

## Federal Bank Of America And Central Bank Of Indonesia Policy On Indonesia Bond Prices

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### Abstract

The purpose of this study is to analyze the effect of inflation of America and Indonesia, interest rates, the rupiah exchange rate, and the FED effective Fund Rate on Government Bond Price. Research on interest rates and inflation which influence the value of government bonds remains interesting to research considering macro and micro economic conditions are always changing and interconnected. The population and sample of this study is all yield tenors of the benchmark series Government bonds for the period 2016 to 2022. The type of research used in this research is causal type explanatory research which seeks to test the influence between variables in a structural model. Data were analyzed using multiple linear regression approach. The results show that Indonesia inflation has strong positive correlation with FED. The FED also has strong positive correlation with Indonesia interest rate. The exchange rate Indonesian Rupiah to American dollar has strong negative correlation with inflation in America. The FED and exchange rate Indonesia rupiah to American dollar have positive impact on the Indonesian Government Bond Price. Interest rates, inflation of

America and Indonesia have negative impact on the Indonesian Government Bond price. The explanation contained in the Bank Indonesia newsletter also states that when the foreign exchange reserves are adequate, investors will not rush to divert their funds abroad.

**Keywords:** Bank Indonesia, Economic, Government bond, Inflation, The FED

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## 1. Introduction

Global inflation is gradually becoming a common threat to countries around the world. Two factors causing high inflation in various parts of the world are the increase in energy commodity prices and the increase in world food prices caused by the protectionism of each country which prioritizes national interests to meet its own needs. Since the beginning of 2022, the food and energy crisis has driven inflation in almost all countries in the world. Russia's invasion of Ukraine in February 2022 further worsened energy and food conditions. The Russian war also raised the prices of oilseeds and grains produced by Ukraine and Russia and wheat crop failures for producers in Australia and New Zealand. Inflation has soared to multidecade highs, prompting rapid monetary policy tightening and squeezing household budgets (World Economic Outlook, 2022).

Facing this situation, countries responded with export bans to meet domestic needs. Likewise, India has banned the export of broken wheat and rice to meet domestic needs. Indonesia also did the same thing by banning the Crude Palm Oil (CPO) commodity due to the quite high price increase on the market from January 2022 to the end of August 2022. Central Banks around the world, especially G20 countries, including Indonesia, reacted to the increase This inflation is accompanied by large increases in interest rates.

Global economic growth in the third quarter of 2022 slowed due to high inflationary pressures and increasing uncertainty in global financial markets. Global inflationary pressures continue to increase due to continued supply chain disruptions, geopolitical

tensions between Russia and Ukraine, as well as the spread of protectionism, especially in the food sector along with persistently high commodity prices. The imposition of sanctions against Russia has caused a decline in international trade, an increase in international commodity prices, including energy and food, and increased uncertainty in global financial markets.

Several countries, especially the United States (US), responded to the increase in inflation with tighter and more aggressive monetary policies, thereby hampering economic recovery and increasing the risk of stagflation. Economic growth in several countries such as the United States, Europe, Japan, China and India is expected to be slower than previously estimated and fears of a recession in the United States are increasing.

The American Central Bank interest rate or what we usually know as the Federal (The Fed) interest rate since the beginning of 2022 has also experienced a very significant increase. Until September 2022, the Fed's interest rate has reached 3.25%, an increase of 300 basis points or 12% from the January 2022 interest rate of 0.25% (Anderson & Chang, 2022).

Another effect of the Fed's increase in interest rates is the occurrence of capital outflow (outflow of foreign funds) from Indonesia. As of September 2022, the difference between the Fed's interest rate yield and SBI has narrowed to 1% (Bank Indonesia October 2022). Government bonds in the form of Government Securities (SBN) as one of the investment components that are of interest to the public are not immune from the influence of changes in interest rates. Foreign ownership funds in the Government Securities market Year Bank Indonesia Interest Rates Indonesian inflation continues to show a downward trend from the end of February 2022 until the third week of October 2022.

