CHAPTER IV

RESULTS

This chapter displays the results of the study on Investor behavior in Thai Equity Funds using the methodologies explained in chapter 3. The organization of this chapter is divided into five key findings which consists of 1.Results on investor behavior on fund flows, 2.The returns and aftermath of flows, 3.Performance of new money portfolios, 4. Investor timing of mutual fund investments, and 5.Equity funds as market sentiment indicator Empirical results are summarized into tables attached onto each relevant section.

Table I shows the basic statistics of Thai equity funds that are open-ended funds with no special restrictions such as LTF, RMF, and industry specific funds, that were in operation during the observation period June 2000 through August 2004. This is the dataset used for all observations. Monthly returns and monthly flows of the entire fund industry is displayed, and are calculated in two ways. First is the equal-weighted average. It is calculated by averaging the monthly returns and monthly flows of all funds in a given month, then annualizing the monthly returns thoughout the entire given year. Second is the value-weighed average. It is calculated by weighting the returns and monthly flows by the total net assets of each fund in a given month period, then annualizing the monthly returns thoughout the entire given year.

Data shows that money flows into equity funds at a negative relationship with short-term interest rates (14-day REPO rate of The Bank of Thailand) or that lower interest rates causes money to shift into equities.

4.1 Investor behavior observed on fund flows

Among 98 equity funds in Thailand, investors have different views, different preferences, different investment appetites according to each fund's characteristics. Investors react to specific information they have on a certain fund by buying or selling units of that fund, creating fund flows in and out of these open-end funds. These fund flows when measured and compared with fund characteristics, can determine what causes investors to make their movements.

Table I
Equity Fund Basic Statistics

Basic statistics of all open-end, non-industry specific, non-special purpose, Thai equity funds for individual investors existing during June 2000 to August 2004 are presented. Data, 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 while weights are 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 asset weighted average and equal-weighted average. Panel C shows the basic statistics of money flows on both total net asset weighted average and equal-weighted average. Panel D shows the relationships that changes in interest rates and market returns have on aggregate fund flow towards equity funds. The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values.

Panel A. Summary statistics for equity fund universe

Year	Number of funds	Funds created	Funds closed
2000*	82	0	0
2001	85	3	2
2002	85	2	2
2003	89	4	7
2004**	87	6	3
By August 31, 2004 status:			
Funds in operations	=	84	
Funds closed	=	14	
All funds	=	98	

*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*	-33.13%	-30.14%	-28.13%
2001	11.84%	9.40%	8.77%
2002	15.70%	26.05%	28.89%
2003	114.30%	109.42%	108.18%
2004**	-27.14%	-17.48%	-17.79%

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

Panel C. Basic statistics of flows

Year	TNA-Avg money flows (% per year)	EW-Avg money flows (% per year)
2000*	-11.64%	-7.89%
2001	-7.28%	-6.28%
2002	-8.32%	-11.37%
2003	77.89%	19.29%
2004**	3.72%	-1.03%

*September 2000 to December 2000
** January 2004 to August 2004
Note: Yearly money flow of funds is calculated from annualizing the average monthly money flow.

Table I - continued

Panel D. Relationship of aggregate flows to equity funds effected by market returns and interest rates	
Independent Variable	**Coefficient**
Intercept	0.109
	(0.001)***
Market Return	0.124
	(0.161)
14-day REPO interest rate	-67.177
	(0.002)***

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

4.1.1 Investor reaction to past return

The first characteristic is the most questioned characteristic which is whether investors select funds to invest based on past returns of funds. As table II shows, the relationship of fund flows cannot be explained by the performance of fund returns in the previous period t-1 but can be explained by the performance of fund returns in longer lagged periods of t-2 and t-3. This can be explained from the fact that perhaps a single month's return is not enough to convince investors to invest based on past performance. Also, last month's fund performance is not information that would quickly spread to all investors. It generally takes longer time for prior fund performance to be advertised and become widely aware by the public.

Results show a negative relationship between flows and past returns of months t-2 and t-3. This explains that either investors do not prefer to invest in funds that just had a good run as their holdings now contain stocks that have enjoyed superior returns and now have limited upside, or that investors who were originally holding these funds are now selling their units to realize the profits made by superior performance in the past couple of months.

