THE IMPACT OF FOREIGN INVESTORS' ABNORMAL TRADING ON THE ABNORMAL RETURNS OF BANKING SECTOR STOCKS: THE CASE OF VIETNAM

Buu Kiem Dang[♣]
Saigon University (SGU)

Le Thi Bao Nhu
Saigon University (SGU)

Thi Huyen Thuong Trinh
Saigon University (SGU)

ABSTRACT

This study aims to analyze the impact of foreign investors' abnormal trading on the abnormal returns of banking sector stocks in Vietnam from 2006 to 2023. The data sample includes 631 abnormal buy events, 571 abnormal buy events on net purchase days, 477 abnormal sell events, and 432 abnormal sell events on net sell days of foreign investors. The study employs the event study methodology with parametric and non-parametric tests. The results show that abnormal buy events and abnormal buy events on net purchase days by foreign investors convey positive information and have a positive impact on stock prices, creating positive abnormal returns, with stock prices forming new equilibrium levels. Abnormal sell events and abnormal sell events on net sell days convey negative information and have a negative impact on stock prices in the short term, after which prices tend to return to their initial states as before the events. The study suggests that investors can observe foreign investors' trading behavior as reference information in their investment decisions regarding banking sector stocks. Furthermore, it recommends that the government consider relaxing the "room" limit on foreign ownership in Vietnamese commercial banks to align with the objective of upgrading the stock market.

Keywords: Foreign investors, abnormal trading, abnormal return, banking sector, Vietnam.

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♣ Corresponding author: Faculty of Finance and Accounting, Saigon University (SGU), 273 An Duong Vuong Street, Ward 3, District 5, Ho Chi Minh City, Vietnam. Tel: +84 938 228 638; Email: dbkiem@sgu.edu.vn

1. INTRODUCTION

In developing markets, the role of foreign investors in the development of the stock market is undeniable (Malik & Amjad, 2013; Tsagkanos et al., 2019). Particularly in emerging markets, foreign investors play a leading role and create positive impacts (Bolaman Avcı, 2015). Richards (2005) metaphorically described foreign investors in the financial markets of emerging Asian countries as "big fish in small ponds.". His analyses indicate that capital flows into emerging Asian countries are generally from institutional rather than individual investors. Net purchases by foreign investors drive stock price increases, which are significantly higher than previously predicted. Richards (2005) argued that the advantage foreign investors have is macroeconomic information and a global network.

Vietnam is no exception; foreign investors also play a significant role in the development of its stock market. The Vietnamese stock market began operations in 2000, and by 2006, the government had issued several legal regulations to facilitate foreign indirect investment flows. Since then, foreign investors have played an important role in the development of Vietnam's stock market, where the majority of market participants are individual investors (Phan et al., 2023; Vo, 2017a). According to statistics at the end of Q1 2023, foreign investor capital inflows into Vietnam's stock market have been increasing, reaching over $3 billion in portfolio value, with Fubon FTSE Vietnam, Vaneck Vietnam, and FTSE Vietnam being the three largest ETFs among foreign ETFs influencing the Vietnamese stock market, as detailed in Table 1.

Table 1: Asset size managed by ETFs as of March 31, 2023

ETFs	**Assets Under Management (million USD)**
Fubon FTSE Vietnam	811
VFMVN Diamond	779
Vaneck Vietnam	522
VFMVN30	351
FTSE Vietnam	328
SSIAM VNFinlead	162
Premia MSCI Vietnam	16
MAFM VN30	16
Kim Growth VN30	13
Vinacapital VN100	10
SSIAM VNX50	6
SSIAM VN30	4
Total	**3019**

Source: Processed by authors from Bloomberg.

Recently, the Vietnamese government has been determined to push forward with several measures to achieve the goal of upgrading the stock market from frontier to emerging market status by 2025. The question is, when the Vietnamese stock market is upgraded, which stock group will attract investment flows from foreign investors? Typically, in the current conditions for buying stocks of foreign investment funds in Vietnam, market capitalization is one of the first factors considered by foreign investors, followed by information transparency (Vo, 2010). Meanwhile, bank stocks account for nearly 40% of market capitalization and about half of the VN30 index's portfolio. Additionally, the banking sector is relatively transparent because it is regulated by multiple parties, including the government, the State Bank, and large institutional funds. Furthermore, the "room" for foreign investors in most Vietnamese commercial banks is nearly full and always attracts foreign investors. According to regulations, the foreign ownership ratio must not exceed 30% of the charter capital of a Vietnamese commercial bank. Therefore, considering these aspects, banking sector stocks are expected to attract more interest from foreign investors when Vietnam's market is upgraded.

