

## CHAPTER 2

### LITERATURE REVIEW

In this chapter, we will explain the rationale for information transfer and volatility in the stock market, as these are the main topics of this white paper. It then describes the literature of previous research that will strengthen the study. Eventually the hypothesis is defined.

#### 2.1 Theoretical Framework

##### 2.1.1 Transfer Information and Volatility Spillover Effect

The spillover effect indicates the possible impact of seemingly unrelated events in one country on another's economy. There is a positive spillover effect, but this effect most commonly applies to the negative effects of domestic events on other parts of the world, such as earthquakes, stock market crises and other macro events.

King and Wadhvani (1990) have designed a model to determine the impact that unexpected in key markets such as the United States to be transferred to other markets. In their model, the asynchronous transaction time of transition and investors had to infer information from the price fluctuations of the previous open market. And it turns out that the effect of increasing the size of the old according to market volatility. The White Paper and this has been proven inflammatory pattern of a small market in a large market. For example, the London Stock Exchange is likely to surge opens the New York Stock Exchange.

For example, a decline in U.S. consumer spending has a ripple effect on the economy and stock markets of a country that relies on the U.S. as its largest. The larger the economy, the greater the ripple effect of the global economy as a whole. As the U.S. is the leader of the

global economy, turmoil in the U.S. market can affect markets in other countries.

Another study has empirically verified whether the Asian stock market is unilaterally affected by the U.S. stock market or has an interaction with the U.S. stock market at this point in 10 years since the Asian financial crisis. In this paper, we looked at the interaction between the two markets through stock information transfer effect, targeting the exchange market between the U.S. and Asian countries (Korea, Singapore, Hong Kong and Japan) in terms of stock market integration. To this end, the daily return (the one-day closing price versus the previous day's closing price) is divided into the overnight return (the same day's closing price) and the daytime return (the same day's closing price compared to the previous day's closing price) before the financial crisis (1992-1997) and immediately after the financial crisis (1997-2001), and the latest (2001). As a result, the influence of the U.S. stock market in Asian countries has doubled since 2001 compared to the immediate aftermath of the Asian financial crisis, and most U.S. stock price information has been shown in the night yield of Asian countries, which has effectively worked. It also confirmed that the influence of Asian stock markets in the U.S. stock market has increased from two times to four times since 2001 compared to right after the Asian financial crisis. This means that unlike in the past, there is an interaction with the U.S. stock market along with the economic growth of Asian countries, and it is possible to predict the U.S. share price rate and volatility through the stock price information of Asian countries. Finally, if the positive and negative returns of U.S. stock prices occur before 2001, the Asian country will have a negative return (Khartsaga, 2018).

The asymmetrical variability transition effect with different effects on overnight yields in the stock market and leverage effect with greater effect on negative (-) yields were identified. On the other hand, since 2001, there has been no leverage effect in the night yield. However, the stock markets in Korea and Singapore were not consistent with each country due to the

significant asymmetric volatility transfer and leverage effects in the daytime yield. And the U.S. stock market also showed leverage effects with asymmetric volatility transfer effects on stock price volatility information in Asian countries, but since 2001, it has declined significantly (Nan, 2014).

As a result, the interaction of the stock market between the United States and Asian countries due to globalization has occurred since 2001.

It can be seen that it is accelerating further. In particular, it can be seen that the inflow of American investment funds, coupled with the opening of capital markets in Asian countries, serves as a medium for linking the U.S. stock market with the Asian stock market.

However, the impact of the U.S. stock market on the Asian stock market is more powerful than that on the U.S. stock market, so the two markets are not yet fully integrated (Kim, 2008).

The last paper to be reviewed is the study of information prior to the effects of cross-country stock markets around Mongolia, South Korea, the US, China's stock market. This paper investigates the unit root, Granger causality test, impulse response function and impulse response of each country through the variance decomposition based on the stock price index returns four countries.

As a result, the US stock market showed a strong transfer effect on price and return to Korea, the stock market, and the Chinese stock market. However, the Mongolian market showed insignificant effect on price and return. The Korea stock market showed significant precedence over the Mongolian stock market. The analysis results of the impulse response function and variance decomposition had the most influence on Korea in the US market. In the case of the Korea market, it was found that the US market was most affected, and the

Chinese and Mongolian markets had little influence. In the case of the Chinese market, it was found that the US market and the Korean market were affected in that order.

In the case of the Mongolian market, it was found that Korea, the United States, and China were affected very little (Od, 2018).

Finally, the study about the Volatility Spillover Effect from G5 Stock Markets to Karachi Stock Exchange (Jan, 2015). From January 5, 2004 to December 30, 2013, there was an enterprising attempt to investigate the outflow of volatility from the G5 national stock market to the Karachi Stock Exchange (KSE). France, Germany, Japan, Britain and the United States. The joint integration test between Johanssen and Husselius was applied to examine the long-term connection between the KSE and G5 stock markets. The variability outflow was analyzed by the GARCH model. We found a long-term relationship between the KSE and the German and British stock markets. The GARCH (1, 1) model shows significant volatility ripple impact on KSE in all G5 stock markets.

