

Examining the U.S. Monetary Shock to Indonesian Government Bonds in Volatile Periods

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Background

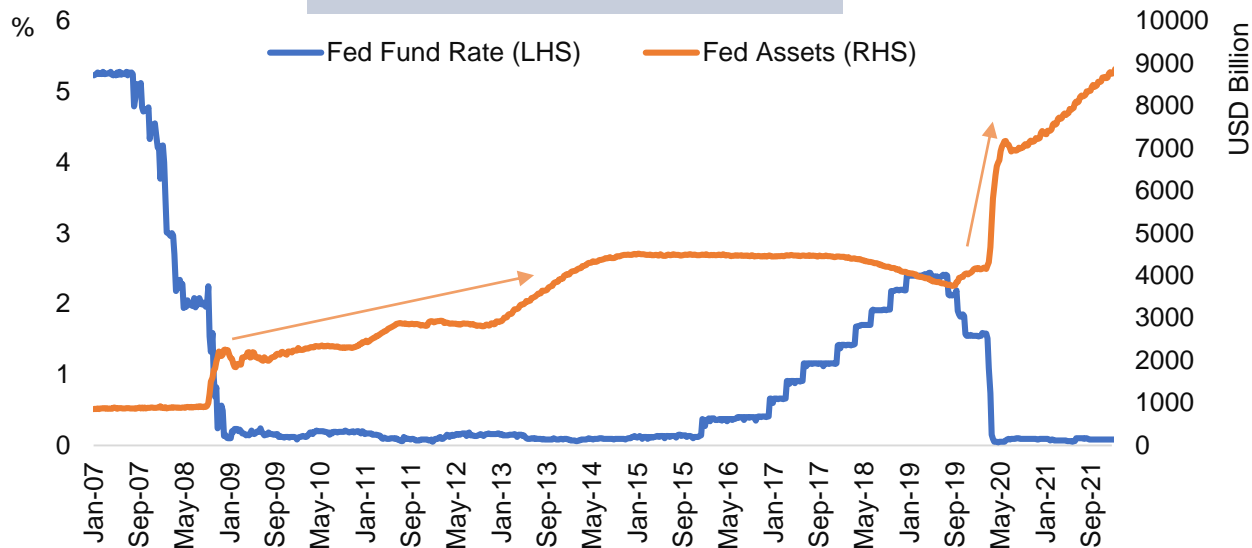
- ❑ More integrated global financial market leads **to increasing sensitivity of developing countries' financial markets** to the dynamics of financial markets in developed countries.
- ❑ Portfolio diversification globally expands opportunities for investors and allows investors to invest more efficiently. This situation can **facilitate the Government to seek financing** from another country through the issuance of bonds.
- ❑ Concerns about the adverse impact of the U.S. monetary policy for countries arise when the tapering-off occurred. Global monetary tightening trend will make difficulties for the Indonesian Government to seek financing. This will pose a **challenge for the Government in financing its programs**.

Study Periods

From **2005-2021, four sub-periods (before 2008 QE, during 2008 QE, 2013 tapering off and fed fund rate normalization, and 2020 Pandemic QE).**

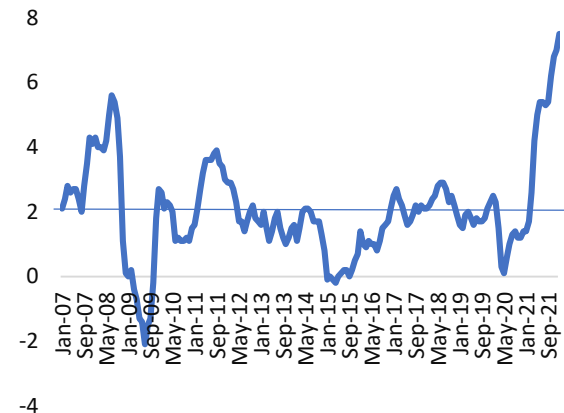
- ❑ Before 2008 Quantitative Easing (1 January 2005 – 24 November 2008), the U.S. monetary policy before the Fed announcement of QE and entered the Zero Lower Bound;
- ❑ 2008 Quantitative Easing (25 November 2008 – 21 May 2013), the U.S. monetary policy between QE and before the taper talk;
- ❑ The Federal Reserve's monetary normalization policy (22 May 2013 – 2 March 2020), U.S. monetary policy from the tapering off until the Fed gradually increase the Fed Fund Rate;
- ❑ 2020 Pandemic Quantitative Easing (3 March 2020 – 31 December 2021), U.S. monetary policy when the COVID-19 pandemic drives the Fed to lower its Fed Fund Rate (FFR) and reinstate the QE policy.

