

CHAPTER II

THEORITICAL FRAMEWORK

The second chapter of this research contains the theoretical framework. This chapter will mainly discuss the basic concept and theories connected to the objective of the research. This chapter also discusses how other researchers' findings on the basic concept and presented it to other researchers. This chapter will be divided into four sections, literature review, previous research, research framework, and hypothesis development.

2.1 Literature Review

2.1.1 Stock market

The stock market is where all company stocks can be traded by the public. All companies listed in the stock market are also open to the public, meaning anyone can access their financial statement. Companies released their financial statement quarterly, in order for the public to analyze the company's performance. Being open to the public is started by listing the company's stock at Initial Public Offering (IPO). The stock market consists of all the public company's stock; thus, it is possible to link a country's economic performance with its stock market. The stock market is capable of contributing to a country's development. Be it through the production of goods and services or the accumulation of real capital (Laopodis & Papastamou, 2016). Should the country's stock market be performing poorly, the productions of goods and services will be negatively affected. The accumulation of real capital will also decrease from the period before

the stock market is performing poorly. On the other hand, should the stock market be performing positively, it will definitely boost the production and the accumulation of capital.

The stock market can also indicate which macroeconomic factor greatly affects the GDP of a country. A research study in South Africa by Wilson & Vencatachellum. (2020) investigated whether mergers and acquisitions are affected by the local stock market Johannesburg Stock Exchange (JSE). The research found JSE plays a key role in facilitating mergers and acquisitions, the stock market encourages it. For an emerging market in South Africa, mergers and acquisitions activity matters to the growth of GDP. This research indicates, there is a clear connection between the stock market and GDP. Therefore, if the stock market is performing poorly, then it will surely negatively affect GDP growth.

The stock market can be greatly affected when the national election is taking place. A research study in the United States of America by Bowes. (2018) investigated whether S&P 500 index is affected by political uncertainty. The result stated financial market volatility increases when the outcome of the national election is less certain. Therefore, there is a clear connection between political outcomes and uncertainty about the economy. It is common for a presidential candidate to have a different policy from the other opposition. Investors are likely to rely on which policy benefits them the most. If the election result is still uncertain, then investors are starting to

develop a distrust of the market. Thus, creating volatility in the stock market.

From the previous research, it can be concluded, that the stock market plays a big role in the country's economic performance. Investors, whether foreign or domestic, can determine whether to invest in a certain country based on its economic performance and its stock market.

2.1.2 Stock market index

The stock market index is the cumulative number of all stocks listed in a country or region. For example, some of the indices used in the United States of America are S&P 500 and Dow Jones. Meanwhile, in Japan it is called Nikkei, in Indonesia, it is called IHSG. These are some examples of many stock indices all over the world. As mentioned before, the stock market usually reflects on the country's economic performance. In order to make analysis easier, one can use the stock market index to determine whether the stock market performance has been performing better or worse.

The stock market index is also affected by the macroeconomic condition. A recent study by Singh & Shaik. (2021) investigated the effect of pandemic COVID-19 on the stock market indices. Research suggested the pandemic negatively affected all stock market indices all around the world, be it developing or developed countries. It is possible the multiple restrictions policy in each country hinders the economic performance. The

government needed to prioritize health over the economy. Therefore, countries' economic performance took a downturn, affecting their index in a negative way. Should the world recover from the pandemic, then every activity will continue normally. It is possible to stock market indices will return to normal, the same as before the pandemic hit. Thus, the stock market index is affected by the macroeconomic factor, in this case where the pandemic is classified as macroeconomy.

2.1.3 Commodities

The stock market index consists of all the stocks listed in the country. Inside this index, there are sectoral indices, classifying which stock belongs to which sector. For example, a company trading in nickel surely belongs to the mining sector. Another example, banking company providing financial services belongs to the finance sector. Within a sector, there are commodities traded as goods by the company. Commodities usually have their own index worldwide. Therefore, when a commodity index rose up it will indicate the company dealing in said commodity is currently performing well. On the other hand, should the commodity index be performing poorly, then it will also affect the company stock price negatively.

