พัฒนาการเศรษฐกิจปริทรรศน์
ปีที่ 18 ฉบับที่ 2 (กรกฎาคม-ธันวาคม 2567)

การเคลื่อนย้ายเงินทุนและอัตราผลตอบแทน ในช่วงวัฏจักรธุรกิจ ในประเทศไทย

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บทคัดย่อ

การศึกษานี้ ขยายมุมมองใหม่จากงานวิจัยในปัจจุบันโดยการสำรวจผลกระทบของการเคลื่อนย้ายเงินทุนในระยะต่าง ๆ ของวัฏจักรธุรกิจ ตลาดหุ้นถูกขับเคลื่อนโดยอุปสงค์และอุปทานของนักลงทุนในตลาดหลักทรัพย์แห่งประเทศไทย (SET) มีนักลงทุนหลัก 4 ประเภทได้แก่นักลงทุนต่างประเทศ สถาบันในประเทศ ผู้ค้าที่เป็นโบรกเกอร์ และนักลงทุนรายย่อย การศึกษานี้สำรวจสมมติฐานที่แข่งขันกันเกี่ยวกับการไหลเข้าของกองทุนใน SET การศึกษานี้ใช้แบบจำลอง Autoregressive Distributed Lag (ARDL) เพื่อทดสอบความสัมพันธ์ระยะสั้น การวิเคราะห์ความสัมพันธ์เชิงดุลยภาพระยะยาวด้วยวิธี Cointegration และการวิเคราะห์สาเหตุของ Granger เพื่อยืนยันความเป็นเหตุเป็นผล ผลการศึกษาสนับสนุนสมมติฐาน feedback-trader hypothesis เพียงบางส่วนเท่านั้นสำหรับความสัมพันธ์ระยะสั้นและระยะยาวระหว่างผลตอบแทนของตลาดและเคลื่อนย้ายเงินทุนจากนักลงทุนต่างประเทศในช่วงสภาวะถดถอย อย่างไรก็ตาม ผลการศึกษาไม่สนับสนุนสมมติฐาน price-pressure hypothesis สำหรับการเคลื่อนย้ายเงินทุนจากนักลงทุนทุกประเภทไปยังตลาดหุ้นในทุกขั้นตอนของวัฏจักรธุรกิจ

คำสำคัญ: การเคลื่อนย้ายเงินทุน ประเภทของนักลงทุน อัตราผลตอบแทน

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Development Economic Review
Volume 18 No.2 (July-December 2024)

Equity Fund Flows and the Stock Market Returns over Business Cycle in Thailand

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Received July 13, 2024
Revised July 23, 2024
Accepted October 3, 2024

Abstract

This study contributes to additional insights from the literature by exploring the impact of fund flow in the different stages of the business cycle. The stock market is driven by the demand and supply of investors. In The Stock Exchange of Thailand (SET), there are four major types of investors consists of foreign investors, domestic institutes, proprietary traders, and retail investors. This study explores the competing hypothesis on fund flows to the SET. The study uses the Autoregressive Distributed Lag (ARDL) model to test short-term relationships, Cointegration to identify the long-term relationships, and pairwise Granger causality analysis to confirm the causality. The results partly support the feedback-trader hypothesis only for the short- and long-term relationship between market return and fund flow from foreign investors in the recession stage. The results do not support the price-pressure hypothesis for the fund flows from all types of investors to the stock market at any stage of the business cycle.

Keywords: Fund flow, Investor types, Stock market return

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1. Introduction

Fund flow is an important element of the stock market. Increasing demand for stock purchase from foreign and domestic equity funds can push the stock price higher (Ndei, Muchina, & Waweru, 2019) and investor sentiment effects across industries are not similar (Dash & Mahakud, 2013). Previous studies on the flow-performance relationship have been conducted under stable market conditions (Richard el. al, 2021). As a result, they fail to explain the puzzling situation of increased fund flows despite the consistent underperformance of equity mutual funds.

Some studies document that various investment institutions have different trading behaviors (Del Guercio, 1996, Cohen, 1999, Dennis & Strikland, 2002 and Barber, Lee, Liu, and Odean, 2005 quoted in Boyer & Zheng, 2009: 3). Besides, fund flows to the stock market may be differ across stages of the business cycle as the prosperity stage may attract fund flow to the stock market but possibly end upon the expectation of a decline in future earning at the late expansion stage where inflation and interest rates are progressively rising. On the contrary, the depression stage discourages investors according to negative output growth leading to company earnings decline.

