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Analysis of The Effect of Credit Default Swap and Macroeconomic Variables on Indonesian Government Bonds Yield

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Abstract:

The objective of this study is to examine the long- and short-term relationships between macroeconomic variables such as inflation, the Bank Indonesia interest rate (BI Rate), the USD/IDR exchange rate, gross domestic product (GDP), and Credit Default SWAP on Indonesian sovereign bond yields from January 2016 to December 2022. The Vector Error Correction Model (VECM) analysis is employed. Microsoft Excel and Eviews were used to perform the research. According to the findings, the dependent variable, inflation, does not have a long-term relationship with bond yields of five, ten, fifteen, or twenty years, but does have a short-term relationship with bond yields. BI Rate has a positive long-term relationship with bond yields of five, ten, and fifteen years. USD/IDR Exchange Rate has a negative long-term relationship with government bond yields of all tenors. Gross Domestic Product (GDP) has a negative long-term relationship with bond yields

Keywords: Macroeconomic, Inflation, Exchange Rate, Gross Domestic Product, Bond Yield.

Introduction

Due to the quick development of technology, geographical boundaries and regions are no longer recognized in modern economic activity. Economic actors may now easily carry out their tasks thanks to technology advancements, one of which is the simpler investing. Investment refers to a financial strategy that is intended to create future revenue. The initial stage in every industrial process is investment, which also contributes to economic growth. Due to financial constraints, only a tiny portion of Indonesia's natural resources may be exploited by its inhabitants, making investment a potentially significant tool for the country. In order to decide what kind of investment to make in an effort to maximize earnings in the future, it is therefore crucial to understand about investing. Investors have the option of investing in either financial or real assets, such as purchasing gold, real estate, and other tangible goods. The two markets for financial assets themselves are known as the money market and the capital market (Bhat et al., 2016).

Given that more people are becoming aware of the value of investing, the state of the Indonesian capital market is now improving. The capital market plays a significant role in improving a nation's economy, and it may even serve as one of the benchmarks for measuring a nation's development. The capital market has two primary purposes: first, as a source of finance for corporate organizations, and second, as a platform for public investment. A capital market is considered to be efficient when the prices of securities accurately reflect all pertinent information. The market is more efficient when new information is reflected in the price of securities as quickly as possible; as a result, it will be exceedingly challenging for investors to regularly make a profit above average by trading on the Stock Exchange. Stocks, bonds, mutual funds, and derivatives are just a few of the many products available in the capital market (Tannady et al., 2020).

Bonds are long-term financial obligations with set interest payments due at maturity. One of the capital market's tools that investors choose is bonds. Depending on the issuer, bonds may be categorized into three categories: business bonds, local government bonds, and government bonds. Bonds have an expiration date. Government bonds in the benchmark series typically have terms of five to twenty years. The government furthermore issues short-term SBN bonds, which have a maturity of three to six months, in addition to long-term bonds. Most business and public entities can satisfy their finance needs by using bonds. One method utilized by businesses as a reliable source of capital for their operational activities is the issuance of bonds (Bodie & Marcus, 2014).

Investors consider the bond price, term, bond issuer, as well as the coupon rate when purchasing a bond, whether they are corporate or government bonds. Bond yield is another aspect that investors take into account when buying bonds. The income or yield that investors will receive as a result of investing their money in bonds is known as yield. Every now and again, yield will fluctuate. This yield change is influenced by a number of different factors. Investors must thus be aware of the variables influencing bond rates in order to identify buy and sell signals. Macroeconomic factors including inflation, interest rates, GDP, and currency rates are among those that influence yield fluctuations. When there is an excessive demand for products as a whole in an economy, inflation results. Investors may anticipate larger returns on their investments if inflation keeps rising since it might raise total prices, making investments in bonds and other assets more risky. Sari & Abudanti, Paramita, and Pangestuti's earlier study shown that inflation had a detrimental impact on bond rates. However, research by Bhat et al. reveals conflicting findings, namely that inflation has a favorable impact on bond rates (Choudry, 2001).