On January 3 2022 the value of ownership in rupiah SBN that can be traded for foreigners/non-residents is still IDR 893.6 trillion. However, at the end of February 2022, after Russia invaded Ukraine, foreign ownership of SBN continued to decline to a total of Rp. 717.3 trillion as of 20 October 2022. This amount is reduced by Rp. 176.3 trillion or a decrease of 19.7% from the beginning of 2022. In October 2022, foreign funds in SBN were only around 14%. This is down compared to the beginning of 2022 when foreign funds in SBN reached 19%. To anticipate this capital outflow, Bank Indonesia increased the BI 7-Day Reverse benchmark interest rate so that foreign investors are still interested in investing in SBN (DJPPR, 2021).

Research on interest rates and inflation which influence the value of government bonds remains interesting to research considering macro and micro economic

conditions are always changing and interconnected. Based on previous research, it was found that Bank Indonesia interest rates and inflation may or may not have an effect on bond prices. Meanwhile, research conducted by (Irawan & Pramono, 2017) shows that interest rates have a positive effect on bond prices. Based on the gaps in previous research, this research adds an Indonesian inflation variable which moderates the Bank Indonesia interest rate on government bond prices. Apart from that, this research also examines the influence of the Fed's interest rates on government bond prices directly.

In another study by (McCauley, 2020), it was found that The Fed's announced intervention in corporate bond markets succeeded before the buying even started. It raised prices of corporate bonds, narrowed both trading and fund valuation spreads, reversed investor runs and encouraged record-setting corporate bond issuance. The study conducted by (Siahaan & Panahatan, 2020), it was found that BI rates, Fed rates and inflation rate have negative effect on bond prices during the observation period. Where the Fed's interest rate affects the BI rate, but the BI rate does not affect the Fed's interest rate, so this research tries to directly test the effect of the Fed's interest rate on bond prices by adding American inflation as a moderator. This research also adds the variables coupon value and time to maturity as factors that influence government bond prices to be reviewed simultaneously with interest rate and inflation factors.

BI Rate, FED Rate, and Inflation simultaneously significantly affect the Composite Stock Price Index. As the analysis results describe the first, BI Rate partially shows the negative influence on the Composite Stock Price Index; second, the FED Rate does not affect the Composite Stock Price Index; third, inflation represents a negative influence on the Composite Stock Price Index. In the end, variables that affect the dominant potential of the Composite Stock Price Index are variables of the Rupiah Exchange Rate (Yusuf et al., 2021).

The Fed Funds Rate and Jakarta Composite Index (JCI) have a positive effect on the yields of Indonesian government bonds in different maturities of 1, 5 and 10 years. The exchange rate and inflation have a negative effect on the yields of on those maturities of Indonesian government bonds. The BI Rate has a positive effect on yields on Indonesian government bonds on 1 year period. The result different for long term 5- and 10-years period which has negative effect on yields of Indonesian government bonds (Rosanti & Sihombing, 2021).

Inflation rate has no impact on yield to Maturity (YTM), while exchange rate and foreign exchange rate partially have negative impact on YTM. The BI rate moderates the impact of both exchange rate and foreign exchange rate on YTM. The BI rate has dominant factor of the fixed rate government bond yield (Wicaksono & Syarif, 2022).

The inflation and US 10-Year Treasury has no impact on the Indonesian Government Bond Yield. However, interest rates and the rupiah exchange rate have positive impact on the Indonesian Government fixed rate Bond Yield (Permanasari & Kurniasih, 2021). The federal funds rate (FFR) significantly impacts the exchange rate and the Consumer Price Index (CPI). However, the FFR does not impact on the BI rate, the amount of the money supply (M2), and Gross Domestic Product (GDP). The result of variance decomposition (VD) test indicated that the variation of the BI rate, the currency exchange rate, and CPI are mostly caused by the FFR variation (Mukhlis et al., 2020).