Several competing theories provide explanations for this co-movement (Warther, 1995). The literature presents three competing hypotheses regarding the relationship between equity fund flows and stock market returns: the feedback-trader hypothesis (market returns attract fund flows), the price-pressure hypothesis (increasing fund flows drive up market prices and returns), and the information-response hypothesis (both equity fund flows and market returns respond to new information independently, with no direct causal link).

This empirical study will investigate which hypothesis best applies to the Stock Exchange of Thailand. Additionally, the study aims to provide a detailed explanation of these relationships across different stages of the business cycle, which has never been tested before. In the Stock Exchange of Thailand (SET), the primary investor categories include foreign investors, domestic institutions, proprietary traders, and retail investors. Analyzing how the fund flow from these various investor types relates to stock market returns is crucial for making informed investment decisions. This study examines whether net investments from these different investor types correlate with stock market returns during various stages of the business cycle.

This study analyzes the effect of fund flow from different types of investors in different stages of the business cycle and vice versa using Autoregressive Distributed Lag (ARDL) to analyze short-term relationship, cointegration test to examine long-term relationship, and pairwise Granger causality test to confirm the relationship. We expand our investigation to rigorously test the competing hypotheses regarding fund flows across all investor types at different stages of the business cycle. This expanded analysis builds upon the groundwork laid by Talthip and Sukcharoensin (2022), who documented the Thai business cycle periods. By examining fund flows throughout dominant economic phases, our study aims to provide deeper insights into how different investor behaviors and market conditions interact. This approach allows us to explore nuances that were not previously addressed, enhancing our understanding of the dynamics between fund flows, investor sentiment, and economic cycles. The paper is organized as follows: Section 1 offers an introduction. Section 2 reviews existing literature on the significant association between equity fund flows and stock market returns. Section 3 describes the data and econometric model, including variable specifications and methodology. Section 4 presents and discusses the empirical results. The final section concludes the paper with summary notes.

2. Literature Reviews

Fund flows to the stock market may be differ across stages of the business cycle as the prosperity stage may attract fund flows to the stock market but possibly end upon the expectation of a decline in future earning at the late expansion stage where inflation and interest rates are progressively rising. Conversely, the depression stage deters investors due to negative output growth, which leads to a decline in company earnings. Given the findings of previous empirical studies, it is worthwhile to investigate the relationship between equity fund flows and stock market returns and to test competing hypotheses for fund flows from all types of investors at various stages of the business cycle. (Talthip & Sukcharoensin, 2022)

There are competing hypotheses regarding the effects of fund flows and market returns. In a comprehensive review, Economou et al. (2023) examine the extensive and diverse academic literature on investors' feedback trading, which is one of the most historically prevalent trading patterns in financial markets. One prominent theory is the feedback-trader hypothesis, which posits that market returns attract fund flows. This area of research examines the idea that certain investors analyze historical stock price patterns and make portfolio decisions based on the belief that these trends will persist. In the realm of behavioral finance, these investors

are known as feedback traders.

Positive feedback traders are those who buy stocks when the market is rising and sell them when they are falling. Their actions are driven by the momentum of price movements; they anticipate that rising prices will continue to rise and falling prices will continue to fall. This behavior can lead to a self-reinforcing cycle, where the influx of funds into rising stocks pushes prices even higher, while the withdrawal of funds from declining stocks drives prices even lower. This hypothesis underscores the impact of investor behavior on market dynamics. As positive feedback traders act on their expectations, they can amplify market trends, contributing to increased volatility and the potential for bubbles or crashes. Their influence is significant enough to create autocorrelation in stock returns, meaning past price movements can help predict future movements to some extent.

The feedback-trader hypothesis also highlights the broader implications for market efficiency. While the actions of feedback traders can lead to temporary mispricings, they also create opportunities for other investors who can recognize and anticipate these patterns. By understanding the behavior of feedback traders, these investors can better navigate the market and potentially exploit the predictability introduced by such trading strategies. (Koutmos, 2014)

Another aspect of research highlights that negative feedback traders adhere to a “buy low, sell high” strategy. This approach contrasts with the behavior of positive feedback traders, who buy stocks as prices rise and sell them as prices fall. The significant presence of both types of feedback traders in the stock market contributes to the autocorrelation of returns, resulting in the partial predictability of aggregate stock returns. This phenomenon is explained by the price-pressure hypothesis, which posits that the flow of funds into and out of stocks exerts pressure on market prices, thereby driving market returns higher. Under this hypothesis, the actions of feedback traders amplify price movements, leading to a self-reinforcing cycle that impacts overall market performance.

