CHAPTER I
INTRODUCTION

1.1 Background of the Research

The increasing integration of international financial markets has strengthened the influence of United States monetary policy on financial conditions beyond the domestic U.S. economy. Changes in expectations regarding U.S. interest rates can affect global liquidity, discount rates, exchange rates, investor risk appetite, and cross-border portfolio allocation. The international relevance of U.S. monetary policy is supported by the central role of the U.S. dollar. According to the 2025 BIS Triennial Central Bank Survey, average daily foreign-exchange turnover reached USD 9.6 trillion, while the U.S. dollar was involved on one side of 89.2 percent of all foreign-exchange transactions. These figures indicate that information affecting U.S. monetary conditions may also have implications for financial markets outside the United States.

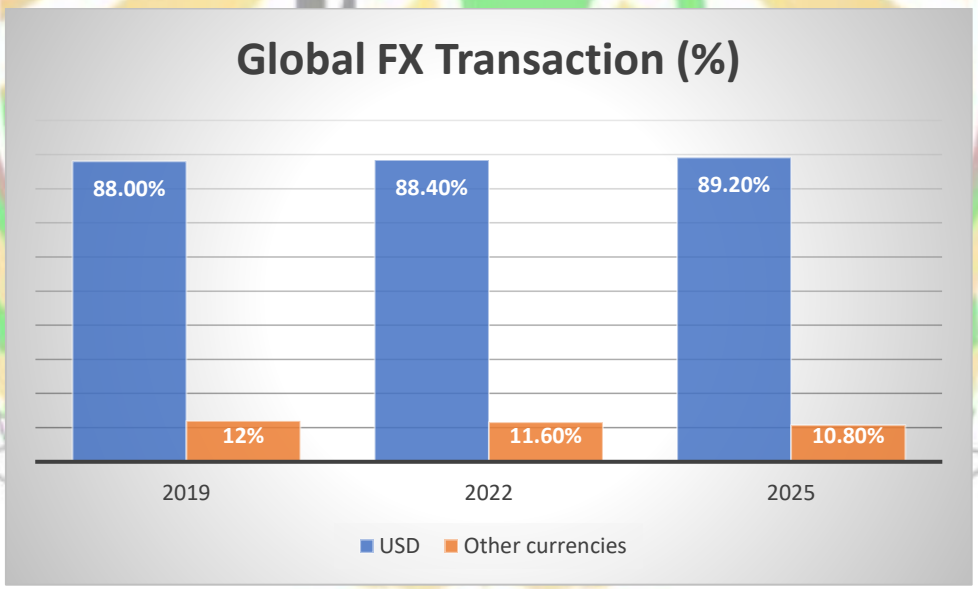

Figure 1.1 Global Foreign Exchange Transaction

Source : BIS Triennial Central Bank Survey

The persistence of U.S. dollar dominance also became more visible during the 2020 - 2024 period, despite the growing discourse on de-dollarization. After the COVID - 19 crisis, the Russia - Ukraine war, and the expansion of financial sanctions, several countries, particularly within BRICS, promoted the use of local currencies and alternative payment mechanisms to reduce dependence on the dollar. However, this political discourse did not produce a substantial shift in the actual structure of international payments. This condition is consistent with the dominant-currency framework of Gopinath and Stein (2021), which explains that trade invoicing, global banking, and safe-asset demand can mutually reinforce the use of a single dominant currency. It is also supported by Jiang et al., (2021), who show that foreign demand for U.S. safe assets strengthens the special role of the dollar as a reserve currency, and by Arslanalp et al., (2022), who find that the gradual decline in the dollar's reserve share has not been matched by a proportional rise in the euro, yen, pound sterling, or renminbi.

