The Effect of Earning Surprise on Market Reaction at Various Free Float Levels: An Event Study in Thailand

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การตอบสนองของราคาหลักทรัพย์ ต่อการประกาศผลกำไรที่คาดเคลื่อนจากที่คาดการณ์ ที่หลากหลายระดับสัดส่วนของผู้ถือหุ้นรายย่อยกรณีศึกษาหลักทรัพย์ที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย

น.ส.เนตรชนก ทองปลอด

สารนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
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เนตรชนก ทองปลอด : การตอบสนองของราคาหลักทรัพย์ ต่อการประกาศผลกำไรที่คาดเคลื่อนจากที่คาดการณ์ ที่หลากหลายระดับสัดส่วนของผู้ถือหุ้นรายย่อยกรณีศึกษาหลักทรัพย์ที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย . (The Effect of Earning Surprise on Market Reaction at Various Free Float Levels: An Event Study in Thailand) อ.ที่ปรึกษาหลัก : ผศ. ดร.นราพงศ์ ศรีวิศาล

การศึกษานี้เป็นการศึกษาความสัมพันธ์ระหว่างการตอบสนองของราคาหลักทรัพย์ ต่อการประกาศผลกำไรที่คาดเคลื่อนจากที่คาดการณ์ ที่หลากหลายระดับสัดส่วนการถือหุ้นของผู้ถือหุ้นรายย่อย (Free Float) ของบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย (SET) โดยชี้ให้เห็นถึงบทบาทที่สำคัญของระดับ สัดส่วนการถือหุ้นของผู้ถือหุ้นรายย่อย (Free Float) ในการมีอิทธพลต่อประสิทธิภาพของตลาดและพฤติกรรมของนักลงทุน บนพื้นฐานสมมติฐานตลาดที่มีประสิทธิภาพ (EMH) ซึ่งระบุว่าราคาหุ้นจะสะท้อนข้อมูลทั้งหมดที่มีอยู่ ทำให้ยากต่อการสร้างผลตอบแทนจากตลาด อย่างไรก็ตาม เป็นที่ยอมรับว่าความไร้ประสิทธิภาพของตลาดสามารถเกิดขึ้นได้ ซึ่งหนึ่งสาเหตุที่เป็นไปได้ก็คือ ส่วนต่างระหว่างการประมาณการณ์ผลการดำเนินงานจากนักวิเคราห์ กับผลการดำเนินของบริษัทที่เกิดขึ้นจริง ซึ่งจะส่งผลให้นักลงทุนสามารถหาโอกาสที่จะได้รับผลตอนแทนจากตลาดได้ ซึ่งการศึกษานี้จะศึกษาสัดส่วนการถือหุ้นของผู้ถือหุ้นรายย่อย (Free Float) มีผลต่อการตอบสนองของการปรับตัวของราคาหลักทรัพย์อย่างไร ที่ถูกกระตุ้นโดย ความคาดเคลื่องการประมาณการณ์ผลประกอบการของบริษัท การที่หุ้นมีสัดส่วนการถือหุ้นของผู้ถือหุ้นรายย่อยอย่างจำกัดจะส่งผลกระทบอย่างไรต่อราคาหุ้นและ ประสิทธิภาพของตลาด โดยใช้ตัวอย่างข้อมูลจากบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทยระหว่างปี 2012-1019 โดยหุ้นที่มีสัดส่วนการถือหุ้นของผู้ถือหุ้นรายย่อยต่ำ (Low Free Float) มีผลกระทบอย่างมีนัยสำคัญต่อผลตอบแทนสะสมที่ผิดปกติ หลังจาก ที่มีการประกาศผลการดำเนินงานของบริษัท ในลักษณะที่มีการตอบสนองต่อตลาดมากจนเกินไป ในทางตรงกันข้ามหุ้นที่มีสัดส่วนการถือหุ้นของผู้ถือหุ้นรายย่อยสูง (High Free Float) จะตอบสนองต่อข่าวเชิงลบอย่างมีนัยสำคัญ ซึ่งผลของการศึกษานี้มีความสำคัญต่อผู้ที่มามีส่วนร่วมในตลาดหุ้น ซึ่งจะเน้นความสำคัญของ การถือหุ้นของผู้ถือหุ้นรายย่อย ซึ่งมีอิทธิพลต่อประสิทธิภาพของตลาด และพฤกติกรรมของนักลงทุน ในบริบทของการตอบสนองต่อการคาดเคลื่อนของการประกาศผลการดำเนินงานของบริษัทที่จดทะเบียนในประเทศไทย (SET)

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Netchanok Thongplod : The Effect of Earning Surprise on Market Reaction at Various Free Float Levels: An Event Study in Thailand. Advisor: Asst. Prof. Narapong Srivisal, Ph.D.

This study investigates the complex relationship between free float and market reactions to earnings surprises within the context of the Thai stock market, casting light on the role of free float in influencing market efficiency and investor behavior. The study examines the Efficient Market Hypothesis (EMH), which states that stock prices reflect all available information, making consistent market outperformance difficult. However, it acknowledges that market inefficiencies can occur, with earnings surprises as one possible source. The study investigates how the level of free float or the number of shares available for trading impact the speed and precision of market adjustments to earnings surprises. A limited free float could have an impact on stock prices and market efficiency. This phenomenon is investigated using a sample of Thai stock market data from 2012 to 2019, such as earnings surprise, stock price, and free float levels. Low free float stocks have a significant impact on cumulative abnormal returns following earnings surprises, with a distinct pattern of initial enthusiasm and potential overreactions. In contrast, stocks with a high free float react quickly to negative news, resulting in greater price declines. These findings have considerable implications for market participants and researchers, highlighting the significance of incorporating free float into stock market dynamics analyses. This study provides valuable insights into the interaction between free float, market efficiency, and investor behavior in the context of earnings surprises on the Thai stock market.

Field of Study:	Finance	Student's Signature .....
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CHAPTER 1: INTRODUCTION

1.1 Background

The Efficient Market Hypothesis (EMH) suggests that stock prices reflect all available information, making it impossible for investors to consistently outperform the market (Fama, 1970), (Clarke et al., 2001).Nonetheless,(Bernard & Thomas, 1990) showed that stock prices do not always fully reflect all available information, and (Hirshleifer et al., 2009) also suggest that investor can sometimes earn excess profits by trading on market inefficiencies, one source of market inefficient may be earnings surprise, which occur when a company's actual earnings differ significantly from analysts' expectation. Earning surprise can have a significant impact on stock price (Jegadeesh & Livnat, 2006b). As investors react to the new information and adjust their valuation of the company accordingly. However, the speed and accuracy of this adjustment may depend on various factors, such as the level of free float of the company's shares. Free float[1] refers to the number of shares available for trading in the market, which are not held by insiders. It has been identified as a factor that affects stock performance. Free float, often known as "public float," refers to the proportion of a company's total capital that is available for trading on the stock market or the proportion of its shares that can be traded freely. The level of free float is contingent upon the definition of major shareholders or strategic shareholders. In Thailand, The Stock Exchange of Thailand (SET) defines "free float" as the remaining stocks after strategic shareholder shares are accounted for. The strategic holders belong to one of the following groups[2]; (1) top management officers, including their families and relatives; (2) shareholders holding more than 5% of paid-up capital,

[1] https://corporatefinanceinstitute.com/resources/capital-markets/free-float/
[2] https://www.set.or.th/en/listing/listed-company/simplified-regulations/maintaining-status/free-float

along with related persons; and (3) Controlling person who could significantly influence a company's policy processes, management, or operations. Thai-listed firms must meet requirements regarding their free float. The SET Board of Governors requires listed companies to have at least 150 minority shareholders holding at least 15% of paid-up capital, as shown on the shareholder list used for the annual general meeting of shareholders (AGM). If a company fails to meet the requirement for two years in a row, it will be charged additional SET listed fees until the qualification is restored. Additional fees are calculated based on the duration of the violation and the size of the free float shortfall (Netiniyom, 2016), which highlights the significance of free float in stock trading, low free float may affect stock price movement. (Bostanci & Kilic, 2010) also mention that free float ratio provides a convenient way to assess a company's ownership structure. A low free float ration suggests concentrated ownership and limited market depth. There are two potential effects of a low free float ratio. First, investors may be hesitant to invest in such a company due to concerns about expropriation in weak corporate governance environments. Second, a lower free float can result in lower market liquidity, as there are fewer shares available for trading. Investors generally dislike an illiquid market, so a small free float is likely to have a negative impact on the value of stock that lack sufficient investor demand. In addition to this, there is the issue with the stock market. The shares of some companies have very low real trading volumes or levels of liquidity, despite the fact that their free float ratios still exceed the required norms. The phrase "low free float shares"[3] has been cited as one of the suspect reasons that has contributed to the stock market's erratic behavior. As a result, significant shareholder, and investor movement

[3] https://www.kasikornresearch.com/en/analysis/k-social-media/Pages/FreeFloat-FB-15-01-21-1.aspx

have had an impact on stock prices.

In an efficient market, when there is an earnings surprise, the stock price should quickly adjust to reflect the new information, meaning that the stock price will move up or down depending on whether the earnings were better or worse than expected. This adjustment should happen quickly because there are enough buyers and sellers in the market to absorb the new information, and the stock price reflects all available.

On the other hand, (Chordia et al., 2009) a higher liquidity can lead to more efficient market, even when there are earnings surprise. When there is a larger free float, it means that there is more share available for trading in the market, which can increase liquidity of the stock (Ding et al., 2016), meaning that the stock price will more quickly reflect new information such as earnings surprise. However, (Eva & Claudia, 2018) state that if the free float of a stock is low, it may take longer for the stock to adjust to the earnings surprise. This is because there are fewer shares available for trading which can result in less liquidity and slower price discovery. As a result, the stock price may not immediately reflect all available information, potentially leading to market inefficiency. In addition, a low free float means that there are a limited number of shares available of public trading, which can create a supply-demand imbalance. If there are more buyers than sellers, the price of the stock can be bid up, and if there are more sellers than buyers, the price can be pushed down. And in terms of the market efficiency, a low free float can make it more difficult for the market to efficiently price the stock because it limits the number of shares in the market. However. This effect may be temporary, as investor may be attracted to the stock due to its limited supply, which could increase demand and push up the price

Market efficiency can be challenging to achieve when there is a low free float since in limits the numbers of shares in the market. Therefore, we hypothesize that the impact of earning surprise on market reaction will be more significant in market with higher free float levels. We also expect that the level of free float will be positively related to market efficiency by investing in the post earnings announcement drift (PEAD).

In this research, we aim to investigate the impact of earning surprise on market reaction at various free float levels, with a particular focus on the Thai stock market. Due to the fact that Thailand is an emerging market, (Griffin et al., 2010) found that an emerging market has a relatively low level of market efficiency, not all investors receive information simultaneously. Hence, as fresh information enters the market, investors have a tendency to overreact or underreact, causing shares to rise or fall until they reach equilibrium. In addition, the role of free float on market efficiency has not been researched in depth. By determining if the quantity of free float of shares affects the speed and precision of market reaction to earnings shocks, and whether this relationship has consequences of market efficiency. We will also explore the potential sources of market inefficiency and their influence on investor behavior and stock price dynamics.

The study will be based on a sample of listed companies in the Stock Exchange of Thailand (SET) over a period of eight years, from 2012-2019. Data on earning surprise, stock price, and free float levels will be collected and analyzed using regression analysis. The results of this study will provide valuable insight into the impact of earning surprises on market reaction and the role of free float in the post earnings announcement drift (PEAD) which could refer to market efficient and cloud

be used by investor and policy makers to make informed decision and to understand market efficiency and investment strategies in the Thai stock market.

1.2 Objective of this study

The objective of this study is to examine the impact of earnings surprises on market reaction and the efficient of the Thai stock market, with a particular emphasis on the role that free float plays in determining stock prices. The study aims to determine whether the market reacts efficiently to earnings surprises, taking into account the varying degrees of free float by analyzing abnormal return using event studies approach, this study seeks to provide insights into the degree of market efficiency in the Thai stock market. The focus is on how free float impacts the market's reaction to earning surprise and whether this reaction is consistent with the efficient market. Furthermore, this study will investigate the impact of free float on the speed of market reaction to earning surprise, which can offer additional evidence to support market efficiency or inefficiency.

1.3 Contribution

This study aims to contribute to the existing literature by examining the effect of free float on market efficiency and market reaction in response to earning surprise. Although previous research has examined the relationship between free float and market liquidity or even market performance, the effect of free float on market efficiency has not been empirical evidence established. This study aims to provide investors with valuable insights regarding the role of free float in their investment decision making process by examining this relationship. Consequently, the purpose of this study is to contribute to a better understanding of the relationship between free

float, market efficiency, and market performance on the post earnings announcement drift (PEAD) and to assist investors in making more informed decision when navigating financial markets.

CHAPTER 2: LITERATURE REVIEW

We separate our literature review into four parts: 2.1 Market efficiency, 2.2 The impact of the free float on market performance, 2.3 Surprise event on market performance, and 2.4 The Post-Earnings-Announcement Drift.