There is no cointegration between the exchange rate, the 10-year bond yield and stock market during the COVID-19 period. However, asymmetric information has impacts on both the short term and the long run Indonesia bond yield and stock market (Prananta & Alexiou, 2023).

The source of funds circulating in the Indonesia Stock Exchange is related to excess liquidity resulting from the policy of quantitative easing (QE) by developed countries' central banks. Banks funding assets with debt results in leverage relationships with the Capital Adequacy Ratio (CAR) negatively affected. Thus, the Indonesian banking strategy is "reactive" and is influenced by external factors. External factors can be influenced by global issues as well as internal (enterprise performance) issues. Therefore, foreign and global issues may important in determining the perceptions of the Indonesian stock market (Rizky, 2015).

## 2. Methodology

The type of research used in this research is causal type explanatory research which seeks to test the influence between variables in a structural model. This research consists of six exogenous variables, namely the Fed interest rate, Bank Indonesia interest rate, coupon, time to maturity, American inflation and Indonesian inflation as well as one endogenous variable or dependent variable, namely the price of government bonds. The operationalization of research variables can be seen in table 1 as follows:

**Tabel 1.** Measurements of Variables

Variable	Concepts	Indicator	Source
Fed Fund Effective Rate (FED)	The federal funds rate is the interest rate at which depository institutions trade federal funds	Annual Fed Fund Effective Rate (2016-2022)	<a href="https://fred.stlouisfed.org">https://fred.stlouisfed.org</a>

Variable	Concepts	Indicator	Source
	(balances held at Federal Reserve Banks).		
Interest rate (SBI)	The BI-7 Day Reverse Repo Rate (BI7DRR) instrument is a new reference rate that has a stronger link to money market interest rates	Annual BI 7-Day (Reverse) Repo Rate (2016-2022)	<a href="http://www.bi.go.id">www.bi.go.id</a>
Exchange Rate (EXR)	JISDOR is the USD/IDR spot price, which is prepared based on the IDR/0.001USD transaction rate against the rupiah between banks on the Indonesian foreign exchange market.	IDR/0.001 USD) (2016-2022)	<a href="http://www.bi.go.id">www.bi.go.id</a>
Inflation rate in America (AIF)	Inflation can be defined as a decline in the purchasing power of money for goods and services. Inflation Rate in America provides current and historical Inflation Rate data for America.	Annual Inflation rate (2016- 2022)	<a href="http://www.rateinflation.com">www.rateinflation.com</a>
Inflation rate in Indonesia (IIF)	Inflation is a general and continuous increase in the prices of goods and services over a certain period of time.	Annual Inflation rate (2016- 2022)	<a href="http://www.bi.go.id">www.bi.go.id</a>
Bond Price (IBP)	Bond price measured by percentage of par value.	Annual Bond Price (2016-2022)	<a href="http://www.idx.co.id">www.idx.co.id</a>

**Source:** Prepared by the author, (2024)

## 2.1.Data Collection

The sample population is fixed rate (FR) government bonds over 10 years or more. The reason for testing bonds with a tenor of 10 years or more is in accordance with the

theoretical basis that interest rates, inflation, coupon rates greatly influence the prices of bonds with long maturities. The sample data taken in this research is annual data from 2016 to 2022. The method used in sampling in this research is a purposive sampling technique, where determining the research sample is based on a number of considerations to achieve certain aims and objectives.

The data sources in this research are secondary data obtained from reports published by Bank Indonesia, the Central Bank of America, the American Bureau of Labor Statistics, the Indonesian Stock Exchange (BEI) and the Financial Services Authority (OJK) and the Central Statistics Agency (BPS) on a monthly basis. namely interest rate and inflation data from the websites of the Indonesian Central Bank and the Central Statistics Agency (BPS), American Central Bank interest rate data from the Federal Research Board, data regarding coupon rates, time to maturity and government bond prices from the Indonesian Stock Exchange and the Financial Services Authority.