Commodity markets usually led stock markets in other countries. A research study by Wang et al. (2013) investigated the link between Rogers International Commodity Index (RICI) and various countries' stock markets. Study findings suggested RICIA agricultural index led stock

market indices of Japan, China, India, Brazil, South Korea, Taiwan, and Africa. RICIE energy index led stock market indices of Japan, Australia, Russia, Taiwan, and Africa. Investors may take advantage of these indices to predict the volatility in each respective sector. In order to predict the volatility, investors can use the changes in each respective index. Thus, it is possible for an investor to use the international commodity index to predict certain countries' sectors. In relation to this study, investors may use nickel prices to determine the companies' performance.

2.1.4 Tesla Motors

Tesla Motors has been revolutionizing the auto industry with its Tesla Models. Electric vehicles use lithium-ion battery, instead of using gas. Tesla delivers its product with the promising result, especially with its cars. This certainly attracts many investors. Tesla also looks into expanding internationally with clean transport and energy around the world. Not only does Tesla receive significant support, but it also has the edge over its competitors. This is due to Tesla being dominant in the clean energy market, and also ahead of Technological innovations (Liu, 2021).

Tesla's CEO Elon Musk is known to be very vocal in social media. One of the prominent examples of Musk's presence is on Twitter. Musk often tweets a major decision on what he will do with Tesla. Investors often take advantage of this as information. Both retail and professional investors

are being benefited due to Musk's tweets on Twitter (Strauss & Smith, 2019).

2.1.5 Investors

Investors are individuals who seek profit by purchasing companies' ownership, in a certain period of time. Investors may use any means necessary to maximize profit and minimize loss. As mentioned before, investors may take advantage of the stock market index, commodity index, and even social media to enter or exit the stock market. Research by Sayyadi Tooranloo et al. (2020) investigated the causal relationship of investor decision-making in purchasing shares. Research suggested investors in Iran are paying attention to political news and its impact on the stock market. It makes sense for an investor in a country with political unrest, following any development on political news. Research by Tauni et al. (2017) investigated investor personality moderate the relationship between information and trading behavior. Research findings suggested that it is possible for investors to become aware of their personality traits, they may avoid potential losses in the investments occurring from the harmful effects of behavioral biases. When investors become biased, they will likely ignore any signals indicating their investment is going to result in a loss.

2.1.6 Informed and uninformed investors

Being informed and uninformed is about how one has better information than the other. The better-informed investor usually has better judgment, than the uninformed ones. Uninformed investors' portfolio is

more prone to changes in the light of public information than those of informed investor. The uninformed investor is dubbed unskilled and places a greater weight on public signals (Abdesaken, 2015). Uninformed investors have a bigger influence when reacting to public signals than those informed ones. The absolute difference in expected demand between uninformed and informed investors increases with the investment horizon but decreases with the level of information asymmetry (Buckley & Perera, 2019). Informed investors yield future returns better than uninformed investors and that uninformed investors continue to be at an informational disadvantage around earnings announcements despite the increasing availability of information through the internet (Fricke et al., 2018). Informed investors have improved prediction ability, and thus will have stronger beliefs on the signal he observes. Uninformed investors have a poor forecasting ability than those who are informed (Guo et al., 2011). The investor with better knowledge of price diffusion over time and space outperforms the uninformed investor, capitalizing on this informational advantage (Hwang & Quigley, 2010). Thus, it can be concluded informed investors are better than those who are uninformed. Being informed is more advantageous than being uninformed, therefore there are clear distinctions between the two.

2.1.7 Overreaction

Overreaction is a phenomenon when irrational investors overestimate new information. This will likely cause a substantial deviation of stock prices from their fundamental price. Built on the basic psychology

theory, in violation of Bayes' rule most people have a habit of overreacting to dramatic news events. By basing upon this theory he explained the increase of stock prices over its intrinsic value at numerous news events, its empirical results termed "stock market overreaction" (De Bondt & Thaler, 1985). The overconfident investor is someone who overestimates the correctness of one's private information indicators but is not public. Overconfident informed investors overweight the private signal relative to the prior, causing the stock price to overreact (Daniel et al., 1998). Thus, previous research concluded that overreaction is very likely to be triggered by investors' overconfidence.