In summary, foreign investors play a very important role in the future development of Vietnam's stock market, and the banking sector is one of the sectors expected to attract significant capital flows from foreign funds when the market is upgraded. More importantly, domestic investors often consider foreign investors' transactions as reference information in their investment decisions (Phan et al., 2023). Additionally, the Vietnamese government is also considering adjusting the foreign ownership ratio for banks to align with new trends. This requires more empirical research on the impact of foreign investors on banking sector stocks to provide a reference for decision-making by stakeholders. However, research on the impact of foreign investors' stock transactions on stock price volatility in Vietnam's stock market is still quite vague, and no studies have examined the case of abnormal trading volume by foreign investors in banking sector stocks. This study aims to clarify the impact of foreign investors' abnormal trading volume on the stock price volatility of banking sector stocks in Vietnam. We expect that the study's results will provide valuable reference information for market investors and government regulators.

The presentation is structured as follows: Section 2 presents the relevant theories and a review of related studies, Section 3 discusses the research methodology and data, Section 4 presents the results and discussion, and Section 5 provides conclusions and some economic implications for stakeholders.

2. LITERATURE

2.1. Relevant Theories

The theories regarding the relationship between trading volume and stock price volatility have differing viewpoints. The Mixture of Distributions Hypothesis (MDH) developed by Clark (1973) and supported by Lamoureux and Lastrapes (1990), Blume et al. (1994) and Suominen (2001), suggests that trading volume represents the flow of information into the market, with higher trading volumes indicating more information. Stock returns and trading volume are related due to underlying information flows, with stock prices changing significantly due to information being disseminated into the market, potentially forming a new equilibrium level. Conversely, the Price Pressure Hypothesis (PPH) developed by Harris and Gurel (1986) argues that stock price changes

are temporary, caused by large demand or supply from a particular investor. Subsequently, stock prices reverse as they have been pushed beyond their true value at the equilibrium price. Petajisto (2011) also suggested that price pressure and trading volume are mainly driven by the sudden needs of funds rather than other investors.

2.2. Empirical Studies

Empirical studies on the impact of foreign investors on stock markets have been conducted by many researchers for different markets, yielding distinctive and interesting results.

Ding and Sun (1997) investigated market reactions, reflected in abnormal returns, to the announcements of FDI investments by Singaporean companies using the event study methodology. The results showed that this information was positive and created positive abnormal returns. Gupta et al. (2013) found that foreign investment flows significantly impacted the overall volatility of the Indian stock market from 2001 to 2012. Also in India, Chhimwal and Bapat (2020) noted that trading behavior among market participants differed and was influenced by unexpected information events. They found that unexpected foreign indirect investment flows created significant stock price volatility, with unexpected sales by foreign investors increasing stock price volatility more than purchases. He and Shen (2014) also showed that in Japan from 1976 to 2008, the role of foreign investors significantly influenced stock prices. The increase in foreign investment contributed to improved stock prices, suggesting that changes in foreign investors' trading behavior could predict future stock price trends. In China's emerging market, Huang et al. (2020) found that foreign investors significantly increased the risk of sudden stock price crashes. Their results imply that an increase in the frequency and magnitude of foreign investors' stock sales could easily lead to a market sell-off. Adding to the debate on the role of foreign investors in stock price crashes, Kim and Park (2017) demonstrated that foreign investor participation helped companies become more transparent, making it harder for managers to hide information due to foreign investors' involvement in governance. Thus, Kim and Park (2017) supported the view that foreign investors help reduce the risk of stock price crashes in South Korea. However, Cho (2021) argued that foreign investors also engage in herd behavior regardless of nationality. Interestingly, the increase in foreign investors' stock trading activities could result in negative stock price volatility. In Turkey, Ülkü and İkizlerli (2012) found that foreign investors' capital flows could predict future market returns. Foreign investors' transactions inherently contain information, and the impact of these transactions on stock prices is long-lasting. In other words, it is a price change that remains in a new state for a long time without reverting to the initial price state. Similarly, findings by Kartal et al. (2022) also revealed that foreign portfolio flows significantly impact the Turkish stock market index. In Thailand, Phansatan et al. (2012) provided evidence that foreign investors often have macroeconomic information advantages, and their transactions are typically conducted using momentum strategies. Therefore, their purchases help increase stock returns, while their sales can exacerbate stock price declines. Similarly, in Malaysia, Sapian and Auzairy (2015) showed that foreign investors' capital flows are crucial to the market. Foreign investors' investment preferences follow momentum strategies, favoring stocks that have shown price increases, thereby further increasing stock prices and creating abnormal returns. In the Indonesian market, Danila et al. (2023) found evidence that foreign fund flows impact the Indonesian stock market through a leverage effect and suggested that the government should provide infrastructure to attract foreign investors to develop the stock market. Abdulkadir (2023) emphasizes that in emerging markets, the trading behavior of international investors can increase market volatility.

