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Capital Resilience: Dynamics Movements of Large Cap and Small-Mid Cap Stock in Global Macroeconomic Uncertainty

Muhammad Rafi Riyadh*

Postgraduate student, Brawijaya University, Malang, East Java, Indonesia, https://orcid.org/0009-0007-3584-7657

Setyo Tri Wahyudi

PhD in Economics, Associate Professor of The Department of Economics, Brawijaya University, Malang, East Java, Indonesia, https://orcid.org/0000-0003-4779-5747

Faishal Fadli

PhD in Economics, Lecturer of The Department of Economics, Brawijaya University, Malang, East Java, Indonesia, https://orcid.org/0000-0001-9478-0316

***Corresponding author:** *rafiriyadh@student.ub.ac.id.*

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Abstract: This research was conducted to examine how large and small-medium cap stocks in Indonesia respond to movements in global macroeconomic variables (Federal funds rate, M2 of Dollar, S&P 500, CBOE Volatility Index) and to determine the extent of the contribution of each variable in influencing both of stock prices. The study period spans from January 2022 to July 2023, during a period of global economic instability due to excessive quantitative easing post-Covid-19 pandemic. This research is quantitative, and the Vector Error Correction Model (VECM) was chosen as the method for analysis. The findings of the study, analysed using Impulse Response Functions (IRF), indicate that small-medium cap stocks represented by DBX are more significantly impacted than large-cap stocks

represented by IDX30 when there is a shock at a particular moment; it can be seen from standard deviation values in the IRF output, suggesting a higher level of volatility in small-medium cap stocks. Further analysis using Forecast Error Variance Decomposition (FEVD) reveals that the movements of both IDX30 and DBX in the short run are predominantly influenced by their past values at t-1, indicating inefficient market conditions based on the Efficient Market Hypothesi. However, these conditions are expected to shift gradually towards more efficiency in the long run. Regarding the examined macroeconomic variables, it was found that the Federal funds rate and S&P 500 have a more significant impact on large-cap stocks than small-medium-cap stocks. Conversely, the M2 of Dollar and CBOE Volatility Index is more dominant in small-medium-cap stocks than large-cap stocks. This study offers valuable insights and considerations for investors seeking to diversify their stock portfolios according to their objectives and risk profiles.

Keywords: Capitalization Stock, Economic Spillover, Efficient Market Hypothesis, Macroeconomics, Vector Error Correction Model (VECM).

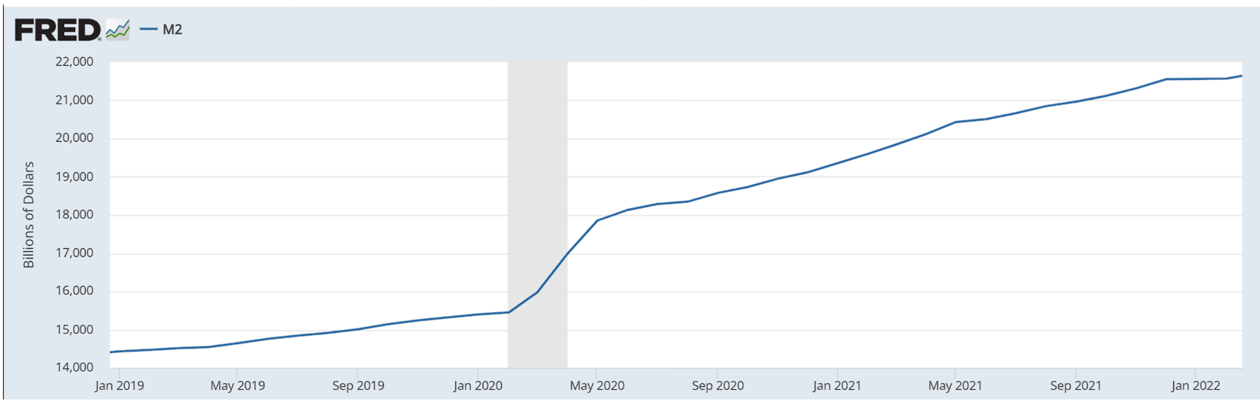
Introduction

The global financial crisis has significant implications in generating Spillover Effects that will impact market risks, asset price movements, market volatility, as well as the processes of economic growth and recovery during periods of turbulence, undoubtedly affecting many countries and economies as a whole (Apostolakis, 2016, Gulzar et al., 2019; Trihadmini & Falianty, 2020; Wang et al., 2023). In the present era, the massive increase in globalisation contributes significantly to the occurrence of Spillover Effects in the economy. This can heighten uncertainty, especially in developing countries with higher risk levels, potentially negatively impacting stock market sentiment (Khan, 2023; Liow et al., 2018; Yadav et al., 2023).