Fed Fund Rate and Fed Assets

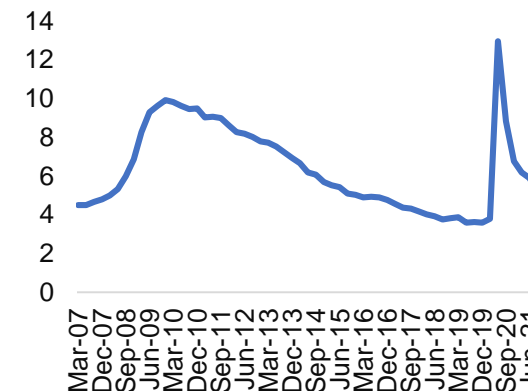


Source : The Federal Reserve, Bloomberg

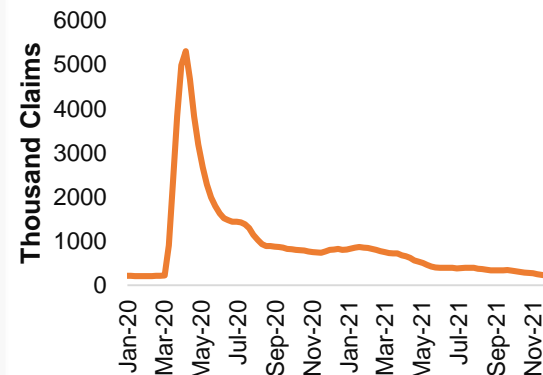
U.S. Inflation (% yoy)



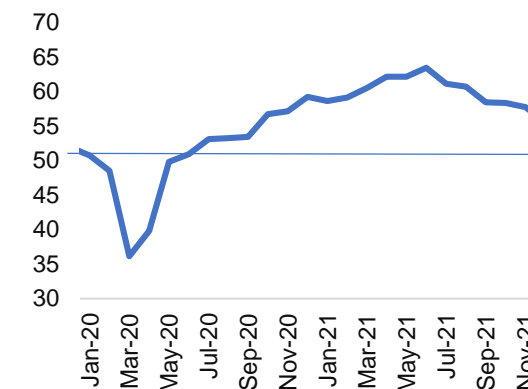
U.S. Unemployment (%)



U.S. Jobless Claim 4 Week Average



U.S. Manufacture



Source :Bloomberg

- At the height of Global Financial Crisis, the **Fed reduced its interest rate drastically to close to 0%** (Zero Lower Bound (ZLB)) and introduced Quantitative Easing.
- In 2013, the Fed planned to stop the QE program. **Triggering taper tantrum → massive outflow of capital from developing countries**, including Indonesia.
- The Fed officially terminated the QE program in FOMC meeting October 2014. Since 2015 to 2018, The **Fed increased the fed fund rate to 2.5%**.
- During the COVID-19 pandemic, The Fed decreased its **benchmark rate to ZLB and reinstated QE with larger scale**.

Enormous fiscal and monetary stimulus along with vaccination efforts yielded positive results when the U.S. economy began to recover amidst the lingering COVID-19 pandemic.