4.1.2 Investor reaction to past abnormal return

More sophisticated investors are aware that raw returns do not measure skill of fund managers as these manager might be loading up in certain stocks that are more sentitive to certain conditions under the CAPM 1-factor model, the Fama-French 3-factor model, and the Carhart 4-factor model. So alpha from these models are tested as the

abnormal returns that each manager generates during each month. Results show that investors do not base their investment decisions on any alpha or abnormal return.

Table II

The Relationship of Fund Flows to Past Characteristics in Thai Equity Funds

The relationship between money flows in and out of Thai equity fund and its relationships with independent varaibles as the fund's raw returns, which is defined $(NAV_{i,t} - NAV_{i,t-1})/NAV_{i,t-1}$, the fund's management fees (including trustee fees and registerant fees), the standard deviation of the funds weekly returns for the past 12 weeks, and the Log of the funds total net asset size of the prior month. The observation period is from September 2000 to August 2004. Besides t-1, relationships with characteristics of further lagged periods of t-2 and t-3 are examined under its respective columns. The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values.

Independent Variable	t-1	t-2	t-3
Intercept	-0.013	-0.014	-0.013
	(0.001)***	(0.000)***	(0.000)***
Raw Returns	-0.001	-0.003	-0.004
	(0.596)	(0.021)**	(0.004)***
Management Fees	-5.359	-5.486	-5.712
	(0.000)***	(0.000)***	(0.000)***
Std. dev. of weekly returns	-0.002	-0.009	-0.012
	(0.479)	(0.004)***	(0.000)***
Log lag TNA	0.002	0.002	0.002
	(0.000)***	(0.000)***	(0.000)***
Adjusted R^2	8.50%	9.04%	9.56%
Number of observations	3908	3810	3712

Flow is further compared to Alpha[1] of the previous calendar year along with fund characteristics. Results show that Flow has no significant reaction to previous year's alpha for the CAPM, Fama-French, and Carhart models.

[1]Alpha(α) or abnormal return is estimated on 12-month calendar year intervals. α for the CAPM 1 factor model is estimated from $(Return_t = \alpha + \beta(RMRF_t) + e)$. α for the Fama-French 3 factor model is estimated from $(Return_t = \alpha + \beta_{RMRF}(RMRF_t) + \beta_{HML}(HML_t) + \beta_{SMB}(SMB_t) + e)$. α for the Carhart 4 factor model is estimated from $(Return_t = \alpha + \beta_{RMRF}(RMRF_t) + \beta_{HML}(HML_t) + \beta_{SMB}(SMB_t) + {}_{bPR1YR}(PR1YR_t) + e)$.

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

4.1.3 Investor reaction to management fees

The management fees row in Table II show significance that money would flow in the opposite direction with expense fees. These fees include management fees and trustee fees that investors have to pay and would be deducted from the fund's NAV. Investors simply opt for funds with lower expense ratios as they do not see the

superiority in premium funds that charge higher management fees, so they would rather save costs since they have an indifferent on estimating fund performance.

4.1.4 Investor reaction to fund size

Results from the Log lag TNA row in Table II show that size does matter. Investors prefer large funds rather than small funds as large funds are generally more recognized by investors. They would feel more secure and have more confidence in putting money in a large reliable fund that many other investors also put money in, rather than try a smaller fund that is not as popular.

4.1.5 Investor reaction to fund riskiness

Fund riskiness or smoothness returns is another measure that funds often use as a marketing tool as they believe that investors dislikes riskiness and prefers funds that are less volatile. Results from table II when measured with the standard deviations of weekly returns for lagged period t-1 show no significance in reaction to riskiness. However, when measured against standard deviations of weekly returns for lagged periods t-2 and t-3 show a significance that investors avoid investing in funds with more volatile returns and prefer to invest in smoother and less risky funds.

The fund managers' assumptions are indeed correct that investors smooth returns and less risky funds.

4.1.6 Performance of the whole fund company

When tested whether investors care about the performance of other funds under the same fund company or looking at the performance at the fund company level, results as in Table III show no significance both when weighted equally among funds under the management company or weighted by TNA of each fund. The results are inline with results when looking at the individual fund performance level.