2.1 Market efficiency

According to the efficient market hypothesis, (Fama et al., 1969) states that market prices immediately reflect all publicly available information, including earnings announcements, dividend changes, new stock issuances, political events, and economic indicators. However, the speed and efficiency of the adjustment process varied depending on the type of information and the characteristics of the individual stock. And their study also identified several factors that influenced the speed and efficiency of the adjustment process, including the size and liquidity of the stock, the level of analyst coverage, and the degree of uncertainty surrounding the new information which consist with another study of (Fama, 1970) that they introduced the concept of efficient market hypothesis which states that asset price in an efficient market reflect all available information. This means that it is impossible to consistently earn an abnormal return by using information that is already known by the market. The securities market was highly efficient in promptly reflecting any new information regarding individual stocks and the overall stock market. This implies that whenever there was news or information, it would quickly spread and be reflected

in the price of the securities without any significant delay. In addition, the study of (Clarke et al., 2001) also support the efficient market hypothesis, however, they found some studies ague the efficient market hypothesis, particularly in the form of market anomalies such as momentum and value effect. These anomalies suggest that certain types of securities may be systematically mispriced and can be used to generate abnormal return.

On the other hand, (Chordia et al., 2008) study on the relationship between liquidity and market efficiency, they found that higher liquidity is associated with greater market efficiency, as measured by the speed at which new information is reflected in stock price which in line with the study of (Chung & Hrazdil, 2010), they found that firms with higher liquidity had lower absolute percentage deviation from their fundamental values, indicating higher levels market efficiency. This relationship was stronger for firms with higher institutional ownership and higher analyst coverage. This research provides evidence that a higher level of liquidity can lead to greater market efficiency. Other research indicates that stock market efficiency and liquidity are closely related and can be mutually reinforcing. Improvements in liquidity can lead to greater efficiency, while improvements in efficiency can attract more investor and further improve liquidity (Yang & Pangastuti, 2016). Hence, these have implications for investors, who may be able to achieve better returns by investing in more liquid stocks, and for policymakers, who may be interested in prompting liquidity as a means of improving market efficiency.

In addition to the form of market efficiency in Fama's paper, I believe that the concept of free float has also become an important consideration in determining the

efficiency of the financial markets. Free float refers to the number of shares of a company that are freely available for trading in the market, and not held by insiders or restricted from trading. A higher free float typically indicates a more liquid market with greater availability of shares for trading, which can improve market efficiency. This is because a larger pool of available shares can increase the speed and accuracy with new information is reflected in stock prices.

2.2 The impact of the free float on market performance

Free float has been identified as a factor influencing the performance of stocks. The relationship between the free float ratio and the ownership structure and market performance of a company has been extensively studied by many researchers. (Eva & Claudia, 2018) discovered that the free float ratio provides insight into the ownership structure of a business. A low free float ratio indicates a concentrated ownership structure as well as a small and thin shallow market for the company. The free float ratio can have two effects on stock prices. First, investors will typically avoid a stock with a low free float ratio. Secondly, a lower free float ratio indicates that there are fewer shares on the market, which could lead to low liquidity on the market for that stock. Investors dislike illiquidity. In other words, investors did not pay more or less for stocks based on the perception of the free float ratio as high or low. The free float ratio appears to have a positive correlation with price volatility. Lastly, the free float ratio has a direct correlation with trading volumes. In other words, a greater free float ratio contributes to greater market liquidity. In addition, they promote the development of incentive measures to be presented to firms and policymakers in order to increase floating ratios, so reducing the cost of capital and ensuring the growth of the capital market.

(Bostanci & Kilic, 2010) examined the influence of the free float ratio on the market performance of Turkish equities in a study. The study evaluated the relationship between the free float ratio and three dependent variables: the average daily closing price, price volatility, and average trading activity. The results indicated that the market favors greater free float ratios, as equities with a greater ratio had a higher average daily closing price and more trading activity. Nonetheless, the study indicated that the price volatility or risk of a stock increased as the free float percentage grew. According to (Chan et al., 2004), in Asian and emerging market stock markets, the number of outstanding shares deemed tradable may be very limited due to government control and significant shareholders, making it difficult to estimate the number of accessible free-floating shares.

In another study,(Imisiker & Tas, 2013) examined the connection between market manipulation and free float ratios. They discovered that firm with low free float ratios and high leverage ratios were more likely to be subject to market manipulation which is consist with what (Lamont & Thaler, 2003) document that a low free float may intensity the mispricing of tech carve outs because there may be limited liquidity in the stock when the parent company holds a large share in the carve out, which can lead to greater mispricing. In addition (Greenwood, 2006) find that companies that engage in float manipulation tend to have lower future profitability, lower future sales growth, and higher future bankruptcy risk. These results suggest that float manipulation is not a sustainable strategy for creating long-term shareholder value and suggest that investors should be cautious of companies that engage in float manipulation, as these companies may be artificially inflating their stock prices and masking underlying weaknesses in their businesses.

(Michel et al., 2014) examined the relationship between the post-IPO market performance of a stock and the proportion of shares issued to the public. They discovered that the relationship between long-run abnormal returns and free float follows a U-shaped (non-linear) pattern: as the free float increases, long-run returns decrease at low levels and increase at high levels. They attribute this relationship to the post-IPO ownership structure and suggest that a larger free float can increase the monitoring power of external shareholders, which in turn can improve long-term market performance by discouraging management and existing shareholders from taking actions that benefit themselves primarily. Similar to (Meles & Salerno, 2020), They discovered that the association between free float and performance is U-shaped, and that newly listed companies had abnormally poor operating performance in the year after their IPO. They indicate that at low levels of free float, increasing the level of free float may have a smaller negative impact on the agency problem, they suggest that increasing free float can improve the ability of shareholders to monitor the actions of management and ensure that they act in the best interests of the company. In contrast, (Madyan et al., 2020) found no significant correlation between free float and long-term market performance on the Indonesian Stock Exchange. However, they discovered that Indonesian investors view free float as a risk factor and that warrants can help companies with high project risks reduce agency costs.

On the other hand, multiple research studies on free float and stock liquidity demonstrate that liquidity also plays a significant role in determining stock price and can relate to market efficiency; (Rezaei & Tahernia, 2013), (Ding et al., 2016) and (El-Nader, 2018) have examined the correlation between free float and liquidity in stock markets. El- Nader's indicated that higher levels of free float boost liquidity by

controlling for company variables such as share price, size, leverage, and foreign ownership, whereas institution ownership decreases the liquidity of domestic firms by decreasing trading activity. According to the research of Ding et al., stocks with a greater free float have a better degree of liquidity in all economic zones and can prevent liquidity from drying up during market shocks. Rezaei and Tahernia discovered a direct correlation between free float shares and the number of buyers, transactions, and turnover ratio, indicating a favorable association with liquidity. Similar to (Lam et al., 2011) discovered that free float and liquidity are correlated as the higher supply of the stock makes it easier to trade. These studies indicate that a greater proportion of free-floating shares is related to greater liquidity and lower liquidity risk, indicating that the market will be more efficient if there is higher liquidity and higher free float.

Overall, the research on the free float ratio indicates that it is crucial in defining a company's ownership structure and market performance. The aforementioned research emphasizes the significance of analyzing the free float ratio when assessing the liquidity and risk of a stock and provides insight into the factors that determine free float and its effect on market performance.

2.3 Surprise event or announcement on market performance

Accounting's capital markets research was pioneered by (Ball & Brown, 1968) and (Beaver, 1968). Ball and Brown also conduct an association study in addition to their event research. Both types of studies are now prevalent in scholarly works.

In an event study, (Collins & Kothari, 1989) state that an earnings announcement conveys new information to market participants, as reflected by

changes in the level or variability of stock prices or trading volume during a short time period surrounding the event. In addition, (Jegadeesh & Livnat, 2006b) find that stock returns are positively correlated with revenue surprises and that post-announcement abnormal returns are positively correlated with revenue surprises. Similar to (Jegadeesh & Livnat, 2006a), they demonstrate that the magnitude of the post-earnings announcement drift is larger when both revenue and earnings surprises have the same sign. According to (Ertimur et al., 2003), the market reacts more strongly to earnings surprises than to revenue surprises. (Kothari, 2001) found statistically significant positive correlations between earnings surprises and abnormal returns following preliminary earnings announcements. Furthermore, (Alwathnani et al., 2017) examine the well-documented market reaction to the announcements of earnings surprises as a manifestation of an investor's underreaction or overreaction to extremely positive or negative earnings news. The evidence suggests an initial investor overreaction to extreme earnings surprise signals, according to the authors.

In other study, (Fernández-Rodríguez et al., 2004) investigate the market's reaction to the announcement made by Spanish firm regarding their compliance with the best practice code. The aim of this study is to examine how various business characteristics may have contributed to the reported excess return. The data reveal that the market response favorably to announcements of compliance with the law that imply a substantial reorganization of the board of directors. However, announcements linked to individual suggestions in the code do not appear to have a substantial impact on the market. The observed market response is bigger for corporations with lower leverage and a greater proportion of executive directors (lower free float).

2.4 The Post Earnings Announcement Drift

The post earnings announcement drift (PEAD) which (Fama, 1998) calls the "granddaddy of underreaction events", is one of the most puzzling anomalies in finance. The post earnings announcement drift (PEAD) refers to the phenomenon that stock prices tend to continue to drift upward (downward) following earnings announcements when the quarterly earnings were above (below) expectations.

According to (Bernard & Thomas, 1990), they investigated the post earnings announcement drift (PEAD) phenomenon in the stock market and found that firm with earning surprise experience abnormal return over several months. They explored two explanations for post earnings announcement drift (PEAD): delayed price response and risk premium. The result suggests that both factors contribute to the post earnings announcement drift (PEAD) phenomenon. Delayed price response means that the market takes time to fully incorporate the information in earnings announcements, while risk premium means that investors demand higher returns for holding stock with higher earning uncertainty which consist to the study of (Francis et al., 2007), they examined the correlation between uncertainty regarding a company's future prospects and the market's response to its earnings announcement. The result showed that greater uncertainty led to a more pronounced post earnings announcement drift (PEAD) effect, where stock prices continued to drift in the direction of the earning surprise. The study also revealed that the market reacted more significantly to earnings announcements for firms with higher information uncertainty, implying that investors paid more attention to earnings news in such cases. Additionally, the effect of uncertainty on the post earnings announcement drift (PEAD) effect was more potent for firms with higher institutional ownership,

indicating that institutional investors, with greater resources for processing information, were more sensitive to a company's future prospects uncertainty.

In addition (Chordia et al., 2009) suggest liquidity is an important factor in the post earnings announcement drift (PEAD).They argue that liquidity affects the magnitude of the post earnings announcement drift (PEAD) because illiquid stocks are more likely to experience delayed price reactions to earnings surprises than liquid stocks. And they find that stocks with low liquidity experience a more significant post earnings announcement drift (PEAD) than highly liquid stocks. Therefore, the finding of their study suggest that liquidity is an important factor in explaining the post earnings announcement drift (PEAD), and that investors should consider liquidity when evaluating the magnitude of post earnings announcement price movements which consistent to the study of (Sadka, 2006), they found that liquidity risk is a priced risk factor that is positively related to expected returns. Stocks with higher liquidity risk earn higher average returns, which suggests that investors demand a premium for bearing liquidity risk and liquidity risk is an important factor in understanding both the momentum and post earnings announcement drift (PEAD) anomalies in financial markets. The study highlights the need for investors to take into account liquidity risk when making investment decisions, and for regulators to consider the impact of liquidity risk on market efficiency.

Literature gap and contribution

Numerous studies have examined the relationship between free float and market performance, highlighting the impact of ownership structure, IPO stock performance, and market liquidity on stock returns. Low free float stock ten to have

greater market reaction (Fernández-Rodríguez et al., 2004) and limited supply (Chan et al., 2004) which can affect stock return. Some studies indicate a positive correlation between free float and short-term market performance however no significant correlation in long term M. Madyan et al. (2020), while Michel et al (2014); Meles & Salerno (2020) discovered a U-sharped relationship between them.

In addition, Lam D., Lin, B.-X., & Michayluk, D. (2011) found that free float is associated with market liquidity and the potential for market manipulation (Imisiker & Tas, 2013) which can have an impact on market efficiency. While the efficient market hypothesis proposes that financial markets are efficient and that price reflect all available information (Fama, 1970), I believe that market efficiency can be influenced by a variety of factors, including free float. Due to the possibility of market manipulation and limited supply, stock with a low free float may be less efficient than those with a higher free float. However, to our knowledge, this relationship has not been conclusively established, and additional empirical research is necessary to investigate the effect of free float on market efficiency.

Therefore, the purpose of my study is to contribute the existing literature by exploring the role of free float in the market reaction when earning surprise happen, particularly interested in the effect of free float on the post earnings announcement drift (PEAD) which could help to explain market efficiency. By addressing this gap in the literature, the objective of my study is to provide investor with insight to consider when making investment decision, taking into account the effect of free float on market efficiency in the Thai stock market.

CHAPTER 3: RESEARCH QUESTION AND HYPOTHESIS DEVELOPMENT

Numerous studies confirm, based on the existing literature, that the earnings surprise announcement had an effect on market performance, as evidenced by changes in the level or variability of stock prices surrounding the event. Collins and Kothari (2009). In accordance with the following research question and hypothesis, I would like to expand the study to examine the impact of earnings surprises on stock prices when various levels of free float are taken into account. This could help to explain the efficiency of the market according to Fama et al (1969), market efficiency occurs when publicly available information is immediately reflected in stock price.

3.1 Positive Surprises Hypothesis

Research Question 1: How does free float impact the cumulative abnormal returns (CAR) when positive earning surprise happen, and how does this effect help to explain the post earnings announcement drift phenomenon?