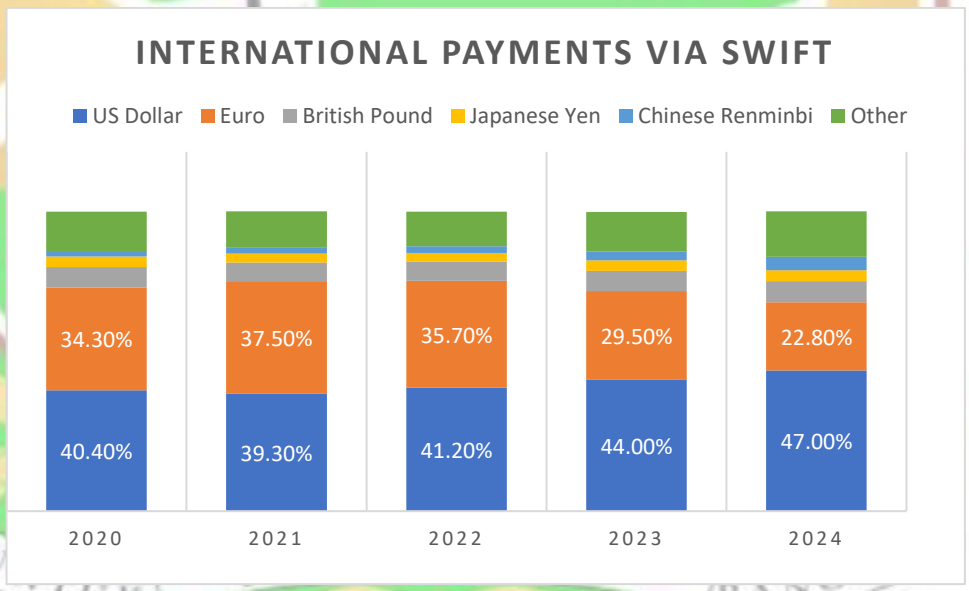

Figure 1.2 International Transaction via SWIFT

Source : Board of Governors of the Federal Reserve System

This gap between de-dollarization discourse and financial practice is reflected in SWIFT-based international payment data. According to FEDS (2025) The share of the U.S. dollar in international payments was 40.4 percent in 2020,

39.3 percent in 2021, 41.2 percent in 2022, 44.0 percent in 2023, and 47.0 percent in 2024. In contrast, the euro declined from 34.3 percent in 2020 to 22.8 percent in 2024, while the Chinese renminbi increased from 1.8 percent to 4.4 percent but remained far below the dollar. These figures indicate that de-dollarization during the sample period was stronger as a geopolitical narrative than as a structural transformation in the global payment system. Therefore, the continued dominance of the dollar in cross-border payments strengthens the relevance of FOMC news, because U.S. monetary policy information affects the currency that remains central to global liquidity, settlement systems, and international financial risk.

One of the principal sources of information regarding U.S. monetary policy is the policy announcement issued by the Federal Open Market Committee. Through its official policy statement, the FOMC communicates its decision concerning the federal funds target range and presents its assessment of inflation, employment, economic activity, and risks to the economic outlook. These announcements may influence financial markets even when the current interest-rate decision has already been anticipated because the statement also contains information about future policy conditions and the Federal Reserve's interpretation of the economy. Kroencke et al., (2021) show that FOMC announcements affect financial markets through changes in investors' perceptions of risk, while Golez & Matthies (2025) demonstrate that FOMC announcements contain information concerning both monetary policy and expected economic conditions.

In this study, the term FOMC news is used in a specific operational sense. It refers to the release of an official FOMC policy statement rather than all communication issued by the Federal Reserve. Meeting minutes, speeches by Federal Reserve officials, congressional testimony, the Beige Book, and other publications are not treated as separate events. The study also does not directly measure whether an announcement is hawkish or dovish, expected or unexpected, or the magnitude of its policy surprise. Instead, the FOMC variable is represented by a dummy that identifies whether an asset-market observation corresponds to an official policy-statement release. Recent studies demonstrate that FOMC

announcement dates can be treated as distinct information events in financial-market analysis (Dotsis & Rosa, 2024; Lastauskas & Nguyen, 2024).

