CHAPTER II
Literature Review

2.1. Definition of The Factors in The Research

The Dow Jones Industrial Average Index (DJIA) is a stock market index created by Wall Street Journal editor Charles Dow. Founded on May 26, 1896, the average is named after Dow and statistician Edward Jones. The index itself shows how 30 large publicly owned U.S companies have traded during a standard trading session in the stock market. About 20 of the DJIA's 30 component companies are industrial and consumer goods manufacturers. The others represent industries including financial services, entertainment, and information technology. The DJIA is just one of Dow Jones' market indexes. These stocks included the American Cotton Oil, American Sugar, American Tobacco, National Lead, and the Tennessee Coal, Iron, and Railroad Co., among others. The DJIA is designed to provide a clear view of the current stock market, which in turn reflects the state of the U.S. economy. The index is calculated by adding the prices of the 30 stocks in the average and dividing by a divisor. The divisor has shrunk over the years to offset arbitrary events, like stock splits and roster changes at companies[1].

The index is weighted as the following calculation formula[(2) (3)]:

$$\textbf{Current Index} = \frac{\textit{Current Total Market}-\textit{Cap}}{\textit{Divisor}} \; \boldsymbol{x\ Base\ Level} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \textit{Eq (1)}$$

The Shanghai Stock Index is Chinese stock index or bourse based in the city of Shanghai. The index is consists of It is one of the three stock exchanges operating independently in the People's Republic of China[4]. The lack of correlation between China's stock market performance and the country's economic performance exemplifies its peripheral nature to the wider economy. When the market crashed in October 2007 (before the credit crunch had a serious impact on the world financial system), the economic growth in China remained steady[5].

The index is weighted as the following calculation formula[6]:

$$\textbf{Current Index} = \frac{\textit{Current Total Market}-\textit{Cap}}{\textit{Divisor}} \; \boldsymbol{x\ Base\ Level} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \textit{Eq (2)}$$

Where Current Total Market – Cap = $\sum$ (Stock Price x Number of Shares Issued)

IDX Finance Sector Index is an index that measures the performance of all stocks in the Finance Sector based on the Jakarta Stock Industrial Classification (JASICA)[7]. The Finance Index contains all listed companies that are engaged in Indonesia's Financial sector. This sector is further subdivided into banking, Financing Institutions, Securities Companies, Insurance, and Others[8].

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[1] https://www.businessnewsdaily.com/3342-dow-jones-industrial-average.html
[2] Jones Averages, D. (n.d.). *April 2020 S&P Dow Jones Indices: Index Methodology*.
[3] *December 2020 S&P Dow Jones Indices: Index Methodology Index Mathematics Methodology*. (n.d.).
[4] https://www.moneycontrol.com/live-index/shanghai
[5] https://theconversation.com/explainer-what-role-does-the-stock-market-play-in-the-chinese-economy-46691
[6] *Methodology of SSE A Share Index*. (n.d.)
[7] https://www.idx.co.id/en-us/products/index/
[8] https://www.indonesia-investments.com/id/finance/stocks-bonds/jakarta-composite-index-ihsg/finance-

Moreover, the weight capping process of the index constituents is also applied. The quality factor is the stock's quality score which is calculated through the assessment of quality variables. The index formula as follows[9]:

$$\textbf{Index} = \frac{\sum_{i=0}^{n}(\textbf{Market Cap } i \textbf{ x Free Float Ratio } i \textbf{ x Quality Score } i)}{\textbf{Base Market Cap}} \textbf{ x 100} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad \textit{Eq (3)}$$

Where:

Market Cap i = Total listed shares × market price of stock I
Free Float Ratio i = Ratio of the number of free-float shares to the total listed shares of stock I
Quality Score i = Quality score of stock I
n = Number of index constituents
Base Market Capi = Market capitalization on the Base Date (adjusted if there are any changes in the number of shares for the index)

Covid-19 active cases are a group of symptomatic individuals linked by the time, geographic location, and common exposures, containing at least one NAAT-confirmed case or at least two epidemiologically linked, symptomatic (meeting clinical criteria of Suspect case definition A or B) persons with positive AgRDTs (based on ≥97% specificity of the test and desired >99.9% probability of at least one positive result being a true positive)[10]. The main symptoms are **fever, cough, and difficulty breathing**. However, in a small percentage of patients, the first symptoms may be **headache, nausea, or diarrhea**. The virus can also infect other cells of the body, including intestinal cells, which would explain the diarrheas and the presence of viral RNA in the stool. **Loss of smell and taste** seems to be frequent among infected individuals and could be among the first signs of disease[11].