Interest rates are another macroeconomic factor that influences bond yields. Interest rates have a significant impact on the economy and have a direct impact on how individuals live their lives. The BI Rate is the current interest rate. The interest rate known as the "BI Rate" is set by BI as a standard for lending and deposit rates for banks and/or other financial institutions all across Indonesia. Through its monetary power, the government uses interest rates to regulate the level of prices. The price of bonds will rise when the current interest rate falls. According to Jogiyanto, the yield-bond price connection is inversely proportional. Bond prices will decrease and bond yields will increase as interest rates rise. In contrast to research conducted by Sundoro, Listiawati, and Paramita, whose findings indicate that interest rates have a positive effect on bond yields, earlier studies on the impact of interest rates on bond yields by Bhat et al. and Naidhu et al. showed a negative relationship between interest rates and yields (Taufik et al., 2022).

The currency rate is a further macroeconomic factor that influences bond rates. The exchange rate between the US dollar and the Indonesian rupiah is known as the rupiah exchange rate. Every nation has its own exchange rates, which compare a currency's value to its international exchange rate. The rupiah exchange rate has a significant impact on bond rates since foreigners own the majority of outstanding government bonds. According to Bloomberg, there were 893 trillion dollars worth of outstanding foreign bonds for Indonesia at the end of 2018. Investors are highly concerned about the rupiah's exchange rate with the dollar because they will choose to invest in the money market by purchasing dollars when the price of the currency rises. In previous studies on the impact of exchange rates on bond yields, Bhat and Dewi et al. found a negative relationship between exchange rates and bond yields, whereas Paramita and Pangestuti found a positive relationship between exchange rates and bond yields (Dewi et al., 2016).

In addition, GDP (Gross Domestic Product) is a factor that influences bond rates. GDP is a gauge of the value of products and services generated on a nation's soil during a specific time period. GDP is a tool used to assess a nation's economic health. The buying power of consumers is positively impacted by changes in the economy, such as a growth in GDP, which raises demand for a company's products. In contrast to Saputra and

Prasetiono's research, which found that GDP had a negative impact on bond yields, Naidhu et al.'s findings indicate that GDP has a positive impact on bond yields (Tannady & Purnamaningsih, 2023).

Derivative instruments are a factor that investors must consider in addition to macroeconomics when making investments. Securities that are exchanged and valued at fair values are known as derivatives. This derivative itself serves as a hedge against potential price changes in the future. One thing that investors might do is purchase derivative products to reduce the risk associated with these changes. Derivatives can serve as a tool for speculation to generate profits for the seller in addition to serving as a hedge. There are several derivative instruments, including futures, swaps, and options. Credit Default SWAP (CDS) is one kind of derivative. Simply put, CDS is bond insurance. An investor pays a premium, and in the event that a bond defaults, the CDS seller gives the investor their bond back. A CDS indicator evaluates the degree of default risk associated with an investment in a nation or business (Halim, 2015). Consequently, CDS may represent the investment risk. This study intends to examine how macroeconomic factors such as inflation, Bank Indonesia interest rates (BI Rate), USD/IDR exchange rates, gross domestic product (GDP), and Credit Default SWAP to the Yield of Indonesian state bonds relate over the long and short terms.

Literature Review

Investment is the current commitment of money or other resources in the hope of future benefits. Investment can be defined as a delay in current consumption to be put into productive assets over a period of time. Investment according to Halim is the placement of a number of funds at this time with the hope of obtaining future profits. From some of the above definitions, it can be concluded that investment is investing capital assets at the expense of current consumption with the expectation of getting benefits in the future. Bodie divides investment into two, namely real assets and financial assets. Investments in real assets such as land and gold, while investing in financial assets such as buying stocks, bonds, deposits, etc. Meanwhile, Jogiyanto divides investment into two, namely direct investment and indirect investment (Jogiyanto, 2017).

The capital market is a market that brings together those who offer and those who need long-term funds, such as stocks and bonds. The Capital Market consists of the words Market and Capital, so the Capital Market can be defined as a place where demand and supply meet for capital, both in the form of equity and long-term debt. Hadi defines the Capital Market as an organized financial system, including conventional banks and all intermediary institutions in the financial sector, as well as all outstanding securities. From some of the above definitions, it can be concluded that the capital market is a place where investors and issuers meet to conduct long-term capital and debt transactions. Capital market instruments consist of stocks and bonds and their derivatives (Purwanti & Purwidianti, 2017).