Financial Integration Theory

- ❑ Phenomenon in which **financial markets between countries**, both regional and global, are **closely related and becoming more interconnected**.
- ❑ Emerges from **formal agreement** of two or more countries (e.g. tax) or **without explicit agreement** (e.g. foreign securities trading).

ADVANTAGES

- ❑ Increasing investment preferences to developing countries
- ❑ Helps strengthen the domestic financial sector, which enables more efficient capital allocation and greater investment and growth opportunities. (Levine, 2001)

RISKS

- ❑ Aggravating the financial contagion if a country experiences a crisis or changing its fiscal or monetary policies
- ❑ Encourage capital outflows from countries with weak quality financial institutions to developed countries with higher quality financial institutions.

Financial Contagion Theory

- ❑ The **spread of market disruption /vulnerability** of one country from economic events that occur in other countries.
- ❑ Claessens and Forbes (2004) categorize contagion into two types, **fundamental causes and investors' behavior**.

Fundamental Causes	Investors' Behavior
<ul style="list-style-type: none"> ❑ Common/global shocks, ❑ Trade linkages, and ❑ Certain financial Linkages 	<ul style="list-style-type: none"> ❑ Liquidity problems, ❑ Incentive problems, ❑ Informational asymmetries, ❑ Market coordination problems, and ❑ Investor reassessment.

"contagion trading strategy" → sale or purchase of a financial asset in one country when the financial markets of another country have increased or decreased.

Channels of shock transmission

Liquidity

Captures **reduced global liquidity** through increase in the level of the U.S. short-term interest rates. If increased, it will increase the opportunity cost of investing in developing financial markets and reduce global liquidity.

Portfolio Balance

Captures the **transmission of the Fed's policies that can increase long-term treasury yields** so that it affects portfolio rebalancing against risky assets, including state-owned government bonds in developing countries.

Confidence

Captures a **market sentiment** in investing in risky assets, **uncertainties that disrupt market confidence** can occur if there is changes in policy stance.

Lim et al. (2014) and Ebeke and Kyobe (2015),

GARCH models

- ☐ to **treat heteroscedasticity** in the research variables
- ☐ to **capture bond yield volatility** during the study period

using daily data;
Jan 2005 - Dec 2021

Mean Equation:

$$ID10Y_t = \alpha_0 + \alpha_1 \cdot US3M_{t-1} + \alpha_2 \cdot US10Y_{t-1} + \alpha_3 VIX_{t-1} + \alpha_4 IDEQT_{t-1} + \alpha_5 IDCDS_{t-1} + \varepsilon$$

ID10Y = Indonesia Local Currency Government Bond 10 year Yield

US3M = The U.S. 3 Month T-bill

→ transmission via liquidity channel

US10Y = The U.S. Government Bond 10 year Yield

→ transmission via portfolio balance channel

VIX = Volatility Index

→ transmission via confidence channel

IDEQT = Indonesia Stock Exchange Index

IDCDS = Indonesia 5-Year Credit Default Swap

} Control variables

Variance Equation :

$$H_t = \beta_0 + \beta_1 h_{t-1} + \beta_2 \varepsilon^2_{t-1}$$

H_t = *bond yield conditional variance* on t period

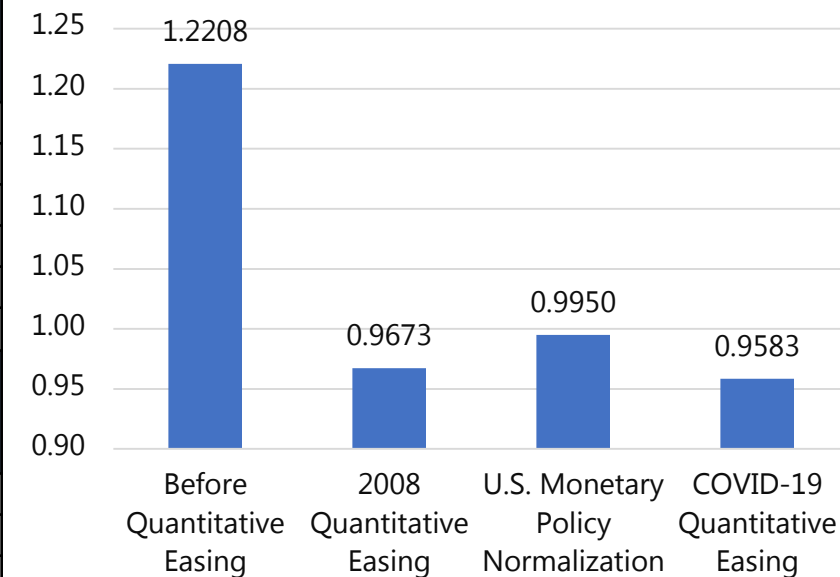
h_{t-1} = *conditional variance* on t-1 to capture *GARCH effects*