The COVID-19 pandemic, which began spreading globally towards the end of 2019, has caused economic, social, and political instability. As reported on the nasdaq.com website, it is noted that by March 2021, The FED had printed $5.2 trillion, surpassing the cost incurred during World War II, which amounted to $4.7 trillion (Surz, 2021). Figure 1 below depicts the growth of M2 in the United States dollars, showing a significant increase since the beginning of 2020.

Figure 1

M2 US Dollar

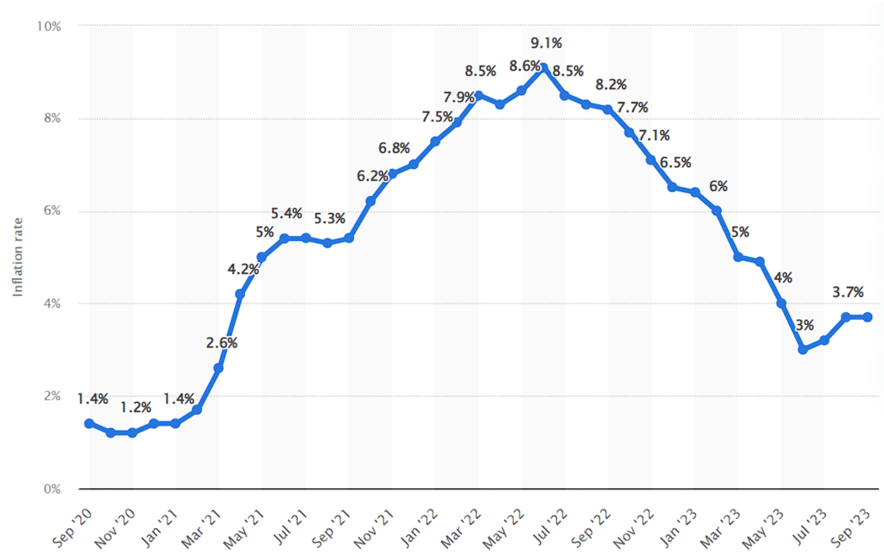


Source: Retrieved from https://fred.stlouisfed.org/

The substantial increase in money supply circulation, both directly and indirectly, will profoundly impact inflation. Moreover, the amount of dollars printed during the pandemic is remarkably high. As illustrated in Figure 2 below, June 2022 marked the peak of inflation in the United States in the last 41 years, reaching 9.1%. This was partly triggered by the extensive amount of money in circulation rapidly printed by The FED (Saputra, 2022).

Figure 2

12-Month Inflation Rate in the United States

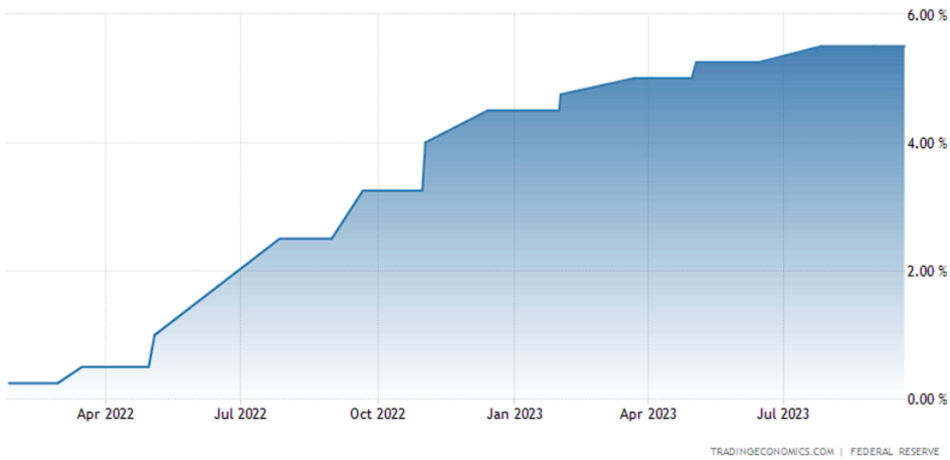


Source: Retrieved from https://www.statista.com/statistics/273418/unadjusted-monthly-inflation-rate-in-the-us/

The United States has chosen an expansive economic policy to confront the COVID-19 pandemic through the implementation of quantitative easing. This policy aims to stimulate economic growth during economic sluggishness caused by social restrictions. Subsequently, the response to inflation (and potentially recession) resulting from this expansive monetary policy has been addressed in the subsequent period through an elevation of interest rates by The Federal Reserve (The FED), as presented in Figure 3 below. Notably, The FED increased its interest rates by 425 basis points throughout 2022, marking the highest figure in the last 40 years (Zhang, 2023).