Table III
The Relationship of Fund Flows to Past Characteristics in Thai Equity Funds and Performance of the Asset Management Companies

The relationship between money flows in and out of Thai equity fund and its relationships with independent varaibles as the raw returns from funds under the particular asset management company, which is measured $(NAV_{i,t} - NAV_{i,t-1})/NAV_{i,t-1}$ for each fund then weighted to calculate returns at the company level, the fund's management fees (including trustee fees and registerant fees), the standard deviation of the funds weekly returns for the past 12 weeks, and the Log of the funds total net asset size of the prior month. Panel A weights the returns equally among funds in each asset management company. Panel B weights the returns by value or TNA of each fund in the asset management company. The observation period is from September 2000 to August 2004. The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values.

Panel A. Equally Weighted	
Independent Variable	**Coefficient**
Intercept	-0.013
	(0.001)***
Raw Returns	-0.002
	(0.282)
Management Fees	-5.351
	(0.000)***
Std. dev. of weekly returns	-0.002
	(0.451)
Log lag TNA	0.002
	(0.000)***
Adjusted R^2	8.46%
Number of observations	3908

Panel B. Weighted by TNA	
Independent Variable	**Coefficient**
Intercept	-0.013
	(0.001)***
Raw Returns	-0.002
	(0.240)
Management Fees	-5.348
	(0.000)***
Std. dev. of weekly returns	-0.002
	(0.445)
Log lag TNA	0.002
	(0.000)***
Adjusted R^2	8.46%
Number of observations	3908

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

4.1.7 Grouping returns into deciles

Measuring whether money flows into funds with superior performance by grouping funds into deciles show that the top two deciles (top 20%) of funds with the

highest net return in the previous month would receive noticeable positive inflow in the subsequent month. While funds in the bottom decile (bottom 10%) with the lowest net retun in the previous month would suffer fund outflow in the subsequent month. Results are shown in Table IV.

In the normal data set of 98 funds, decile 2 (top 11-20%) outperformed the top decile (top 10%) but when examined into data, I found that a particular fund in decile 2 experienced a gigantic percentage wise inflow. Flows caused the fund to double in size during one month, then triple in size in the adjacent month. This caused the inflow of decile 2 to be superior than decile 1. After this fund was removed from the dataset decile 2 would still show positive inflow but at a slightly less result when compared to the top decile.

This supports the assumption that money flows into funds with superior return and out of funds with inferior return. It also shows that a medium performing fund is more likely to experience outflow than inflow. It can be implied that investors are more likely to invest during the launch of the fund, then gradually cashing out on their investments.

4.1.8 Commercial banks attract funds

Results from Table V show that the dummy variable BANK show statistical significance of positive coefficient. This explains that commercial bank affiliated funds can attract investors far better than non-commercial bank affiliated funds. Give credit to the banks' large customer base and marketing channels that stand alone mutual fund management companies cannot match.

4.2 Returns aftermath to flows

4.2.1 Returns to net money flows

Results from Panel A of Table VI show that when using raw fund returns as the return variable, the is positive correlation to money flows. However, when comparing with the benchmarked return of raw returns less market return, results show no significance in correlation to money flows. The reason that raw return reacts with flows is that heavy inflows and outflows generally happen under certain market conditions which

raw returns yield a similar direction to market returns for all funds. A market benchmark is needed to distinguish funds that outperform or underperform. Which when compared with the benchmark, excess return cannot be explained by net flows of previous periods.

Table IV
Simple Test of Flow Portfolios Ranked by Past Return

10 Portfolios of funds are created by grouping funds by each fund's return for the previous month into decile rankings. A comparison between the top decile portfolio and the bottom decile portfolio is conducted, recalibrating monthly according to previous returns, to see whether funds that attract top money flow outperformed funds with bottom money flows. The observation period is from October 2000 to August 2004. The plain numbers are the avarage monthly fund flow as a percentage of previous month's TNA, while the number in parentheses below each return is its respective t-statistics. Panel A included all 98 funds while Panel B excluded one fund in particular which had a three-fold and a one-fold monthly inflow in two consecutive months.

Panel A. Included all funds

Portfolio	Average Monthly Flow	t-statistic
Decile 1 (Top Return $_{t-1}$)	2.6%	(2.64)***
Decile 2	5.4%	(1.30)
Decile 3	-0.7%	(0.66)
Decile 4	0.0%	(0.02)
Decile 5	0.1%	(0.22)
Decile 6	-0.6%	(1.51)
Decile 7	-0.4%	(2.06)**
Decile 8	-0.2%	(0.48)
Decile 9	-0.6%	(2.11)**
Decile 10 (Bottom Return $_{t-1}$)	-1.3%	(3.57)***
Decile 1 - Decile 10 (Top Return $_{t-1}$ - Bottom Return $_{t-1}$)	3.9%	(3.66)***