Hypothesis 1.1: Lower free float has higher cumulative abnormal returns (CAR) when positive earning surprise happen.

The hypothesis 1.1, based on Eva & Claudia (2018) state that a lower free float ratio indicates that there are fewer shares on the market, which could lead to low liquidity on the market, And Chan et al., 2004 also confirm that the market's limited supply of free-float shares has a significant impact on stock returns. So, I believe that a low free float may be related to a limited supply if the stock in high demand, which may cause the price to rise and result in a higher return when earnings surprises occur.

Hypothesis 1.2: Lower free float stocks have stronger post earnings announcement drift (PEAD), when positive earning surprise happen.

The hypothesis 1.2, based on Chordia et al (2009), suggest that stocks with low liquidity experience a more significant the post earnings announcement drift (PEAD) than highly liquid stocks and more likely to experience delayed price reactions to earnings surprises than liquid stocks, which are similar to low free float in that limited supply, making it more difficult for public investor to buy and sell stock and more likely to delay price reaction to earnings surprises than higher free float. So, this could lead to against the market efficient with low free float, investor could earn abnormal return.

We expand on the second research question by introducing interaction between earning surprise and free float categories (high, medium, and low) to investigate whether the impact of earnings surprise on the cumulative abnormal returns (CAR) differs depending on the level of free float by linkage with X. (S.) Ding et al. (2016), who find that a stock's liquidity and volatility, as reflected by its free float.

Research Question 2: Does the impact of positive earning surprise on cumulative abnormal returns (CAR) depend on free float, how the post earnings announcement drift (PEAD) varies by free float?

Hypothesis 2.1: The impact of positive earnings surprises on the cumulative abnormal returns (CAR) for low free float is higher than for high free float.

The hypothesis 2.1, we would like to apply the findings of Fernández-Rodríguez et al.'s (2004) study on the market's reaction to the announcement of compliance with best practice codes to my owns study. According to their study, firms with a greater proportion of executive directors had a more favorable market

response. This could be related to low free float because executive directors are considered strategic shareholders.

Hypothesis 2.2: Lower levels of free float led to a more the post earnings announcement drift (PEAD) in terms of the impact of positive earning surprise on the cumulative abnormal returns (CAR).

The hypothesis 2.2 is similar to the hypothesis 1.2, but we add an interaction term between positive earning surprise and free float categories in order to see the magnitude of the post earnings announcement drift (PEAD) depends on free float level categories.

3.2 Negative Surprises Hypothesis

Research Question 1: How does free float impact the cumulative abnormal returns (CAR) when negative earning surprise happen, and how does this effect help to explain the post earnings announcement drift phenomenon?

Hypothesis 1.1: Lower free float has a greater decline in the cumulative abnormal returns (CAR become more negative or lower CAR) when negative earning surprise happen.

The hypothesis 1.1, based on Eva & Claudia (2018) and Chan et al., 2004, a lower free float ration means there are fewer shares available for trading, potentially leading to lower market liquidity. In the context of negative earnings surprise, stocks with restricted free float tend to exhibit more pronounced price declines and increased volatility when faced with negative earnings surprises, leading to rapid price swings as buyers and sellers respond in a market with limited liquidity. Investors holding such stocks may encounter challenges when attempting to sell at desired prices,

particularly during periods of heightened selling pressure, as the scarcity of available shares can intensify price drops, prompting sellers to accept lower prices to exit their positions, resulting in lower return during negative earnings surprise. Conversely, stocks with higher free float ratios are less susceptible to dramatic price swings, as their greater supply of shares enables them to absorb selling pressure more effectively.

Hypothesis 1.2: Lower free float stocks have stronger post earnings announcement drift (PEAD), when negative earning surprise happen.

The hypothesis 1.2, based on Chordia et al (2009), suggest that stocks with low liquidity experience a more significant the post earnings announcement drift (PEAD) than highly liquid stocks and more likely to experience delayed price reactions to earnings surprises than liquid stocks, which are similar to low free float in that limited supply, making it more difficult for public investor to buy and sell stock and more likely to delay price reaction to earnings surprises than higher free float. So, this could lead to against the market efficient with low free float.

We expand on the second research question by introducing interaction between earning surprise and free float categories (high, medium and low) to investigate whether the impact of negative earnings surprise on the cumulative abnormal returns (CAR) differs depending on the level of free float by linkage with X. (S.) Ding et al. (2016), who find that a stock's liquidity and volatility, as reflected by its free float. And in order to determine whether the outcome will be the same with a positive earnings surprise or not.

Research Question 2: Does the impact of negative earning surprise on cumulative abnormal returns (CAR) depend on free float, how the post earnings announcement drift (PEAD) varies by free float?

Hypothesis 2.1: The impact of negative earnings surprises on the cumulative abnormal returns (CAR) for low free float is higher than for high free float. (CAR become more negative or lower CAR)

The hypothesis 2.1, we would like to apply the findings of Fernández-Rodríguez et al.'s (2004) study on the market's reaction to the announcement of compliance with best practice codes to my owns study. According to their study, firms with a greater proportion of executive directors had a more favorable market response. This could be related to low free float because executive directors are considered strategic shareholders.

Hypothesis 2.2: Lower levels of free float led to a more the post earnings announcement drift (PEAD) in terms of the impact of negative earning surprise on the cumulative abnormal returns (CAR).

The hypothesis 2.2 is similar to the hypothesis 1.3, but we add an interaction term between negative earning surprise and free float categories in order to see the magnitude of the post earnings announcement drift (PEAD) depends on free float level categories.

CHAPTER 4: DATA AND SAMPLE DESCRIPTION

4.1 Sample

Our data set, consisting of the SET constituents over the period from 2012-2019 were from Bloomberg. The variables include individual stock price, individual stock free float ratio, SET index (as proxy for the market), and 10-year government bond yield (as proxy for the risk-free-rate).

4.2 Earing Surprise

We first collected the analysts' report[4] on Thai companies from Bloomberg, which has provided the collected data on analysts' reports since 2012. Due to this time limitation, our sample includes analysts' forecast data for Thai companies that listed in SET over the fiscal years of 2012-2019. We collect each analyst's last earning forecast prior to earning announcements in each quarter that is available as well as the actual earnings of each company from Bloomberg based on (May, 1971)[5] and (DeFond et al., 2007)[6]

4.3 Free Float

Free float represents total ownership excluding strategic shareholder shares. It is defined as the portion of total share available to the public trade The ownership data are obtained from Bloomberg, based on (Michel et al., 2014) we organize sample data in order to group free float based on percentile[7] and measure low free float group

[4] Bloomberg consensus
[5] May (1971) provides evidence of the significant impact of quarterly earnings announcement on investor decisions and stock prices and highlight the important of timely and accurate disclosure of financial information by companies.
[6] DeFond et al (2007) found the important of investor protection in promoting high quality financial reporting and ensuring that earnings announcement provide useful information to investors. And investor should take into account the level of investor protection in different countries when making investment decisions.
[7] from appendix Table 11A

which is below the 25th percentile and high free float group as above the 75th percentile of each year see in Figure 1

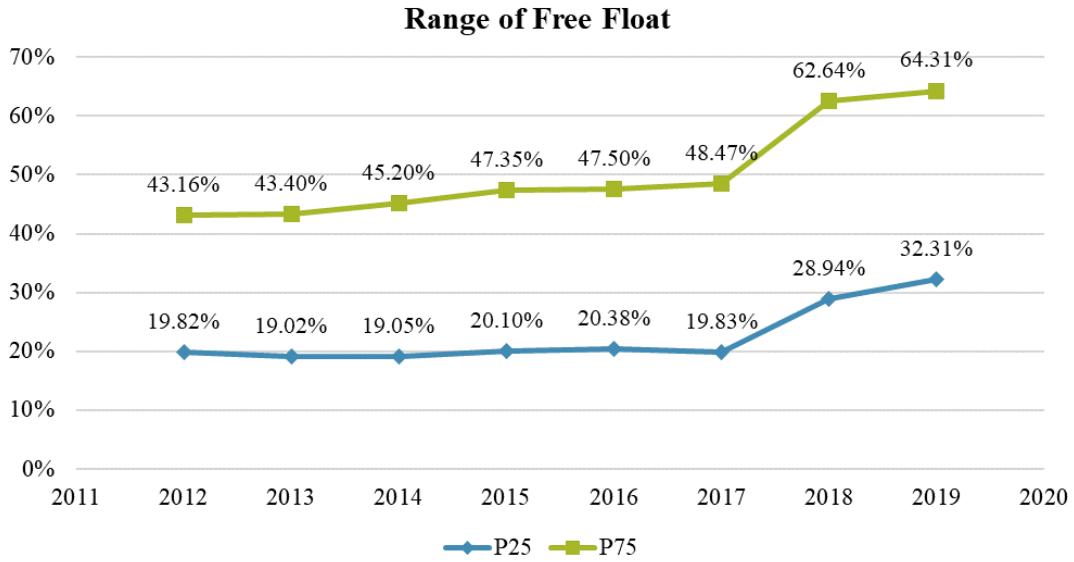

Figure 1 : Range of free float in SET during 2012-2019

4.4 Control Variable

To investigate the relationship between free float and cumulative abnormal return. We control other factors that might affect firms' performance. These factors include firm characteristics and macroeconomic factors.

Based on Meles & Salerno (2020), Firm characteristic such as size, age, and leverage should be considered when assessing performance, Size, measured as the natural logarithm of total asset, is an important factor as larger firms are better equipped to handle credit market information asymmetry and have variety of capabilities that can lead to higher performance (Dushnitsky & Lenox, 2006). Age, measured as the natural logarithm of firm age. (Coad et al., 2013) suggest that older firm are greater expertise and immunity to risk associated with newness, therefore older firm should have positive performance. Leverage, measured as the ratio of total

liability and total asset, is another factor to consider. While low leverage firm are less likely to became insolvent and therefore expected to have better performance according to (Yazdanfar & Öhman, 2015). However, (Lin et al., 2013) argue that higher level of debt can lead to stricter the monitoring of managers by creditor, which can also result in better business performance. Volume[8], measured as a proxy for liquidity and transaction cost for a stock. Based on Madyan et al., (2020), we adopt control variable as follow: the inflation rate, which is calculated with a 1-year lag inflation data, GDP growth, which is calculated with a 1-year lag economic data, in order to control for the effect of the overall market.

Table 1 Description of variables

Symbol	Description	Unit	Source
Dependent Variables			
CAR	The cumulative abnormal return of CAR (-2,2)	% p.a.	Calculation
PEAD	The post earnings announcement drift is the cumulative abnormal return CAR (2,20)	% p.a.	Calculation
Independent Variables			
$FF_{i,q}$	The proportion of free float for firm *i* of event *q*	% divided by 10	Bloomberg
$FF_{i,q}^{Low}$	It is a dummy variable representing low levels of free float for firm *i* of event *q* which take on the value 1 if the free float is low, and 0 otherwise	%	Bloomberg
$FF_{i,q}^{High}$	It is a dummy variable representing high levels of free float for firm *i* of event *q* which take on the value 1 if the free float is high, and 0 otherwise	%	Bloomberg
$ESUR_{i,t}$	The earning surprise for firm *i* of event *q*, measured as the actual earning minus the consensus earnings forecast scaled by actual earning	%	Bloomberg and Calculation

[8] Stoll (2000) demonstrates that recent stock price and trading volume are strongly correlated with trading costs and liquidity. Mendenhall (2004) also utilized trading volume as a control variable for liquidity and transaction costs in his post earnings announcement drift (PEAD) earnings surprise model.

FF_ESUR	Free Float Multiple with Earning Surprise	%	Calculation
$ESUR\_FF_{i,q}^{Low}$	Earning Surprise Multiple with the dummy variable representing low levels of free float	%	Calculation
$ESUR\_FF_{i,q}^{High}$	Earning Surprise Multiple with the dummy variable representing high levels of free float	%	Calculation
Control Variables			
LNSIZE[9]	Firm Size measure as the natural logarithm of firm size as the natural logarithm of total asset	Baht	Bloomberg
AGE^9	Firm Age	Year	Bloomberg
LEV^9	Firm Leverage measure as the ratio of total liability and total asset	%	Bloomberg
$LNVOL^9$	Firm Volume measure as the natural logarithm of total number of shares of a particular stock that have been traded	Shares	Bloomberg
INF[10]	Inflation Rate is calculated with a 1-year lag inflation data	%	Bloomberg
EG^{10}	GDP Growth is calculated with a 1-year lag economic data	%	Bloomberg

[9] based on Madyan et al., (2020), control the effect of Firm characteristic
[10] based on Meles & Salerno (2020), control the effect of the overall market

CHAPTHER 5: METHODOLOGY

In this paper, we use the exogenous event to examine how the difference in free float affects the abnormal return when facing earning surprises. Therefore, we must first observe the abnormal return that affects the earing surprise in order to determine the cumulative abnormal return and then combine it with the free float factor in order to set the regression model and test our hypothesis.

