

to one if the past year return is negative, otherwise zero. This allows for difference in sensitivities to positive or negative returns. Therefore, β_1 captures the sensitivity of flows to positive return in previous year while β_2 capture sensitivity of flows to negative return in previous year. I also include past year flows (NCF(t-1)) in my estimation in order to control for autocorrelation. Table 3 shows results of fund flow behavior. Panel A presents results estimated using raw return. The results show that

fund flows are statistically positively related to the past year return and size of management companies. In contrast, size and age of funds are negatively related to fund flows. Model 2, in column 3, includes a variable $RTN(t-1)*DNeg(t-1)$ in order to investigate positive and negative returns separately. I find that that, over the study period, negative returns are insignificantly related to fund flows.

Panel B, column 4-5, estimates results using risk adjusted returns. The results are consistent to Panel A in that fund flows are positively related to past returns and company size. In contrast, fund flows are negatively related to fund age and fund size.

Thus, the results suggest that that equity fund investors employ past performance as their investment strategy. Nevertheless, they rely more on raw returns measure than sophisticated technique. In addition, based on risk adjusted return measure, results show that investors disproportionately move their money to funds that perform well in the past. The results are

consistent to previous literature that there is a convex relationship between past performance and flows of funds. Investors are more sensitive to positive past returns than negative past returns (Del Guercio & Tkac, 2002; Lynch & Musto, 2003; Berk & Green, 2004; Elton, Gruber and Busse 2004; Bollen, 2007; Huang, Wei and Yan 2007)

In addition, I find that investors also employ fund characteristics as their investment criteria. Investors favor small and young funds. These findings are consistent to Sawicki (2001) and Sawicki and Finn (2002) that small and young funds receive greater amount of cash flows. In contrast, they invest in funds which operate in a large management company. This phenomenon is explained in Sirri and Tuffano (1998) that consumers are likely to buy funds that are easy to identify. Large management companies are able to pay more marketing expenses and enjoy economy of scale in advertising costs. Thus, this makes investors reach their information easier than those small management companies.

Table 3 Panel analysis for cash flow behavior

	Panel A: Raw Return		Panel B: Risk Adjusted	
	[1]	[2]	[1]	[2]
RTN(t-1)	1.20E+08*** (3.51)	1.10E+08** (2.55)	6.10E+10** (2.42)	1.40E+10** (2.31)
NCF (t-1)	-0.00703 (-0.08)	-0.00643 (-0.08)	-0.0224 (-0.26)	-0.0181 (-0.21)
TNA	-0.208*** (-3.16)	-0.208*** (-3.15)	-0.203*** (-3.09)	-0.197*** (-2.99)
AGE	-1.10E+06*** (-3.4)	-1.00E+06*** (-3.42)	-830000** (-2.37)	-820000** (-2.33)
DFAM	1.30E+08*** (2.85)	1.30E+08*** (2.84)	1.10E+08** (2.44)	1.10E+08** (2.38)

Table 3 Panel analysis for cash flow behavior (continued)

	Panel A: Raw Return		Panel B: Risk Adjusted	
	[1]	[2]	[1]	[2]
$RTN_{(t-1)} * DNEG_{(t-1)}$		1.00E+08 (0.97)		-6.10E+10** (-2.27)
Constant	1.90E+08*** (3.52)	1.90E+08*** (3.52)	1.30E+08** (2.12)	1.70E+08*** (2.85)
Adjusted R ²	0.12	0.12	0.12	0.11

Notes: * Significant at a 10% level. ** Significant at a 5% level. *** Significant at a 1% level.

T-statistics for estimated coefficients are in parentheses ().

4.2 Smart Money Effect

While investors employ past returns as a primary factor for making decision, it is also important to understand whether funds that receive great amount of flows perform well in the future. Smart money effect refers to investors' ability to select outperforming funds. In order to investigate smart money effect, I estimate factors that explain fund returns as shown in Equation 4 using panel regression estimation. Subsequently, I regress fund returns on previous year net flows (NCF (t-1)), and control for fund size (TNA). In addition, the previous results show that small funds receive greater amount of flows. Thus, I include an interaction variable between size and fund flows in my estimation. Moreover, Sapp and Tiwari (2004) argue that smart money effect can be explained by momentum phenomenon in that investors simply chase past outperforming funds. Thus, in order to control for this

phenomenon, I also include lagged year return variable in my estimation.

Results are presented in Table 4. Panel A gives results when returns are estimated using raw return. Past year net flows are insignificantly related to raw return of funds. Thus, there is no evidence of smart money effect over the study period. Nonetheless, size is negatively related to fund performance indicating that small funds provide higher returns. I also find inverse evidence in momentum phenomenon in mutual fund performance. In addition, I also use risk adjusted return as a dependent variable as shown in Panel B (Column 4-5). Similarly, I find no evidence in momentum effect. Nonetheless, I find evidence in momentum phenomenon. Subsequently, I confirm no smart money effect in Thai equity fund investors. These findings are inconsistent to many previous studies (Gruber, 1996; Edelen, 1999; Benson & Faff, 2006) although this is comparable to a study by Sapp and Tiwari (2004).