Panel B. Excluded Fund INGTEF

Portfolio	Average Monthly Flow	t-statistic
Decile 1 (Top Return $_{t-1}$)	2.4%	(2.67)***
Decile 2	2.1%	(1.40)
Decile 3	-0.9%	(0.66)
Decile 4	0.0%	(0.01)
Decile 5	-0.1%	(0.04)
Decile 6	-0.6%	(1.44)
Decile 7	-0.4%	(1.78)*
Decile 8	-0.2%	(0.61)
Decile 9	-0.7%	(2.54)**
Decile 10 (Bottom Return $_{t-1}$)	-1.3%	(3.25)***
Decile 1 - Decile 10 (Top Return $_{t-1}$ - Bottom Return $_{t-1}$)	3.7%	(3.69)***

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

Table V
Attractiveness of Funds that are Affiliates of Commercial Banks

A comparison between Thai mutual funds of seven asset management companies that are affiliates of a commercial bank and funds of remaining seven asset management companies that are not. The comparison is observed from money flows in and out of the funds and its relationships with independent varaibles as the fund's raw returns, which is defined $(NAV_{i,t} - NAV_{i,t-1})/NAV_{i,t-1}$, the fund's management fees (including trustee fees), the standard deviation of the funds weekly returns for the past 12 weeks, and the Log of the funds total net asset size of the prior month. A dummy variable of bank or non-bank is inserted. The observation period is from September 2000 to August 2004. The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values.

Independent Variable	Coefficient
Intercept	-0.016
	(0.000)***
Bank (Dummy Variable)	0.003
	(0.000)***
Raw Returns	-0.001
	(0.408)
Management Fees	-2.499
	(0.000)***
Std. dev. of weekly returns	0.001
	(0.711)
Log lag TNA	0.002
	(0.001)***
Adjusted R^2	10.50%
Number of observations	3282

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

4.2.2 Returns to gross money flows

As shown in Table VI Panel B, returns do not have a relationship with gross flows. Both raw return and benchmarked return of raw return less market return do not show relationship with gross flows. This implies that flows causing managers to adjust their cash positions is a minimal amount and do not effect the performance of funds. The load fees collected is also not significant enough to make the difference to NAV.

4.3 Performance of new money portfolios

This section shows the results of three different methods of measuring performance of new money portfolios which the performance of these new money portfolios is a model of whether following the flow of money can create abnormal return to investors.

Table VI

The Relationship of Returns to Past Characteristics in Thai Equity Funds

The relationship between monthly returns of Thai equity fund, measured by $(NAV_{i,t} - NAV_{i,t-1})/NAV_{i,t-1}$, and its relationships with independent varaibles as money flow in or out of the funds, the fund's management fees (including trustee fees and registerant fees), the standard deviation of the funds weekly returns for the past 12 weeks, and the Log of the funds total net asset size of the prior month. The observation period is from September 2000 to August 2004. Panel A considers only the net money flows into funds. Panel B separately considers both net money flows into funds as well as gross flows in and out of funds. The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values. Column Rp computes the underlying regression using raw fund return as monthly return.

Column Rp-Rm uses the market return as a benchmark to compare returns. Excess return to market (raw returns - market returns) is computed instead of raw returns.

Panel A. Net Money Flows

Independent Variable	Rp	Rp-Rm
Intercept	0.064	-0.015
	(0.002)***	(0.010)***
Net Money Flow	0.028	0.004
	(0.013)**	(0.457)
Management Fees	10.471	2.500
	(0.008)***	(0.155)
Std. dev. of weekly returns	-0.006	-0.029
	(0.858)	(0.021)**
Log lag TNA	-0.007	-0.002
	(0.003)***	(0.070)*
Number of observations	3908	3908

Panel B. Net Money Flows and Gross Money Flows

Independent Variable	Rp	Rp-Rm
Intercept	0.063	-0.017
	(0.003)***	(0.078)*
Net Money Flow	0.028	0.004
	(0.016)**	(0.419)
Gross Money Flow	0.000	0.000
	(0.598)	(0.357)
Management Fees	10.865	2.745
	(0.006)***	(0.121)
Std. dev. of weekly returns	-0.005	-0.029
	(0.871)	(0.022)*
Log lag TNA	-0.007	-0.002
	(0.004)***	(0.057)*
Number of observations	3907	3908

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

4.3.1 Estimated by simple grouping method

Simple grouping is a trading strategy that follows the flow of money by creating a zero investment portfolio, taking a long position in funds within the top decile (top 10%) of flows and taking a short position in funds within the bottom decile (bottom 10%) of flows. This strategy hedges out effects of market returns and measures only the excess returns between funds with inflows and funds with outflows. Results from Table VII show that the top decile has a higher return than that of the bottom decile and that the zero cost portfolio would enjoy positive return. The test was done both with flows of period t-1 and t-2 and both tests show similar results.