Specifically, in the Nigerian stock market, Abdulkadir (2023) provides evidence of foreign investors engaging in positive feedback trading. Similarly, in the emerging Romanian stock market, Tudor (2021) indicated that foreign investors play a significant role in market development, possessing an informational advantage over other investors. A net buying position by foreign investors is a significant predictor of stock returns over the following twelve months. In other words, the net buying behavior of foreign investors can transmit positive information about future stock performance. Evidence from the emerging Macedonian stock market by Angelovska (2020) also indicated that an increase in net buying flows from foreign investors contributes to an overall rise in market returns, with the increase in stock prices being sustainable and irreversible. In Sweden, Dahlquist and Robertsson (2004) demonstrated that foreign investors' net purchases generated superior returns on net purchase days, and these returns remained stable in the long term (prices increased and stayed at new high levels without reverting to initial states). In the U.S., Hartmann and Pierdzioch (2007) examined the impact of foreign capital flows on predicting stock market returns. They found evidence that foreign investors' net purchases were positively correlated with stock returns, and this impact was long-lasting.

In Vietnam, several previous studies have evaluated the impact of foreign investors on the stock market from different perspectives. Vo (2019) pointed out that foreign investors accelerate the incorporation of available information into domestic stock prices. Vo (2016) argued that foreign investors hold stocks with long-term strategies, thereby reducing stock liquidity and consequently decreasing stock supply. Additionally, Vo (2017b) studied foreign investors' trading behavior in Vietnam's stock market before and after the 2008 global financial crisis. The results showed that foreign investors were positive feedback traders, buying stocks when prices confirmed an upward trend and selling when prices confirmed a downward trend. These actions further promoted long-term stock price increases (creating positive abnormal returns) or could exacerbate stock price declines. This conclusion was also supported by Bui (2020).

Research on the impact of foreign investors' transactions through exchange-traded funds (ETFs) on Vietnam's stock market by Vo and Dang (2016c) analyzed market reactions through price and trading volume to the changes in stocks within the FTSE Vietnam Index from 2008 to 2014. The authors used the event study methodology to evaluate changes around the days when the fund announced the rebalancing of its portfolio stocks. The results showed that there were positive abnormal returns (price increases) accompanied by increased trading volume with the inclusion of stocks in the FTSE Vietnam Index (before and after the announcement); and negative abnormal returns accompanied by decreased trading volume before the announcement of the removal of stocks from the FTSE Vietnam Index. Interestingly, these abnormal returns persisted until the day the fund carried out the portfolio restructuring, accompanied by a positive increase in trading volume. Examining another large foreign ETF, the VanEck Vietnam ETF (VNM), Vo and Dang (2016b) evaluated how the announcement of changes in the VanEck Vietnam ETF portfolio impacted prices and trading volumes. The authors used the event study methodology and analyzed the period from 2009 to 2015. The study results showed that the market did not react to the information about changes in the VanEck Vietnam ETF portfolio on the announcement day but reacted before and after the announcement day. In other words, stock prices and trading volumes fluctuated significantly before and after the announcement day, with the inclusion and exclusion of stocks from the VanEck Vietnam ETF portfolio, but no significant fluctuations occurred on the announcement day. Stock prices increased and maintained new equilibrium levels with the

inclusion of stocks in the VanEck Vietnam ETF portfolio; prices decreased and maintained new equilibrium levels with the increase in stock weights in the VanEck Vietnam ETF portfolio. In summary, it can be seen that the fluctuations in stock prices and trading volumes through abnormal returns from foreign ETF transaction announcements, such as FTSE Vietnam ETF and VanEck Vietnam ETF, are different and inconsistent in Vietnam's stock market.

Approaching from an interesting perspective, instead of focusing on announcement events, Vo and Dang (2016a) examined how abnormal trading behaviors of foreign investors impact stock prices. They investigated whether these abnormal buy and sell events contain positive or negative information and their effects on stock prices. These abnormal trading events of foreign investors were identified based on trading values exceeding a threshold of 2.33 (equivalent to a 1% probability in a one-sided normal distribution). Additionally, the authors considered abnormal buy events on net purchase days and abnormal sell events on net sell days. The study results showed that the information contained in abnormal buy events and abnormal buy events on net purchase days by foreign investors was positive and generated positive abnormal returns on event days; the information in abnormal sell events and abnormal sell events on net sell days by foreign investors was negative and generated negative abnormal returns on event days. This study also implied that observing foreign investors' abnormal trading volumes could provide investors with additional reference information for their trading decisions.