Negative feedback trading accounts for the positive autocorrelation observed in daily stock returns. This offers one explanation for the positive autocorrelation in daily stock returns, other factors such as non-synchronous trading, time-varying expected returns, transaction costs, and market microstructure effects also contribute to this complex market behavior.

Understanding these various influences helps to provide a more comprehensive view of the mechanisms driving stock price movements. While negative feedback trading offers one explanation for the positive autocorrelation in daily stock returns, other factors such as non-synchronous trading, time-varying expected returns, transaction costs, and market microstructure effects also contribute to this complex market behavior. Understanding these various influences helps to provide a more comprehensive view of the mechanisms driving stock price movements.

The feedback-trader hypothesis posits that market returns drive fund flows, with investors buying fund shares in response to rising prices and selling when prices fall, resulting in positive co-movement. However, causality could also operate in the opposite direction. Jank (2012) posits that mutual fund investors might act based on sentiment unrelated to fundamentals, causing stock prices to temporarily deviate from their intrinsic values due to uninformed demand. This perspective, suggesting that flows drive returns, is known as the price-pressure hypothesis. A third explanation, the information-response hypothesis, asserts that both stock market returns, and fund flows react simultaneously to new information.

Some literature had mentioned the significant association between equity fund flow and stock market returns. Equity Fund purchases will lead to a temporary increase in stock price, causing increase stock returns (Harris and Gurel, 1986 quoted in Ndei et al., 2019: 23). Among others, Zeckhauser (1994) studied mutual fund data during the period 1975-1987 in the U.S. stock market by using the model:

$$F_t = \beta_0 + \beta_1 F_{t-1} + \beta_2 B_{t-1} + \beta_3 E_{t-1} + e_t$$

F_t is the rough investment flow into the U.S. stock market in month t, Bt-1 is total return on long-term high-grade U.S. corporate bonds in month t-1 and Et-1 is total return on S&P 500 index in month t-1. The results concluded that the recent returns of the assets significantly influence investment flows. Mutual fund flows are more related to the ranking of performance rather than to absolute performance. Results also showed less variation of international purchases of U.S. equities and bonds.

Baker & Wurgler (2007) mentioned two investor sentiment approaches, which are the bottom-up approach to explain how investors under-react or over-react to past returns or fundamental elements of stocks and the top-down approach, which takes investor sentiment as an

exogenous factor and focus on its effects on the stock market.

Next, Boyer & Zheng (2009) analyzed the relationship between cash flows to the stock market by net equity purchase from broad investor groups and stock market returns using U.S. stock market data between period 1952-2004 and tested with first- order Vector Autoregressive model. Boyer & Zheng (2009) found a statistically significant relationship between stock market returns and investor groups' fund flow with positive feedback at a quarterly frequency. In addition, fund flows are highly autocorrelated within each investor group. Mutual Funds and Foreign Investors move together with stock market returns.

Kopsch & Song (2015) studied the relationship between mutual fund flows and stock market returns to determine whether the relationship follows the feedback-trader hypothesis (market returns affect fund flows), the price-pressure hypothesis (mutual fund flows affect market returns) or the information-response hypothesis (both mutual fund flows and market returns react to new information without any direct causal linkage between them) using Swedish quarterly data on mutual fund flows and market return data on OMX Stockholm 30 (OMXS30) from 1998 to 2013. The methodology tested was structural Autoregressive model AR(1) to measure the relationship between lagged values of fund flows and determinants (including stock market return, T-bill, expected inflation and outflow from interest funds) and Granger causality Wald test in order to determine the sequence of the relationship. The study found that the correlation coefficient of 0.39 confirms a co-movement of fund flows and stock market return. The results suggested that market return does not Granger-cause mutual fund flow, which implied that VAR estimates do not support the feedback-trader hypothesis. In addition, market return is not Granger-caused by flow, which is against the price-pressure hypothesis. However, the market return had an impact on equity fund flows indirectly through the information-response mechanism. The overall results rejected both the feedback-trader hypothesis and the price-pressure hypothesis and only supported the information-response hypothesis.