5.1 Earning Surprise

Consistent with many recent studies stock prices react to earning surprise, we adopt (Park & Lee, 2014) to measure earning surprise by using actual earning minus the consensus earnings forecast scaled by actual earning. We denote this earnings surprises measure as ESUR and it is given by Equation (1)

$$ESUR_{i,t} = \frac{AEPS_{i,t} - FEPS_{i,t}}{AEPS_{i,t}} \quad (1)$$

Where $ESUR_{i,t}$ is the earning surprise for firm *i* at time *t*

$AEPS_{i,t}$ is the reported EPS (earnings per share) for firm *i* in quarterly earnings announcement *t*

$FEPS_{i,t}$ is the consensus EPS forecasts of firm *i* for the same quarter

Base on (Park & Lee, 2014), The consensus EPS forecasts for firm are the average of the last forecast of analysts covering the firm for the quarter's EPS. If $ESUR_{i,t}$ is positive the firm announces a positive earnings surprise and if $ESUR_{i,t}$ is negative the firm announces a negative earnings surprise

5.2 Event Study

In this paper, we adopt the event study methodology of (Brown & Warner, 1985) to define the effect of surprise event on stock performance with difference free float level. It can investigate how the stock market reacts to new information i.e., announcement or surprise event. Moreover. This methodology has been widely used and supported in several studies in event study. (Pandey & Kumari, 2021)

The event date is the surprise event that occur (t = 0). The event window consists of 5 days which considers only trading day (t = -2 to t = 2) in order to see the cumulative abnormal return. The estimation period is 35 trading days before the first day of the event window (t = -2) as shown in Figure 2. Moreover, we will investigate the post earnings announcement drift (PEAD), in order to see this phenomenon, we extend event window consisted of 19 days which considers only trading day (t = 2 to t = 20).

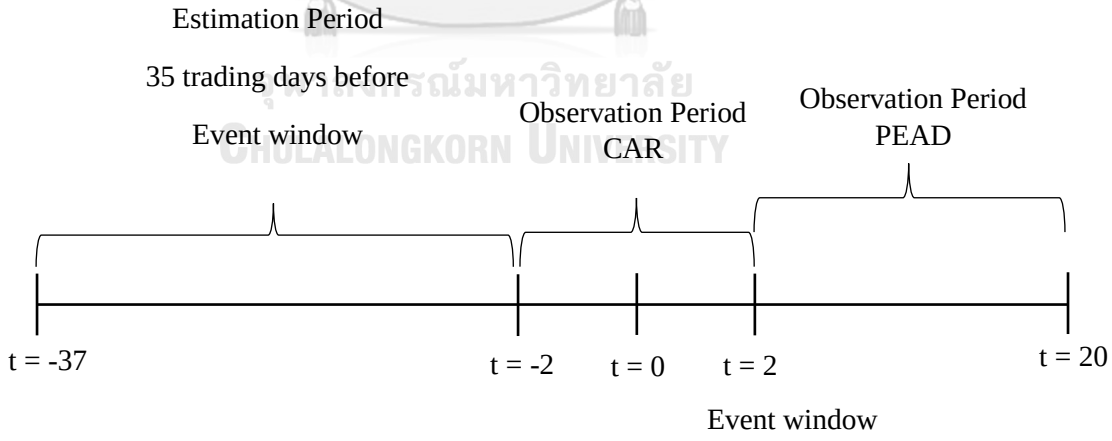

Figure 2 : Event period

We calculate cumulative abnormal return of observation period to capture the impact on stock return according to earning surprise by adopting market model, see as follow[11];

Step1: To obtain $\hat{\alpha}$ and $\widehat{\beta}$, we run a single index model regression over the estimation period (60 trading days before event window of event q in *Figure 3* by using Equation (2)

$$R_{i,t,q} - R_{f,t,q} = \alpha_{i,q} + \beta_{i,q}\left(R_{m,t,q} - R_{f,t,q}\right) + \varepsilon_{i,t,q} \quad (2)$$

Where $R_{i,t,q}$ is return of stock *i* at time *t* for the estimation period of event q

$R_{f,t,q}$ is risk free rate at time *t* for the estimation period of event q

$R_{m,t,q}$ is stock market return at time *t* for the estimation period of event q

Step2: We use the $\hat{\alpha}$ and $\widehat{\beta}$ from Step 1 and apply to the data from the event window of event q (t=-5, t=5) by using Equation (3) to compute expected return $E(R_{i,t,q})$ during the event window of event q

$$E(R_{i,t,q}) = R_{f,t,q} + \hat{\alpha}_{i,q} + \hat{\beta}_{i,q}\left(R_{m,t,q} - R_{f,t,q}\right) + \varepsilon_{i,t,q} \quad (3)$$

Step3: we compute the actual daily return for observation period by using Equation (4)

$$DR_{i,t,q} = \ln\left(\frac{P_{i,t,q}}{P_{i,t-1,q}}\right) \quad (4)$$

Where $DR_{i,t,q}$ is actual daily return of stock *i* at time *t* for the event window of event q

[11] An independent study (Veerapat V, 2021),

$P_{i,t,q}$ is close price of stock *i* at time *t* for the event window of event *q*

$P_{i,t-1,q}$ is close price of stock *i* at time *t-1* for the event window of event *q*

Step4: we take $DR_{i,t,q}$ from Step 3 to compute abnormal return $(AR_{i,t,q})$ as the difference between the actual daily return and the expected return on a given *t* for the event window of event *q* by using Equation (5)

$$AR_{i,t,q} = DR_{i,t,q} - E(R_{i,t,q}) \quad (5)$$

Step5: we calculate the cumulative abnormal return $(CAR_{i,t,q})$ for an individual stock. The abnormal return of each stock is aggregated over the event window of event *q* (t=-5, t=20). using Equation (6)

$$CAR_{i,t,q} = \sum_{t=-t}^{t=t} AR_{i,t.q} \quad (6)$$

Step6: we future examine how the market reactions with surprise event are related to the difference free float level in order to test our hypothesis.

5.3 Free Float

Free float refers to the number of shares of a company's stock that are available for public trading. It is important when considering the impact of surprise earnings announcements on cumulative abnormal returns (CAR). Surprise earnings announcements can have a significant impact on a company's stock price, and therefore on its cumulative abnormal return. The free float of a stock affects its liquidity and price volatility X. (S.) Ding et al (2016) which might impact the magnitude of the stock price reaction to a surprise earnings announcement. If stock with a high public float is likely to have greater liquidity, which can help absorb the impact of a large volume of trade following a surprise earnings announcement,

reducing the magnitude of the stock price reaction. In contrast, if stock with a low free float may be subject to greater price if there are surge in demand due to limit supply it can be more difficult for public investor to trade, which can amplify the stock price reaction to a surprise earnings announcement. Therefore, our hypothesis is to investigate the impact of earning surprise on abnormal return at different free float levels in order to see how free float play a role in the market reaction and this effect could help to explain the post earnings announcement drift (PEAD) which can lead to indicate that Thai stock market is less efficient that investor could earn abnormal return and to show which level of free float can potentially lead to faster and more accurate price discovery toward to earning surprise. The regression model based on Fernández-Rodríguez et al., (2004) and (Martinez-Blasco et al., 2017) is used to test our hypotheses.

Positive Surprises

To test our hypothesis 1.1, to find the pure impact between free float and cumulative abnormal returns (CAR). We state the hypothesis that low free float has higher the cumulative abnormal returns (CAR) when earning surprise happen, we investigate through regression analysis model by using Equation (7) and (8)

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q} + \beta_2 ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (7)$$

$$H_0 : \beta_1 = 0 , \; H_1 : \beta_1 < 0$$

Where $CAR_{i,q}$ is the cumulative abnormal return of firm *i* as calculated in **5.2 Event Study.** For the measurement of expansionary variable for Equation (7) - (13), see in Table 1

In Equation (7), if β_1 is found to be significant and negative, indicating that a decrease in free float is associated with higher the cumulative abnormal return (CAR) when earning surprise happen.

The second equation of the hypothesis 1.1 is an extension of the first equation and includes a categorical variable as follows.

$FF_{i,q}^{High}$ which take on the value 1 if the free float is high, and 0 otherwise.

$FF_{i,q}^{Low}$ which take on the value 1 if the free float ids low, and 0 otherwise.

This allows for the analysis of the effect of free float on the cumulative abnormal return (CAR) for stock with different levels of free float. See in Equation (8)

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \beta_3 ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (8)$$

$H_0 : \beta_2 = 0$, $H_1 : \beta_2 > 0$, compared low group with medium group.

$H_0 : \beta_1 - \beta_2 = 0$, $H_1 : \beta_1 - \beta_2 < 0$, compared high group with low group.

In Equation (8), the coefficients of $FF_{i,q}^{High}$ and $FF_{i,q}^{Low}$ can be interpreted as the effect of free float on the cumulative abnormal return (CAR) with high and low free float, respectively, compared to firm with medium free float. If the hypotheses are confirmed, indicating that firm with low free float have higher impact on the cumulative abnormal return (CAR) when earning surprise happen compared to high free float.

To test our hypothesis 1.2, to test lower free float stocks a stronger for post earnings announcement drift (PEAD), when earning surprise happen. See in Equation (10)

$$PEAD_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \beta_3 ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (9)$$

$H_0 : \beta_2 = 0$, $H_1 : \beta_2 > 0$, compared low group with medium group.

$H_0 : \beta_1 - \beta_2 = 0$, $H_1 : \beta_1 - \beta_2 < 0$, compared high group with low group.

Where $PEAD_{i,q}$ is the post earnings announcement drift, which comes from the cumulative abnormal return (CAR) between days (2,20) of the event window.

In Equation (9), if the hypotheses are confirmed, indicating that firm with low free float have higher post earnings announcement compared to firm with high free float. This phenomenon could help to show that low free float investors could earn an abnormal return when earning surprise happen, indicating that market is less efficient with low level free float.

We also expand the examiner by introducing interaction between earning surprise and free float to investigate the impact of earning surprise on the cumulative abnormal return (CAR) whether it depend on free float or not in order to see how the post earnings announcement drift (PEAD) varies by free float.

To test our hypothesis 2.1, The impact of earnings surprises on the cumulative abnormal returns (CAR) for low free float is higher than for high free float by using Equation (10) and (11)

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q} + \beta_2 ESUR_{i,q} + \beta_3 FF_{i,q} ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (10)$$

$H_0 : \beta_3 = 0$, $H_1 : \beta_3 \neq 0$

In Equation (10), if β_3 is statistically significant, indicating that the impact of earnings surprise on the cumulative abnormal returns (CAR) varies depending on the level of free float.

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \gamma_0 ESUR_{i,q} + \gamma_1 ESUR_{i,q} FF_{i,q}^{High} + \gamma_2 ESUR_{i,q} FF_{i,q}^{Low} + Control + \varepsilon_{i.q} \quad (11)$$

$H_0 : \gamma_2 = 0$, $H_1 : \gamma_2 > 0$, compared low group with medium group.

$H_0 : \gamma_1 - \gamma_2 = 0$, $H_1 : \gamma_1 - \gamma_2 < 0$, compared high group with low group.

In Equation (11), if the hypotheses are confirmed, indicating that firm with low free float have a greater impact on the cumulative abnormal returns (CAR) compared to firm with high free float.

To test our hypothesis 2.2, we state that lower levels of free float led to more the post earnings announcement drift (PEAD) in terms of the impact of earning surprise on the cumulative abnormal return (CAR) by using Equation (12)

$$PEAD_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \gamma_0 ESUR_{i,q} + \gamma_1 ESUR_{i,q} FF_{i,q}^{High} + \gamma_2 ESUR_{i,q} FF_{i,q}^{Low} + Control + \varepsilon_{i.q} \quad (12)$$

$H_0 : \gamma_2 = 0$, $H_1 : \gamma_2 > 0$, compared low group with medium group.

$H_0 : \gamma_1 - \gamma_2 = 0$, $H_1 : \gamma_1 - \gamma_2 < 0$, compared high group with low group.

Where $PEAD_{i,q}$ is the post earnings announcement drift, which comes from the cumulative abnormal return (CAR) between days (2,20) of the event window.

In Equation (12), if the hypotheses are confirmed, indicating that firm with low free float have a higher post earnings announcement drift (PEAD) on the cumulative abnormal return (CAR) compared to firm with high free float. This phenomenon could help to show that low free float investors could earn an abnormal return, indicating that market is less efficient with low level free float.

Negative Surprises

To test our hypothesis 1.1, to find the pure impact between free float and cumulative abnormal returns (CAR). We state the hypothesis that low free float has lower the cumulative abnormal returns (CAR) when negative earning surprise happen, we investigate through regression analysis model by using Equation (13) and (14)

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q} + \beta_2 ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (13)$$

$$H_0 : \beta_1 = 0 , \quad H_1 : \beta_1 > 0$$

Where $CAR_{i,q}$ is the cumulative abnormal return of firm *i* as calculated in **5.2 Event Study.**

In Equation (13), if β_1 is found to be significant and positive, indicating that a decrease in free float is associated with lower the cumulative abnormal return (CAR) or greater decline in cumulative abnormal return (CAR) when negative earning surprise happen.

The second equation of hypothesis 1.1 is an extension of the first equation and includes a categorical variable as follows:

$FF_{i,q}^{High}$ which take on the value 1 if the free float is high, and 0 otherwise.

$FF_{i,q}^{Low}$ which take on the value 1 if the free float ids low, and 0 otherwise.

This allows for the analysis of the effect of free float on the cumulative abnormal return (CAR) for stock with different levels of free float. See in Equation (14)

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \beta_3 ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (14)$$

$H_0 : \beta_2 = 0$, $H_1 : \beta_2 < 0$, compared low group with medium group.