Bonds are capital market instruments in the form of debt that the borrower issues and promises to pay back to the lender or investor over time, together with interest. Bonds are securities that are issued in accordance with a loan agreement, bonds are issued (or sold) by borrowers to lenders in exchange for a certain sum of money. A bond, in Jogiyanto's definition, is a contract that calls for the borrower to pay back the principle and interest within a predetermined time frame. Bonds are debt instruments issued by debt issuers that will repay the debt with additional interest over a specific period of time, according to some of these definitions (Bhat et al., 2016).

Choudhry defines yield is the return on bonds determined by discounting the bond price. Jogiyanto defines yield as the bond's return. Bond yield may be calculated using a number of different methods, including current yield, yield to maturity, and yield to call. The amount of a year's coupon divided by the bond's current market value is used to calculate current yield. The rate of return on a bond that is bought at the current market price and kept until maturity is its yield to maturity. A bond's yield to call is the rate of return from now until the time it is redeemed (Tannady et al., 2020).

Inflation is a long-term process of generally and steadily increasing prices. Inflation is a broad increase in prices that occurs continually for a collection of items, much as definition by previous reseacher. We may thus say that inflation is an ongoing increase in the cost of things. The occurrence of inflation may be brought on by a variety of factors, including a rise in community consumption, a shortage of a certain class of products, excessive government money printing to boost the money supply, and more. A constant loss in the value of the currency is another way to define inflation (Bodie & Marcus, 2014).

The interest received expressed as a proportion of the asset price is what Parkin defines as the interest rate for financial assets in his paper. Hull describes an interest rate as a particular circumstance in which the borrower makes a special commitment to pay back more than the amount borrowed. The BI Rate is used to describe interest rates in Indonesia. The BI Rate is an interest rate established by Bank Indonesia and made public to reflect the direction of its monetary policy. At each monthly Board of Governors meeting, the Bank Indonesia Board of Governors releases the BI Rate. For those who invest in risk-free securities, the BI Rate serves as a useful reference (Taufik et al., 2022).

Exchange rate is a fundamental concept in economics that refers to the price of a currency in units of another currency. Simply put, exchange rates measure how many units of one country's currency can be exchanged for units of another country's currency. Exchange rates play an important role in international trade activities, investment, tourism, and various aspects of global economic life. Exchange rates can be expressed in two main forms: real exchange rates and nominal exchange rates. Nominal exchange rates refer to the price of currency in the form of paper or electronic money that we are familiar with. Real exchange rates, on the other hand, reflect the actual purchasing power of a currency against goods and services, after taking into account price changes and inflation in different countries (Dewi et al., 2016).

Gross Domestic Product (GDP) is one of the most important economic indicators used to measure the magnitude of a country's economic activity over a period of time, usually one year. The concept of GDP describes the total economic value of all goods and services produced within a country's borders, both by residents and by foreigners operating in the country. GDP can be calculated using two main approaches, namely the production and income approaches. In the production approach, GDP is measured by adding up the value added generated by the various sectors of the economy, such as agriculture, industry, services, and others. This approach highlights the contribution of different sectors to national economic activity. On the other hand, the income approach measures GDP by summing up all the income received by the factors of production, such as wages, profits, interest, and taxes. GDP has several components that provide a more detailed picture of a country's resources and economic activity. The main components of GDP include household consumption, investment, government spending, and net trade balance (the difference between exports and imports). Household consumption reflects people's total spending on goods and services, while investment includes spending on development and capital improvements. Government expenditure represents government spending in various sectors (Halim, 2015).

Derivatives are financial instruments that derive their value from an underlying asset, such as a stock, bond, commodity or currency, but do not involve direct ownership of that asset. This instrument is a contract between two parties who agree to exchange payments based on changes in the value of the underlying asset within a certain time. Derivatives are utilized for various purposes, such as to manage risk, speculation, or for hedging purposes. There are several types of derivatives that are commonly traded, including options, futures contracts, swaps, and index options. Options give the option holder the right to buy or sell an underlying asset at an agreed price within a specified time. A futures contract is an agreement to buy or sell an underlying asset on a specific date in the future at a preset price. Swaps involve the exchange of cash flows or payments between two parties based on some underlying asset, such as an interest rate or currency. Index options are similar to regular options, but the underlying asset is a stock market index. Formally, CDS is a bilateral contract to transfer credit risk from one party to another. Bodie et al define CDS as an agreement between two parties (seller and buyer) of a premium for a default event. When an event of default or default of interest on the bond occurs, the seller of the premium covers the loss in the market value of the bond. Credit Default Swap is a contract that indicates insurance against the risk of default by a particular company. CDS was first developed in the 1990s by an organization working for JP Morgan. CDS contracts usually range from one to ten years. The premium paid by the buyer to the seller is also called the "Spread" with a specific contract value and is paid quarterly. CDS itself can also be a credit derivative instrument for hedging or speculation for profit (Jogiyanto, 2015).