In summary, previous studies have shown that foreign investors play a role in the development of stock markets. In Vietnam, most previous studies have approached foreign investors' trading behavior from various perspectives, showing that these transactions impact stock prices and trading volumes. Particularly, Vo and Dang (2016a) demonstrated that foreign investors' abnormal transactions contain information and create abnormal returns. However, this study did not examine specific sectors, particularly the banking sector. Building on the ideas of Vo and Dang (2016a), this study aims to clarify the impact of foreign investors' abnormal buy and sell transactions on the stock price volatility of banking sector stocks. We expect that this study will contribute additional evidence of foreign investors' impact on Vietnam's market and provide a basis for policymakers and stock market investors to refer to.

3. METHODOLOGY AND DATA

3.1. Methodology

Based on the ideas of Wright and Swidler (2023), Bajo (2010) and Jarrell and Poulsen (1989), this study uses the event study methodology to analyze the impact of foreign investors' abnormal buy and sell transactions on stock price volatility. Specifically, the steps of this methodology are as follows:

Events

The events examined in this study include four types: first, abnormal buy transactions by foreign investors; second, abnormal buy transactions on net purchase days by foreign investors; third, abnormal sell transactions by foreign investors; and fourth, abnormal sell transactions on net sell

days by foreign investors. Abnormal buy and sell transactions by foreign investors were identified using the methods of Wright and Swidler (2023), Bajo (2010) and Jarrell and Poulsen (1989). A transaction by foreign investors is considered abnormal when the normalized abnormal volume (NAV) is greater than 2.33, corresponding to a 1% probability in a one-sided normal distribution.

$$NAV_{i,t} = \frac{TV_{i,t} - \mu_{i,t}}{\sigma_{i,t}}$$

where

$$\mu_{i,t} = \frac{1}{60}\sum_{t-1}^{t-60} TV_{i,t} \qquad \sigma_{i,t} = \sqrt{\frac{1}{59}\sum_{t-1}^{t-60}\left(TV_{i,t} - \mu_{i,t}^{TV}\right)^2}$$

- $TV_{i,t}$ is the trading volume of foreign investors for stock i on day t ;
- $\mu_{i,t}$ and $\sigma_{i,t}$ are the mean and standard deviation of foreign investors' trading volume for stock i on day t over a 60-day period prior to day t.

The selected events are spaced at least 30 trading days apart to avoid having too many events within the same period for the same stock and to prevent estimation conflicts (Bajo, 2010).

Event window

MacKinlay (1997) suggested that there is no universal standard for the length of the estimation window and event window, as it depends on the type of event and the researcher's experience. Drawing on the ideas of Bajo (2010), we propose an estimation window from [-65; -6], an event window from [-5; +5], and a post-event window from [+6; +30].

Abnormal Return

Abnormal return (AR) is defined as the difference between the actual return and the expected return. Expected returns are estimated using the market and risk-adjusted model (Bajo, 2010; Bonnier & Bruner, 1989; Homan, 2006; Lummer & McConnell, 1989) and the mean-adjusted model (Brown & Warner, 1985; Lambertides, 2009).

Testing Method

This study employs a combination of parametric (T-test) and non-parametric (Sign test) tests. Using both testing methods serves as a robustness check and increases the reliability of the research results.

3.2. Data

The research data includes 27 Vietnamese joint-stock commercial banks listed on the Ho Chi Minh Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) from 2006 to 2023. Data on prices and trading volumes were collected from HOSE and HNX.

After calculations, the research sample has the characteristics shown in Table 2. Specifically, the sample includes 631 abnormal buy events by foreign investors, of which 411 events generated positive returns (Rit), accounting for 65% of observations, with an average return of 1.26%. Similarly, there are 571 abnormal buy events on net purchase days by foreign investors, of which 383 events generated positive returns (Rit), accounting for 67% of observations, with an average return of 1.41%. These results show that the average return generated on the event day of abnormal buy transactions on net purchase days by foreign investors is higher and has a higher probability of generating positive returns compared to abnormal buy events.

The sample includes 477 abnormal sell events by foreign investors, of which 194 events generated positive returns (Rit) and 283 events generated negative returns (Rit), accounting for 59% of observations, with an average return of -0.05%. Finally, there are 432 abnormal sell events on net sell days by foreign investors, of which 259 events generated negative returns (Rit), accounting for 60% of observations, with an average return of -0.15%. These results indicate that abnormal sell transactions on net sell days by foreign investors create greater negative average returns and have a higher probability of occurring than abnormal sell events.