$H_0 : \beta_2 - \beta_1 = 0$, $H_1 : \beta_2 - \beta_1 < 0$, compared high group with low group.

In Equation (14), the coefficients of $FF_{i,q}^{High}$ and $FF_{i,q}^{Low}$ can be interpreted as the effect of free float on the cumulative abnormal return (CAR) with high and low free float, respectively, compared to firm with medium free float. If the hypotheses are confirmed, indicating that firm with low free float have higher impact or more negative on the cumulative abnormal return (CAR) when negative earning surprise happen compared to high free float.

To test our hypothesis 1.2, to test lower free float stocks a stronger for post earnings announcement drift (PEAD), when negative earning surprise happen. See in Equation (15)

$$PEAD_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \beta_3 ESUR_{i,q} + Control + \varepsilon_{i.q} \quad (15)$$

$H_0 : \beta_2 = 0$, $H_1 : \beta_2 < 0$, compared low group with medium group.

$H_0 : \beta_2 - \beta_1 = 0$, $H_1 : \beta_2 - \beta_1 < 0$, compared high group with low group.

Where $PEAD_{i,q}$ is the post earnings announcement drift, which comes from the cumulative abnormal return (CAR) between days (2,20) of the event window.

In Equation (15), if the hypotheses are confirmed, indicating that firm with low free float have higher post earnings announcement compared to firm with high free float. This phenomenon could help to show that low free float stocks, price adjustment may not occur promptly, resulting in larger fluctuations in terms of post earnings announcement drift (PEAD), delayed and more pronounced responses to negative earning surprise, indicating that market is less efficient with low level free float.

We also expand the examiner by introducing interaction between negative earning surprise and free float to investigate the impact of negative earning surprise on the cumulative abnormal return (CAR) whether it depend on free float or not in order to see how the post earnings announcement drift (PEAD) varies by free float.

To test our hypothesis 2.1, The impact of negative earnings surprises on the cumulative abnormal returns (CAR) for low free float is lower than for high free float by using Equation (16) and (17)

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q} + \beta_2 ESUR_{i,q} + \beta_3 FF_{i,q} ESUR_{i,q} + Control + \varepsilon_{i.q} \qquad (16)$$

$H_0 : \beta_3 = 0$, $H_1 : \beta_3 \neq 0$

In Equation (16), if β_3 is statistically significant, indicating that the impact of earnings surprise on the cumulative abnormal returns (CAR) varies depending on the level of free float.

$$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \gamma_0 ESUR_{i,q} + \gamma_1 ESUR_{i,q} FF_{i,q}^{High} + \gamma_2 ESUR_{i,q} FF_{i,q}^{Low} + Control + \varepsilon_{i.q} \quad (17)$$

$H_0 : \gamma_2 = 0$, $H_1 : \gamma_2 < 0$, compared low group with medium group.

$H_0 : \gamma_2 - \gamma_1 = 0$, $H_1 : \gamma_2 - \gamma_1 < 0$, compared high group with low group.

In Equation (17), if the hypotheses are confirmed, indicating that firm with low free float have a greater impact or more negative on the cumulative abnormal returns (CAR) compared to firm with high free float.

To test our hypothesis 2.2, we state that lower levels of free float led to more the post earnings announcement drift (PEAD) in terms of the impact of negative earning surprise on the cumulative abnormal return (CAR) by using Equation (18)

$$PEAD_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \gamma_0 ESUR_{i,q} + \gamma_1 ESUR_{i,q} FF_{i,q}^{High} + \gamma_2 ESUR_{i,q} FF_{i,q}^{Low} + Control + \varepsilon_{i.q} \quad (18)$$

$H_0 : \gamma_2 = 0$, $H_1 : \gamma_2 < 0$, compared low group with medium group.

$H_0 : \gamma_2 - \gamma_1 = 0$, $H_1 : \gamma_2 - \gamma_1 < 0$, compared high group with low group.

Where $PEAD_{i,q}$ is the post earnings announcement drift, which comes from the cumulative abnormal return (CAR) between days (2,20) of the event window.

In Equation (18), if the hypotheses are confirmed, indicating that firm with low free float have a higher post earnings announcement drift (PEAD) on the cumulative abnormal return (CAR) compared to firm with high free float. This phenomenon could help to show that low free float stocks, price adjustment may not occur promptly, resulting in larger fluctuations in terms of post earnings

announcement drift (PEAD), delayed and more pronounced responses to negative earning surprise, indicating that market is less efficient with low level free float.

CHAPTER 6: RESULTS

6.1 Descriptive statistics

Table 2 summarizes the descriptive statistics for all variables considered in this study regarding the earnings announcement surprise in each quarter that Thai stock was available over the period of 2012–2019. Panel A presents a sample of positive earnings surprises. There are 1,447 observations, which come from 205 listed firms. The mean of the cumulative abnormal return (CAR) of positive earnings surprises is 232.56% p.a. between event windows (-2, 2), and the mean of the post-earnings announcement drift (PEAD) of positive earnings surprises is -108.08% between event windows (2, 20), The mean of free float (FF) in positive earnings surprises is 44.90%. The minimum of free float is 2.00%, and the maximum of free float is 99.60%. while Panel B presents the sample of negative earnings surprises. There are 1,387 observations, which come from 214 listed firms. The mean of the cumulative abnormal return (CAR) of negative earnings surprises is -431.43% p.a. between event windows (-2, 2), and the mean of the post earnings announcement drift (PEAD) of negative earnings surprises is -120.53% between event windows (2, 20). The mean of free float (FF) in negative earnings surprises is 44.00%. The minimum of free float is 2.00%, and the maximum of free float is 99.60%.

Table 2 Descriptive Statistics Summary

Variable	Mean	Std. Dev.	Min	Max
Panel A : Positive Earning Surprise				
Number of shares = 205				
Number of observations = 1,447				
CAR (-2,20)	232.56	1,759.37	-14,544.56	6,882.76
PEAD (2,20)	-108.08	3286.72	-19,471.64	24,452.34
FF	4.49	1.85	0.20	9.96
FF^{Low}	0.09	0.28	0	1.00
FF^{High}	0.37	0.48	0	1.00
ESUR	31.75	106.94	0.09	2,536.36
FF ESUR	140.21	601.55	0.24	17,762.87
$ESUR\_FF^{Low}$	4.15	48.51	0	1,454.55
$ESUR\_FF^{high}$	12.69	89.11	0	2,536.36
AGE	31.88	16.78	0.56	105.46
LNSIZE	10.75	1.82	6.57	15.00
LEV	3.45	3.18	0	23.37
LNVOL	15.51	1.74	8.29	20.48
INF	1.02	1.18	-1.07	3.62
EG	3.46	1.83	0.84	7.24
Panel B : Negative Earning Surprise				
Number of shares = 214				
Number of observation = 1,387				
CAR (-2,20)	-431.43	1,809.92	-11,215.96	17,768.97
PEAD (2,20)	-120.53	3,339.67	-17,238.71	29,984.87
FF	4.40	1.83	0.20	9.96
FF^{Low}	0.10	0.30	0	1.00
FF^{High}	0.33	0.47	0	1.00
ESUR	-29.26	75.93	-2,000.00	-0.02
FF ESUR	-124.75	301.95	-6,099.60	-0.06
$ESUR\_FF^{Low}$	-2.33	10.54	-93.33	0
$ESUR\_FF^{high}$	-7.82	24.27	-432.86	0
AGE	31.11	17.14	0.61	105.96
LNSIZE	10.61	1.81	6.62	14.99
LEV	3.17	2.66	1.02	23.07
LNVOL	15.32	1.80	6.22	20.86
INF	1.02	1.15	-1.07	3.62
EG	3.60	1.86	0.84	7.24

6.2 Correlation Analysis

Table 3 and Table 4 present the correlation analysis result, illustrating the relationship among all variables considered in the analysis. The key findings from the correlation analysis between cumulative abnormal return (CAR), post earning announcement drift (PEAD) and each variable in Panel A and Panel B for both positive and negative earning surprises.

In Table 3, it shows cumulative abnormal return CAR (-2,2) for positive earning surprises (Panel A), We observed the correlation between cumulative abnormal return (CAR) and various factors in Panels A and B, and several key insights emerged. In Panel A, a negative correlation between cumulative abnormal return (CAR) and free float (*FF*) suggests that as free float increases, cumulative abnormal return (CAR) tends to decrease following positive earnings surprises. However, missing correlation coefficients for "low free float" (FF^{Low}) and "Interaction between low free float and earning surprise" ($ESUR\_FF^{Low}$) leave gaps in our understanding. Conversely, a negative correlation with high free float (FF^{High}) indicates a decrease in cumulative abnormal return (CAR) in the presence of high free float during positive earning surprises. Notably, a positive correlation is observed between cumulative abnormal return (CAR) and earning surprise (ESUR), signifying an increase in cumulative abnormal return (CAR) as positive earning surprises intensify. Moreover, cumulative abnormal return (CAR) displays a positive relationship with the interaction of free float and earning surprise (*FF_ESUR*) and the interaction of high free float and earning surprise ($ESUR\_FF^{High}$), further reinforcing the role of these interactions in cumulative abnormal return (CAR) following positive earning surprises. In Panel B, a very weak negative correlation with free float (*FF*) and missing coefficients for "low free float" pose limited significance, suggesting minimal relationships between free float and cumulative abnormal return (CAR) after negative earnings surprises. On the other hand, a positive correlation with high free float (FF^{High}) implies that cumulative abnormal return (CAR) tends to increase with high free float in this context. Importantly, cumulative abnormal return (CAR) shows a positive correlation with earning surprise (*ESUR*), indicating an increase in

cumulative abnormal return (CAR) as negative earning surprises become more pronounced. Additionally, the positive correlation with the interaction of free float and earning surprise (*FF_ESUR*) highlights the significance of the interaction between free float and earning surprise in cumulative abnormal return (CAR) following negative earning surprises. The most pronounced relationship is found with the interaction of low free float and earning surprise ($ESUR\_FF^{Low}$), displaying a strong positive correlation, suggesting a substantial impact of the interaction between low free float and negative earnings surprises on cumulative abnormal return (CAR). Finally, a weak negative correlation is observed between cumulative abnormal return (CAR) and the interaction of high free float and earning surprise ($ESUR\_FF^{High}$), indicating a minor decrease in cumulative abnormal return (CAR) when high free float interacts with negative earnings surprises. These findings provide valuable insights into how these variables relate to cumulative abnormal return (CAR) in the context of positive and negative earning surprises, emphasizing the importance of free float, earning surprise, and their interactions in understanding cumulative abnormal return (CAR) dynamics. These findings shed light on the complex relationship between free float, earning surprises, and cumulative abnormal returns in distinct market conditions, offering valuable insights for financial analysts and investors.

In Table 4, our correlation analysis of market efficiency, as measured by the post-earning announcement drift (PEAD) which comes from cumulative abnormal return CAR (2,20), we examined the correlation in Panels A and B, several key findings emerge. In Panel A, a positive correlation between post-earning announcement drift (PEAD) and free float (*FF*) suggests a minor positive relationship, indicating that higher free float corresponds to a slightly increased post-

earning announcement drift (PEAD) following positive earning surprises. However, a strong negative correlation with low free float (FF^{Low}) signifies a substantial adverse relationship, highlighting a significant reduction in post-earning announcement drift (PEAD) after positive earning surprises when low free float is present. Similarly, a weak negative correlation with high free float (FF^{High}) indicates a minor decrease in post earning announcement drift (PEAD) under high free float conditions following positive earning surprises. On the other hand, a weak positive correlation with earning surprise (*ESUR*) reveals that as positive earning surprises intensify, post earning announcement drift (PEAD) experiences a slight increase. Moreover, the interaction of free float and earning surprise (*FF_ESUR*) shows a weak positive relationship with post-earning announcement drift (PEAD), emphasizing the role of this interaction in enhancing post-earning announcement drift (PEAD) after positive earning surprises. Conversely, interactions with low and high free float, $ESUR\_FF^{Low}$ and $ESUR\_FF^{High}$ respectively, display minor relationships with post earning announcement drift (PEAD), suggesting modest effects following positive earning surprises. In Panel B, the correlations generally exhibit similar trends, but for the context of negative earning surprises. These findings collectively provide valuable insights into market efficiency dynamics, illustrating how free float, earning surprise, and their interactions influence post earning announcement drift (PEAD), in both positive and negative earning surprise scenarios.