Kang & Suh (2015) discussed reverse spillover effects of fund flow. During period of financial turmoil in 2013-2014 there was reduction of portfolio fund flow from emerging market to advanced economies, but the influence of emerging markets on the global financial market increased during this period.Babalos, Caporale, & Spagnolo (2021) studied the relationship between equity fund flows and stock market returns and the volatility spillovers from stock

market returns to equity fund flows before and after the 2008-2009 global financial crisis using VAR-GARCH (1, 1)-in-mean model with a BEKK representation. They found causality-in-mean from stock market returns to equity fund flows, which supports the feedback-trading hypothesis only in the post-September 2008 period and volatility spillovers from stock market return to equity fund flows both before and after the crisis. However, the relationship is not stable and weaker in the crisis period.

Ndei, Muchina, & Waweru (2019) explored the relationship between equity unit trust fund flows (purchases and sales) and stock market returns in Kenya during the period January 2010 – December 2017 using the Vector Autoregressive model, Granger causality and Impulse Response information. The results found that equity fund purchases have a predominantly positive relationship with the stock market return. In contrast, equity fund sales have negative relationship with stock market returns.

Yangbo et, al. (2024) examines the relationship between aggregate equity mutual fund flows and excess stock market returns in Hong Kong and Singapore from October 1998 to December 2007. The empirical results reveal a two-way causality in Hong Kong: aggregate equity mutual fund flows Granger-cause subsequent excess stock market returns, and excess stock market returns Granger-cause subsequent aggregate equity mutual fund flows. In contrast, no such causality is observed in Singapore, where neither aggregate equity mutual fund flows Granger-cause subsequent excess stock market returns nor do excess stock market returns Granger-cause subsequent aggregate equity mutual fund flows.

3. Methodology

3.1 The Data

The study period in this research work is from January 2002 to December 2019, analyzing on a monthly data basis. According to the start analysis from January 2002, PTT Public Company Limited (leading energy company) has been privatized to public company on 1 October 2001 and PTT stock officially traded in The Stock Exchange of Thailand in December 2001. PTT has the highest market capitalization in The Stock Exchange of Thailand; therefore, PTT should be fully included in the analysis period. The exported data from Thomson Reuters Eikon database on monthly basis provides 215 observations after adjustments for time-series analysis. Monthly net investment data of the four types of investors in The Stock Exchange of Thailand also obtained accordingly.

The stages of the business cycle in this study are identified by using the simplified methodology introduced by Talthip & Sukcharoensin (2021) which constructed from Thailand real GDP growth, YoY, Seasonally Adjusted data from the CEIC database. The business cycle has been divided into 4 stages using cyclical movement along a steady zero-growth line together with peak (local maxima) and trough (local minima) of Thailand real GDP growth data where local maxima are defined as the highest point between the period which output growth path in plot chart crossing up and down steady zero-growth line and local minima are defined as the lowest point between the period which output growth path in plot chart crossing down and up steady zero-growth line. The 4 stages of the business cycle are defined as:

Stage 1 Expansion stage (D_1 or D_{expand}) is defined as positive real GDP growth increasing apart from the steady zero-growth line towards local maxima.

Stage 2 Recession stage (D_2 or D_{recess}) is defined as real GDP growth positive but declines from local maxima down towards the steady zero-growth line.

Stage 3 Depression stage (D_3 or $D_{depress}$) is defined as a declining negative real GDP growth path apart from the steady zero-growth line towards local minima.

Stage 4 Recovery stage (D_4 or D_{recov}) is defined as real GDP growth negative but increasing apart from local minima up towards the steady zero-growth line.

The specified period of each stage of the business cycle in Thailand using in the analysis of this study is defined in Table 1.

Table 1: Specified period of each stage of business cycle in Thailand

Expansion	Recession	Depression	Recovery
Jan 2002 – Mar 2003	Apr 2003 – Sep 2008	Oct 2008 – Mar 2009	Apr 2009 – Sep 2009
Oct 2009 – Mar 2010	Apr 2010 – Sep 2011	Oct 2011 – Nov 2011	Dec 2011 – Jan 2012
Feb 2012 – Dec 2012	Jan 2013 – Dec 2013	Jan 2014 – Mar 2014	
Apr 2014 – Mar 2018	Apr 2018 – Dec 2019		

Source: Talthip & Sukcharoensin (2021)

3.2 Econometric Model

To study the impact of the business cycle on net investment from various types of investors, the fundamental assumption is that market returns fluctuate across different business cycle stages, leading to variations in net investment from these investors. During the recovery and early expansion stages, investors may have optimistic expectations for future market returns, thus attracting more investment.