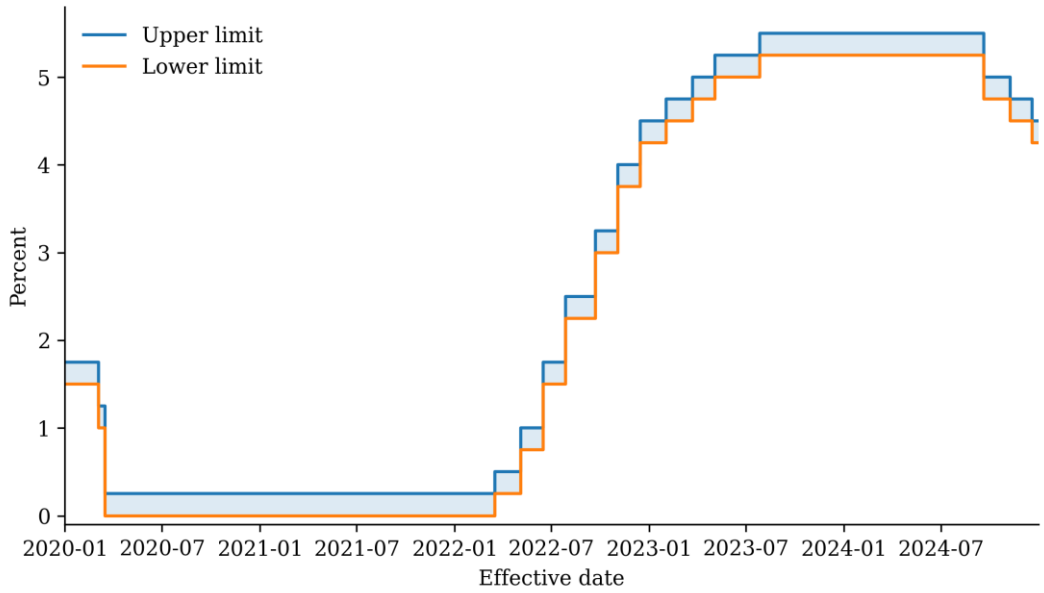

Figure 1.3 Federal Funds Target Range, January 2020 - December 2024

Source: Board of Governors of the Federal Reserve System

The period from January 2020 to December 2024 provides a particularly relevant setting for examining FOMC announcement effects because it contains several substantially different monetary-policy regimes. In March 2020, the Federal Reserve reduced the federal funds target range to 0.00 - 0.25 percent in response to the economic and financial disruption associated with the COVID-19 pandemic. The near-zero-rate environment was followed by a tightening cycle beginning in March 2022, and the target range reached 5.25 - 5.50 percent in July 2023. The policy direction changed again in 2024, with the target range declining to 4.25 - 4.50 percent by December 2024. Research on this period shows that extraordinary policy intervention, pandemic-related uncertainty, and subsequent monetary tightening created substantially different financial-risk environments (Baker et al., 2020; Bauer et al., 2023).