Table 2: Descriptive statistics of the research sample

Event Type	Number of Events	Number of Rit>0	Percentage of Rit>0	Rit mean
Abnormal buy	631	411	65%	1.26%
Abnormal buy on net purchase days	571	383	67%	1.41%
Abnormal sell	477	194	41%	-0.05%
Abnormal sell on net sell days	432	173	40%	-0.15%

Source: Calculations by the authors based on the dataset.

4. THE RESULTS AND DISCUSSION

The impact of foreign investors' abnormal buy, abnormal buy on net purchase days, abnormal sell, and abnormal sell on net sell days on abnormal stock returns is detailed in Tables 3, 4, 5, and 6, respectively. Overall, the abnormal returns estimated by the market and risk-adjusted model (AAR1) and the mean-adjusted model (AAR2) show no significant differences. However, there are differences in the results of the parametric T-test and the non-parametric Sign test. Non-parametric tests do not require the sample to meet normal distribution assumptions and require fewer assumptions than other methods (MacKinlay, 1997). Therefore, the authors use the results from the Sign test for abnormal returns estimated by the market and risk-adjusted model (AAR1) for discussion in this study.

Abnormal buy and abnormal buy on net purchase days by foreign investors

The results in Table 3 show the existence of positive abnormal returns around the event days of foreign investors' abnormal buy transactions, which persist for at least 30 days after the event. On the event day [0], there is a positive abnormal return AAR1[0] = 1.08%, which is statistically significant. Before the event day [-1], there is a positive abnormal return AAR[-1] = 0.22%, which is statistically significant. After the event day [1], there is a positive abnormal return AAR[1] = 0.17%, statistically significant with the T-test but not with the Sign test. The cumulative average abnormal returns CAAR1[0; 5] = 1.07%; CAAR1[0;10] = 0.94%, and CAAR1[0;30] = 1.61% are all statistically significant at strong levels. These results suggest that foreign investors' abnormal buy transactions create positive abnormal returns, with stock prices increasing but adjusting back to the initial state. However, the price adjustment is minimal, and the stock prices continue to increase, establishing a new higher price level (Figure 1 illustrates our arguments more clearly). These results also imply that the abnormal buy events by foreign investors convey positive information.

Table 3: Abnormal buy events by foreign investors

NAV>2.33 (631 Observations)						
Day	**AAR1**	**T test**	**Sign Test**	**AAR2**	**T test**	**Sign Test**
-5	0.00%	0.01	-0.44	-0.02%	-0.17	1.87*
-4	0.14%	1.61	0.84	0.02%	0.21	1.47
-3	0.16%	1.89*	1.63	0.27%	2.62***	3.70***
-2	0.10%	1.10	1.32	0.16%	1.49	3.62***
-1	0.22%	2.57***	2.03**	0.26%	2.52**	5.85***
0	1.08%	12.41***	11.03***	1.29%	12.40***	11.35***
1	0.17%	1.92*	0.84	0.12%	1.16	1.63
2	-0.02%	-0.17	-1.63	-0.06%	-0.54	1.00
3	0.07%	0.82	-0.36	0.14%	1.33	2.03**
4	-0.17%	-1.99**	-1.47	-0.15%	-1.41	0.68
5	-0.06%	-0.65	-1.39	-0.17%	-1.60	0.52
Window	**CAAR1**	**T test**	**Sign Test**	**CAAR2**	**T test**	**Sign Test**
[-5;-1]	0.62%	3.94***	4.74***	0.70%	4.39***	5.70***
[0;5]	1.07%	6.92***	5.62***	1.18%	7.25***	5.85***
[0;10]	0.94%	6.06***	4.66***	1.32%	8.10***	4.90***
[0;30]	1.61%	10.30***	3.31***	2.43%	15.10***	3.62***

***Notes**:* AAR1 and AAR2 correspond to abnormal returns according to the market and risk-adjusted model and the mean-adjusted model, respectively. CAAR1 and CAAR2 correspond to the cumulative average abnormal returns calculated based on AAR1 and AAR2, respectively. The T test represents the parametric testing method; the Sign test represents the non-parametric testing method. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Calculations by the authors based on the dataset.

Similarly, the results in Table 4 and Figure 2 show that abnormal buy transactions on net purchase days by foreign investors also create positive abnormal returns, persisting for at least 30 days after the event, with stock prices increasing. However, the abnormal returns on the event day AAR1[0] = 1.19% are higher than the abnormal returns on the event day of foreign investors' abnormal buy transactions (AAR1[0] = 1.08%). Thus, the information conveyed in abnormal buy transactions on net purchase days by foreign investors is also positive and relatively stronger than that of foreign investors' abnormal buy events.