On the contrary, during the recession and depression stages, investors may withdraw their investments. We use interaction terms between market returns and business cycle stage dummies to represent different market returns across various business cycle stages. Similarly, investment from different types of investors varies throughout the business cycle stages and can impact market returns during these respective stages. Interaction terms between net investment from different types of investors are also used to represent varying levels of net investment across different business cycle stages. We apply Auto Regressive Distributed Lag (ARDL) model for a short-term relationship, the cointegration test for a long-term relationship, and the pairwise Granger causality test to confirm a causal relationship.

The ARDL model is defined as:

$$\Delta INV_{k,t} = \alpha_{k,s,t} + \sum_{i=1}^{n} \beta_i \Delta INV_{t-i} + \sum_{i=1}^{n} \delta_i \Delta Rm_{t-i} * D_{s,t-i} + \varphi_1 \Delta INV_{t-1} + \varphi_2 \Delta Rm_{t-1} * D_{s,t-1} + \mu_t$$

$$\Delta Rm_t = \alpha_{k,s,t} + \sum_{i=1}^{n} \beta_i \Delta Rm_{t-1} + \sum_{i=1}^{n} \delta_i \Delta INV_{k,t-1} * D_{s,t-1} + \varphi_1 \Delta Rm_{t-1} + \varphi_2 \Delta INV_{k,t-1} * D_{s,t-1} + \mu_t$$

$INV_{k,t}$ is a net investment from investor type k at month t and $INV_{k,t-l}$ is the l^{th} lag term of net investment from the investor type k.

ΔRm_t is market return at month t and ΔRm_{t-l} is the l^{th} lag term of the market return.

$D_{s,t-l}$ is the l^{th} lag term of the dummy variable representing the sth business cycle stage.

$INV_{k,t-l} * D_{s,t-l}$ is the interaction term representing net investment from investor type k in the sth business cycle stage at l^{th} lag.

$Rm_{t-l} * D_{s,t-l}$ is the interaction term representing stock market return in the sth business cycle stage at l^{th} lag.

The data are all stationary from the ADF test and optimal lag determination from Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HC) suggest the appropriate lag structure of lag 1 therefore, I use ARDL (1,1) for the analysis.

4. Results and Discussions

The correlation between net investment from different types of investors and stock market return are demonstrated in Table 2.

Table 2: Correlations between net investment to the stock market from different types of investors and market return

	Foreign Investors	Domestic Institutes	Proprietary Traders	Retail Investors	Rm
Foreign Investors	1	-0.685504	0.278758	-0.882318	**0.557586**
Domestic Institutes	-0.685504	1	-0.133539	0.289301	-0.204328
Proprietary Traders	0.278758	-0.133539	1	-0.455899	0.311597
Retail Investors	-0.882318	0.289301	-0.455899	1	-0.624109
Rm	**0.557586**	-0.204328	0.311597	-0.624109	1

Source: Author's calculation based on monthly market return data in The Stock Exchange of Thailand from Thomson Reuters Datastream and monthly data of net investment from a different type of investors from The Stock Exchange of Thailand database.

Correlation analysis reveals that net foreign investment has the highest correlation with stock market return (significant correlation coefficient = 0.557586, Chi-Square 85.98, Prob 0.0000) compared with net investment from other types of investors. Among different types of investors, net foreign investment has a positive correlation with proprietary traders' investment and has a negative correlation with net investment from domestic institutes and retail investors.

However, highest volatility has been observed with net investment to the stock market from the foreign investors, followed by retail investors, which demonstrates in Table 3 which shows that net investment from a foreign investor has the highest variance and sum-squared deviation compared with other types of investors.

Table 3: Variance and Sum-Squared Deviation of Net Investment to Stock Market from Different Types of Investors

	Foreign Investors	**Domestic Institutes**	**Proprietary Traders**	**Retail Investors**
Variance	**450.86**	99.52	11.09	301.62
Sum squared deviation	**96,484**	21,298	2,374	64,546

Source: Author's calculation based on monthly data of net investment from a different type of investors from The Stock Exchange of Thailand database.

From descriptive statistics, net foreign investment has highest correlation with stock market return in Thailand but also has highest volatility compared with net investment from other types of investors. Further analysis has been made to explore the relationship between fund flow (net investment) from different types of investors and stock market return using Autoregressive Distributed Lag (ARDL) model for short-term relationship analysis, cointegration test for the analysis of long-term relationship, and pairwise Granger causality test to confirm the relationship.