An observation is done by testing with flows during the same period as the return or period t. The objective of this is too see whether money flow causes the excess returns and results show negative returns caused by flows. This can be because when new money enters the funds, it remains as cash until the manager can allocate them to suitable securities. These inflows generally come in months with positive market returns, therefore, causing this new cash to miss out on market gains and causing the fund to underperform other funds with less cash inflows.

4.3.2 Estimated by Portfolio regression method : Zheng (1999)

The portfolio regession model groups the funds into portfolios first then running the regression. Results from Table VIII show that there is no significant difference in performance between the funds with positive flow and negative flows. Most portfolios do not show a significance in excess returns, alpha from the CAPM model and alpha from the Fama-French model.

4.3.3 Estimated by Fund regression method : Gruber (1996)

The fund regession model runs the regression of the whole market first then grouping the alphas into portfolios. The results are shown in Table IX. Alpha from both the CAPM model and Fama-French 3-factor model show similar results that positive cash flow portfolios have higher alpha than negative cash flow portfolios. Both value weighted and equally among portfolios show concurring results.

However, when dividing funds into upper and lower 50% of all flows, the results show a reversal that the lower 50% has a higher alpha than top 50%. But when thoughly examining the dataset, it was found that about 70% of the funds have negative cash flows so that about half of the upper 50% group is actually a negative flow fund. These middle flow funds caused the alphas of the upper 50% group to become lower.

Table VII

Performance of New Money Portfolios Estimated by Simple Grouping Method

10 Portfolios of funds are created by grouping funds by each fund's money flow into decile rankings. Three different money flow periods are examined one at a time at each observation. Flowt groups funds by the same month's money flows. $Flow_{t-1}$ groups funds by the previous month's money flows. $Flow_{t-2}$ groups funds by the previous month's money flows. A zero investment portfolio is created by taking a long position on the top decile portfolio and a short position on the bottom decile portfolio, recalibrating monthly according to money flow. The observation period is from October 2000 to August 2004. The plain numbers are the annualized return of each portfolio, while the number in parentheses below each return is its respective t-statistics.

	Flow Period Examined		
Portfolio	**t**	**t-1**	**t-2**
Decile 1 (Top Flow)	18.4%	25.0%	30.1%
	(1.75)*	(2.19)**	(2.19)**
Decile 2	18.5%	17.6%	11.0%
	(1.72)*	(1.94)*	(1.87)*
Decile 3	17.3%	25.0%	24.1%
	(1.90)*	(2.22)**	(2.20)**
Decile 4	19.9%	24.7%	27.0%
	(1.71)*	(2.22)**	(2.18)**
Decile 5	18.3%	24.3%	14.1%
	(1.82)*	(2.00)**	(1.34)
Decile 6	22.8%	19.4%	26.4%
	(2.06)**	(1.95)*	(2.01)**
Decile 7	20.0%	21.1%	24.8%
	(1.69)*	(2.03)**	(2.03)**
Decile 8	21.8%	27.4%	23.5%
	(1.82)*	(2.24)**	(1.94)*
Decile 9	25.2%	24.8%	29.2%
	(2.23)**	(2.23)**	(2.29)**
Decile 10 (Bottom Flow)	30.2%	22.0%	27.4%
	(2.38)**	(2.01)**	(2.11)**
Decile 1 - Decile 10	-11.8%	3.0%	2.7%
(Top Flow - Bottom Flow)	(0.54)	(0.14)	(0.12)

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

Table VIII
Performance of New Money Portfolios Estimated by Simple Excess Returns and Risk-Adjusted Returns Using the Portfolio Regression Approach