Figure 3

United States Fed Funds Interest Rate



Source: Retrieved from https://tradingeconomics.com/united-states/interest-rate

This research aims to assess how global macroeconomic variables will influence the stock prices of both large-cap and small to medium-cap stocks and to examine the magnitude of the impact of each variable. The author includes a comparison of the two indices (large-cap and small to medium-cap stocks) to understand the distinct characteristics of these indices in facing fluctuations in global macroeconomic conditions, represented in this study by the Federal Funds Rate, M2 of Dollar, S&P 500, and the CBOE Volatility Index. It is hoped that investors will make wiser decisions in the future by understanding the characteristics of the types of stocks they choose. In this study, IDX30 is selected as the index representing large-cap stocks in Indonesia. At the same time, the author uses the Development Board Index as a representation of small to medium-cap stocks.

Research Problem

It’s fascinating to observe how global economic changes affect the movements of local stock prices, particularly in Indonesia. It's interesting to compare how large-cap and small-to-mid-cap stocks respond differently to these fluctuations. Understanding the response patterns of these stocks to global economic changes can help investors make well-informed decisions about their investment strategies. This study will analyse the volatility and efficiency of both types of stocks in responding to global economic conditions.

The research is essential as it fills a gap in the existing literature. So far, no studies have directly compared the efficiency of large-cap and small-cap stocks in responding to global macroeconomic fluctuations. Additionally, no studies have compared the volatility and efficiency of these stocks using the Vector Error Correction Model (VECM) as an analytical approach.

Research Focus

This research will analyse how price movements in the Indonesian stock market correlate with global macroeconomic conditions, particularly in the United States, the world's largest economy, as a manifestation of the spillover effect.

Research Aim and Research Questions

The research questions of this study are as follows:

1. How does the volatility of stocks compare based on their market capitalisation in response to global macroeconomic conditions (The FED interest rate, M2 USD, S&P 500, and CBOE Volatility Index)?
2. What are the differences in efficiency form between the two types of stocks while responding to global macroeconomic conditions (The FED interest rate, M2 USD, S&P 500, and CBOE Volatility Index), and which variable plays the most significant role?

Literature Review

An excellent point to begin a literature review is to declare the aim of it. In other words, you should explain to the reader why you perform a literature review.

In this study, we will examine the role of neo-functionalism theory in the context of the influence of economic policies in the United States, which has the most significant financial strength, in generating spillover effects for developing countries. The focus of this research is on the stock market conditions in Indonesia. Furthermore, this study also explores Eugene Fama's efficiency theory, which outlines three forms of market efficiency. This research seeks to determine whether large-cap and minor to mid-cap.

Firstly, the theory of Neofunctionalism articulated by Ernst B. Haas in the 1950s in his book discusses integration in Europe, which was initiated by the formation of the European Union. Haas assumed that the integration process would automatically progress in line with the interrelated and interdependent needs among nations, ultimately creating spillover effects in the economies of these countries (Haas & Dinan, 2004). One of the concepts in neofunctionalism theory is related to functional spillover, particularly in the economic field. This concept emphasises that the integration process in a specific policy area creates the need or pressure to integrate other policy areas (Haas & Dinan, 2004). This integration expands with the development of globalisation, and currently, economic integration worldwide is nearly universal, with no exception in monetary policy, where the Federal Reserve (The FED) serves as a benchmark for central banks worldwide in determining policy.

Then there is the Efficient Market Hypothesis, which Professor Eugene F. Fama first proposed at the University of Chicago, which says that stock prices will reflect all available information in the market. The theory comprises three primary forms: weak form, where stock prices reflect historical prices of the respective issuers; semi-strong form, stating that prices will represent all publicly available information such as financial reports and news in the media; and strong form, indicating a condition where prices represent even closed information typically known only to internal company stakeholders (Fama, 1970).

Indeed, the optimal conditions of this theory are impossible to happen. If they did, there would be no investment managers or retail investors outperforming the market returns; all investor returns would be the same as market conditions. Therefore, the focus is typically on observing how market prices deviate from the actual market conditions (Fama, 1970).

In the context of this research, the author aims to examine Indonesia's stock market's efficiency in capturing global economic issues. The author seeks to compare the efficiency of large-cap stocks and small- to medium-cap stocks in responding to global financial conditions. Based on the potential price synchronisation, according to Renze (2020), the initial assumption is that large-cap stocks are likely to have more substantial price efficiency potential compared to small to medium-cap stocks. This is because global investors with significant capital are more inclined to consider blue-chip stocks with relatively safer risk levels as options for building their portfolios (Lubis et al., 2020; Shiva & Singh, 2020).