ε^2_{t-1} = *squared residual* on t-1 to capture *ARCH effects*

GARCH Regression Results

Mean Equation	Before Quantitative Easing	2008 Quantitative Easing	U.S. Monetary Policy Normalization	COVID-19 Quantitative Easing
C	-0.00258	-0.00732***	-0.00244*	-0.00309*
US3M	0.46458***	-0.20958	0.01896	0.07776
US10Y	0.16703***	0.05789*	0.23035***	0.21539***
VIX	0.01859***	0.00943***	0.00879***	0.00311***
IDEQ	-0.00021***	-0.00023***	-0.00007**	-0.00004
IDCDS	0.00113***	-0.0001	0.00216***	0.00079*
Variance Equation	Before Quantitative Easing	2008 Quantitative Easing	U.S. Monetary Policy Normalization	COVID-19 Quantitative Easing
C	0.00042***	0.00032***	0.00007***	0.00012***
α	0.53527***	0.17936***	0.09271***	0.22958***
β	0.68555***	0.78795***	0.90227***	0.72875***

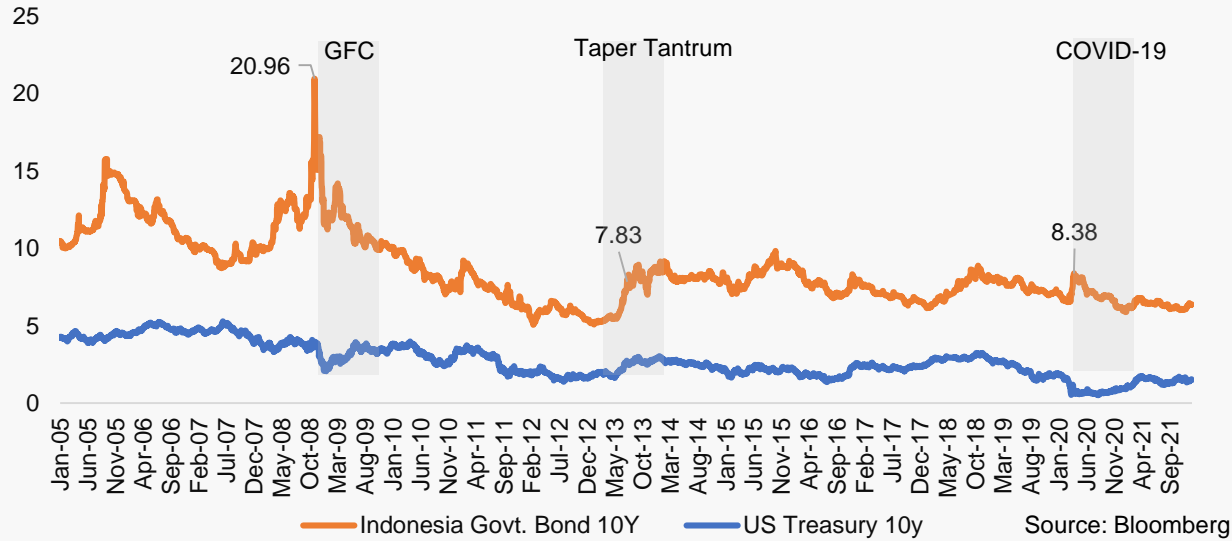
Volatility



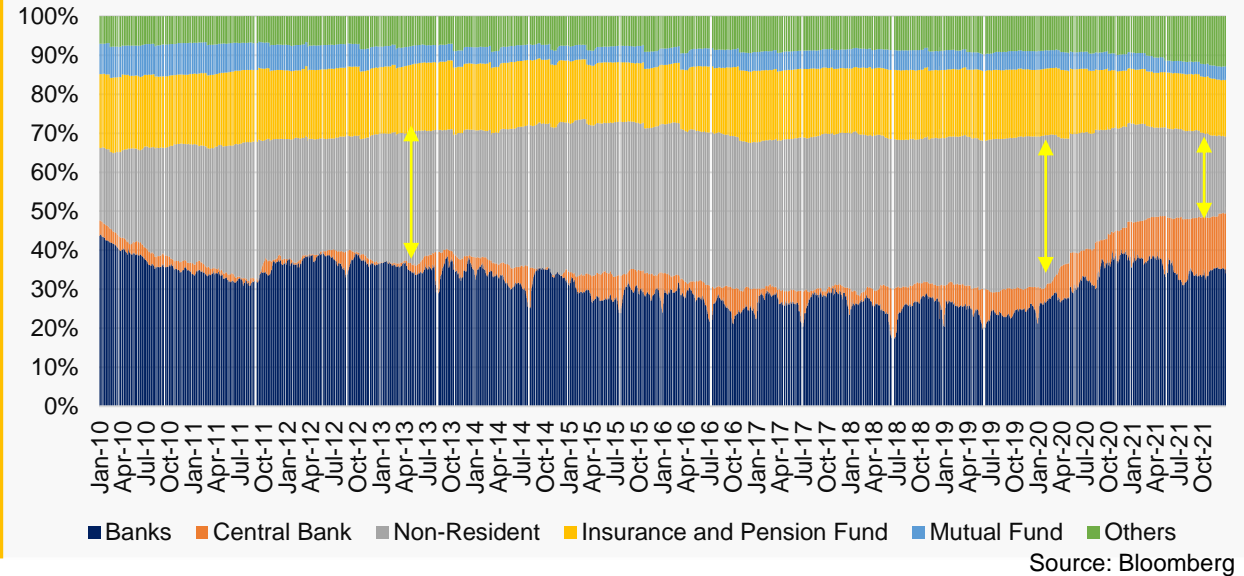
*** significant on 1%, ** significant on 5%, * significant on 10%

- Before QE period, U.S. economic transmission through liquidity (US3M), portfolio balance (US10Y), and confidence channel (VIX) has positive significant relation to Indonesia Government Bond Yield. **During this period, VIX has strongest influence** to Indonesia Bond Yield compared to other periods. GARCH value shows the **highest volatility** compared to other periods.
- During the 2008 QE, VIX has positive and significant influence to Indonesia Government Bond Yield. **Volatility in this period decreased** compared to the global financial crisis period (pre-QE).
- The portfolio balance (US10Y) and confidence channel (VIX) significantly affect the Indonesian Government Bond 10-year during 2013 normalization period. The **effect of US10Y** during this period is the **highest compared to other periods. Volatility increased**, occurred persistently during this period.
- During the pandemic, shock transmission occurred significantly from the portfolio balance channel (US10Y) and confidence channel (VIX). The **volatility** during the pandemic period **is the lowest** of the entire research period.