Table 3 Correlation CAR (-2,2)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Panel A : Positive Earning Surprise														
(1) *CAR*	1.000													
(2) *FF*	-0.041	1.000												
(3) FF^{Low}	0.042	-0.448*	1.000											
(4) FF^{High}	-0.025	0.756*	-0.234*	1.000										
(5) *ESUR*	0.079*	-0.012	0.049*	0.018	1.000									
(6) *FF_ESUR*	0.061*	0.096*	-0.035	0.093*	0.906*	1.000								
(7) $ESUR\_FF^{Low}$	0.017	-0.141*	0.281*	-0.066*	0.432*	0.075*	1.000							
(8) $ESUR\_FF^{high}$	0.038	0.134*	-0.043*	0.186*	0.808*	0.957*	-0.012	1.000						
(9) *AGE*	0.016	0.213*	-0.057*	0.209*	-0.021	0.003	-0.030	0.021	1.000					
(10) *LNSIZE*	-0.026	0.248*	-0.120*	0.219*	-0.032	0.002	-0.058*	0.026	0.355*	1.000				
(11) *LEV*	-0.004	0.231*	-0.029	0.203*	-0.034	-0.016	-0.015	-0.001	0.289*	0.578*	1.000			
(12) *LNVOL*	-0.030	0.126*	-0.199*	0.051*	0.033	0.046*	-0.036	0.049*	-0.017	0.295*	0.119*	1.000		
(13) *INF*	-0.058*	0.019	-0.063*	0.066*	-0.029	-0.007	-0.067*	0.005	-0.001	0.020	0.053*	-0.005	1.000	
(14) *EG*	0.069*	0.068*	0.003	-0.004	-0.034	-0.010	-0.051*	-0.009	0.026	0.025	0.038	0.013	0.291*	1.000
Panel B : Negative Earning Surprise														
(1) *CAR*	1.000													
(2) *FF*	-0.001	1.000												
(3) FF^{Low}	-0.006	-0.464*	1.000											
(4) FF^{High}	0.038	0.734*	-0.231*	1.000										
(5) *ESUR*	0.041	0.030	0.024	0.051*	1.000									
(6) *FF_ESUR*	0.023	-0.131*	0.090*	-0.060*	0.919*	1.000								
(7) $ESUR\_FF^{Low}$	0.051*	0.318*	-0.672*	0.155*	0.060*	-0.028	1.000							
(8) $ESUR\_FF^{high}$	-0.024	-0.342*	0.106*	-0.460*	0.229*	0.473*	-0.071*	1.000						
(9) *AGE*	-0.012	0.149*	-0.053*	0.180*	-0.015	-0.043	0.094*	-0.062*	1.000					
(10) *LNSIZE*	0.078*	0.245*	-0.086*	0.191*	0.071*	0.031	0.148*	-0.037	0.351*	1.000				
(11) *LEV*	-0.022	0.146*	-0.011	0.134*	-0.004	-0.025	0.052*	-0.036	0.335*	0.604*	1.000			
(12) *LNVOL*	0.035	0.247*	-0.185*	0.137*	0.055*	0.008	0.145*	-0.074*	-0.043	0.308*	0.131*	1.000		
(13) *INF*	0.019	-0.041	-0.012	0.034	0.040	0.042	-0.013	-0.023	0.001	-0.041	0.029	0.068*	1.000	
(14) *EG*	0.066*	0.034	0.059*	-0.017	0.010	-0.011	-0.048*	-0.034	-0.012	-0.045*	-0.039	0.037	0.362*	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Table 4 Correlation PEAD (2,20)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Panel A : Positive Earning Surprise														
(1) *PEAD*	1.000													
(2) *FF*	0.019	1.000												
(3) FF^{Low}	-0.064*	-0.448*	1.000											
(4) FF^{High}	-0.011	0.756*	-0.234*	1.000										
(5) *ESUR*	0.017	-0.012	0.049*	0.018	1.000									
(6) *FF_ESUR*	0.022	0.096*	-0.035	0.093*	0.906*	1.000								
(7) $ESUR\_FF^{Low}$	-0.022	-0.141*	0.281*	-0.066*	0.432*	0.075*	1.000							
(8) $ESUR\_FF^{high}$	0.016	0.134*	-0.043*	0.186*	0.808*	0.957*	-0.012	1.000						
(9) *AGE*	0.048*	0.213*	-0.057*	0.209*	-0.021	0.003	-0.030	0.021	1.000					
(10) *LNSIZE*	0.005	0.248*	-0.120*	0.219*	-0.032	0.002	-0.058*	0.026	0.355*	1.000				
(11) *LEV*	-0.005	0.231*	-0.029	0.203*	-0.034	-0.016	-0.015	-0.001	0.289*	0.578*	1.000			
(12) *LNVOL*	-0.035	0.146*	-0.210*	0.056*	0.038	0.057*	-0.042	0.059*	-0.024	0.285*	0.098*	1.000		
(13) *INF*	-0.061*	0.022	-0.063*	0.067*	-0.033	-0.011	-0.068*	0.000	-0.003	0.021	0.053*	-0.014	1.000	
(14) *EG*	-0.032	0.068*	0.003	-0.004	-0.034	-0.010	-0.051*	-0.009	0.026	0.025	0.038	0.010	0.292*	1.000
Panel B : Negative Earning Surprise														
(1) *PEAD*	1.000													
(2) *FF*	0.019	1.000												
(3) FF^{Low}	0.011	-0.464*	1.000											
(4) FF^{High}	0.027	0.734*	-0.231*	1.000										
(5) *ESUR*	0.024	0.030	0.024	0.051*	1.000									
(6) *FF_ESUR*	-0.002	-0.131*	0.090*	-0.060*	0.919*	1.000								
(7) $ESUR\_FF^{Low}$	0.031	0.318*	-0.672*	0.155*	0.060*	-0.028	1.000							
(8) $ESUR\_FF^{high}$	-0.039	-0.342*	0.106*	-0.460*	0.229*	0.473*	-0.071*	1.000						
(9) *AGE*	0.029	0.149*	-0.053*	0.180*	-0.015	-0.043	0.094*	-0.062*	1.000					
(10) *LNSIZE*	0.055*	0.245*	-0.086*	0.191*	0.071*	0.031	0.148*	-0.037	0.351*	1.000				
(11) *LEV*	0.020	0.146*	-0.011	0.134*	-0.004	-0.025	0.052*	-0.036	0.335*	0.604*	1.000			
(12) *LNVOL*	0.026	0.255*	-0.173*	0.140*	0.072*	0.016	0.128*	-0.094*	-0.086*	0.274*	0.108*	1.000		
(13) *INF*	0.012	-0.041	-0.011	0.033	0.037	0.038	-0.014	-0.024	0.001	-0.040	0.029	0.056*	1.000	
(14) *EG*	0.039	0.031	0.059*	-0.019	0.011	-0.010	-0.048*	-0.033	-0.012	-0.045*	-0.040	0.044*	0.365*	1.000

*** p<0.01, ** p<0.05, * p<0.1

6.3 Empirical Results and Discussion

This study investigates the correlation between free float and cumulative abnormal returns (CAR) in the context of earnings surprises. Our research investigates the critical role that free float plays in shedding light on the post earnings announcement drift (PEAD) phenomenon. We focus specifically on two significant issues: First, we investigate how free float influences cumulative abnormal returns (CAR) when earnings surprises occur, and then we assess how this influence contributes to a better understanding of the post earnings announcement drift (PEAD) phenomenon. In addition, we aim to determine if the impact of earnings surprises on cumulative abnormal returns (CAR) varies based on the extent of free float, casting light on how post earnings announcement drift (PEAD) varies across free float categories. Through cautious empirical analysis, our study aims to provide valuable insights into the interaction between free float, earnings surprises, cumulative abnormal returns (CAR), and post earnings announcement drift (PEAD), thereby presenting an integrated perspective on market dynamics in the context of both positive and negative earnings surprises.

6.3.1 Regression analysis on market reaction to earnings announcements related to free float.

In this section, based on Research Question 1, we examine how free float impacts cumulative abnormal returns (CAR), which can help explain the post-earnings announcement drift phenomenon when earnings surprises happen.

Positive Surprises

Firstly, we investigate lower free float have higher cumulative abnormal return following positive earnings surprise. As presented in Table 5, we found the cumulative abnormal return is influenced by the level of free float. A significant negative relationship is found between free float and cumulative abnormal return following positive earnings surprises, indicating that on average, a decrease of 10% of free float is expected to increase cumulative abnormal return by 44.09% p.a. when a positive surprise occurs. Therefore, the result supports the hypothesis that a low free float is related to a higher cumulative abnormal return when positive earnings surprises happen. This finding is in line with Eva & Claudia (2018) and Chan et al. (2004)

Second, we investigated stocks within the low free float group to determine whether they exhibited a higher cumulative abnormal return (CAR) than stocks in the high free float group when positive earnings surprises occurred. As presented in Table 6, our findings indicate that there is no significant difference in cumulative abnormal return (CAR) between low free float and medium free float stocks. This suggests that there is not enough evidence to conclude that low free float stocks outperform medium free float stocks in terms of cumulative abnormal return (CAR). However, when comparing low free float stocks with high free float stocks, we observed a significant negative impact on cumulative abnormal return (CAR). In the same earnings surprise scenario, low free float stocks tended to have a more pronounced negative impact on cumulative abnormal return (CAR), registering at 206.99% p.a. compared to high free float stocks. These results strongly support the hypothesis that

stocks with low free float tend to exhibit significantly higher cumulative abnormal returns (CAR) following positive earnings surprises, in contrast to stocks with high free float. This underscores the critical role that free float plays in determining the market's reaction to positive earnings surprises, with low free float firms exerting a more positive influence on cumulative abnormal return (CAR).

Lastly, we examine lower free float stocks have stronger post earnings announcement drift (PEAD) when positive earnings surprise happen. As show in Table 7, This result marked a significant deviation from our original hypothesis. Notably, the post earnings announcement drift (PEAD) of stocks with low, medium, and high free floats varies significantly. These findings go against generally accepted and raise concerns about the efficacy of markets, particularly with regard to low free float stocks. As we extended the event window from day 2 to day 20, a remarkable phenomenon emerged: low-free-float stocks displayed a more significant decline in cumulative abnormal returns (CAR) than their medium and high-free-float counterparts. The data suggests that stocks with low free float experience a more pronounced negative cumulative abnormal return (CAR) -1,001.30% p.a. compared to those with medium free float, while stocks with high free float exhibit a less significant cumulative abnormal return (CAR) 785.55% p.a. compared to those with low free float. This pattern defies conventional assumptions and necessitates a closer examination of market efficiency. It suggests that the post earnings announcement drift, typically associated with positive earnings surprises, may not manifest uniformly across stocks with varying free float levels. Intriguingly, when we investigate the data, the cumulative average abnormal return (CAR) as show in figure 4. Initially, following positive earnings announcements, low-free-float stocks exhibit

greater positive cumulative abnormal returns (CAR) in the 2-3 days following the earnings announcement. Nonetheless, what comes next is equally impressive. These securities tend to experience more reversals, resulting in negative cumulative abnormal returns (CAR) when compared to those with a medium or high free float. This pattern raises significant concerns about the efficacy of markets, particularly in the case of stocks with limited supply. It suggests that the market dynamics of these stocks may be less efficient, with prices initially reflecting positive earnings surprises followed by substantial corrections, possibly due to factors such as limited liquidity or elevated investor sentiment. In essence, the observed behavior of low free float stocks suggests the presence of an overreaction phenomenon, echoing the findings of (De Bondt & Thaler, 1985) and (Boubaker et al., 2015). This phenomenon challenges conventional notions of market efficiency and underscores the profound impact of free float on the price dynamics of financial markets. It invites us to reevaluate our understanding of how market efficiency operates, especially when dealing with stocks characterized by restricted supply.

Negative Surprises

Firstly, we investigate whether lower free floats have a greater decline in cumulative abnormal return (CAR) following a negative earnings surprise. Our findings, as presented in Table 5, did not reveal a significant relationship between free float and cumulative abnormal return (CAR) in the context of negative earnings surprises. Consequently, we lack sufficient evidence to support the conclusion that stocks with lower free floats indeed experience a more pronounced decline in cumulative abnormal return (CAR) when faced with negative earnings surprises.

Second, we explored whether stocks with low free float experience a more substantial decline in cumulative abnormal return (CAR) than stocks with high free float when negative earnings surprises occur. As indicated in Table 6, there is no significant difference in cumulative abnormal return (CAR) among stocks with low, medium, and high free floats. This suggests that there is no discernible link between cumulative abnormal return (CAR) and free float. Consequently, there is not enough evidence to support the notion that low free float stocks exhibit a greater decline in cumulative abnormal return (CAR) than high free float stocks when negative earnings surprises occur.

Lastly, we examined whether stocks with lower free floats display a stronger post-earnings announcement drift (PEAD) when negative earnings surprises occur. As shown in Table 7, revealed intriguing insights. Specifically, we found no significant disparity in post earnings announcement drift (PEAD) between stocks with low and medium levels of free float. However, a noteworthy and statistically significant distinction emerged when comparing stocks with low and high free floats. These findings, while diverging from our initial hypothesis, carry important implications regarding market efficiency, particularly concerning stocks with varying free float characteristics. Contrary to our initial expectations, the observed impact of negative earnings surprises on low-free-float stocks appeared to be less pronounced, registering an annualized post earnings announcement drift (PEAD) of 89.98% p.a. In contrast, high free float stocks displayed a more substantial response to negative earnings surprises. This unexpected outcome challenges traditional assumptions and suggests that the market may exhibit varying degrees of efficiency based on the free float characteristics of stocks when confronted with negative earnings surprises.

Moreover, when we examine Figure 5, an intriguing pattern emerges: low free float stocks exhibit notably more fluctuation and volatility in cumulative average abnormal returns compared to their medium and high free float counterparts. This pattern suggests a lack of a noticeable post earnings announcement drift (PEAD) for stocks with low free floats following negative surprises. In contrast, high free float stocks displayed a less negative cumulative average abnormal return (CAR) and a more stable decline, indicating potentially greater market efficiency in the face of negative earnings surprise.

Taken together, these findings underscore the notion that market efficiency can vary based on the free float of stocks. In particular, stocks with low free floats may experience less pronounced reactions to negative earnings surprises, potentially due to factors such as limited liquidity or investor sentiment. This variation challenges the conventional understanding of market efficiency and highlights the importance of considering free float characteristics in analyzing post earnings announcement effects.