This research is essential as no prior studies in Indonesia have directly aimed to compare large-cap and small-cap stocks in their response to global economic shocks. The study will be divided into two sections: the first will compare the volatility of both stocks in facing these shocks, and the second will examine the efficiency of both types of stocks in responding to shocks. The findings of this research will be valuable for investors in identifying the characteristics of these stocks, thereby enhancing their analysis before making investment decisions.

This section should conclude with a brief description of the existing research gaps identified during the literature review. This is a crucial point that justifies the need to conduct this study.

Materials and Methods

This research adopts a quantitative approach grounded in the philosophy of positivism, employed to test a specific population or sample to examine predetermined hypotheses based on applicable statistical procedures (Fischer et al., 2023; Sugiyono, 2013; Sürücü & Maslakci, 2020). In this study, the purposive sampling method is utilised, which involves selecting samples based on specific criteria to achieve research objectives (Sekaran & Bougie, 2016).

Sample and Participants

The IDX30 index is chosen as the sample representing large-cap stocks because it fulfils the criteria expected by the researcher. Namely, the index comprises chosen stocks with the highest level of capitalisation. Subsequently, the development board index is selected as the sample representing small to medium-cap stocks in Indonesia. The criteria include stocks with small to medium capitalisation that are not eligible to be listed on the main board.

Instruments and Procedures

The author has chosen the documentation method for the formation of this thesis. Arikunto (2011) explains that the documentation method is used to gather relevant data that can address the research objectives from reliable sources such as newspapers, books, meeting minutes, publications, transcripts, etc. The researcher collected data from January 2022 to July 2023 in line with the research objectives, and the author used Yahoo Finance, fred.stlouisfed.org, and marketwatch.com as data collection tools.

Data Analysis

The Vector Autoregression (VAR) method is a statistical analysis technique used to examine the dynamic relationship between two or more time series variables. The VAR method can be applied if the variables are stationary at the level stage, or if not, they can be differenced at the first level. Next, a cointegration test will be carried out (Haslbeck et al., 2021). If cointegration is identified among the measured variables, then it is necessary to proceed with the Vector Error Correction Model (VECM) method (Widarjono, 2013).

Then, after identifying whether the VAR or VECM method should be used, the analysis can be conducted using Impulse Response Function (IRF) or Forecasting Error Variance Decomposition (FEVD) to determine the response of each variable to shocks from other variables (Gorodnichenko & Lee, 2020). In the context of the research objectives, we will examine how the large-cap stock index and the small to medium-cap stock index respond to shocks from global macroeconomic variables.

Here is the formulation of the VECM equation model that will be used in this study:

$$\Delta yt = \alpha e_{t-1} + \beta 1 \Delta y_{t-1} + \ldots + \beta_{p-1} \Delta yt_{p+1} + \Gamma 1 \Delta x_{t-1} + \ldots + \Gamma_{p-1} \Delta xt_{p+1} + \Psi_1 \Delta z_{t-1} + \ldots + \Psi_{p-1} \Delta zt_{p+1} + \ldots + \varepsilon t,$$

where

Δyt: First derivative vector for the first dependent variable.

α: The matrix of cointegration coefficients.

e_{t-1}: Error Correction Term (ECT)

βt: The matrix of coefficients of the first dependent variable i (i = 1, 2, ..., p)

Δyt: The first derivative vector of the first dependent variable at lag i (i = 1, 2, ..., p)

Γt: The matrix of coefficients of the second dependent variable I (i = 1, 2, ..., p)

Δxt: The first derivative vector of the second dependent variable at lag i (i = 1, 2, ..., p)

Ψ_1: The matrix of coefficients of the third dependent variable I (i = 1, 2, ..., p)

Δzt: The first derivative vector of the third dependent variable at lag i (i = 1, 2, ..., p)

εt: Residual vector

In VECM analysis, each variable can be the dependent variable positioned to the left of the equal sign.

Results

Table 1 below represents the descriptive statistics of the data. The variables included are IDX30, DBX, Federal Funds Rate, M2 of Dollar, S&P 500, and CBOE Volatility Index. It can be observed that almost all variables are distributed relatively normally, with standard deviations tending to be minor, except for the Federal Funds Rate. The condition of the Federal Funds Rate during the research period is a significant and exponential increase as a follow-up to efforts to control inflation resulting from quantitative easing measures undertaken in the preceding period.

Based on the analysis results from the Impulse Response Function (IRF) output in Figure 4 and Figure 5, it was found that small to medium-cap stocks represented by the Development Board Index (DBX) are more affected when facing shocks compared to blue-chip stocks represented by IDX30. It can be observed that shocks in the Federal Funds Rate can impact 0.002 on IDX30, and on DBX, the effect is 0.0015. Furthermore, for shocks caused by M2 USD, the impact on IDX30 reaches 0.0027, while on DBX, it reaches 0.0096. Next, for shocks caused by the S&P 500 Index, the influence on IDX30 reaches 0.0106, and on DBX, it can reach 0.0152. Lastly, for the CBOE Volatility Index, we see its impact on IDX30 is only 0.001 (almost negligible), and on DBX, the furthest point reaches -0.0017. Interestingly, small to medium-cap stocks showed negative responses to shocks from the CBOE Volatility Index, different from blue-chip stocks (IDX30).