Indonesia Government Bond Yield



Ownership in Indonesia Government Bond



- Despite the **COVID-19 pandemic** that weakened the global financial sector, Indonesian government bond yield during pandemic **did not increase as much as the 2008 crisis or tapering period**.
- **High foreign investor ownership** in developing country government bonds has a relationship to **high volatility and strengthen the impact of global economic shocks** (Ebeke and Lu (2014); Ebeke and Kyobe (2015)).
- Domestic investors role, including the central bank through the **debt monetization policy** and banking industry, **help fill the bond market demand**.
- **Foreign ownership in Indonesia government bond fell drastically** from 38% (Jan 2020) → 25% (Dec 2020) → 19% (Dec 2021). On the other hand, the government bond ownership by banks increased to 34% (Dec 2021) from 23% (Jan 2020), while the ownership by central bank rose to 17% from 8% in the same period.

Indonesia's Selected Vulnerability Indicators

	December 2013	December 2021
Inflation (yoy)	8.38%	1.87%
Bank Indonesia Benchmark Interest Rate	7.5%	3.5%
Foreign Reserve Reserve Position	USD99.4 billion equivalent to financing 5.6 months of imports or 5.4 months of imports and servicing government external debt	USD144.9 billion equivalent to financing 8.0 months of imports or 7.8 months of imports and servicing of government external debt
Nominal Effective Exchange Rate	74.63 (-17.52% ytd)	71.79 (+2.73% ytd)
Trade Balance (ytd cumulative)	-USD4.07 billion	USD35.34 billion
Current Account Deficit / GDP	-3.2%	0.3%
External Debt / GDP	29.13% (2014: 32.95%; 2012:27.41%)	34.99% (2020: 39.35%; 2019:36.07%)
S&P Credit Rating	Non-Investment Grade BB+ (Stable Outlook)	Investment Grade BBB (Negative Outlook)

- ❑ **Robust macroeconomic fundamentals help dampen the external economic shock**, particularly from exposure of the U.S. monetary policy (Fratzscher et al. (2013); Sahay et al. (2014); Ahmed, Coulibaly, and Zlate (2017)).
- ❑ **Indonesia's macroeconomic** indicators during the **pandemic** are relatively **stronger** than the 2013 taper tantrum.
- ❑ **Investor base diversification** in the bond market is **essential** to reduce dependency on foreign investors and the central bank (when the debt monetization policy ends).
- ❑ **Maintaining investor confidence is important** as the confidence channel (VIX) significantly affects the Indonesian government bond yield in the entire study period.
- ❑ **Transparent and clear guidance on fiscal and monetary policies**, especially in ending the debt monetization policy and when rising the interest rates, is needed.

U.S. Economic Shock Effect

- ❑ U.S. monetary policy, particularly from the **confidence channel (VIX)**, positively impacts the Indonesian Government Bond Yield **throughout the entire study period**.
- ❑ Meanwhile, the portfolio balance channel (US10Y) occurred significantly during pre-QE 2008, 2013 normalization, and the pandemic period, whereas the liquidity channel (US3M) occurred significantly during pre-QE period.
- ❑ Indonesia's government bond **market volatility occurs at different levels in each period**, with persistence volatility occurred in the pre-QE 2008 period, followed by the monetary policy normalization in 2013.
- ❑ The **volatility during the pandemic QE is the lowest** compared to other periods.
- ❑ A combination **of stronger macroeconomic fundamentals, lower foreign ownership in the government bond market, and fiscal-monetary policy mix** to recover the economy (including the debt monetization policy) helps **lower volatility**.

Policy Alternatives

MARKET DEVELOPMENT (INVESTOR DIVERSIFICATION)

- ❑ **Encourage the financial institutions**, particularly insurance and pension fund, to **invest more in Indonesia bond market**.
- ❑ **Develop financing sources** from retail investors.
- ❑ Significant presence of insurance, pension fund, and retail investors can **diversify investors** in Indonesia bond market.

MAINTAIN MACROECONOMIC FUNDAMENTALS

- ❑ Policies that **strengthen macroeconomic fundamentals** is need (structural reform, tax reform, financial sector reform).

INVESTOR CONFIDENCE

- ❑ **Effective communication strategy** from authorities to manage investors expectation and behavior.

Thankyou

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