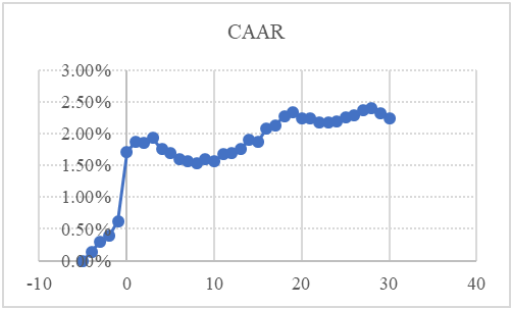
Our findings are consistent with the Mixture of Distributions Hypothesis (MDH), where trading volumes convey information to the market. Abnormal buy events and abnormal buy events on net purchase days by foreign investors contain positive information regarding banking sector stock prices. In other words, the increase in foreign investors' investments contributes to improving stock prices. These research results are also consistent with previous studies (Angelovska, 2020; Dahlquist & Robertsson, 2004; Hartmann & Pierdzioch, 2007; He & Shen, 2014; Richards, 2005; Tudor, 2021; Ülkü & İkizlerli, 2012).

Table 4: Abnormal buy on net purchase days by foreign investors

NAV>2.33 (571 Observations)						
Day	**AAR1**	**T test**	**Sign Test**	**AAR2**	**T test**	**Sign Test**
-5	0.05%	0.61	-0.31	0.03%	0.24	2.04**
-4	0.11%	1.23	0.70	0.02%	0.17	1.45
-3	0.17%	1.92*	1.70*	0.30%	2.77***	3.63***
-2	0.14%	1.58	1.29	0.18%	1.70	3.46***
-1	0.31%	3.43***	2.54**	0.36%	3.27***	6.15***
0	1.19%	13.39***	11.17***	1.39%	12.77***	11.59***
1	0.12%	1.29	0.28	0.09%	0.79	1.12
2	-0.03%	-0.28	-1.81*	-0.07%	-0.63	1.12
3	0.13%	1.45	-0.31	0.21%	1.95*	2.29**
4	-0.19%	-2.18**	-1.14	-0.16%	-1.52	0.36
5	-0.08%	-0.87	-1.56	-0.20%	-1.87*	0.03
Window	**CAAR1**	**T test**	**Sign Test**	**CAAR2**	**T test**	**Sign Test**
[-5;-1]	0.78%	4.47***	5.22***	0.89%	5.06***	5.81***
[0;5]	1.14%	6.66***	5.56***	1.25%	7.20***	6.23***
[0;10]	1.01%	5.93***	4.72***	1.39%	8.00***	4.97***
[0;30]	1.47%	8.56***	3.46***	2.33%	13.36***	3.88***

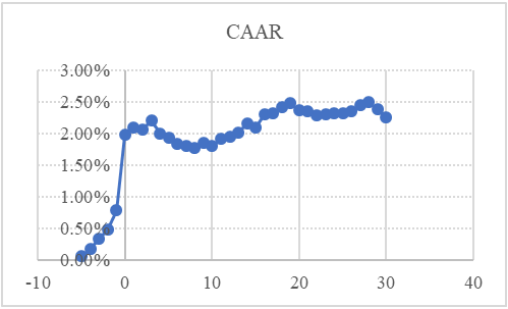
Notes: AAR1 and AAR2 correspond to abnormal returns according to the market and risk-adjusted model and the mean-adjusted model, respectively. CAAR1 and CAAR2 correspond to the cumulative average abnormal returns calculated based on AAR1 and AAR2, respectively. The T test represents the parametric testing method; the Sign test represents the non-parametric testing method. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. ***Source:*** Calculations by the authors based on the dataset.

Figure 1: Abnormal buy events



Source: Processed by authors

Figure 2: Abnormal buy on net purchase days



Source: Processed by authors

Abnormal sell and abnormal sell on net sell days by foreign investors

Abnormal sell events by foreign investors have complex impacts on banking sector stock prices. The results in Table 5 show that abnormal sell events by foreign investors do not have significant negative impacts on stock prices on the event day, AAR1[0] = -0.01%, which is not statistically significant (both T-test and Sign test). Interestingly, immediately after the event day, stock prices recover and increase, AAR[1] = 0.24%, which is statistically significant. However, this price increase does not sustain, and prices tend to revert to the initial state, even forming a downward trend, evidenced by negative abnormal returns from days [2] to [4], particularly AAR1[4] = -0.25%, which is statistically significant. Additionally, the cumulative average abnormal returns CAAR1[0;5] = -0.21%; CAAR1[0;10] = -0.47% are statistically significant, indicating a downward price trend for at least 10 days after the event. However, shortly after, stock prices tend to recover and establish new higher levels than the event day, evidenced by CAAR1[0;30] = 0.34%, statistically significant at the 10% level with the T-test. Figure 3 illustrates the price volatility in response to foreign investors' abnormal sell events more clearly.