The condition where movements in the CBOE Volatility Index do not significantly affect large-cap stocks aligns with Renze's study, which states that blue-chip stocks with large capitalisation are less likely to experience synchronisation. This is because the attention of large investors, especially foreign investors with abundant capital, will be higher, and they will be more cautious and conduct more in-depth research than retail investors in selecting their portfolios. The negative direction of movements in small to medium-cap stocks in Indonesia in response to shocks in the VIX is also due in part to the global macroeconomic conditions at the time of the study, which was not favourable, leading to negative sentiment in stock markets worldwide, especially in small-cap stocks in developing countries including Indonesia. Renze (2020) also explains that negative news has a more significant impact than favourable news in influencing investor psychology to make impulsive decisions, ultimately leading to bigger price synchronisation.

Next, analysis using the Forecast Error Variance Decomposition (FEVD) technique, also commonly referred to as Variance Decomposition (VD), is used to examine the composition of the contribution of each variable in influencing the changes in variability of other variables in a model when facing a shock (Gorodnichenko & Lee, 2020). First, in IDX30 (figure 6), it is observed that in the early phase of the shock occurrence, the variable that contributes the most to influence the variability of other variables is the IDX30 variable itself at t−1. Then, its contribution gradually decreases over time. The condition where stock prices are intervened by their historical prices is considered inefficient or weak efficiency according to the Efficient Market Hypothesis (Fama, 1970). Furthermore, the dominance of historical prices in influencing variability gradually weakens, so in this context, large-cap stocks will become progressively increasingly efficient in the long term. This also applies to small to medium-cap stocks (figure 7), where their contribution is dominated by themselves at the beginning of the period but gradually diminishes in composition. From the output, it can be concluded that stocks in Indonesia, whether large-cap or small to medium-cap, exhibit inefficient conditions in the early period of shock occurrence and become more efficient over time. Indonesia's condition, which is still less sensitive to the movement of global macroeconomic variables in the short term, especially in the monetary field, is consistent with Ansari's study, which examined 20 countries (10 developed and 10 developing) and found that issues related to economic policy cannot be used as the main predictors in developing countries.

Table 1

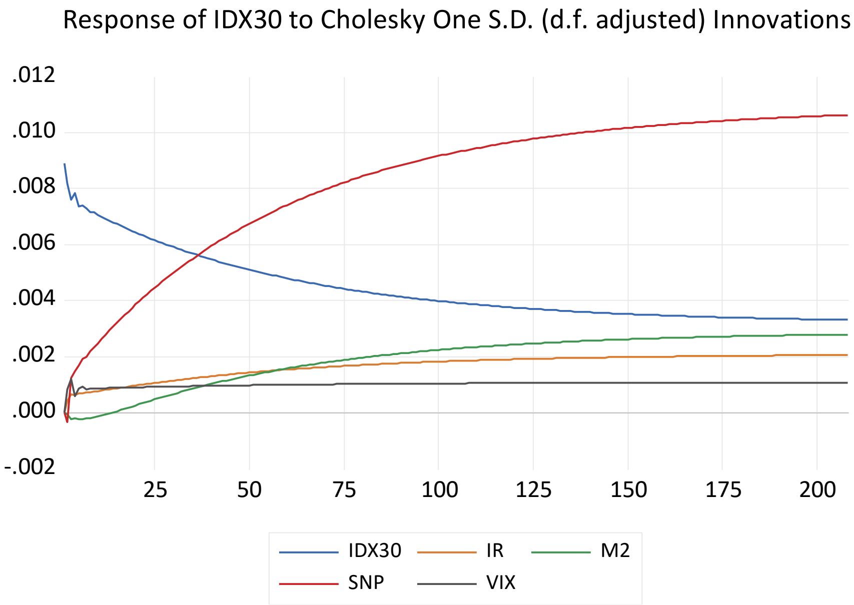
Summary Statistic of Data

Variable	Mean	SD	Min	Max
IDX30	2.71	0.02	2.67	2.77
DBX	3.25	0.05	3.17	3.33
FEDRATE	2.84	1.89	0.056	5.14
M2 DOLLAR	4.33	0.007	4.32	4.34
SNP 500	3.61	0.027	3.55	3.67
VIX	1.34	0.107	1.12	1.52

Source: Authors' development.