Table 5 Regression Results – The impact between free float and CAR

$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q} + \beta_2 ESUR_{i,q} + Control + \varepsilon_{i.q}$

Variable	CAR (-2, 2)	
	POS_ESUR	**NEG_ESUR**
FF	-44.09**	-23.66
	(26.69)	(28.36)
ESUR	1.33***	0.69*
	(0.43)	(0.53)
AGE	2.96	-2.95
	(2.57)	(2.64)
LNSIZE	-26.47	154.89***
	(40.26)	(42.51)
LEV	11.18	-68.08***
	(14.75)	(18.67)
LNVOL	-23.20	0.35

	(38.32)	(34.20)
INF	-124.78***	1.81
	(39.30)	(44.24)
EG	94.48***	66.80***
	(23.75)	(25.96)
Constant	700.80*	-1,889.97***
	(487.24)	(438.90)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1*

Noted: this study hypothesis one side test hypothesis. According to positive earnings surprise and negative earnings surprise, variables such as free float is one side test. This variable is expected to be a negative sign for positive earnings surprise and a negative sign for negative earnings surprise.

Table 6 Regression Results - The impact between various groups of free float and CAR

$CAR_{i,q} or\ PEAD_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \beta_3 ESUR_{i,q} + Control + \varepsilon_{i.q}$

Variable	CAR (-2, 2)		PEAD (2,20)	
	POS_ESUR	**NEG_ESUR**	**POS_ESUR**	**NEG_ESUR**
FF^{High}	-60.54	121.51	-236.76*	133.18
	(97.40)	(114.46)	(175.50)	(201.61)
FF^{Low}	146.45	30.18	-1,001.30***	223.16
	(186.13)	(167.77)	(383.48)	(303.58)
ESUR	1.31***	0.65	0.68	0.77
	(0.44)	(0.52)	(0.71)	(1.12)
AGE	2.64	-3.68*	9.82**	2.84
	(2.56)	(2.67)	(4.93)	(4.95)
LNSIZE	-27.50	148.68***	12.11	109.05*
	(40.28)	(41.98)	(70.53)	(74.96)
LEV	8.26	-68.52***	-9.10	-27.68
	(14.60)	(18.56)	(29.00)	(33.63)
LNVOL	-22.56	-7.25	-104.45**	21.52
	(38.09)	(34.88)	(59.20)	(67.15)
INF	-120.19***	2.83	-164.90**	-2.65
	(39.37)	(44.08)	(79.54)	(79.92)
EG	90.74***	65.93***	-26.22	70.73*
	(23.90)	(25.94)	(48.90)	(49.89)
Constant	543.14	-1,829.62***	1,524.77**	1,906.93**
	(497.70)	(446.27)	(894.87)	(887.95)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1*

Noted: this study hypothesis one side test. According to positive earnings surprise and negative earnings surprise, variables such as low free float is one side test. This variable is expected to be a positive sign for positive earnings surprise and a negative sign for negative earnings surprise when compared to medium free float stocks.

Table 7 Hypothesis Tests- The difference in impact of low and high free floats on CAR
$FF^{High} - FF^{Low} = 0$ *and* $FF^{Low} - FF^{High} = 0$

Difference Test	CAR (-2,2)		PEAD (2, 20)	
	POS_ESUR	NEG_ESUR	POS_ESUR	NEG_ESUR
Coeff	-206.99*	-91.34	764.55**	89.98**
Prob > F	0.10	0.31	0.02	0.39

**** p<0.01, ** p<0.05, * p<0.1*

Noted: this study hypothesis one side test. According to positive earnings surprise and negative earnings surprise, variables such the coefficient of the difference test between low and high free float is one side test. This variable is expected to be a negative sign for both positive and negative earnings surprise.

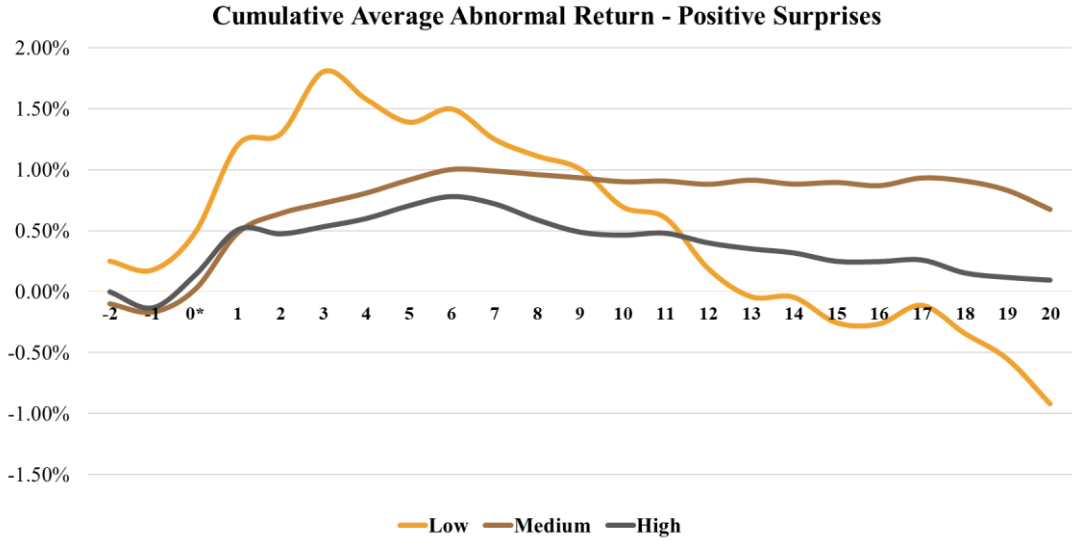

Figure 4 Cumulative Average Abnormal Return: CAAR (-2,20) – Positive Surprise

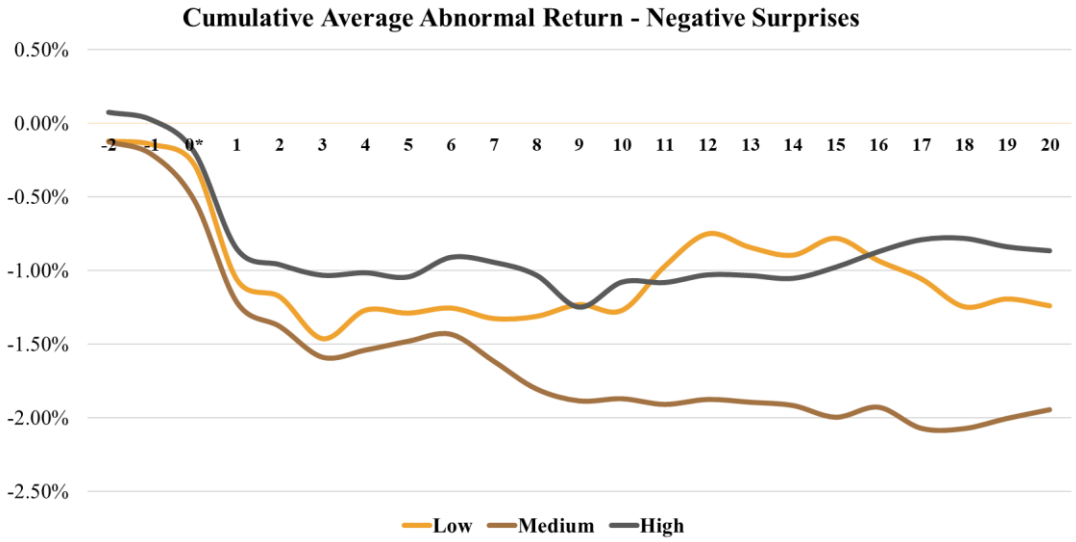

Figure 5 Cumulative Average Abnormal Return: CAAR (-2,20) – Negative Surprise

6.3.2 Regression analysis on market reaction to earnings announcements depends on free float.

In this section, based on Research Question 2, we investigate the interaction between positive earnings surprise and free float to determine whether the impact of earnings surprise on the cumulative abnormal return (CAR) event windows depends on free float, and this can help explain whether the post-earnings announcement drift phenomenon varies by free float when earnings surprises happen.

Positive Surprises

First, we investigate whether the impact of positive earnings surprise on the cumulative abnormal return (CAR) depends on the level free float. As shown in Table 8, we observed that the coefficient for the interaction term is negative, suggesting a potential negative relationship between free float and cumulative abnormal return (CAR) following positive earnings surprises. However, this relationship is not statistically significant, which leads us to reject our hypothesis.

Second, we examined whether the effect of positive earnings surprises on cumulative abnormal return (CAR) is stronger for stocks with low free float compared to those with high free float. As indicated in Table 9, there is a statistically significant difference in the impact of positive earnings surprises on cumulative abnormal return (CAR) between low free float and medium free float stocks. Contrary to our hypothesis, however, the coefficient reveals a negative relationship, indicating that low free float has a lower impact on positive earnings surprises cumulative abnormal return (CAR) (4.56% p.a.) than medium free float. Similarly, when comparing stocks with low and high free float, we observed statistically significant differences in

cumulative abnormal return (CAR) following positive earnings surprises between low and high free float stocks. In contrast to our hypothesis, the difference is positive, suggesting that the impact of the interaction between earnings surprise and high free float is 0.69% p.a. greater than the impact of the interaction between earnings surprise and low free float.

Lastly, we look into whether lower levels of free float caused more post-earnings announcement drift (PEAD) in terms of the impact of positive earnings surprises on the cumulative abnormal return (CAR). As shown in Table 10, we observed no statistically significant interaction effect on post earnings announcement drift (PEAD) among low, medium, and high free float stocks. This suggests that there is no discernible difference in post-earnings announcement drift (PEAD) among various free float stocks when positive earnings surprises occur.

Our result disagree with the finding of Fernández Rodriguez et al. (2004) in terms of firms with low free float having a more favorable market response; however, our finding is that the impact of positive earnings surprises on the cumulative abnormal (CAR) may not depend on the level of free float, but when we analyze the difference in free float group, we find high free float has a significantly higher impact on the cumulative abnormal return (CAR) when positive earnings surprises occur.

Negative Surprises

First, we investigate whether the impact of negative earnings surprise on the cumulative abnormal return (CAR) depends on the level free float. As shown in Table 8, we observe the interaction term is statistically significant. In other words, there is strong evidence to support our hypothesis that the impact of negative earnings

surprises on cumulative abnormal returns (CAR) depends on free float. The negative coefficient for the interaction term implies that, when there is a negative earnings surprise, the impact on cumulative abnormal returns (CAR) is less pronounced for stocks with a lower free float. In other words, stocks with a low free float may experience a less significant decline in cumulative abnormal return (CAR) following negative earnings surprises compared to stocks with a high free float.

Second, we examine whether the impact of negative earnings surprises on the cumulative abnormal return (CAR) is greater decline for stocks with low free float than for those with high free float. As shown in the Table 9, there is a statistically significant difference in the impact of negative earnings surprises on cumulative abnormal return (CAR) between the low free float and medium free float stocks; however, contrary to our hypothesis, the coefficient has a positive relationship, indicating that low free float has less impact of negative earnings surprises on cumulative abnormal return (CAR) (12.25%p.a.) than medium free float. Similarly, when comparing stocks with low and high free float, we observe statistically significant differences in cumulative abnormal return (CAR) following negative earnings surprises between the low and high free float stocks. Since the difference is positive, contrary to our hypothesis, it suggests that on average, the impact of the interaction between negative earnings surprise and low free float is 13.56% p.a. less than the impact of the interaction between negative earnings surprise and high free float.

Lastly, we investigate whether lower levels of free float led to greater post earnings announcement drift (PEAD) in terms of the impact of negative earnings

surprises on the cumulative anomalous return (CAR). As shown in Table 10, our analysis revealed a statistically significant interaction effect between post-earnings announcement drift (PEAD) and free float across low, medium, and high free float stocks when negative earnings surprises occurred. These findings, though contrary to our initial hypothesis, offer intriguing insights into market dynamics, particularly in the context of varying free float levels. Surprisingly, our results indicate a positive impact, suggesting that the post-earnings announcement drift (PEAD) in low free float stocks is comparatively less pronounced at 18.07% p.a. In contrast, medium free float stocks demonstrate a stronger response, with a post earnings announcement drift (PEAD) of 23.94% p.a., and high-free-float stocks exhibit an even more substantial reaction. This unexpected outcome prompts a reevaluation of our assumptions and hints at a compelling explanation.

It appears that the market's reaction to negative earnings surprises may be more pronounced in stocks with higher free floats. The abundance of available shares in high-free-float stocks could facilitate a more robust response to absorb negative earnings surprises. Conversely, in stocks with low free floats, the limited supply may result in a comparatively subdued reaction. These findings invite us to reconsider the role of free float in influencing market responses to adverse earnings news. While our hypothesis diverged from the observed results, the implications are noteworthy. The market's capacity to absorb negative surprises may be influenced by the availability of shares, shedding light on the complex relationship between free float and post-earnings announcement effects.