2.1.8 Uninformed investors caused overreaction

After concluding that uninformed Investors are at the disadvantage, now it is time to relate between uninformed investors and overreaction. Uninformed investors are likely to be involved in momentum trading. This behavior will cause overreaction and short-term price momentum. This is one of experiments cited by (Duxbury, 2015). Immediately upon receiving news, informed investors have a fairly better and earlier reaction in a significant way. Uninformed investors lagged behind informed investors, which is generally quite significant (Geoffrey Booth et al., 2011). Uninformed investors rather have the tendency to particularly follow any trend in the market, which is fairly significant. They are most likely to become trend chasers, simply buying when the price rising and selling when falling

(Cherono et al., 2019). Uninformed investors are heavily influenced by recent trades and are motivated to buy (sell) when previous trade has been bought (sold) (Angelovska, 2016). Informed investors are definitely pretty much better at discerning new information. Informed investors for the most part see news directly, without being affected by noise. While uninformed investors see a combination of news and noise. As time goes, when new information goes to light, uninformed investors definitely realized it was too late to buy. In the end, uninformed investors become trend chasers (Liang, 2012). Uninformed investors positively are the origin of market overreaction, and particularly further create market volatility (Lobão & Costa, 2019). Thus, after taking the previous study into consideration, it can be assumed that uninformed investors are likely to overreact. Specifically, when it comes to information, informed investors are better and do not simply follow the market trend. It can be concluded; uninformed investors are the explanation why market overreaction happens.

2.1.9 Overreaction due to Tesla

With the case of Tesla, there is an apparent market reaction each time news was published. Investors become overconfident when they trade during early Tesla development. Investors gained more return from what they expected in the first place, possibly due to the good news. Then more good news came, increasing the investors' return even more. Inversely, bad news also had the opposite effect, where the negative return is exaggerated.

Investors realized the pattern of this good news and bad news, thus being confident that their prediction would come true. If we assumed an uninformed investor did this prediction, then it would be the trigger of overreaction. Thus, investors' overconfident caused overreaction towards the good or bad news regarding Tesla.

In order to investigate whether Tesla Inc. news caused overreaction, there will be two periods. The first period is before Tesla is involved with Indonesia, and the second is during Tesla's involvement in Indonesia. The reasoning behind this is that overreaction may happen all the time. This research focuses on overreaction during Tesla involvement. Therefore, in order to support the hypothesis, there will be two periods.

2.2 Previous Research on News Overreaction

This section will discuss previous research, about how news related to investors' overreaction. There is an instance where investors received news from the company itself. A profit warning is a warning declaration issued by the company to the investors. This warning is essentially when a company's profit will significantly change from previous profit. This profit warning can be both positive and negative. Research on profit warnings by Yin et al. (2018), suggested that abnormal returns are positive (negative) on the day of release positive (negative) profit warnings and negative (positive) on the subsequent days. This event study indicates a strong presence of reversal pattern, following positive and negative warnings.

In the case of mergers and acquisitions, the mandatory offer will occur. A mandatory offer is where one company in mergers and acquisitions, purchase some or all the shares of the other company. Research by Okoń. (2012), suggested that mandatory offers have a significant impact on the stock price. The author also suggested that during the announcement of the mandatory offer, there is a drop in average abnormal return. Therefore, investors should sell immediately after mandatory offers announcement. Information can be either private or public, and investors are reacting to them differently.

A study on private and public signals by Rainer & Tallau. (2016), suggested that investors tend to underreact to public signals and overreact to private information. The author elaborated further that, there are large (positive) price changes without public information followed by price reversals. Meanwhile, there are large (negative) price changes with the public announcement, which are even pronounced with price-relevant information.

There are times when companies will start announcing when they will share dividends. Of course, this announcement can be treated as good news. A study by Al-Shattarat & Al-Shattarat. (2017), investigated the relationship between cumulative abnormal return and earnings. The findings suggested that there is a significant positive abnormal return on dividend announcement days. On days where there are no dividend announcements, it was found that there are no significant changes.

Overreactions can be found within a smaller time frame. The stock market time frame can range from minutes to monthly. A study by Tripathi & Aggarwal. (2015), investigated overreaction within minutes and hours of intraday price shocks. The findings suggested that stock price jump high accompanied by favorable events, and decline accompanied by unfavorable events. The author elaborated further; this is basically due to investors overreacting to unexpected information in a very short term

Once good news and bad news are identified, it is possible to link the news and abnormal returns. A study by Khatua & Pradhan. (2014), investigated abnormal returns during quarterly news. Research findings suggested that the market overreacts more to any bad news than good news. The author explained further, this finding correlates with information asymmetry. It is possible that information is not distributed properly, only reaching those institutional investors.