Figure 4

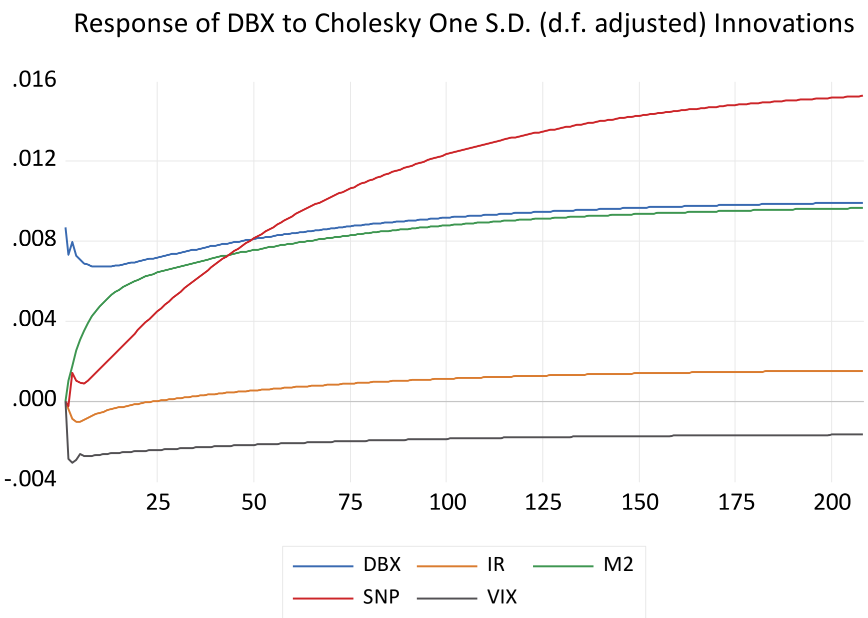
IRF Output of IDX30



Source: Authors' development.

Figure 5

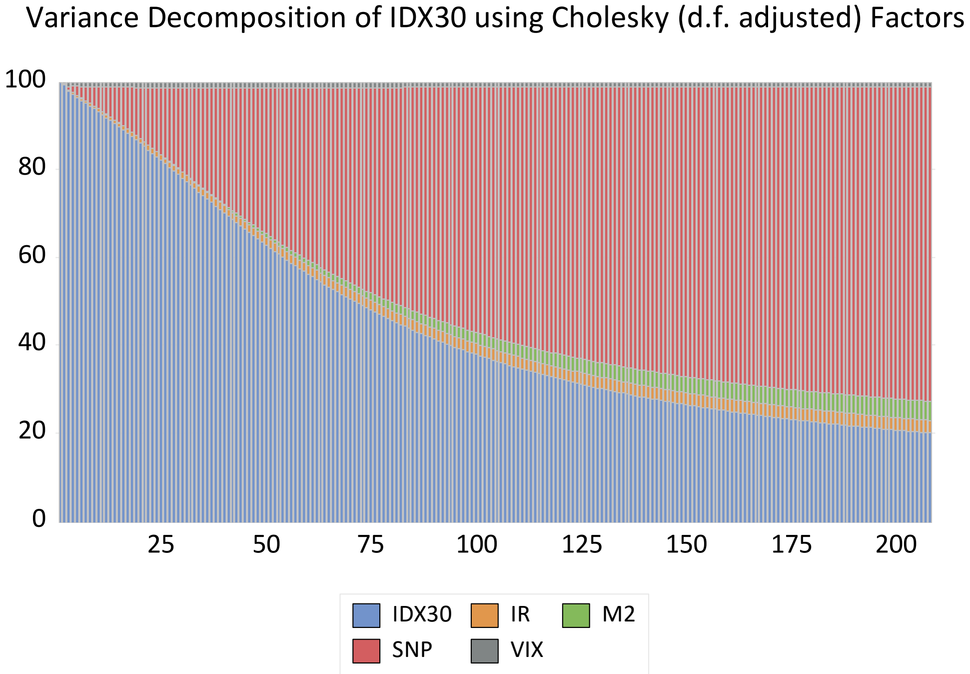
IRF Output of DBX



Source: Authors' development.