That is, the weekly time series data were used from January 5, 2004 to December 30, 2013. The long-term connection between the Karachi Stock Exchange and the G5 Stock Exchange is analyzed using the joint integrated analysis of Johanssen and Husselius. The G5 countries contained in the study are France, Germany, Japan, Britain and the United States. The study used the GARCH (1, 1) model to investigate the outflow of variability from the G5 stock market to the Karachi Stock Exchange. A joint integrity analysis shows the long-term relationship between the Karachi Stock Exchange and the German and British stock markets. The study looked at the volatility spillover leading from the G5 stock market to the Karachi Stock Exchange and found that the volatility spillover impact exceeded from the entire G5 country to the Karachi Stock Exchange. This shows that changes in the G5 stock market will affect the Karachi Stock Exchange. While the G5 stock markets, including France, Germany, the U.K.,

and Japan, have become more volatile, the U.S. stock market has reduced volatility in Karachi's stock market. The integration of the G5 and the Karachi Stock Exchange shows investors that there are fewer opportunities for diversification. Investors on the Karachi Stock Exchange do not have a good opportunity to diversify their risks by investing in the G5 stock market. In addition, investors in the G5 stock market unbenefit from investing in emerging markets on the Karachi Stock Exchange (as cited in Jan, 2015).

### **2.1.2 Stock Market**

Stock market means a group of markets and exchanges in which regular activities of trading and issuing shares of a listed company take place. Financial activities or transactions are carried out on official exchanges or over-the-counter (OTC) markets operating under established rules. A country or region may have several stock trading locations that allow stock and other forms of securities to be traded in one country or region. These may include securities listed on the public stock exchange, and private shares sold to investors through the stock crowdfunding platform. And most investments in the stock market are traded using stock brokerage or electronic trading platforms. And there is a name for the stock market in each country. The United States has NYSE, S&P 500, China has SSEC, Singapore has STI (SGX), and Indonesia has COMPOSITE (IDX). Tjong and Clara (2019) analyzed the impact of corporate information quality on the cost of equity capital in Indonesia by using a different proxy. The proxy was the ratio of corporate stock return and corporate earning growth.

Tjong and Clara (2019) analyzed the impact of known corporate information quality by using an unbalanced panel data regression after including some control variables.

### **2.1.3 Time Series**

Many types of inter-market coordination have been studied using a time series approach; many studies have partial results that there is a trend in the global stock market. However, among other studies, the results sometimes reject the trend. Rangvid (2001) analyzed the general recursive probabilistic trend and found that the convergence (level) between European stock markets is rising.

However Koop (1994) have used a variety of objective Bayesian methods. Two units of the root and the common component properties of the set of financial data has been analyzed. The results showed no price or a common trend in the exchange rates between countries. Corhay, Rad and Urbain (1995) also five regions (Australia, Japan, Hong Kong, New Zealand and Singapore) have investigated the stock market. However, the evidence of a single probability-based trend could not be found. Christofi and Pericli (1999) looked at the short-term dynamics between Brazil, Argentina, Colombia, Mexico and Chile. And find the relevant one minute and two minutes dependencies.

### **2.1.4 Market Integration**

Market integration is an important concept in international economics. Several studies have been conducted on market consolidation. Campbell and Hamao (1992) studied the predictability of US Treasury bond rates using monthly returns on US and Japanese stock portfolios. And we looked at the integration relationship between the US and Japanese stock markets. Data used monthly reflect data for the US, Japan, and UK from 1980 to 1993. Kasa (1995) found that market consolidation is sensitive to changes in global discount rates. Market integration has concluded the high volatility of the discount rate the higher the relevance of the market. Johnson and Soen (2002), using the daily revenue data from 1988 to

1998, compared to about integration between the Japanese stock market and 12 other Asian stock markets. As a result, They found that the import/export ratio and the difference in inflation between the two markets are possible economic determinants of international integration. They find that Australia, Hong Kong, Malaysia, New Zealand and Singapore stock markets are integrated and most Japanese equity markets. They also found evidence that these Asian markets become more integrated.

Asian capital markets are receiving a lot of attention from emerging markets (Indonesia, China, Vietnam, etc.). This is because Asia's emerging market economy is the fastest growing region of the global economy. Much research has been done since the 1990s to investigate the synchronicity between advanced and Asian stock markets (Chowdhury, 1994).