The excess return is calculated as R_{it} - R_{mt}, where R_{it} is the return of portfolio *i* between time *t* and time *t-1*, and R_{mt} is market return, the return on the value-weighted SET index. The *t*-statistic in parentheses tests the performance difference between the particular portfolio and the average mutual fund. The *t*-statistic in brackets test the performance difference between the particular portfolio and the market. $Alpha_1$ is calculated from the time series regression of portfolio returns on the single factor model: $R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + e_{pt}$. R_{pt} is the rate of return of portfolio *p* in month *t*, R_{ft} is the risk-free interest rate in month *t*, α_p is the abnormal return of the model, and β_p is the factor loading of the market factor. The *t*-statistics in parentheses tests whether $alpha_1$ is significantly different from zero. $Alpha_3$ is calculated from the time-series regression of the abnormal portfolio returns on the excess of market return and mimicking returns for the size (SMB) and book-to-market equity (HML) factors

: $R_{pt} - R_{ft} = \alpha_p + \beta_{pRMRF}RMRM_t + \beta_{pSMB}SMB_t + \beta_{pHML}HML_t + e_{pt}$. The excess market return, RMRF, is the difference between the return of the SET index and the 14-day REPO yields. SMB is the return on the mimicking portfolio for the common size factor in stock returns. HML is the return on the mimicking portfolio for the common book-to-market equity factor in stock returns. RMRF, SMB, and HML are constructed according to the descriptions in Fama and French (1993). bp is the factor loading of the corresponding factor. EW denotes equally weighted, and CW means that the individial fund returns are weighted by their corresponding new money amount. New Money = $TNA_{it} - TNA_{i,t-1} * (1+R_{it})$, where TNA is total net assets. For panel B, the *t*-statistics in parentheses test whether the performance difference between the positive and the negative portfolios is significantly different from zero. The observation period is from January 2001 to August 2004.

Panel A. Portfolio Performance			
Portfolios	**Excess Return**	**Alpha1**	**Alpha3**
1. Average fund	0.002	0.005	0.005
	(NA)	(1.33)	(1.09)
	[0.12]		
2. Weighted by total net asset	0.002	0.006	0.005
	(0.02)	(1.49)	(1.21)
	[0.15]		
3. Positive cash flow (EW)	-0.000	0.002	0.002
	(0.13)	(0.53)	(0.36)
	[0.00]		
4. Negative cash flow (EW)	0.002	0.005	0.004
	(0.02)	(1.75)*	(1.01)
	[0.15]		
5. Positive cash flow (CW)	0.003	0.004	0.003
	(0.49)	(0.94)	(0.67)
	[0.17]		
6. Negative cash flow (CW)	-0.007	-0.002	-0.006
	(0.54)	(-0.24)	(0.78)
	[0.39]		
7. Upper 50 percent of all cash flow (EW)	0.003	0.006	0.005
	(0.05)	(1.58)	(1.19)
	[0.18]		
8. Lower 50 percent of all cash flow (EW)	0.001	0.004	0.004
	(0.06)	(1.02)	(0.95)
	[0.07]		

Table VIII - continued

Panel B. Performance Difference between the Positive and Negative Portfolios	
	Excess Return Mean Difference
Portfolio 3 - Portfolio 4	-0.002
	(-1.22)
Portfolio 5 - Portfolio 6	0.010
	(0.56)
Portfolio 7 - Portfolio 8	0.002
	(0.11)

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

4.4 Investor timing of mutual fund investments

The observation of investor timing at the aggregate level of all mutual funds show that during the 48-month observation, passive hold investor outperform active buy-sell investors, as shown in Table X. While when observed in different time spans of rolling 24-month, results show that 19 out of 24 possible observation goes in favor of the hold investor. The buy-sell investor wins 5 out of the 24 observations. Ironicly the periods that buy-sell investors win is the periods from late 2001 to late 2003. It ends during the time that heavy inflows come in and market enjoys a massive return. But in normal conditions and in the longer run, the hold portfolio performs better.

This is just a preliminary observation on aggregate mutual fund investments and timing. It cannot measure the timing skills of a single or group of investors as trading data for each invididual is unavailable. There are difference in each investor's investment horizon and magnitude. Opposite directions of flows which are coming from a different individual can offset each other. In order to accurately study investor timing skill, specific information on individuals is necessary to compare returns and movements of investment timing.

The Treynor-Mazuy approach is not a good observation either, as returns of each fund is treated equally while the returns to aggregate mutual funds are driven the absolute value of return created by of each fund which is dictated by size as well.