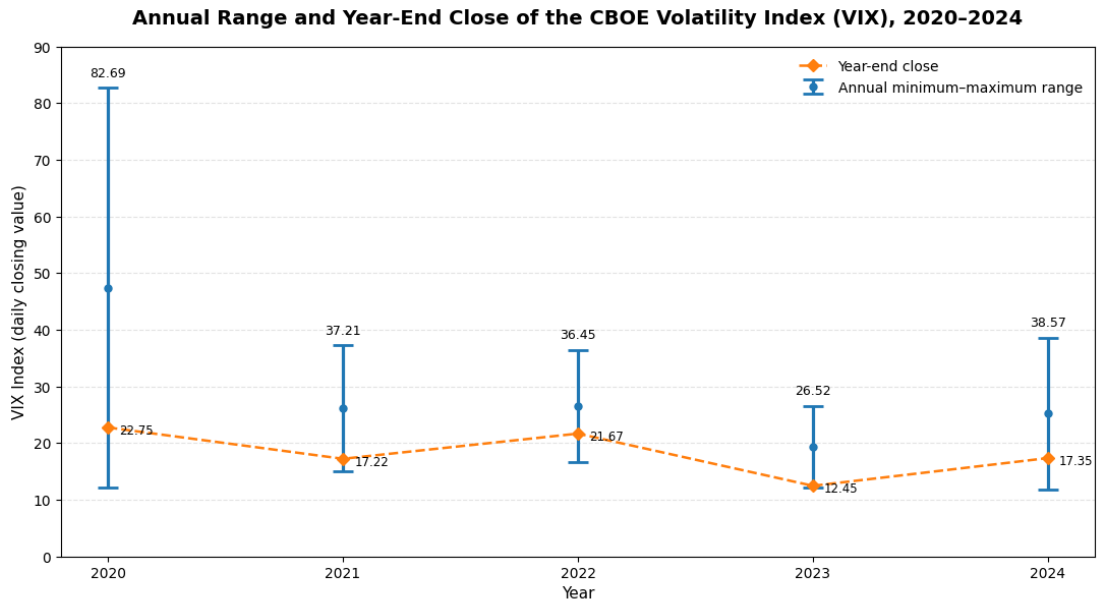

Figure 1.4 CBOE Volatility Index, 2020 – 2024

Source: Board of Governors of the Federal Reserve System

The importance of studying volatility during this period is also visible from the substantial variation in market-based measures of uncertainty. The CBOE Volatility Index, which reflects expected near-term volatility derived from S&P 500 option prices, reached 82.69 on March 16, 2020, but subsequently declined considerably during more stable market periods. Such large variation illustrates that market risk does not remain constant over time. Financial markets move between relatively calm periods and episodes of severe uncertainty, particularly when investors receive new information regarding economic conditions and policy responses. Baker et al., (2020) document the exceptional stock-market reaction during the COVID-19 disruption, while Ignatieva and Ohashi (2025) show that FOMC-related return and volatility patterns can vary across financial and volatility markets.

The time-varying nature of financial risk provides the central reason for observing conditional volatility. A single unconditional variance assumes that the level of risk is constant throughout the observation period. Such an assumption is unsuitable for a sample containing a pandemic-related market disruption, rapid

monetary tightening, changing inflation expectations, and the beginning of monetary easing. Conditional volatility instead allows the expected variance of returns to change according to previous shocks, past volatility, and newly available information. Khan et al. (2023) find substantial volatility clustering and persistence across major financial markets during the COVID-19 period, while Ampountolas (2024) demonstrates the usefulness of GARCH-family models for representing changing volatility conditions in financial and commodity markets.

Conditional volatility is also important because average returns do not provide a complete description of market reactions. Following an FOMC announcement, some investors may interpret the information positively, while others may view the same information as unfavorable. Their opposing transactions can generate a relatively small average return even though the magnitude and dispersion of price changes increase. Consequently, an insignificant average return does not necessarily indicate that an announcement has no effect on market risk. Recent studies of monetary-policy communication show that central-bank information may influence uncertainty, risk perception, and trading behavior even when the directional return response is limited or mixed (Kroencke et al., 2021; Usta & Sert, 2025).

Another important characteristic of conditional volatility is persistence. A large market shock may continue to influence risk after the original event has occurred, creating a pattern in which periods of high volatility are followed by additional periods of high volatility. Financial-market volatility may also be asymmetric because negative and positive return innovations of equal magnitude do not always produce the same subsequent risk response. Evidence from GARCH-family applications indicates that financial assets frequently exhibit volatility clustering, persistence, heavy-tailed returns, and asymmetric responses to shocks, particularly during crisis and high-uncertainty periods (Ampountolas, 2024; Khan et al., 2023; Ünlü & Bayram, 2024).

FOMC announcements are particularly relevant to conditional-volatility analysis because they differ from conventional macroeconomic releases. Nonfarm

Payrolls, Gross Domestic Product, inflation indicators, and the ISM Manufacturing Index primarily report statistical information concerning recently observed economic activity. An FOMC statement, by contrast, combines a policy decision, the central bank's assessment of current conditions, and information concerning the possible future direction of monetary policy. It can therefore affect expectations regarding future interest rates as well as investors' interpretations of economic risks. Recent research identifies both monetary-policy and information components in market reactions to FOMC communication, demonstrating that FOMC announcements contain multidimensional information not normally present in a single statistical release (Golez & Matthies, 2025; Kroencke et al., 2021).