Chaudhuri (1997) used Johansen Co-integration Methodology to investigate general drift in seven Asian markets. It paper that a single drift was identified as a result. Phallac-McMiken (1997) surveyed the ASEAN Monthly Market Index (Indonesia, Philippines, Singapore, Malaysia, Thailand) from 1987 to 1995. Except for Indonesia, markets in Malaysia, Philippines, Singapore and Thailand are interconnected. These markets are not collectively efficient. Local stock market harmonization generally limits the benefits of international diversification. Risk is unattractive. However, in the long term, the interconnection between markets is weak but stable. As a result, the benefits of international diversification of the portfolio can be realized, at least in the long term. Here Palac-McMiken (1997) is, despite the evidence of interdependence suggests that there is a lot of diversification throughout the ASEAN market.

Masih (1999) found a high level of interdependence between the markets of Thailand, Malaysia, the United States, Japan, Hong Kong and Singapore, from 1992 to 1997. However,

Chan (1992) is performed by the units and bi-directional path consistency tests have found that it is not grasp the relationship between the Asia-Pacific market and integrated into these Asian markets jointly.

Factors influencing many of the market consolidation include high income rates as well as inflation, real interest rates and GDP growth. As a result, the larger the difference, the more negative consequences of the joint movement of the stock market between countries. Looking at the relationship between Japan and the United States with the four emerging economies (Hong Kong, Korea, Singapore, and Taiwan), Chowdhury (1994) found that the US market led the four major NIEs. A big reason for such findings is that Hong Kong and Singapore, Japan and the US stock markets have found significant relevance. Phylaktis (1995) found that capital market consolidation increases the capital markets of the Pacific Basin as the US and Japan increase. Cashin (1995) evaluated how similar stock prices move between countries and regions. That way, we use joint integration testing. They have localized the national stock market. As a result, we report an increase in consolidation of emerging stock markets from the beginning of 1990. Also, when the long-term equilibrium relationship collapsed due to a global shock in the national stock market. It has been confirmed that the stock market will take months to recover (Omar, 2008)

### **2.1.5 Causal Relationship**

The United States invests large amounts of capital in a variety of countries. This is why the United States has a political or economic impact in so many countries around the world. Therefore, a lot of research has been done to investigate the relationship between the US and other stock markets. Eun and Shim (1989) used Vector Autoregression(VAR) Model to study the interdependence of global stock markets. Their research has found evidence of joint movement between these markets. And it was concluded that the US market is leading the



global trend. Cheung and Mak (1992) used a single equation model to investigate the causal relationship between Asia Pacific and developed markets. As a result, they confirmed that the U.S. market is an important global factor; they also found that the U.S. market dominates most emerging markets in Asia and the Pacific. Kwan, Sim, and Cotsomitis (1995) looked at the stock markets in UK, USA, Korea, Taiwan, Australia, Japan, Hong Kong, Singapore, and Germany. And they found an important leading relationship between the stock markets. The conclusion argued that these markets are not weak.

Many studies of the relationship between the stock market and real economy variables was conducted. The result is divided by two conclusions. The first conclusion is that checking between the stock market and real economic variables have relation and influence. Many studies of the relationship between the stock market and real economy variables was conducted. The result is divided by two conclusions. The first conclusion is that the stock market and real economic variables have a close relationship and influence. Gallinger (1994) found a one-way causal relationship between stock market activity and economic activity. He describes three reasons for the association between stock returns and real activity. First, changes in stock returns will affect the future demand for consumer and investment goods. As a result, changes in income and wealth are closely related changes. Second, the increase in real economic activity is to increase the existing capital. It will increase consumer demand. Finally, the return on equity is an important indicator of the economy.

In addition, Levine and Zeros (1998) have investigated the relationship between the stock market and long-term economic growth and banks. They find that it is to develop liquidity in the banking and the stock market that a good indicator of economic growth. Cheng and Lai (1998) has investigated the EMS countries (France, Germany, Italy). EMS countries has confirmed the macro-economic variables such as money supply, dividends and industrial

production that is associated with long-term stock market movements. They suggest that the long-term trend can be partly attributed to the price, especially since the 1987 collapse of macroeconomic variables. But it does not have much explanation (Yin, Kon, & Lai, 1998).

In contrast, some studies have shown that the stock market has little to do with economic variables. There is a study by King (1994) that there is an observable economic variable that only part of the short-term market covariate can be explained. However, there were unobservable factors such as investment sentiment. So only a small part of the study is recognized. Karolyi and Stulz (1996) analyzed joint interest movements in the Japanese and US stock markets. As a result, we found that the impact of US macroeconomic announcements on exchange rates, government bond returns, or industrial effects did not have a statistically significant relationship between asset returns. Ammer and May (1996) estimated the covariates between earnings components in national stock markets. We then concluded that stock risk premiums rather than fundamental variables account for most of the coordination across the country's stock index. This paper adopted the method from Budhidharma (2020) in testing the causal relationship.

## **2.2 Hypothesis**

Based on the studies discussed above, the literature we have made the following hypothesis.

The null hypothesis and the alternative hypothesis can be written as follows:

**H0: There is volatility spillover among USA, China, Singapore to Indonesia stock market.**

**H1: There is no volatility spillover among USA, China, Singapore to Indonesia stock market.**