Table IX
Performance of New Money Portfolios Estimated by Risk-Adjusted Returns Using the Fund Regression Approach

$Alpha_1$ is calculated as the weighted average of the realized alphas of the individual funds obtained from the time series regression: $R_{it} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + e_{pt}$. R_{it} is the rate of return fund i in month t, R_{mt} is market return, the return on the value-weighted SET index, R_{ft} is the risk-free interest rate in month t, α_p is the abnormal return of the model, and β_p is the factor loading of the market factor. $Alpha_3$ is calculated as the weighted average of the realized alphas of the individual funds obtained from the time series regression : $R_{pt} - R_{ft} = \alpha_p + \beta_{pRMRF}RMRM_t + \beta_{pSMB}SMB_t + \beta_{pHML}HML_t + e_{pt}$. The excess market return, RMRF, is the difference between the return of the SET index and the 14-day REPO yields. SMB is the return on the mimicking portfolio for the common size factor in stock returns. HML is the return on the mimicking portfolio for the common book-to-market equity factor in stock returns. RMRF, SMB, and HML are constructed according to the descriptions in Fama and French (1993). β_i is the factor loading of the corresponding factor.

The t-statistics in parentheses tests the performance difference between the particular portfolio and the avarage mutual fund. The t-statistics in brackets tests the performance difference between the particular portfolio and the market. EW denotes equally weighted, and CW means that the individial fund returns are weighted by their corresponding new money amount. New Money = TNAit - TNAi,t-1 * (1+Rit), where TNA is total net assets. For panel B, the t-statistics in parentheses test whether the performance difference between the positive and the negative portfolios is significantly different from zero. The observation period is from January 2001 to August 2004.

Panel A. Portfolio Performance		
Portfolios	**Alpha1**	**Alpha3**
1. Average fund	0.005	0.005
	(NA)	(NA)
	[1.36]	[1.39]
2. Weighted by total net asset	0.005	0.005
	(1.39)	(1.38)
	[1.35]	[1.38]
3. Positive cash flow (EW)	0.007	0.006
	(8.25)***	(7.90)***
	[1.21]	[1.25]
4. Negative cash flow (EW)	0.005	0.005
	(6.31)***	(6.62)***
	[1.33]	[1.36]
5. Positive cash flow (CW)	0.008	0.007
	(6.97)***	(6.49)***
	[1.12]	[1.16]
6. Negative cash flow (CW)	0.007	0.006
	(4.19)***	(4.20)***
	[1.24]	[1.27]
7. Upper 50 percent of all cash flow (EW)	0.004	0.004
	(5.58)***	(5.95)***
	[1.43]	[1.46]
8. Lower 50 percent of all cash flow (EW)	0.006	0.006
	(9.05)***	(9.18)***
	[1.29]	[1.32]

Table IX - continued

Panel B. Performance Difference between the Positive and Negative Portfolios		
	Alpha1	**Alpha3**
Portfolio 3 - Portfolio 4	0.001	0.001
	(6.44)***	(-6.08)***
Portfolio 5 - Portfolio 6	0.001	0.001
	(2.49)**	(2.26)**
Portfolio 7 - Portfolio 8	-0.002	-0.002
	(10.30)***	(10.65)***

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

4.5 Equity funds as market sentiment indicator

When examining aggregate fund flows against market returns as a sentiment indicator that equity fund investors drive stock market returns through their investment in mutual funds, results as in Table XI show there is no significant correlation between fund flows into equity fund and market returns. The result is not surprising as equity funds represent a very small proportion[4] of total money invested in the stock market. Foreign investors, retails investors, and hybrid funds shifting into equities are more likely the drive to market movement.

As Warther (1995) did, the flows are able to separated into expected and unexpected flows. The best autoregressive fit for predicting expected flows is regression with ARMA(2,3), as shown in Panel C. However, when examining only unexpected fund flows results still show that there is no sentiment relationship between market returs and unexpected fund flows into equity funds.

[4] As of early 2005, only 79 billion baht is invested in pure equity funds which accounts for 1.6% of approximately 5 trillion baht in SET market capitalization.