Table 5: Abnormal sell events by foreign investors

NAV>2.33 (477 Observations)						
Day	**AAR1**	**T test**	**Sign Test**	**AAR2**	**T test**	**Sign Test**
-5	-0.01%	-0.06	-1.50	-0.09%	-0.78	-2.42**
-4	0.18%	2.02**	-0.86	0.16%	1.40	-1.60
-3	0.20%	2.32**	-0.59	0.22%	2.01**	-2.70***
-2	0.03%	0.30	-0.86	0.01%	0.11	-1.23
-1	0.01%	0.10	1.52	-0.08%	-0.73	0.42
0	-0.01%	-0.09	0.33	-0.05%	-0.41	-0.40
1	0.24%	2.67***	-2.33**	0.26%	2.33**	-3.34***
2	-0.11%	-1.29	0.51	-0.08%	-0.75	-2.05**
3	-0.10%	-1.16	0.79	-0.01%	-0.13	-1.50
4	-0.25%	-2.84***	0.88	-0.29%	-2.58***	0.88

NAV>2.33 (477 Observations)						
Day	**AAR1**	**T test**	**Sign Test**	**AAR2**	**T test**	**Sign Test**
5	0.03%	0.38	-0.86	0.03%	0.24	-1.32
Window	**CAAR1**	**T test**	**Sign Test**	**CAAR2**	**T test**	**Sign Test**
[-5;-1]	0.41%	1.97*	-1.41	0.22%	1.07	-0.68
[0;5]	-0.21%	-0.98	-2.61***	-0.15%	-0.69	-1.50
[0;10]	-0.47%	-2.25**	-2.24**	-0.51%	-2.41**	-2.15**
[0;30]	0.34%	1.64*	-1.32	0.34%	1.60	-1.50

Notes: AAR1 and AAR2 correspond to abnormal returns according to the market and risk-adjusted model and the mean-adjusted model, respectively. CAAR1 and CAAR2 correspond to the cumulative average abnormal returns calculated based on AAR1 and AAR2, respectively. The T test represents the parametric testing method; the Sign test represents the non-parametric testing method. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. ***Source:*** Calculations by the authors based on the dataset.

Similarly, the results in Table 6 and Figure 4 show that abnormal sell transactions on net sell days by foreign investors do not have significant impacts on stock prices on the event day, AAR1[0] = -0.07%, which is not statistically significant. Stock prices also tend to recover the day after the event (AAR1[1] = 0.26%), as supply decreases and prices become more attractive. However, after that, stock prices form a short-term downward trend for at least 10 days (AAR values from day [2] to day [4] are negative, particularly AAR[4] = -0.3%, statistically significant) and then tend to recover to the initial state, even forming new higher levels than the event day (CAAR[0;30] = 0.35%).

Table 6: Abnormal sell on net sell days by foreign investors

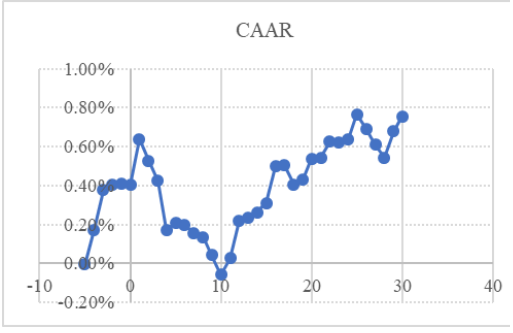
NAV>2.33 (432 Observations)						
Day	**AAR1**	**T test**	**Sign Test**	**AAR2**	**T test**	**Sign Test**
-5	0.01%	0.08	-1.48	-0.11%	-1.01	-2.35**
-4	0.17%	1.79*	-1.00	0.14%	1.21	-1.68*
-3	0.15%	1.52	0.06	0.18%	1.55	-1.96**
-2	0.02%	0.26	-1.10	-0.04%	-0.33	-1.10
-1	-0.03%	-0.28	1.89*	-0.18%	-1.60	0.93
0	-0.07%	-0.75	0.54	-0.14%	-1.23	-0.13
1	0.26%	2.74***	-2.25**	0.26%	2.25**	-3.12***
2	-0.05%	-0.50	0.35	-0.02%	-0.15	-2.16**
3	-0.10%	-1.02	0.54	-0.02%	-0.22	-1.68*
4	-0.30%	-3.15***	0.73	-0.36%	-3.14***	1.22
5	0.08%	0.80	-1.00	0.06%	0.56	-1.58
Window	**CAAR1**	**T test**	**Sign Test**	**CAAR2**	**T test**	**Sign Test**
[-5;-1]	0.33%	1.40	-1.58	-0.02%	-0.09	-1.10
[0;5]	-0.18%	-0.79	-2.45**	-0.22%	-0.96	-1.58