2.2 Contagion Effect Theory

The contagion concept first became popular as both a descriptive and explanatory device for social, as opposed to biological, phenomena in the late 19th century France, notably through the work of James Mark Baldwin (1894), Gabriel Tarde (1903), and Gustave Le Bon (1895).

Revealed that the main interpretation of the contagion effect comes from the interdependence between the market economies such as macro-economic similarities, trade relations, and loans from banks[12].

Calvo and Reinhart (1996) mentioned that the idea behind this channel shock, whether local or global, which spread throughout the country through real and financial. The contagion has a definition as significant relationships increase in some the financial markets after the shock transmitted to several countries or group of countries (Bavister & Squirrell, 2000).

Most economists would define the contagion as follows "the contagion is the propagation of shocks among markets over the transmission explained by the fundamentals" (Rigobon, 2002.).

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[9] *Guide for IDX Quality30 Index*. (n.d.).

[10] https://www.who.int/publications/i/item/WHO-2019-nCoV-Surveillance_Case_Definition-2020.2

[11] https://www.isglobal.org/en/coronavirus

[12] https://www.researchgate.net/publication/5193656_Contagious_Currency_Crises

The contagion is best defined as a significant increase in the cross-market linkages after the shock to an individual country (or group of countries), as measured by the degree to which asset prices or the financial flows move together across the markets relative to this movement in the tranquil times. The contagion refers to the spread of market disturbances mosey on the downside from one country to the other, a process observed through movements in the exchange rates, stock prices, sovereign spreads, and capital flows. (Bavister & Squirrell, 2000).

In economics and finance, the contagion can be explained as a situation where a shock in a particular economy or region spreads out and affects others by way of, such as the price movements. The contagion effect explains the possibility of the spread of economic crisis or boom across countries or regions. This phenomenon may occur both at a domestic level as well as at an international level. The fundamental underlying this scenario where the price movements in one market are resultant of shocks or volatility in the other market is that there is a perfect information flow. With increasing interdependence and correlation between economies, this possibility has increased. While internationally, there could some other factors governing trade, which may influence the extent of this contagion effect across geographies[13].

The contagion is one of the most commonly referenced yet least understood notions in international finance. Nevertheless, the plethora of definitions can be classified into two broad categories. In the first is the definitions that relate to the contagion as a change in the propagation mechanism around the crises. In other words, an increase in the strength of how shocks are transmitted across countries is evidence of contagion. In the second category, the definitions focus on the type of propagation mechanism driving the transmission. The proponents of this definition are concerned with how much of the shock is propagated through the trade, how much by the investor behavior, and so on. In general, the proportion of shock that is not transmitted through the "standard" channels (e.g., trade links) is considered the contagion. The body of theoretical literature on contagion can be divided into four broad categories according to the types of links or channels of transmission are the fundamentals-based, financial, investor behavior, and liquidity based. The fundamental channels are the so-called real links between the two economies. They include the transmission channels of trade and monetary and fiscal policies. The financial links focus on the channels associated with the organization and the functioning of financial markets. For example, existing regulatory constraints may lead to significant comovement of cross-border lending. The theories about investor beliefs and expectations and how they drive the contagion to fall into the class of investor behavior theories. Finally, the liquidity-based theories focus on the constraints on the activities of security market participants and how these constraints affect the pricing and overall functioning of the securities markets (Rigobon, n.d.)

2.3 Empirical Studies

The contagion effects, as a result of global events that originate from a country or region, has been an interest in economic and financial literacy.

Since the end of 2019, a respiratory disease of seemingly unknown cause identified in the Chinese city of Wuhan has evolved into a truly global pandemic (Costa et al.). The disease started as mere pneumonia started by unjustified cause in Wuhan, China on 31st December 2019 (Juma & Ph.D., 2020) During the COVID-19 epidemic, there was a significant decline in stock market returns, which has attracted the

[13] https://economictimes.indiatimes.com/definition/Contagion

attention of many scholars recently (Liu et al., 2020). There is a general agreement that the global pandemic, COVID-19, which started in the Chinese city of Wuhan in December 2019, led to serious disruptions in the global financial and economic systems that leads to reactions, not only from the governments but also from the businesses (Phan & Narayan, 2020; Mukherjee & Bardhan, 2020)

The greatest impact of COVID-19 impelled the great economic uncertainty on the developed nations like the United States of America's real Gross Domestic Product (Juma & Ph.D., 2020). The COVID-19 pandemic outbreak continues its tremendous spread in the US causing unprecedented effects of the US stock markets volatility and the economic policy uncertainty where the recent stock volatility levels rival or exceed those observed during October 1987, December 2008, and during the 1929 crash (Sharif et al., 2020)