Table X

Return Comparison Between Hold and Buy-Sell Mutual Fund Investors

The aggregate investor in mutual funds is being measured whether they have timing skill to time the market. Panel A compares aggregate investor return in mutual funds by comparing two trading strategies. The Hold (passive) Strategy is simulated by comparing month-by-month NAV. Outstanding units adjusted by adding units to inflows and subtracting units to outflows at current NAV price. NAV = (TNA / Units outstanding). Monthly Return = $(NAV_t - NAV_{t-1})/NAV_{t-1}$. The Buy-Sell (active) Strategy measures changes in TNA of each period, excluding TNA changes from flows. Monthly Return = $(TNA_t - TNA_{t-1}\text{-}FLOW_{t-1})/TNA_t$. This approach considers the size of each fund and considers aggregate investors to value-weight among the funds. A single 48-month observation and twenty-four rolling 24-month observations are displayed. Panel B uses the Treynor-Mazuy (1966) approach to examine aggregate investor timing ability investing in mutual funds by running a regression of each fund return compared to the market return and the square of market return. This approach does not consider the size of each mutual fund and consider aggregate

investors to equal-weight among the funds. The observation period is from September 2000 to August 2004 for all observations

Panel A. Active vs. Passive Approach to Investor Timing

48 month observation

Strategy	Annualized Returns (% per year)	t-statistic
Hold Strategy	18.36%	1.54
Buy-Sell Strategy	17.99%	1.49

Rolling 24 month observations

Strategy	Average Annualized Returns (% per year)	Observations with Superior Performance
Hold Strategy	20.91%	19
Buy-Sell Strategy	20.74%	5
Excess return from Hold Strategy (Hold Strategy - Buy-Sell Strategy)	0.17%	
Total Observations	24	

Panel B. Treynor-Mazuy Approach to Investor Timing

Independent Variable	Coefficient	t-statistic
Intercept	0.005	8.908***
Market Return	0.866	125.06***
$(\text{Market Return})^2$	-0.027	-0.54

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

Table XI

Aggregate Money Flow of Mutual Funds as an Indicator to Market Sentiment

Aggregate money flow of mutual funds is examined against market returns for whether Flow can be an indicator to market sentiment. Panel A is a regression between the aggregate money flow towards mutual funds and the return of the market in each month. The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values. Panel B examines lagged variables of money flow to generate the best fit model predicting expected money flows. Thus, Unexpected flows = (Total flows - Expected flows). The best autoregressive fit is AR(2) as expected flows, which is displayed in column (A). There is also a moving average fit of MA(3) so the best fit regression ARMA(2,3) is displayed in column (B). The plain numbers are the coefficients of each independent variable while the number in parentheses below each coefficient is its respective p-values. The observation period is from July 2000 to August 2004. The correlogram showing best fit ARMA(2,3) is shown as figure C.

Panel A. Total Flows

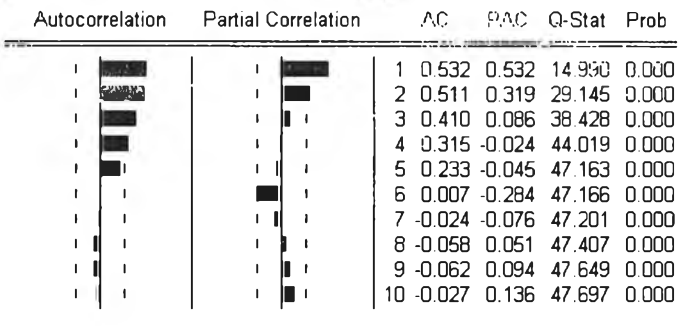
Independent Variable	Coefficient
Intercept	0.011
	(0.338)
Aggregate FLOW	0.285
	(0.181)

Panel B. Expected and Unexpected Flows

Independent Variable	(A)	(B)
Intercept	0.016	0.016
	(0.208)	(0.215)
Expected FLOW	0.064	0.011
	(0.895)	(0.721)
Unexpected FLOW	0.391	0.420
	(0.138)	(0.159)
Root Mean Square Error	0.044	0.039

Figure C. Correlogram showing best fit ARMA(2,3)

Sample: 2000:07 2004:08
Included observations: 50



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.532	0.532	14.990	0.000
		2	0.511	0.319	29.145	0.000
		3	0.410	0.086	38.428	0.000
		4	0.315	-0.024	44.019	0.000
		5	0.233	-0.045	47.163	0.000
		6	0.007	-0.284	47.166	0.000
		7	-0.024	-0.076	47.201	0.000
		8	-0.058	0.051	47.407	0.000
		9	-0.062	0.094	47.649	0.000
		10	-0.027	0.136	47.697	0.000

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