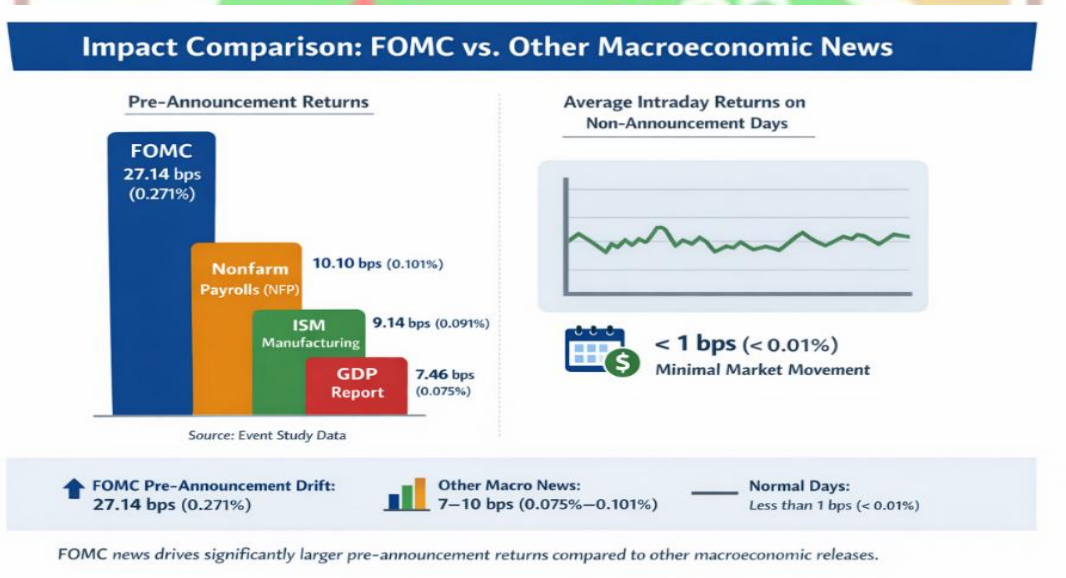

Figure 1.5 Impact Comparison FOMC vs. Other Macroeconomic News

Source : Hu, G., Pan, J., Wang, J., & Zhu, H. (2022).

Hu et al., (2022) provide empirical evidence that the information environment preceding FOMC announcements differs from that preceding several other scheduled macroeconomic releases. They report an average pre-announcement equity-market return of approximately 27.14 basis points before FOMC announcements. The corresponding average returns before Nonfarm Payrolls, ISM Manufacturing, and GDP releases were approximately 10.10, 9.14, and 7.46 basis points, respectively. The larger pre-FOMC return as compensation

associated with heightened uncertainty before an important scheduled announcement. Their evidence supports the argument that FOMC events should be examined separately from general macroeconomic-news releases rather than being treated as identical information events.

The findings of Hu et al. (2022) should not be interpreted as direct evidence that conditional volatility necessarily rises on every FOMC announcement date. Pre-announcement return and conditional volatility measure different aspects of market behavior. A return premium concerns the direction and average magnitude of price changes, whereas conditional volatility concerns the expected dispersion and risk of returns. Moreover, the effect of an FOMC announcement may depend on the prevailing policy regime, market expectations, statement tone, and level of economic uncertainty. Ignatieva and Ohashi (2025) show that FOMC-related patterns may differ across financial and volatility markets, while Usta & Sert (2025) find that the total characteristics of FOMC communication are associated with market uncertainty and risk aversion. These variations make direct empirical estimation necessary.

The volatility effect of FOMC announcements may also differ across asset classes because each market has a distinct economic function and transmission channel. The S&P 500 represents the developed U.S. equity market and is directly exposed to domestic monetary-policy information. Changes in interest-rate expectations can alter the present value of future corporate cash flows, corporate financing conditions, expected economic activity, and the risk premium required by equity investors. Kroencke et al., (2021) show that changes in risk perception around FOMC announcements explain an important component of equity-market responses, while Dotsis and Rosa (2024) find that equity-factor returns on FOMC announcement dates are influenced by prevailing investor sentiment.