Table 4 Panel analysis for smart money effect

	Panel A: Raw Return		Panel B: Risk Adjusted	
	[1]	[2]	[1]	[2]
NCF (t-1)	1.5E-11 (1.02)	1.9E-11 (1.28)	2.2E-13 (1.08)	1.2E-13 (0.66)
TNA	-6.7E-11*** (-4.2)	-6.2E-11*** (-3.84)	-2.8E-13* (-1.91)	-2.8E-13** (-2.01)
NCF _(t-1) *TNA	-2E-21 (-0.4)	-1.2E-21 (-0.24)	7.2E-23** (2.55)	6.8E-23** (2.37)
RTN (t-1)		-0.0701* (-1.91)		0.243*** (3.82)
Constant	0.186*** (10.91)	0.19*** (11.61)	-0.00021 (-1.33)	-0.00014 (-0.8)
Adjusted R ²	0.02	0.02	0.01	0.01

Notes: * Significant at a 10% level. ** Significant at a 5% level. *** Significant at a 1% level.

T-statistics for estimated coefficients are in parentheses ().

4.3 General and Tax-Benefit Funds

Tax-benefit funds are a unique fund style in Thailand. They are different from general funds in terms of their restrictions which require a longer holding period than general funds. Thus, tax-benefit funds investors can be viewed as long-term investors. They are expected to be more passive than those general fund investors. As a result, selection criteria for tax-benefit fund investors can be different from those general fund investors. Subsequently, I classify funds into two groups and re-estimate the model. Table 5 presents results for cash flow behavior. Panel A shows estimation results when raw returns are employed. Results on general funds and tax-benefit funds are presented in column 2 and 3, respectively. We find that past raw returns are statistically significant in both general and tax-benefit funds although investors give more weight on past positive returns. This confirms that financial

factor is the main determinant in explaining fund flows. In addition, fund size is also negatively related to net cash flows. Nevertheless, the results show that tax-benefit funds investors also employ past flows information as well as fund longevity in making their decision. Funds with high net flows attract more investors and will also receive high flows in the subsequent period. Panel B confirms results in Panel A by employing risk adjusted return method. Similar to findings in Panel A, fund flows are sensitive to past performance and fund size.

Table 6 presents results in smart money effect comparing between general and tax-benefit funds. I find no evidence in smart money effect for both general and tax-benefit funds. Nonetheless, small general funds perform better than large funds. I also find evidence in momentum phenomenon although the results are yet inconclusive.

Table 5 Panel analysis for fund flow behavior across fund characteristics

	Panel A: Raw Return		Panel B: Risk Adjusted	
	General	Tax-benefit	General	Tax-benefit
RTN(t-1)	1.60E+08*** (3.6)	-8.80E+07** (-2.28)	8.60E+10*** (3.05)	-1.30E+10 (-0.5)
RTN _(t-1) *DNEG _(t-1)	-3.20E+07 (-0.29)	4.80E+08 (0.67)	-8.80E+10*** (-2.93)	-1.40E+11** (-2.28)
NCF (t-1)	-0.0506 (-0.74)	1.82*** (3.96)	-0.0562 (-0.82)	1.75** (2.1)
TNA	-0.233*** (-3.76)	-0.684*** (-3.22)	-0.233*** (-3.78)	-0.653* (-1.73)
AGE	-2.50E+05 (-0.66)	2.20E+06 * (1.87)	-97756 (-0.24)	3.20E+06* (1.95)
DFAM	8.20E+07* (1.65)	1.20E+08 (1.61)	7.90E+07 (1.6)	1.40E+08* (1.73)
Constant	7.80E+07 (1.16)	-4.60E+07 (-0.67)	2.20E+07 (0.33)	-1.80E+08* (-1.93)
Adjusted R ²	0.16	0.547	0.169	0.515

Notes: ** Significant at a 5% level. *** Significant at a 1% level. * Significant at a 10% level.

T-statistics for estimated coefficients are in parentheses ().