Table 8 Regression Results - The interaction between free float and CAR

$CAR_{i,q} = \beta_0 + \beta_1 FF_{i,q} + \beta_2 ESUR_{i,q} + \beta_3 FF_{i,q} ESUR_{i,q} + Control + \varepsilon_{i.q}$

Variable	CAR (-2, 2)	
	POS_ESUR	NEG_ESUR
FF	-40.45*	-40.48*
	(26.99)	(30.24)
ESUR	1.87*	3.08**
	(1.38)	(1.62)
FF_ESUR	-0.11	-0.65**
	(0.22)	(0.38)
AGE	2.96	-3.05
	(2.57)	(2.64)
LNSIZE	-25.94	155.93***
	(40.37)	(42.66)
LEV	10.79	-68.19***
	(14.80)	(18.64)
LNVOL	-23.16	-0.40
	(38.33)	(34.26)
INF	-123.96***	2.88
	(39.34)	(44.18)
EG	94.83***	65.06***
	(23.74)	(25.93)
Constant	675.21*	-1,817.99***
	(489.27)	(443.64)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Noted: this study hypothesis one side test except the interaction terms between the level of free float and earning surprise is two side test. According to positive earnings surprise and negative earnings surprise, variables such as the interaction terms between the level of free float and earning surprise. This variable is expected to be not equal to zero.

Table 9 Regression Results - The interaction between various groups of free float and CAR

$CAR_{i,q}$ or $PEAD_{i,q} = \beta_0 + \beta_1 FF_{i,q}^{High} + \beta_2 FF_{i,q}^{Low} + \gamma_0 ESUR_{i,q} + \gamma_1 ESUR_{i,q} FF_{i,q}^{High} + \gamma_2 ESUR_{i,q} FF_{i,q}^{Low} + Control + \varepsilon_{i.q}$

Variable	CAR (-2, 2)		PEAD (2,20)	
	POS_ESUR	NEG_ESUR	POS_ESUR	NEG_ESUR
FF^{High}	48.56	95.66	-212.82	-2.59
	(102.47)	(127.95)	(185.24)	(227.23)
FF^{Low}	296.23*	319.93*	-918.63***	646.09**
	(190.61)	(197.40)	(389.95)	(372.23)

ESUR	4.78***	0.63	1.68	1.07
	(1.37)	(0.51)	(1.63)	(1.22)
$ESUR\_FF^{High}$	-3.87***	-1.31	-0.89	-5.88*
	(1.39)	(2.51)	(1.88)	(3.79)
$ESUR\_FF^{Low}$	-4.56***	12.25**	-2.14	18.07**
	(1.42)	(5.97)	(2.07)	(10.30)
AGE	2.60	-3.97*	9.81**	2.46
	(2.55)	(2.67)	(4.93)	(4.96)
LNSIZE	-26.34	143.37***	11.67	103.48*
	(40.22)	(42.46)	(70.73)	(75.56)
LEV	7.72	-67.74***	-8.79	-26.34
	(14.55)	(18.55)	(29.06)	(33.34)
LNVOL	-21.40	-7.84	-104.11**	17.58
	(37.98)	(35.00)	(59.20)	(67.99)
INF	-122.87***	5.04	-166.89	0.93
	(39.19)	(44.12)	(79.55)	(79.75)
EG	90.44***	65.16***	-27.11	67.48*
	(23.85)	(26.02)	(48.97)	(49.99)
Constant	424.09	-1,759.41***	1,501.23**	-1,762.72**
	(496.20)	(448.56)	(897.98)	(890.85)

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Noted: this study hypothesis one side test. According to positive earnings surprise and negative earnings surprise, variables such as the interaction terms between the low free float and earning surprise. This variable is expected to be a positive sign for positive earnings surprise and a negative sign for negative earnings surprise when compared to medium free float stocks.

Table 10 Hypothesis Tests - The difference in interaction impact of low and high free floats on CAR and PEAD

$ESUR\_FF^{High} - ESUR\_FF^{Low} = 0$ and $ESUR\_FF^{Low} - ESUR\_FF^{High} = 0$

Difference Test	**CAR (-2, 2)**		**PEAD (2,20)**	
	POS_ESUR	**NEG_ESUR**	**POS_ESUR**	**NEG_ESUR**
Coeff	0.69*	13.56**	0.12	23.94**
Prob > F	0.07	0.02	0.22	0.01

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Noted: this study hypothesis one side test. According to positive earnings surprise and negative earnings surprise, variables such the coefficient of the difference test between as the interaction terms between the low free float with earning surprise and high free float with earning surprise. This variable is expected to be a negative sign for both positive and negative earnings surprise.

To summarize our study, we examined the impact of free float on cumulative abnormal returns (CAR) in response to both positive and negative earnings surprises. Our findings reveal distinct patterns for positive and negative reactions.

For positive surprises, we observed a significant negative relationship between free float and cumulative abnormal returns (CAR), indicating that a reduction in free float corresponds to an increase in cumulative abnormal returns (CAR) following positive earnings surprise. Interestingly, low free float stocks exhibited notably higher cumulative abnormal returns (CAR) following positive earnings surprises, supporting our hypothesis that low free float is associated with more favorable market responses in such scenarios. However, our interaction analysis introduced complexity. We found that the impact of free float on cumulative abnormal returns (CAR) following positive surprises lacked statistical significance. Furthermore, when comparing low free float stocks to those with medium and high free float, we uncovered an unexpected result: low free float stocks did not consistently exhibit a stronger positive market response to positive earnings surprises than stocks with medium or high free float. This finding underscores the intricate relationship between free float and positive earnings surprises, challenging previous assumptions. Surprisingly, we identified a statistically significant negative correlation, indicating that low free float stocks had a less substantial impact on cumulative abnormal returns (CAR) following positive earnings announcements compared to their medium- and high-free-float counterparts. Our analysis of post earnings announcement drift (PEAD) revealed a nuanced trend in which low free float stocks initially experienced more substantial positive cumulative abnormal returns (CAR), followed by pronounced reversals, suggesting a possible overreaction phenomenon.

Turning to negative surprises, we found a statistically significant association between free float and cumulative abnormal returns (CAR). The negative coefficient for the interaction term suggested that the impact of negative surprises on cumulative abnormal returns (CAR) was less pronounced for stocks with lower free float. However, our comparison of low free float to high free float stocks revealed results that deviated from our initial hypothesis. Contrary to expectations, low free float stocks exhibited a less significant decline in cumulative abnormal returns (CAR) following negative earnings surprises. Similarly, our interaction analysis further confirmed this relationship, revealing that low free float stocks experienced a less substantial decline in cumulative abnormal returns (CAR) following negative surprises. Our analysis of post-earnings announcement drift (PEAD) also provided unexpected insights. Stocks with higher free floats displayed more pronounced reactions to negative earnings surprises, challenging conventional assumptions and suggesting that market efficiency may indeed vary with free float characteristics.

In summary, our findings highlight the pivotal role of free float in shaping market reactions to earnings surprises. Low free float firms exerted a positive influence on cumulative abnormal returns (CAR) in positive scenarios and experienced a milder decline in negative scenarios, underscoring the intricate interplay of free float in diverse market contexts.

These results have substantial implications for market participants and researchers. The greater impact of high free float stocks in response to positive surprises can be attributed to their ample supply, facilitating rapid responses to increased demand and resulting in immediate and pronounced price increases. High

free float stock's ability to absorb demand shocks leads to more stable price movements, making them appealing to investors seeking reduced volatility. Additionally, the perception of high free float stocks as more liquid and less susceptible to extreme price swings can influence investor behavior and trading patterns following positive news, magnifying their impact.

Conversely, low free float stocks, with their limited supply and potential investor reluctance to sell, demonstrated a weaker post earnings announcement drift (PEAD) effect when negative surprises occurred. Behavioral biases, such as loss aversion, may lead investors in low free float stocks to retain their shares despite negative news, tempering the impact of such revelations. This discrepancy in supply dynamics and investor behavior between low and high free float stocks underscores the complexity of market reactions to earnings surprises and underscores the importance of considering free float characteristics when analyzing market dynamics.

In summary, our study delves into the intricate relationship between free float and cumulative abnormal returns (CAR) in response to positive and negative earnings surprises, revealing unique patterns in market responses.

CHAPTER 7: CONCLUSIONS

In this study, we set out to investigate the impact of free float on market reactions to earnings surprises and assess its role in determining the efficiency of the Thai stock market. Through an event study approach, we sought to shed light on whether the market responds efficiently to earnings surprises, considering varying degrees of free float. Our findings have unveiled distinct patterns in the reactions to

positive and negative earnings surprises, providing valuable insights into market efficiency and investor behavior.

In response to positive earnings surprises, our study found that lower free float corresponds to higher cumulative abnormal returns (CAR), suggesting that reduced free float is associated with more favorable market responses. Notably, low free float stocks exhibited significantly higher cumulative abnormal returns (CAR), which supports previous study that suggests they benefit from positive earnings surprises. However, our interaction analysis added complexity, revealing no consistent advantage for low free float stocks over those with medium or high free float in responding to positive earnings surprises. Surprisingly, low free float stocks had a less substantial impact on cumulative abnormal returns (CAR) than their medium and high free float counterparts, with post earnings announcement drift (PEAD) showing a pattern of initial enthusiasm followed by pronounced reversals, indicating a possible overreaction phenomenon in Thai stock market with low free float stock.

In response to negative earnings surprises, we found that lower free float is associated with less pronounced declines in cumulative abnormal returns (CAR), contrary to our initial hypothesis. Low free float stocks exhibited a milder decrease in cumulative abnormal returns (CAR) following negative surprises, and our interaction analysis confirmed this pattern. Surprisingly, stocks with higher free floats displayed more pronounced reactions to negative earnings surprises, challenging traditional assumptions and indicating that market efficiency can vary with free float characteristics.

Our study highlights the crucial role of free float in shaping market reactions to earnings surprises. Low free float firms demonstrate a positive impact on cumulative abnormal returns (CAR) in positive scenarios and a less severe decline in negative scenarios. The dynamics of supply and demand, coupled with investor behavior, play a crucial role in these outcomes. High free float stocks, with their larger supply, tend to react more quickly to negative news, leading to more pronounced price declines, while low free float stocks may exhibit delayed reactions due to limited supply and potential reluctance to sell.

In conclusion, our research contributes to the existing literature by emphasizing the significance of free float and the response to earnings surprises. It underscores the importance of considering free float when analyzing stock market behavior. This study aims to empower investors with valuable insights into the role of free float in their investment decisions.

Our research findings have significant implications for market participants and researchers across various domains. We discovered a negative correlation between free float and stock performance after positive earnings surprises, suggesting that low free float stocks tend to outperform high free float stocks. This insight offers investors the potential for higher returns in low free float stocks after positive surprises, prompting a reevaluation of investment strategies. Understanding the impact of free float on market reactions is crucial, as it highlights its role in shaping market dynamics. Investors can use this knowledge to develop informed trading strategies that consider the differing behaviors of high and low free float stocks. Furthermore, our findings challenge conventional assumptions about market efficiency,

emphasizing the need to consider free float when assessing market dynamics and crafting investment strategies. Given the heightened volatility in low free float stocks, sophisticated risk management strategies are essential for these investments. Regulators and policymakers should also take our findings into account when evaluating market dynamics and their potential implications for market stability.

Limitations and Future Research:

It is important to acknowledge the limitation of our study, namely the unequal distribution of observations across free float categories due to the scarcity of low free float stocks as shown in Table 12A. This scarcity may be attributed to lower analyst coverage and forecasted earnings per share (EPS) for stocks with limited free float, contributing to the reduced sample size for this group. Future research should aim to address this limitation by exploring strategies to enhance data collection for low free float stocks.

The findings invite further research to delve deeper into the reasons behind these observed patterns. Investigating the underlying mechanisms driving the relationship between free float, earnings surprises, and cumulative abnormal returns (CAR) can provide valuable insights for market participants.

In summary, this study has delved into the complex interplay between free float and cumulative abnormal returns (CAR) in response to earnings surprises, revealing unique patterns in market responses. These insights offer valuable guidance for market participants and researchers and emphasize the importance of considering free float characteristics when analyzing market dynamics and investment strategies in the Thai stock market.

APPENDIX

Table 11A Descriptive statistics: the percentile of free float in SET

Year	Mean	N	P1	P25	P50	P75	P99
2012	32.54	106,287	2.23	19.82	29.24	43.16	84.86
2013	32.23	112,327	1.41	19.02	29.44	43.40	80.38
2014	33.60	123,624	1.57	19.05	29.85	45.20	89.39
2015	35.21	130,717	2.07	20.10	31.04	47.35	100.00
2016	35.11	136,710	2.13	20.38	31.55	47.50	99.13
2017	35.80	141,225	2.13	19.83	31.73	48.47	99.83
2018	47.01	149,125	5.08	28.94	44.42	62.64	100.00
2019	48.67	153,410	5.17	32.31	47.45	64.31	98.03
Total	38.13	1,053,425	2.18	22.01	33.94	51.50	99.57

Table 12A The number of earing surprises in each free float group

Number of events	Positive Surprises				Negative Surprises			
	Low	Medium	High	Total	Low	Medium	High	Total
2012	7	68	58	**133**	4	55	34	**93**
2013	11	91	75	**177**	15	111	70	**196**
2014	7	86	70	**163**	15	93	65	**173**
2015	17	93	64	**174**	6	103	58	**167**
2016	20	114	65	**199**	15	97	60	**172**
2017	16	105	73	**194**	13	99	56	**168**
2018	25	143	72	**240**	29	111	51	**191**
2019	20	88	59	**167**	39	125	63	**227**
All years	**123**	**788**	**536**	**1,447**	**136**	**794**	**457**	**1,387**

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