IHSG represents an emerging equity market that may respond to U.S. monetary-policy information through international capital flows, exchange-rate expectations, global liquidity, interest-rate differentials, and investor risk appetite. A rise in expected U.S. interest rates can increase the relative attractiveness of U.S.

dollar-denominated assets and encourage portfolio reallocation away from emerging markets. However, the responses of emerging markets are not uniform because they depend on domestic financial structures, foreign-investor exposure, policy credibility, and external vulnerabilities. Lastauskas and Nguyen, 2024) find that U.S. monetary tightening produces larger, more prolonged, and persistent effects in emerging economies, while also documenting substantial heterogeneity across countries. This heterogeneity means that evidence from other emerging markets cannot automatically be generalized to Indonesia.

Gold has a different economic role because it is a globally traded, non-yielding asset associated with store-of-value and safe-haven functions. FOMC information can influence gold through real interest-rate expectations, inflation expectations, movements in the U.S. dollar, and the opportunity cost of holding a non-interest-bearing asset. These channels may operate in opposite directions. An expectation of higher interest rates may reduce the attractiveness of gold, while increasing economic uncertainty may strengthen safe-haven demand. Awartani et al. (2024) find that intraday gold returns and volatility respond significantly to U.S. monetary-policy shocks. Ben Ameur et al. (2024) also show that gold's hedging and safe-haven characteristics vary across market conditions, indicating that safe-haven status does not imply constant or consistently low volatility.

Bitcoin represents a further distinct asset category. It is traded continuously, has no conventional stream of corporate cash flows, and is strongly influenced by speculative expectations, market liquidity, regulatory developments, and cryptocurrency-specific information. Nevertheless, increasing institutional participation has strengthened its connection with global monetary and financial conditions. Corbet et al. (2020) find heterogeneous cryptocurrency responses to FOMC announcements, while Karau (2023) documents a significant relationship between U.S. monetary-policy conditions and Bitcoin. More recent evidence from Ben Omrane et al. (2025) shows that cryptocurrency volatility responds to intraday macroeconomic news, although the magnitude and consistency of reactions vary across news categories and digital assets.

The inclusion of the S&P 500, IHSG, gold, and Bitcoin therefore enables the study to compare four economically distinct markets: a developed equity market, an emerging equity market, a traditional non-yielding asset, and a digital speculative asset. The comparison is important because evidence obtained from one asset category cannot automatically explain the behavior of another. Research on higher-order moments and dynamic volatility relationships shows that equity, gold, and cryptocurrency markets exhibit different risk structures and respond differently across market regimes (Ben Ameur et al., 2024; Gkillas et al., 2022). The purpose of the present study is therefore not to assume a uniform response but to evaluate whether FOMC-related conditional-volatility patterns differ across the four assets.

A further methodological issue arises from differences in market hours and trading calendars. FOMC policy statements are generally released during U.S. trading hours, allowing the S&P 500 to incorporate the information on the official announcement date. By contrast, the Indonesian stock market has normally closed before an FOMC statement becomes publicly available, meaning that the relevant IHSG reaction may occur on the following Indonesian trading day. Gold follows an international trading calendar, while Bitcoin trades continuously. Recent announcement-based studies demonstrate that financial-market reactions can be concentrated within narrow periods around policy communication, making accurate alignment between release time and market observation essential (Corbet et al., 2020; Ignatieva & Ohashi, 2025).

Although recent studies establish that FOMC communication is relevant to financial markets, the empirical evidence remains fragmented. Some studies examine equity returns and risk shifts, others focus on pre-announcement returns, statement tone, gold-market reactions, emerging-market spillovers, or cryptocurrency behavior. These studies also use different measurements of monetary-policy information, including futures-based surprises, textual sentiment, actual interest-rate changes, and announcement-day dummy variables. Because these measurements represent different concepts, their results cannot be treated as

direct evidence of the same announcement-day conditional-volatility effect (Awartani et al., 2024; Hu et al., 2022; Kroencke et al., 2021; Usta & Sert, 2025).

Differences in data frequency and methodology create an additional research gap. High-frequency event studies are designed to identify immediate reactions within minutes around an announcement, whereas daily conditional-volatility models capture broader risk dynamics associated with an announcement observation. Moreover, many existing studies concentrate on one market or one asset class. Comparative evidence examining the S&P 500, IHSG, gold, and Bitcoin under a consistent daily conditional-volatility framework remains limited. The findings of Corbet et al. (2020), Awartani et al., 2024, Lastauskas and Nguyen, (2024), and Kroencke et al., (2021) indicate that the four markets are exposed to monetary-policy information through different mechanisms, but they do not provide a directly comparable EGARCH estimation across the four assets.