Table 6 Panel analysis for smart money effect across fund characteristics

	Panel A: Raw Return		Panel B: Risk Adjusted	
	General	Tax-benefit	General	Tax-benefit
NCF (t-1)	1.90E-11 (1.16)	-5.50E-11 (-0.49)	9.20E-15 (0.05)	4.30E-13 (0.44)
TNA	-6.70E-11*** (-3.42)	2.20E-12 (0.04)	-3.20E-13** (-2.07)	-2.70E-13 (-0.58)
NCF(t-1)*TNA	-1.90E-21 (-0.31)	-1.90E-20 (-1.41)	4.00E-23 (1.13)	2.00E-23 (0.16)
RTN (t-1)	-0.0568 (-1.4)	-0.227*** (-5.3)	0.248*** (3.7)	0.0561 (0.5)
Constant	0.193*** (10.5)	0.184*** (4.69)	-0.00019 (-1)	0.0005** (2.53)
Adjusted R ²	0.02	0.07	0.04	0.01

Notes: * Significant at a 10% level. ** Significant at a 5% level. *** Significant at a 1% level.

T-statistics for estimated coefficients are in parentheses ().

5. Robustness of results

In order to test the robustness of the results, we use fixed effects regression method to estimate the results. The fixed effect model is also called Squares Dummy Variable (LSDV) which assumes unobserved heterogeneity which correlated with time³. Results are comparable to Table 3 in that funds with high past returns, funds with high past flows and small funds will receive greater fund flows in subsequent period.

In contrast to evidence in Table 4, using fixed effect regression, we find that fund flows are positively related to performance in subsequent period indicating to the smart money effect even when fund characteristics and momentum effect are controlled. Thus, I conclude that evidence on smart money effect is sensitive to the methodology used.

6. Conclusions

The importance of mutual fund investment in Thailand has increased over time. Unlike those developed countries, in Thailand, mutual funds industry is still lagged behind even though their popularity has escalated dramatically over the past a decade. There are not many studies concerning Thai mutual funds and, therefore, we still know very little how Thai investors select funds. This is because Thai mutual fund investors are not well-informed and they still have limited information for making their decisions.

Subsequently, this study aims to examine fund flows behavior of equity funds in the Thai context as an indicator of investors' decision strategy. Besides, I investigate selection ability of investors or a so-called 'smart money effect' using equity funds in Thailand from 2002 to 2009 and

employing panel regression analysis to detangle the research questions.

The findings show that, first, flows of Thai equity funds are determined by both financial and non-financial factors. Fund flows have positive relationship with past year returns and size of its management company. Nonetheless, it is more sensitive to positive returns than negative returns. In contrast, fund flows have negative relationship with size and age indicating that small and young funds are likely to receive greater amount of flows.

Second, equity funds which receive high amount of flows do not generate high performance in the subsequent period even when momentum phenomenon is controlled. Thus, there is no evidence in smart money effect. Nonetheless, when the fixed effect regression is employed, the coefficients become statistically significant. Thus, evidence on smart money effect is sensitive to the measures used in the analysis. Fund size has negative relationship with fund performance.

Third, general and tax-benefit funds show slightly different in results. General fund investors rely more on past performance in making their decision compared to tax-benefit fund investors. In contrast, tax-benefit fund investors are likely to focus more on fund characteristics and past year net cash flows. This evidence can be viewed as the herding behavior in tax-benefit fund investors.

Thus, the findings reveal that Thai mutual fund investors employ financial information as a main selection criterion. They select fund based on its past performance. However, non-financial factors are also considered. Thai mutual fund investors favor small and young funds as well as funds that operate in large management companies. In addition, investment criteria for tax-benefit funds investors are different to those general funds investors. General fund investors

³ Tables are not shown but available upon request.

rely more on financial information while tax-benefit fund investors are more passive and employ both financial and non-financial information.

Consequently, these results show both similarities and contradictions to the literature. The similarity is that Thai equity fund investors employ both financial and fund specifics in making decision. Nevertheless, past performance is the primary factor in making decision even though fund flows are more sensitive to positive previous returns than negative previous returns. The contradiction is that we find no evidence in smart money effect, or, at least, this evidence is yet inconclusive. Subsequently, these contradictions call for further study, in order to find out what causes them. In addition, it is clearly seen that the results of the between general fund category contrasts with those of the tax-benefit funds. This implies differences in the characteristics of these two fund investors, which should also be further investigated.