NAV>2.33 (432 Observations)						
Day	**AAR1**	**T test**	**Sign Test**	**AAR2**	**T test**	**Sign Test**
[0;10]	-0.56%	-2.44**	-2.16**	-0.66%	-2.85**	-2.25**
[0;30]	0.35%	1.53	-1.00	0.26%	1.12	-1.77*

Notes: AAR1 and AAR2 correspond to abnormal returns according to the market and risk-adjusted model and the mean-adjusted model, respectively. CAAR1 and CAAR2 correspond to the cumulative average abnormal returns calculated based on AAR1 and AAR2, respectively. The T test represents the parametric testing method; the Sign test represents the non-parametric testing method. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. ***Source***: Calculations by the authors based on the dataset.

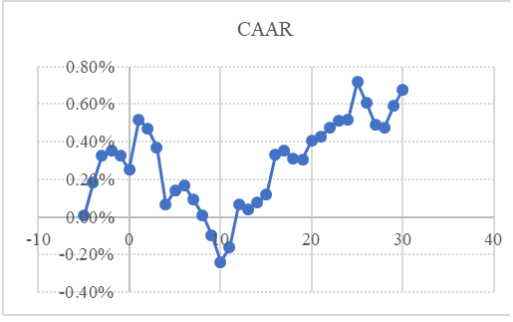
Overall, abnormal sell events and abnormal sell events on net sell days by foreign investors do not have significant impacts on stock prices on the event day. However, the information contained in foreign investors' abnormal sell transactions is negative and impacts banking sector stock prices in the short term, for about 10 days after the event. Subsequently, stock prices recover to their initial state. This finding is consistent with the Price Pressure Hypothesis (PPH). Moreover, our results align with Huang et al. (2020), where foreign investors' abnormal sales can trigger a stock price decline. Additionally, foreign investors' abnormal sales increase stock price volatility more than their abnormal purchases, consistent with Chhimwal and Bapat (2020).

Figure 3: Abnormal sell events



Source: Processed by authors

Figure 4: Abnormal sell on net sell days



Source: Processed by authors

5. CONCLUSION AND POLICY IMPLICATIONS

This study aims to evaluate the impact of foreign investors' abnormal trading events on the abnormal returns of banking sector stocks in Vietnam. The data sample includes 631 abnormal buy events, 571 abnormal buy events on net purchase days, 477 abnormal sell events, and 432 abnormal sell events on net sell days by foreign investors. These events were identified based on the stock price information of 27 Vietnamese joint-stock commercial banks listed on the Ho Chi Minh Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) from 2006 to 2023. The study employs the event study methodology with parametric and non-parametric tests. The research results show that abnormal buy events and abnormal buy events on net purchase days by foreign investors convey positive information and have a positive impact on stock prices, creating positive abnormal

returns. Simultaneously, stock prices form new equilibrium levels higher than before the event. Abnormal buy events on net purchase days provide stronger evidence than abnormal buy events. Abnormal sell events and abnormal sell events on net sell days by foreign investors convey negative information and have a negative impact on stock prices in the short term. Subsequently, stock prices tend to revert to their initial state before the event, even forming new higher price levels. Additionally, the study found that foreign investors' abnormal sales create more complex price volatility than their abnormal buy activities.

Based on these research results, we have several recommendations for stakeholders. First, for investors: (i) investors can observe foreign investors' abnormal buy transactions and abnormal buy transactions on net purchase days as valuable reference criteria for investment decisions in banking sector stocks; (ii) investors should not panic over foreign investors' abnormal sell transactions and abnormal sell transactions on net sell days for banking stocks, as the negative price volatility is short-term, and prices tend to return to the initial state. Second, for policymakers, consider creating a more favorable environment to attract foreign investors to increase the value of banking sector stocks. Our research findings indicate that large-volume stock purchases by foreign investors are likely to generate a positive trend in the prices of banking sector stocks. This not only benefits the banking stocks themselves but may also have a spillover effect on other industry groups, thereby fostering the overall development of the stock market. Therefore, the development of policies by the Vietnamese government to facilitate the attraction of foreign investors not only meets the objectives of the strategy to upgrade the stock market but also achieves broader benefits in developing the stock market. Furthermore, the government should consider relaxing the foreign ownership limit at Vietnamese commercial banks to better align with the increasing foreign investment flows as the stock market is upgraded. Increasing the ownership limit for foreign investors in the banking sector from the previous regulatory cap of 30% of charter capital is indeed necessary to absorb substantial capital from foreign investors when the Vietnamese stock market is upgraded.

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