The Exponential Generalized Autoregressive Conditional Heteroskedasticity model is appropriate for addressing this research problem because it allows conditional variance to evolve according to previous shocks and previous volatility. The model can capture volatility clustering, high persistence, and different responses to positive and negative return innovations. These characteristics are important because market risk during the 2020 - 2024 period was neither constant nor normally distributed across time. Recent empirical applications show that EGARCH and related GARCH-family models are effective for analyzing changing volatility conditions across equity, commodity, and cryptocurrency markets (Ampountolas, 2024; Khan et al., 2023).

The asymmetric component of EGARCH must be distinguished from the FOMC announcement dummy. EGARCH asymmetry refers to whether positive and negative return innovations produce different effects on subsequent volatility. It does not classify FOMC announcements as hawkish or dovish, favorable or unfavorable, or expected or unexpected. The FOMC dummy has a separate function: it identifies whether an observation is associated with an official policy-statement release. Recent applications of announcement variables within volatility

models demonstrate that an event indicator can be estimated separately from parameters representing general shock magnitude, asymmetry, and volatility persistence (Ampountolas, 2024; Falay, 2024).

Based on these considerations, this study examines whether official FOMC policy announcements affect the conditional volatility of the S&P 500, IHSG, gold, and Bitcoin from January 2020 to December 2024. Separate EGARCH(1,1) models are estimated for each asset, and the FOMC announcement dummy is incorporated into the conditional-variance equation. This design makes it possible to evaluate announcement-related volatility after accounting for previous return shocks, volatility persistence, and asymmetric return innovations. The use of separate asset models is also consistent with recent evidence that FOMC effects and volatility dynamics vary across market structures and asset categories (Awartani et al., 2024; Lastauskas & Nguyen, 2024).

This research is important because the direction of asset returns alone does not provide a complete measurement of the risk associated with monetary-policy information. Investors, portfolio managers, companies, and policymakers need to understand not only whether prices rise or fall around FOMC announcements, but also whether uncertainty increases and whether volatility shocks persist. By comparing four economically different assets within a consistent conditional-volatility framework, this study provides evidence regarding which markets display statistically significant FOMC announcement effects and how their broader volatility characteristics differ. Such information is relevant to event-related risk assessment, hedging, portfolio allocation, and financial-market monitoring (Bauer et al., 2023; Kroencke et al., 2021).

1.2 Research Questions

From the background that already explained above, the formulation for the problem is

1. Does the FOMC news affect the volatility of S&P500

2. Does the FOMC news affect the volatility of IHSG
3. Does the FOMC news affect the volatility of Gold
4. Does the FOMC news affect the volatility of Bitcoin

1.3 Research Objectives

Based on the previously stated background and problem, the objectives of this research are :

1. To analyze how the FOMC news affect the S&P500 volatility
2. To analyze how the FOMC news affect the IHSG volatility
3. To analyze how the FOMC news affect the Gold volatility
4. To analyze how the FOMC news affect the Bitcoin Volatility

1.4 Contribution of the Research

1. Theoretical contributions

Theoretically, the current contribution is instructive for financial economics. What it does is provide confirmation that, quite obviously, central bank signals work well on markets, in fact it's already firmly established in theories like the Efficient Market Hypothesis and signalling models. Putting it differently, the analysis does not permit slow changes in expectations, the timing of new information is completely impulsive. What we do have is some clearer evidence of how quickly and unevenly markets process such surprises, recalibrating their assessment in the space of mere hours toward a different estimate of risk manifest in rapid shifts in priced-in expectations.

This analysis adds to our understanding of market swings by comparing different sorts of assets that have looked shaky developed stocks such as the S&P 500 and emerging ones like Indonesia's IHSG, safe havens including gold, newer digital entrants like Bitcoin. Because categories like this can respond differently to changes in the economy, looking at them together can help bring into sharper relief patterns about what happens when a major change in United States monetary policy

expectations ripples through systems of varying depth, trading ease, participants backgrounds and risk exposures.