References

- Bauer, R., Otten, R., & Rad, A. T. (2006). New Zealand mutual funds: Measuring performance and persistence in performance. *Accounting and Finance, 46*(3), 347-363.
- Benson, K. L., & Faff, R. W. (2006). Conditional performance evaluation and the relevance of money flows for Australian international equity funds. *Pacific-Basin Finance Journal, 14*(3), 231-249.
- Benson, K. L., Tang C., & Tutticci L. (2008). The relevance of family characteristics to individual fund flows. *Australian Journal of Management, 32*(3), 419-443.
- Bergstresser, D., Chalmers, J. M. R., & Tufano, P. (2009). Assessing the costs and benefits of brokers in the mutual fund industry. *The Review of Financial Studies, 22*(10), 4129-4156.
- Berk, J. B., & Green, R. C. (2004). Mutual fund flows and performance in rational markets. *Journal of Political Economy, 112*(6), 1269-1295.
- Bollen, N. P. B. (2007). Mutual fund attributes and investor behavior. *Journal of Financial and Quantitative Analysis, 42*(3), 683-708.
- Brown, S. J., Goetzmann, W., Ibbotson, R. G., & Ross, S. A. (1992). Survivorship bias in performance studies. *The Review of Financial Studies, 5*(4), 553-580.
- Capon, N., Fitzsimons, G. J., & Prince, R. A. (1996). An individual level analysis of the mutual fund investment decision. *Journal of Financial Services Research, 10*(1), 59-82.
- Del Guercio, D., & Tkac, P. A. (2002). The determinants of the flow of funds of managed portfolios: Mutual funds vs. Pension funds. *Journal of Financial and Quantitative Analysis, 37*(4), 523-557.
- Edelen, R. M. (1999). Investor flows and the assessed performance of open-end mutual funds. *Journal of Financial Economics, 53*(3), 439.
- Elton, E. J., Gruber, M. J., & Busse, J. A. (2004). Are investors rational? Choices among index funds. *Journal of Finance, 59*(1), 261-288.
- Frazzini, A., & Lamont, O. A. (2008). Dumb money: Mutual fund flows and the cross section of stock returns. *Journal of Financial Economics, 88*(2), 299-322.
- Gaspar, J. M., Massa, M., & Matos, P. (2006). Favoritism in mutual fund families? Evidence on strategic cross-fund subsidization. *Journal of Finance, 61*(1), 73-104.
- Gharghori, P., Mudumba, S., & Veeraraghavan, M. (2007). How smart is money? An investigation into investor behaviour in the Australian managed fund industry. *Pacific-Basin Finance Journal, 15*(5), 494-513.

- Gruber, M. J. (1996). Another puzzle: The growth in actively managed mutual funds. *Journal of Finance*, 51(3), 783-810.
- Huang, J., Wei, K. D., & Yan, H. (2007). Participation costs and the sensitivity of fund flows to past performance. *Journal of Finance*, 62(3), 1273-1311.
- Investment Company Institute. (2014). Mutual fund fact book. Retrieved February 2, 2014, from http://www.ici.org/research/stats/worldwide/w_w_12_13
- Ippolito, R. A. (1992). Consumer reaction to measures of poor quality: Evidence from the mutual fund industry. *Journal of Law and Economics*, 35(1), 45-70.
- Keswani, A., & Stolin, D. (2008). Which money is smart? Mutual fund buys and sells of individual and institutional investors. *Journal of Finance*, 63(1), 85-118.
- Lynch, A. W., & Musto, D. K. (2003). How investors interpret past fund returns. *Journal of Finance*, 58(5), 2033-2058.
- Otten, R., & Bams, D. (2002). European mutual fund performance. *European Financial Management*, 8(1), 75-101.
- Renneboog, L., Horst J. T., & Zhang C. (2011). Is ethical money financially smart? Nonfinancial attributes and money flows of socially responsible investment funds. *Journal of Financial Intermediation*, 20(4), 562-588.
- Sapp, T., & Tiwari, A. (2004). Does stock return momentum explain the smart money effect? *Journal of Finance*, 59(6), 2605-2622.
- Sawicki, J. (2001). Investors' differential response to managed fund performance. *Journal of Financial Research*, 24(3), 367-384.
- Sawicki, J., & Finn, F. (2002). Smart money and small funds. *Journal of Business Finance and Accounting*, 29(5-6), 825-846.
- Shu, P. G., Yeh, Y. H., & Yamada, T. (2002). The behavior of Taiwan mutual fund investor-performance and fund flows. *Pacific-Basin Finance Journal*, 10(5), 583-600.
- Sirri, E. R., & Tufano, P. (1998). Costly search and mutual fund flows. *Journal of Finance*, 53(5), 1589-1622.
- Warther, V. A. (1995). Aggregate mutual fund flows and security returns. *Journal of Financial Economics*, 39(2-3), 209-235.
- Zheng, L. (1999). Is money smart? A study of mutual fund investors' fund selection ability. *Journal of Finance*, 54(3), 901-933.



Dr. Teerapan Ungphakorn received her doctoral degree in Finance from the University of Birmingham, UK; her Master degree in Financial Management from the University of East London, UK; and her Bachelor degree in Business Administration in Finance from Khon Kaen University. At present, she is a full-time lecturer in Financial Management major, Mahasarakham Business School, Mahasarakham University. Her publications include Stock returns and liquidity premiums in emerging markets (co-author with Sounay Pothisane; and Liquidity augmented performance evaluation of Thai's mutual funds (co-author with Ranko Jelic and Michael Theobald).