The feedback-trader hypothesis has been tested by using fund flows (net investment) from different types of investors as the dependent variable and stock market returns in the different stages of the business cycle as the independent variable. The results are shown in Table 4.

Table 4: ARDL Estimation, Long-Run Cointegration, and Granger Causality Analysis for Market Return in Each Stage of the Business Cycle (independent variable) and Net Investment from a Different Type of Investors (dependent variable).

	Foreign Investors	Domestic Institutes	Proprietary Traders	Retail Investors
$Rm*D_{expand}$	**2.417605**	-0.338528	**0.609293**	**-2.728354**
(short run)	**(0.0000)**	(0.2328)	**(0.0000)**	**(0.0000)**
$Rm*D_{expand}$ (-1)	0.315509	**-0.914749**	-0.028769	0.383187
	(0.5266)	**(0.0010)**	(0.7623)	(0.3645)
$Rm*D_{expand}$	**4.006766**	**-1.575883**	**0.480119**	**-2.671286**
(long-run)	**(0.0001)**	**(0.0025)**	**(0.0000)**	**(0.0000)**
$Rm*D_{expand}$	Not Sig	**Rm*Dexpand granger**	Not Sig	Not Sig
(Causality Test)		**cause domestic institutes**		
$Rm*D_{recess}$	**2.721752**	**-0.528895**	**0.117020**	**-2.333410**
(short run)	**(0.0000)**	**(0.0006)**	**(0.0160)**	**(0.0000)**
$Rm*D_{recess}$ (-1)	**-1.035419**	-0.121186	0.045184	**0.670952**
	(0.0013)	(0.4405)	(0.3622)	**(0.0125)**
$Rm*D_{recess}$	**2.472177**	**-0.817419**	**0.134150**	**-1.893639**
(long-run)	**(0.0000)**	**(0.0019)**	**(0.0142)**	**(0.0000)**
$Rm*D_{recess}$	**Rm*Drecess granger**	Not Sig	Not Sig	Not Sig
(Causality Test)	**cause foreign investors**			
$Rm*D_{depress}$	0.438727	0.324409	0.019157	**-0.777551**
(short run)	(0.3647)	(0.2458)	(0.8291)	**(0.0470)**
$Rm*D_{depress}$ (-1)	0.083512	-0.158555	-0.005795	-0.000659
	(0.8616)	(0.5664)	(0.9473)	(0.9986)
$Rm*D_{depress}$	0.765607	0.208546	0.011051	-0.886428
(long-run)	(0.4352)	(0.6671)	(0.9132)	(0.1496)
$Rm*D_{depress}$	Not Sig	Not Sig	Not Sig	Not Sig
(Causality Test)				
$Rm*D_{recov}$	0.699498	-0.217418	0.145917	-0.578661
(short run)	(0.4058)	(0.6540)	(0.3443)	(0.3929)
$Rm*D_{recov}$ (-1)	0.841665	-0.509302	-0.064746	-0.499376
	(0.3207)	(0.2955)	(0.6747)	(0.4634)
$Rm*D_{recov}$	**2.259356**	-0.913784	0.067132	-1.227948
(long-run)	**(0.0356)**	(0.0848)	(0.5426)	(0.0666)
$Rm*D_{recov}$	Not Sig	Not Sig	Not Sig	Not Sig
(Causality Test)				

Source: Author's calculation based on monthly market return data of The Stock Exchange of Thailand from Thomson Reuters Datastream, real GDP data from CEIC database, and monthly data of net investment from a different type of investors from The Stock Exchange of Thailand database.

Although the result shows that the first month lag of market return in the expansion stage of the business cycle has a significant short-term relationship with net investment from domestic institutional investors but the coefficient shows negative sign therefore not supported feedback-trader hypothesis. From our analysis, the feedback-trader hypothesis is the one only supported. This means there is a short-term and long-term relationship between market return in the recession stage of business cycle and net foreign investment which has been confirmed by the pairwise Granger causality test.

To evaluate the price-pressure hypothesis, similar methodology has been applied using market return (Rm) as dependent variable and fund flow (net investment) from the various types of investors in the different stages of business cycle as independent variable. The results are demonstrated in Table 5.

Table 5: ARDL estimation, long-run cointegration, and granger causality analysis for net investment from different types of investors in each stage of business cycle.