Methodologically, this paper extends previous use of EGARCH models to study volatility around events. It incorporates not just the post shocks to explain the latter swings but also FOMC announcements in its model. What's new is that it treats good and bad policy news differently, implying they have divergent effects on market turbulence. This transformation allows the discovery of structural relationships that are not typically obvious under original GARCH specifications.

Post 2020 view The equation reflects the variations brought on by poisonous central bank intervention, blossoming economic uncertainty and digital assets utilization in institutional finance. Things become new-patterned here and it's not the pattern of past politics when things were more static, events more peaceful. These comments augment rather predictably to those prior influences, somewhat tempering its recent penetration into today's more complex pastures.

2. Practical Contributions

For practical contributions, since it explains how FOMC news gets passed on into time-variation volatility across S&P 500, IHSG, gold and Bitcoin with the EGARCH approach. Because EGARCH is suitable to capture the clustering of volatility and asymmetric effects, the results provide a realistic picture of risk dynamics in times of monetary policy information releases. The cross-asset comparison is also of use to understand which markets have a more pronounced reaction and which have more persistent volatility following FOMC related shocks so the findings are directly applicable to risk forecasting and decision making.

For investors, the implications vary depending on the time horizon. Long-term investors can use the evidence to help them better strategic asset allocation and diversification by identifying assets that tend to dampen risk versus those that amplify it during FOMC driven uncertainty, which allows them to be more disciplined about risk-based re-balancing and be better resourced/robust in their portfolios over time. In contrast, short-term investors and traders can use the

EGARCH-related volatility estimates to implement tactical controls, such as position size, leverage settings and stop loss rules during high-risk periods when prices are fast repricing around FOMC announcements. In addition, understanding which asset class has the highest asymmetry or volatility spikes can be used to make more informed instrument selection for event-driven strategies.

For policymakers and companies, the study provides information on how to manage spillovers and operational risk. Policymakers can use the results as an input for early-warning monitoring for transmission of external shocks - particularly into IHSG, and improve calibration of market stability measures and communications strategies in periods of high uncertainty. Meanwhile, companies - especially those with exposure to exchange rates, commodity costs, or market-based financing - can take the findings and use them to improve their treasury and risk management, including more well-timed hedging, planning liquidity buffers, and more careful timing of capital market activities when volatility conditions are likely to be unfavorable.

1.5 Scope of the research

The analysis focuses only on the effect of FOMC releases on the volatility of a set of financial assets. The study covers four categories of assets, that are S&P 500 Index, Indonesia Composite Index (IHSG), Gold and bitcoin which represent developed equity market, emerging equity market, traditional safe haven asset and digital asset respectively. The study also focuses purely on conditional volatility, measured with Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) model and it does not investigate price levels or returns or cross-asset spillover effects. FOMC news is regarded as an exogenous information shock, and it is operationalized by a dummy variable for announcement days without specifying hawkish/dovish policy stance's surrogate. We use daily secondary data from January 1, 2020, to December 31, 2024 and do not include other macroeconomic variables to decompose the direct impact of FOMC announcements on market volatility.

1.6 Research Outline

The systematics of writing in this study consists of five chapters which have their perspective functions and purposes of writing. The systematics of writing are as follow :

CHAPTER I: INTRODUCTION

This chapter serve as an introduction, outlining the background, problem statement, research objectives, contributions of the study, scope of the research, and the structure of the paper.

CHAPTER II: LITERATURE REVIEW

This chapter presents the theoretical foundation, including literature review, conceptual framework, previous studies, and hypothesis.

CHAPTER III: RESEARCH METHOD

This chapter explains the data and data sources, data collection methods, population, research samples and variables, and data analysis techniques to be used by the author.

CHAPTER IV: RESULTS AND DISCUSSION

This chapter contains an explanation of the research results which will be described by the author based on the results obtained from data that has been processed using the system and hypotheses that have been made.

CHAPTER V: CONCLUSION

This chapter is a closing which contains the conclusions from the results of the analysis and puts forward some suggestions as improvements for further research