Thus, from previous studies, it can be concluded that there is a relation between news (signals) and investor reaction. The table below will provide a summary of previous studies on News Overreaction.

Table 1 Summary of previous studies

Authors and year of publication	Title	Variables	Method and period of analysis	Results
Yin et al. (2018)	Stock Price Reaction to Profit Warnings: The Role of Time-varying Betas	-Profit Warnings -Market efficiency -Overreaction -Time-varying betas -Event-induced variance	Cumulative Abnormal Return	Abnormal returns are positive (negative) on positive (negative) profit warning and negative (positive) on subsequent days
Okoń. (2012)	Investor Reaction to Mandatory Offers on the Warsaw Stock Exchange	-Mandatory offer -Event Study -Investors' reactions	Cumulative Abnormal Return	Mandatory offers have a significant impact on the price of companies' stock listed in the Warsaw Stock Exchange
Rainer & Tallau. (2016)	Stock Returns Following Large Price Changes and News Release – Evidence from Germany	-Overreaction -Market efficiency -Event Study	Cumulative Abnormal Return	Large (positive) price changes without public information followed by price reversals. Large (negative) price with public announcement, even more pronounced with price

				relevant information
Al-Shattarat & Al-Shattarat. (2017)	The Relationship Between Cumulative Abnormal Returns and Earnings: Evidence from Emerging Markets	-Dividend Announcement -Signaling Hypothesis -Future Earnings	Cumulative Abnormal Return	On dividend release, there is a significant positive abnormal return on the announcement days. On no dividend release, no significant abnormal return
Tripathi & Aggarwal. (2015)	Prior Return Effect in Indian Stock Market: An Intra-Day Analysis	-Prior Return Effect -Contrarian Strategy -Overreaction Effect -Overreaction Hypothesis -Indian Stock Market -Intraday Analysis -High Frequency Data	Cumulative Abnormal Return	Stock price jump up high accompanied by favorable developments. Stock price decline accompanied by unfavorable developments

Khatua & Pradhan. (2014)	Examining Overreaction in Indian Stock Market for Quarterly News	-Overreaction -Event Study -Abnormal Return -Cumulative Abnormal Return -Market Modal -Quarterly Announcement	Cumulative Abnormal Return	Market overreacts more on any bad news than any good news. This prove information asymmetry
--------------------------	--	--	----------------------------	---

All previous studies are related to news affecting the abnormal return. Therefore, this study will also use a similar pattern on news affecting abnormal returns. Abnormal return is necessary to investigate whether overreaction is present or not. Abnormal returns can result in both positive and negative. Positive abnormal return indicates excess return from realized return. On the other hand, negative abnormal return indicates return drop below expected return. As observed from previous studies, all studies used a similar method using cumulative abnormal return to investigate overreaction. Thus, this study will also use a similar method by Musnadi et al. (2018) when investigating overreaction Indonesian stock market sectors. The reason why I chose this study, is due to a similar object study which is the Indonesian stock market.

2.3 Research framework

After the summary of previous studies revolving around overreaction, the framework can be drawn as below. The main idea is that

investors read the news as a source of information. However, due to a lack of skill and information, investors are likely to be uninformed. Another possible scenario, informed investors do have adequate skill and information. Therefore, investors can be categorized into informed and uninformed. Whereas uninformed investors caused overreaction, informed investors caused underreaction

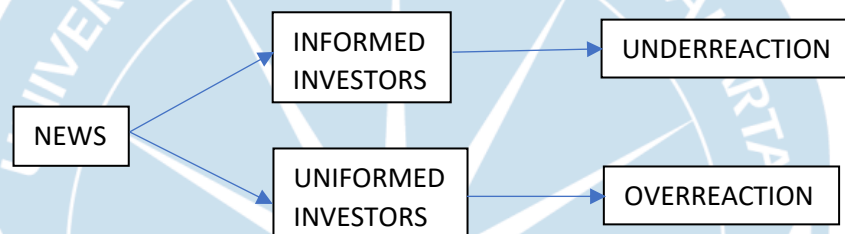


Figure 1 Research framework

2.4 Hypothesis development

With the relations of theories revolving around investors' irrationality, uninformed, and overreaction, and also how Tesla Inc. news influenced investors, the author assumes news affected uninformed investors, which caused overreaction as the result. Therefore, the possible hypothesis will be as follow:

H1: Tesla Inc. news caused uninformed investors to overreact to recent information