### 3. Results

Bond price (IBP) has average 108.13% with minimum 76.9% means the price 23.1% lower than its par value and maximum 136.51% means 36.51% higher than its' pare value. Federal funds effective rate (FED) has average 0.0123 (1.23%) with minimum 0.0025 (0.25%) and maximum 0.0250 (2.50%). Indonesian interest rate measured by JISDOR interest rate (SBI) has average 0.043 (4.33%). Average inflation in America (IFA) around 0.0393 (3.93%). Average inflation in Indonesia (IFI) around 0.0292 (2.92%). In average inflation in Indonesia lower than inflation in America during the period of study 2016 – 2022. Exchange rate IDR/USD (EXR) in average is 0.0704 IDR/0.001USD or 70.4 IDR/USD. For more detail descriptive statistic shown in table 2.

**Table 2.** Descriptive Statistic

Variable	Minimum	Maximum	Mean	Std. Deviation
IBP	76.9000	136.5090	108.1358	10.0988
FED	0.0025	0.0250	0.0123	0.0079
SBI	0.0350	0.0600	0.0433	0.0084
IFA	0.0140	0.0910	0.0393	0.0293
IFI	0.0168	0.0435	0.0292	0.0090
EXR	0.0641	0.0744	0.0704	0.0033

Source: Prepared by the author, (2024)

Correlation matrix between independent variables can be seen at table 3. The highest correlation -0.78 between variable inflation in America (IFA) and exchange rate (EXR). The second variable between federal fund effective rate (FED and inflation in Indonesia (IFI) around 0.705. However, those correlation are below than absolute 0.85,

so the multiple regression process can be proceeded.

**Table 3.** Correlations

Variable	FED	SBI	IFA	IFI	EXR
FED	1				
SBI	0.640**	1			
IFA	-0.023	-.634**	1		
IFI	0.705**	0.087	.372**	1	
EXR	-.310**	.330**	-.780**	-.418**	1

Source: Prepared by the author, (2024)

Indonesian interest rate has significant impact on bond price (sig. level below than 0.01) or t value -4.585 higher t absolute table 2.575 as shown in table 4. In order to improve the model, then the lowest t value or significant level higher than 0.001 can be eliminated.

**Table 4.** Original Model

Variable	Coeff. B	st. error	t	sig.
(Constant)	92.960	24.408	3.809	0.000
FED	560.076	233.216	2.402	0.017
SBI	-793.992	173.176	-4.585	0.000
IFA	-79.063	41.106	-1.923	0.055
IFI	-289.433	129.575	-2.234	0.026
EXR	770.541	355.801	2.166	0.031

Source: Prepared by the author, (2024)

After eliminating variable American interest rate (IFA), the multi-regression result can be seen at table 5 (Improve Model). Now, all absolute t value higher than 2.575 (or sig. level lower than 0.01).

**Table 5.** Improved Model

Variable	Coeff. B	St. error	t	sig.
(Constant)	56.381	15.367	3.669	0.000
FED	635.125	230.947	2.750	0.006
SBI	-714.148	168.871	-4.229	0.000
IFI	-369.970	123.166	-3.004	0.003
EXR	1217.179	270.769	4.495	0.000

Source: Prepared by the author, (2024)

Based on table 5 (improved model), then the multi-regression model can be written down as follows:

$$IBP = 56.38 + 635.13FED - 714.15SBI - 369.97IFI + 1,21718EXR + \varepsilon$$

Improvement of the model can be checked with F value. If the F value increase, then the improved model better than the original model and vice versa. The original model has F value 9.295 and the improved model with F value 10.599. So, the improved model is better than the original model. The American inflation factor strengthens the influence on the Fed's interest rates, causing the Fed's interest rates to influence government bond prices. If there is an increase in American inflation, it will cause the Fed's interest rates to rise. On the other hand, if American inflation falls, it will cause the Fed's interest rates to fall.