Credit Event itself is an event that affects the market, such as the risk of default, restructuring or rearrangement, moratorium (suspension of debt payments). As for the CDS mechanism itself, CDS is traded by financial institutions, through the Over The Counter (OTC) mechanism. With the OTC, traders will look for Counterparties and when each Counterparty has met, the next process is to create a bilateral contractual relationship with the contract price agreement based on the bargaining process between the two parties. CDS buyers pay a certain fee (premium) to the CDS provider within a certain period of time with the aim of protection from credit events. When a credit event occurs, the seller/buyer sends a notification that a credit event has occurred. Then Physical Settlement or Cash Settlement is carried out (Dewi et al., 2016).

Methodology

This research uses a quantitative approach with an associative research type. The scope of this research is the yield of five, ten, fifteen and twenty years tenor Indonesian government bonds in general for the period 2016-2022. This research uses secondary sources obtained through state financial reports. The analysis method uses Vector Autoregressive (VAR) or Vector Error Correction Model (VECM) which has previously tested variance decomposition, Impulse Response Function (IRF), and also causality tests with Eviews 8 and Microsoft Excel 2016 analysis tools.

Results

Granger causality test results, it is known that five-years Yield has a significant effect on BI Rate, bond Yield has a significant effect on CDS, and Inflation has a significant effect on CDS because the probability value is smaller than the alpha value (0.05). As for the 10-year Yield, it has a significant effect on CDS, Inflation has a significant effect on CDS, and BI Rate has a significant effect on the Exchange Rate, because the probability value is smaller than the alpha value (0.05). The 15-year Yield also has a significant effect on CDS, and Inflation has a significant effect on CDS because the probability value is smaller than the alpha value (0.05). Further testing on the 20-year Yield, has a significant effect on BI Rate, and BI rate also has a significant effect on the 20-year Yield. 20-year Yield has a significant effect on CDS, and Inflation has a significant effect on CDS because the probability value is smaller than the alpha value (0.05).

After conducting the previous prerequisite tests, it can be briefly concluded that the model for 5-year government yields uses the VECM model. Based on the test results, it is found that Inflation does not have a long-term relationship with the 5-year government bond yield because the critical t value is -0.16290> -1.988966. And the BI rate has a positive long-term relationship with the 5-year government bond yield because the t-statistic value is 3.84806 > 1.988966. For the Exchange Rate variable has a negative long-term relationship to the 5-year government bond yield with a statistical t value of -5.47475 < -1.988966. GDP has a negative long-term relationship to the 5-year government bond yield because it has a statistical t value of -6.64871 < -1.988966. The CDS variable has a positive long-term relationship to the 5-year government bond yield with a t-statistic value of 2.07966 > 1.988966.

For the short-term relationship, it is known that the Inflation variable has a significant negative relationship at lag 3, meaning that if there is an increase in Inflation in the previous 3 months it will reduce the yield by -2.18, BI Rate has a significant positive short-term relationship at lag 1 & 2 but at lag 3 it does not have a significant short-term relationship, meaning that when there is a BI rate increase in the previous 1 and 2 months it will increase the 5-year yield by 3.9 and 2.3. The USD/IDR Exchange Rate variable has a significant negative short-term relationship in lags 1-3, meaning that when there is an increase in the USD/IDR exchange rate, it will reduce the yield by -4.1, -4.3 and -4.4. The GDP variable has a significant negative relationship to the 5-year bond yield on lag 1 and 2 but there is no relationship on lag 3, meaning that when there is an increase in GDP in the previous 1 to 3 months, it will make the 5-year bond yield decrease by -3.7, -2.4 and -1.02. And the CDS variable has a positive and significant short-term relationship only at lag 1, meaning that when there is an increase in CDS in the previous month, it will make the 5-year bond yield increase by 2.64.