Foreign Investors				
Rm	**FOR*D$_{expand}$ (short run)**	**FOR*D$_{expand}$ (-1)**	**FOR*D$_{expand}$ (long-run)**	**FOR*D$_{expand}$ (Causality Test)**
	0.119452	-0.059837	0.069916	Not Sig
	(0.0002)	(0.0634)	(0.1000)	
	FOR*D$_{recess}$ (short run)	**FOR*D$_{recess}$ (-1)**	**FOR*D$_{recess}$ (long-run)**	**FOR*D$_{recess}$ (Causality Test)**
	0.156116	-0.031202	**0.146498**	Not Sig
	(0.0000)	(0.1360)	**(0.0000)**	
	FOR*D$_{depress}$ (short run)	**FOR*D$_{depress}$ (-1)**	**FOR*D$_{depress}$ (long-run)**	**FOR*D$_{depress}$ (Causality Test)**
	0.238943	0.005350	0.286505	Not Sig
	(0.0139)	(0.9584)	(0.0651)	
	FOR*D$_{recov}$ (short run)	**FOR*D$_{recov}$ (-1)**	**FOR*D$_{recov}$ (long-run)**	**FOR*D$_{recov}$ (Causality Test)**
	0.418209	-0.094596	0.379532	Not Sig
	(0.0044)	(0.4993)	(0.0527)	
Domestic Institutes				
Rm	**INS*D$_{expand}$ (short run)**	**INS*D$_{expand}$ (-1)**	**INS*D$_{expand}$ (long-run)**	**INS*D$_{expand}$ (Causality Test)**
	-0.033911	0.026106	-0.008885	Not Sig
	(0.6024)	(0.6839)	(0.9219)	
	INS*D$_{recess}$ (short run)	**INS*D$_{recess}$ (-1)**	**INS*D$_{recess}$ (long-run)**	**INS*D$_{recess}$ (Causality Test)**
	-0.145055	0.011705	**-0.151815**	Not Sig
	(0.0024)	(0.8121)	**(0.0223)**	
	INS*D$_{depress}$ (short run)	**INS*D$_{depress}$ (-1)**	**INS*D$_{depress}$ (long-run)**	**INS*D$_{depress}$ (Causality Test)**
	0.519438	-0.176302	0.390650	Not Sig
	(0.0514)	(0.5139)	(0.3686)	
	INS*D$_{recov}$ (short run)	**INS*D$_{recov}$ (-1)**	**INS*D$_{recov}$ (long-run)**	**INS*D$_{recov}$ (Causality Test)**
	-1.028446	0.275558	-0.857141	Not Sig
	(0.0426)	(0.5757)	(0.2575)	
Proprietary Traders				
Rm	**PROP*D$_{expand}$ (short run)**	**PROP*D$_{expand}$ (-1)**	**PROP*D$_{expand}$ (long-run)**	**PROP*D$_{expand}$ (Causality Test)**
	0.526145	0.045713	**0.662422**	Not Sig
	(0.0006)	(0.7665)	**(0.0203)**	
	PROP*D$_{recess}$ (short run)	**PROP*D$_{recess}$ (-1)**	**PROP*D$_{recess}$ (long-run)**	**PROP*D$_{recess}$ (Causality Test)**
	0.468750	-0.270666	0.229454	Not Sig
	(0.0051)	(0.1123)	(0.4314)	
	PROP*D$_{depress}$ (short run)	**PROP*D$_{depress}$ (-1)**	**PROP*D$_{depress}$ (long-run)**	**PROP*D$_{depress}$ (Causality Test)**
	4.849614	**4.015232**	**10.268763**	Not Sig
	(0.0024)	**(0.0137)**	**(0.0006)**	
	PROP*D$_{recov}$ (short run)	**PROP*D$_{recov}$ (-1)**	**PROP*D$_{recov}$ (long-run)**	**PROP*D$_{recov}$ (Causality Test)**
	0.456734	-0.039927	0.482817	Not Sig
	(0.4889)	(0.9511)	(0.6321)	