#### 4. Discussion

Bank interest rates increase, the present value of the remaining bond cash flows will decrease and the bonds will have a lower value. On the other hand, if bank interest rates fall, bonds will have a higher value. On the other hand, if bank interest rates fall, bonds will have a higher value. This principle is known as the Golden Rules of the Bond, namely:

- If the interest rate (yield) > Coupon value → Bond value < Par value
- If the interest rate (yield) < Coupon value → Bond value > Par value
- If the interest rate (yield) = Coupon value → Bond value = Par value

If the Bank Indonesia interest rate is higher than the coupon value obtained by investors, investors will be more interested in investing in deposit instruments because of the fixed income and higher returns and lower risk compared to investing in bonds. Investors will tend to sell bonds, resulting in a decline in bond prices. From research data, government bond coupons from 2016 to 2022 averaged 8.16% compared to the average Bank Indonesia interest rate of 4.72%. With lower interest rates, investors will be more interested in investing in bonds that provide coupons above the interest rate. This has an impact on demand for bonds which causes the price of the bonds offered to be high (premium).

The cause of the high rate of inflation in America is due to supply chain disruptions caused by the Covid-19 pandemic and the Russia-Ukraine war at the end of February 2022, as well as drought in several countries. The impact of the high increase in inflation in 2022 has caused the Federal Bank of America to increase the Fed's interest rate in an effort to slow down the rate of increase in inflation and return to the inflation target of 2%. The Fed's aggressive increase in interest rates will slow down economic growth, but on the other hand it will reduce the inflation rate due to high loan interest

rates. Interest rates are important because they affect borrowing costs and household and business spending decisions.

Lower interest rates, however, will encourage more people to get mortgages for new homes or borrow money to buy cars or make home improvements. Lower interest costs will also encourage businesses to borrow funds and to invest in business development such as buying new equipment, upgrading factories, or hiring more workers. Meanwhile, higher interest rates will discourage consumers or businesses from borrowing money (Federal Reserve Board, 2021).

The Bank Indonesia interest rate is more influenced by the rise and fall of the Fed's interest rate, where an increase in the Fed's interest rate causes the spread with the Bank Indonesia interest rate to become smaller. The effect of this small spread will affect investors, where investors tend to invest abroad (America) because of the high returns on the Fed's more stable interest rates and the certainty of stable investment (capital outflow). The Fed interest rate and the Bank Indonesia interest rate have a unidirectional relationship, namely the Fed interest rate will influence the Indonesian bank interest rate while the Bank Indonesia interest rate does not affect the Fed interest rate (Ulfa & Saputra, 2021).

There is a fairly strong correlation between the Fed's interest rate, Bank Indonesia's interest rate and Indonesian inflation. The correlation value between the Fed interest rate and the Bank Indonesia interest rate is 0.654, while the correlation value between the Fed interest rate and Indonesian inflation is 0.740. So changes that occur in the Fed's interest rates will affect Bank Indonesia interest rates and Indonesian inflation (Siahaan & Panahatan, 2020).

## 5. Conclusion

Foreign exchange reserves can reflect how big the level of risk that will be accepted by investors. The risk of default (default risk) can be reflected in the ability of bond issuers to pay yields for their investors. One of the indicators used to determine the security of bond investments is through the liquidity ratio. The explanation contained in the Bank Indonesia newsletter also states that when the foreign exchange reserves are adequate, investors will not rush to divert their funds abroad. Bond yields decrease when a country has good economic liquidity (large foreign exchange reserves) because good liquidity represents a low risk of default. Conversely, small foreign exchange reserves can indicate a high risk of default, so investors tend to demand higher yields.

## Declaration and statements

### Ethical Consent

Not required

### Conflict of interest

The authors do not have any conflict of interest.

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