Figure 6

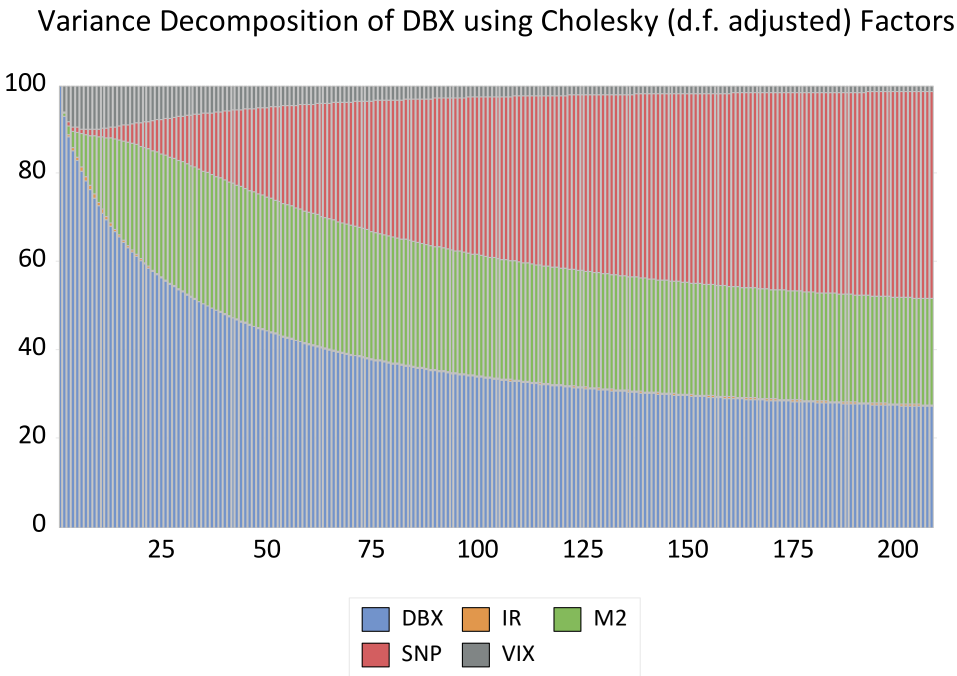
FEVD Output of IDX30



Source: Authors' development.

Figure 7

FEVD Output of DBX



Source: Authors' development.

Discussion

Regarding volatility, small-cap stocks have certain disadvantages compared to large-cap stocks regarding risk levels, which correlate with higher volatility. Historically dominated by small-cap stocks, IPO stocks are an exciting example of how high volatility is reflected in small-cap stocks. Value investors, particularly defensive investors, often avoid IPO stocks because the prices offered during IPOs tend to favour sellers (i.e., those who obtain shares at the underwriting price or before they are publicly traded) and are less advantageous for buyers (Graham & Zweig, 2006; Ong et al., 2020). This scenario often presents an opportunity for early owners to exit and profit in the IPO market, with small capitalisation facilitating such plans.

Company owners frequently collaborate with underwriters or market makers to manipulate and inflate stock prices immediately after the IPO, planning their exit strategy. The stock market in Indonesia, where many retail investors or traders are willing to pay significantly above a company's book value, encourages numerous company owners (even those at the MSME level) to seek instant profits in the Indonesian stock market. This trend is further supported by the relatively lax regulatory policies in the Indonesian stock exchange (Yeoh, 2024).

Such conditions highlight the characteristics of small-cap stocks, whose prices are easily manipulated and thus exhibit greater volatility during economic shocks. These companies' small capitalisation allows for more agile manoeuvring. This trait contrasts with large-cap stocks, where substantial capital is required to move prices, often driven by institutional investors with significant financial resources.

When discussing efficiency, there are numerous reasons why developing countries like Indonesia are less efficient than developed countries in responding quickly to changes in global economic conditions, including those related to international trade openness. Research by Ay et al. (2017) found that trade openness significantly correlates with economic growth in African countries and will strengthen in the long term. This also applies even in the poorest countries in Africa, Niger. Developed countries, especially those with rapidly growing manufacturing industries, demonstrate openness with the primary aim of promoting export activities to create a trade surplus. Developed countries with advanced manufacturing industries have an advantage (due to stable and high-value finished goods prices) compared to poor or developing countries that rely only on a few flagship commodities (raw materials) whose prices are highly volatile; therefore, some poor or developing countries are reluctant to engage in trade openness activities too aggressively (Robinson, n.d.).

Another condition that affects stock markets in developing countries is that they are less efficient than developed countries in responding to changes in global economic conditions. Foreign capital flows tend to enter developed countries' markets, thus causing more robust integration. Developed countries have higher trust from investors, therefore triggering more significant capital inflows than developing countries. This is also correlated with the potential for capital outflows that can occur due to shocks in the global economy. In a study conducted by Chukwuogor (2007) on 40 countries worldwide, it was found that the potential returns of stock markets in developing countries are not always higher than those in developed countries. The stock market conditions in developed countries, which are generally more stable and offer more significant return potential than in developing countries, will naturally attract foreign investors' interest in investing in developed countries. This is what makes stock markets in developed countries more affected by spillover effects.