Retail Investors				
Rm	**RET*D$_{expand}$ (short run)**	**RET*D$_{expand}$ (-1)**	**RET*D$_{expand}$ (long-run)**	**RET*D$_{expand}$ (Causality Test)**
	-0.149892	0.033616	**-0.141262**	Not Sig
	(0.0000)	(0.2954)	**(0.0064)**	
	RET*D$_{recess}$ (short run)	**RET*D$_{recess}$ (-1)**	**RET*D$_{recess}$ (long-run)**	**RET*D$_{recess}$ (Causality Test)**
	-0.209190	0.020949	**-0.228690**	Not Sig
	(0.0000)	(0.4028)	**(0.0000)**	
	RET*D$_{depress}$ (short run)	**RET*D$_{depress}$ (-1)**	**RET*D$_{depress}$ (long-run)**	**RET*D$_{depress}$ (Causality Test)**
	-0.447325	-0.037107	**-0.588525**	Not Sig
	(0.0000)	(0.7332)	**(0.0017)**	
	RET*D$_{recov}$ (short run)	**RET*D$_{recov}$ (-1)**	**RET*D$_{recov}$ (long-run)**	**RET*D$_{recov}$ (Causality Test)**
	-0.467261	0.072598	**-0.479467**	Not Sig
	(0.0017)	(0.6164)	**(0.0252)**	

Source: Author's calculation based on monthly market return data of The Stock Exchange of Thailand from Thomson Reuters Datastream, real GDP data from CEIC database, and monthly data of net investment from a different type of investors from The Stock Exchange of Thailand database.

The results show that net foreign investment in the recession stage has significant coefficients for both short-run and long-run relationship with the market return; however, the Granger causality test does not confirm the causality relationship for this result. Similar notification is also applied to net investment from domestic institutes in the recession stage where it has inverse short- and long-term relationship with the market return but the Granger causality test does not confirm the causality relationship. Net investment from the proprietary traders in both expansion and depression stages have positive significant coefficients for short-run and long-run relationships with market returns; however, the Granger causality test does not confirm the causality relationship for this result. Net investment from the retail investors in all stages of the business cycle has an inverse relationship with stock market return in either short-run or long-run; however, the Granger causality test does not confirm the causality relationship for this result.

5. Conclusion and Recommendations

This study investigates the competing hypothesis for equity fund flows on stock returns over different business cycles in the SET. It employs the Autoregressive Distributed Lag (ARDL) model to examine short-term relationships, cointegration analysis to identify long-term relationships, and pairwise Granger causality analysis to confirm causality between these variables. The results show that among four major types of investors net foreign investment has the highest (positive) correlation with stock market return compared with net investment

from other types of investors. Among the various types of investors, net foreign investment positively correlates with proprietary traders' investment and negatively correlates with net investment from domestic institutes and retail investors.

This finding contradicts Boyer & Zheng (2009), which mentioned that mutual funds and foreign investors move together with stock market returns. We also found that net foreign investment has the highest volatility over a period (followed by net investment from retail investors) compared with net investment from other types of investors, while in some literature, the retail investor has the highest volatility.

Some literature discusses the bidirectional relationship between fund flows and stock returns. According to this view, increasing stock returns attract money flows from investors (the feedback-trader hypothesis), while increased investor demand drives stock prices upward, thereby boosting stock returns (the price-pressure hypothesis). The findings of this study partially support the feedback-trader hypothesis. Specifically, during the recession stage of the business cycle, there is a significant short- and long-term relationship between stock market returns and net investments from domestic institutions. However, our results do not provide support for the price-pressure hypothesis across all types of investors at any stage of the business cycle.

This research makes a significant contribution by delving into the dynamics of fund flows and stock market returns across various stages of the business cycle. Through comprehensive analysis, the study aims to deepen our understanding of how investor behavior and market conditions intertwine, providing valuable insights into the complexities inherent in financial markets. By exploring these relationships systematically, the research not only examines the short-term impacts of fund flows on stock market returns but also investigates their long-term implications through cointegration analysis.

This approach helps uncover whether certain patterns persist over time, offering a nuanced perspective on how investor sentiment and economic cycles influence market dynamics. Moreover, the study employs pairwise Granger causality analysis to elucidate causal relationships between fund flows and stock returns. By identifying lead-lag relationships and directional influences, it contributes to clarifying the mechanisms through which financial markets respond to changes in investor behavior and economic conditions.

Overall, this comprehensive exploration enhances our knowledge of the intricate interactions within financial markets, providing valuable insights that can inform investment strategies, regulatory policies, and academic research in finance and economics. This research contributes valuable insights by exploring the dynamics of fund flows and stock market returns across different stages of the business cycle. By analyzing these relationships comprehensively, the study enhances our understanding of how investor behavior and market conditions interact, shedding light on the complexities underlying financial markets.

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