(Uğurlu, 2020) examined the impacts of the Covid-19 outbreak on the dynamic correlations between Turkey, the US, and China stock market returns by employing VAR(1)-DCC-GARCH(1,1) methodology and found that First of all, the impact of China stock market on the US and Turkish stock market reduces and becomes insignificant after Covid-19, respectively. Second of all, the variance equation results demonstrate that pandemic has a substantial impact on short-run volatility for the US and China stock markets. For the Turkish stock market, findings imply a substantial effect of long-run volatility both before and after the outbreak of Covid-19. Third, the results show that Turkey is more correlated with the US stock market than the China market before and after the Covid-19 outbreak. Although the pandemic does not influence the correlation between the US and Turkey stock market, the dynamic correlation between the US and China stock markets become negative after February.

The linkages between the global stock markets have been a significant research issue (Masih & Masih, 1999; Apergis & Miller, 2009; Kenourgios & Padhi, 2012; Neaime, 2016; Fang & Bessler, 2018; Mishra et al., 2020; Ahmed et al., 202; Mario Arturo Ruiz Estrada & Evangelos Koutronas, 2020). These studies explained that the global financial market has been affected in response to the Covid-19 pandemic.

The S&P 500 had a cumulative drop higher than 30%, considering only the period from February to April 2020, and the US sectoral index also recorded high and heterogeneous drawdowns, ranging from 23% (S&P 500 Consumer Staples) to 57% (S&P 500 Energy), for instance (Costa et al.). (David et al., 2021) also found that the shocks caused by the diseases significantly affected the markets. Nonetheless, except for the COVID-19, the stock exchange indices reveal a sustained and fast recovery when an identical length time window of 79 days is analyzed. But (Morales & Andreosso-O'callaghan, 2020) had proved the core research findings indicate that the markets did not react to volatility levels exhibited by the Shanghai stock market, with China being identified as the epicenter of the virus outbreak.

On the other hand (Mukherjee & Bardhan, 2020) attempts to explore the relationship between the stock prices and the prices of the two most traded commodities in the derivatives market, viz. crude oil and gold in the Indian context and resulted that the stock returns and the commodity prices are closely linked with each other. Interestingly, the findings suggest that the pandemic has altered the relationship. In the pre-COVID period, there was no cointegration among the stock, gold, and crude oil prices. However, during the pandemic, found evidence of cointegrating relationships. The short-run relationship also provides some interesting insights is the relationship has changed during the COVID-19 pandemic. during the pre-pandemic period, the stock prices are only positively influenced by contemporary gold prices, and the long term trends of these variables are not related. However, during the pandemic, the relationship has changed,

and evidently, the stock price and prices as well as volatilities of prices of gold and crude oil exhibit a long term relationship.

(Pitaloka et al., 2020) aims to analyses the economic impact of the covid 19 outbreak on the stock market in Indonesia. The result in this study is the covid-19 pandemic outbreak has a pretty bad impact on the capital market, where the occurrence of this pandemic has affected many investors in making investment actions that are very influential on the Stock Market. (Trisnowati & Muditomo, 2021) aimed to present the reaction of the equity market in Indonesia towards the COVID-19 pandemic. From the research conducted over the 10 indicators of the stock market index in Indonesia, it is concluded that the industrial sectors that have the tenacious reaction toward the COVID-19 pandemic hit in Indonesia, where it is also found that the agriculture sector; basic and chemical industry; miscellaneous, consumer goods; property and real estate; transport and infrastructure; finance; trade, service, and investment, give stronger reactions compared with mining and manufacture. (Yulianti & Wicaksana Siregar, 2020) analyzes the reaction of the Indonesian capital market to the Covid-19 incident by using the Liquid-45 market index (LQ-45). The results showed that during the Covid-19 pandemic, the Indonesian capital market was said to be efficient in a half-strong form both in the information and decisions. The information of efficiency means that the market responds quickly and efficiently in a decision meaning that the market responds appropriately. The negative and significant average abnormal return also reflects the Covid-19 Pandemic has harmed the Indonesian capital market.

2.4 Research Gap

The corona outbreak which is increasingly widespread in various parts of the world is a serious threat to the global economy. In January 2020, the World Bank argued that growth in almost all emerging markets and developing economies was weaker than expected due to global trade tensions, a sharp decline in major economic and financial disruptions. When China's stock market reopened on February 3, the Shanghai Securities Composite Index fell nearly 8% in response. Dow Jones and Standard & Poor's showed that the value of corporate shares in the US fell 20% since mid-March 2020. The JCI fell from 5,150 to 4,892 levels, with bank shares taking the biggest hit, down 5.94%. This was caused by the Covid-19 Pandemic. Then the different results of research conducted by previous studies also lead to the reason this research was conducted.