Then, we can observe that the variables of the United States interest rate (FED Rate) and the S&P 500 Index contribute significantly more to large-cap stocks (IDX30) than to small to medium-cap stocks (DBX) in the long term, with the interest rate variable having almost no effect on DBX. A study conducted by Valadkhani (2022) on exchange-traded funds (ETFs) for large and small-cap stocks in 7 countries (China, India, Germany, Europe, Japan, the United Kingdom, and the United States) during extreme market conditions, it was found that large-cap ETFs tend to provide higher returns than small-cap ETFs in situations of extreme market growth, while in situations of extreme market decline, small-cap ETFs decline more than large-cap ETFs, this condition indicates that large-cap stocks have a higher level of security and potential returns than small to medium-cap stocks, leading global investors to prefer large-cap stocks, primarily when investing in emerging countries like Indonesia. This also affects IDX30 to be more responsive in facing shocks from The FED interest rate or the S&P 500 Index compared to DBX because the influence of the transactions of large global investors makes large-cap stocks their preference in choosing safe and profitable portfolios.

Furthermore, a study conducted by Chung and Ariff (2016) in 4 Asian countries (Japan, Korea, China, and India) found that the amount of money in circulation would impact the increase in liquidity, ultimately leading to higher prices in the stock market. Then, research by Renze (2020) implies that the greater attention from global investors to large-cap stocks will minimise the synchronisation of prices that may occur so that movements in large-cap stocks do not necessarily depend on intervention from the large amount of money in circulation, this can explain why the more significant amount of money in circulation contributes more to small to medium-cap stocks than to large-cap stocks.

Lastly, the CBOE Volatility Index (VIX) 's impact is more evident in small to medium-cap stocks in the short term. It gradually diminishes in the long term, while the VIX variable does not contribute significantly to large-cap stocks. This condition aligns with research conducted by Zakamulin (2016), which observed that the VIX would affect stock prices in the short term. Based on research by Ricco (2019) found that traders who commonly engage in short selling tend to focus on stocks with a small market capitalisation that's because the high volatility levels offer more significant return potential for small-cap stocks, while for blue-chip stocks, the volatility is not as aggressive, resulting in less attractive return potential when engaging in short selling.

Conclusions and Implications

This study aims to analyse the influence of shocks from the movement of global macroeconomic variables (Federal funds rate, M2 of Dollar, S&P 500, CBOE Volatility Index) in providing spillover effects for the Indonesian stock market, which will be classified into two categories: large-cap stocks (represented by IDX30) and small to medium-cap stocks (represented by DBX). The analysed period ranges from January 2022 to July 2023, during aggressive increases in the Federal Funds Rate. Sample selection was conducted using purposive sampling, and a quantitative method was employed with VECM (Vector Error Correction Model) chosen as the statistical analysis method.

Based on the analysis using IRF (Impulse Response Function), it was found that small to medium-cap stocks respond more aggressively to shocks (except for interest rates) compared to large-cap stocks, reflecting the relatively higher volatility of small to medium-cap stocks compared to large-cap stocks.

Furthermore, through FEVD (Forecast Error Variance Decomposition) analysis, it was found that in the short term, both large-cap and small to medium-cap stocks in Indonesia, based on the Efficient Market Hypothesis, can be said to have weak efficiency because their movements tend to be more influenced by themselves at t-1. This condition will become more efficient over time. Indonesia's condition, which is still less sensitive to the movement of global macroeconomic variables in the short term, especially in the monetary field, is in line with the findings of Ansari (2020), who conducted research in 20 countries (10 advanced and ten developing) and concluded that issues related to monetary policy cannot be used as the main predictors in developing countries.

Developing countries like Indonesia may not be as efficient as developed countries in responding to changes in global economic conditions, partly due to limitations in international trade openness. A study by Ay et al. (2017) in Africa indicates that trade openness can positively correlate with economic growth. However, developing countries tend to be less aggressive in trade openness compared to developed countries with rapidly growing manufacturing industries; that's because developing countries often rely on a few essential commodities whose prices are highly volatile, making aggressive trade openness less viable (Robinson, n.d.; Van Tran, 2020). Moreover, stock markets in developing countries may be less efficient in responding to global economic changes due to the dominance of foreign capital inflows into developed countries, which have higher investor confidence and can attract more capital inflow; this makes stock markets in developed countries more susceptible to spillovers from global conditions. It was also found that the FED Funds Rate and S&P 500 have a more significant contribution to large-cap stocks in terms of shock composition. In contrast, the M2 of the Dollar and the CBOE Volatility Index contribute more to small to medium-cap stocks.

Suggestions for Future Research

This study is limited to the period of interest rate hikes as a response to quantitative easing in the United States post-Covid-19. Future research can further analyse conditions beyond the period examined in this study. Additionally, grouping stocks by type, nature, or sector can be utilised in future research to enrich the understanding of stock characteristics, focusing on their market capitalisation and considering various other essential variables.

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Conflict of Interest

None.

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