In the 10-year Yield model, it is known that Inflation has no long-term relationship with the 10-year government bond yield because the critical t value is -1.05732 > -1.988966. And the BI rate has a positive long-term relationship with the 10-year government bond yield because the t-statistic value is 5.41087 > 1.988966. For the Exchange Rate variable has a negative long-term relationship to the 10-year government bond yield with a statistical t value of -4.98629 < -1.988966. GDP has a negative long-term relationship to the 10-year government bond yield because it has a statistical t value of -4.77746 < -1.988966. The CDS variable has a positive long-term relationship to the 10-year government bond yield with a t-stats value of 4.21046 > 1.988966.

For the short-term relationship, it is also known that the Inflation variable has a significant negative relationship at lag 3 to the yield, meaning that when there is an increase in Inflation in the previous 3 months it will reduce the yield of 10-year bonds by -2.4, BI Rate has a significant positive short-term relationship at lag 1 & 2 but at lag 3 it does not have a significant short-term relationship, meaning that when there is an increase in BI Rate in the previous 1 and 2 months it will increase the yield of 10-year bonds by 4.8 and 3.5. The USD/IDR Exchange

Rate variable has a significant negative short-term relationship in lags 1-3, meaning that when there is an increase in the USD/IDR Exchange Rate in the previous 1 to 3 months, it will make the bond yield in this month decrease by -4.13, -3.7 and -3.8. The GDP variable has a significant negative relationship to the 10-year bond yield at lag 1, meaning that if there is an increase in GDP in the previous 1 month it will make the 10-year bond yield this month decrease by -3.4. And the CDS variable has a positive and significant short-term relationship only at lag 1 to lag 3, meaning that if there is an increase in CDS in the previous 1, 2 and 3 months, it will make the 10-year bond yield this month increase by 4.14, 2.61 and 2.15.

The model for the 15-year government yield uses the VECM model. The results show that Inflation does not have a long-term relationship with the 15-year government bond yield because the critical t value is -0.75333 > -1.988966. And the BI rate has a positive long-term relationship to the 15-year government bond yield because the statistical t value is 5.15818 > 1.988966. For the Exchange Rate variable, it has a negative long-term relationship to the 15-year government bond yield with a statistical t value of -5.57565 < -1.988966. GDP has a negative long-term relationship to the 15-year government bond yield because it has a t-stats value of -4.89272 < -1.988966. The CDS variable has a positive long-term relationship to the 15-year government bond yield with a t-stats value of 3.56517 > 1.988966.

In the short-term relationship, it can be seen that the Inflation variable has a significant negative relationship at lag 3 to the 15-year bond yield, meaning that if there is an increase in Inflation in the previous 3 months it will make the 15-year bond yield this month decrease by -2.4, BI Rate has a significant positive short-term relationship at lag 1 & 2 but at lag 3 it does not have a significant short-term relationship to the 15-year yield, meaning that if there is an increase in BI rate in the previous 1 and 2 months it will make the 15-year yield this month increase by 5.1 and 3.4 respectively. The USD/IDR Exchange Rate variable has a significant negative short-term relationship at lag 1 to 3 to the 15-year bond yield, meaning that if there is an increase in the USD/IDR Exchange Rate in the previous 1 to 3 months it will make the 15-year bond yield this month decrease by -4.4, -4.07 and -3.9. The GDP variable has a significant negative relationship to the 15-year bond yield at lag 1, meaning that if there is an increase in GDP 1 month earlier it will make the 15-year yield this month decrease by -3.5. And the CDS variable has a positive and significant short-term relationship at lag 1 to 3, meaning that if there is an increase in CDS in the previous 1 to 3 months it will make the 15-year yield this month increase by 4.6, 3.06 and 2.4.

In the 20-year government yield using the VECM model, the results show that Inflation does not have a long-term relationship with the 20-year government bond yield because the critical t value is 1.49641 < 1.988966. And the BI rate also has no long-term relationship to the 20-year government bond yield because the statistical t value is -0.29282> -1.988966. For the Exchange Rate variable, it has a negative long-term relationship to the 20-year government bond yield with a statistical t value of -3.39010 < -1.988966. GDP does not have a long-term relationship with the 20-year government bond yield because it has a t-stats value of 0.82331 < 1.988966. The CDS variable has a positive long-term relationship to the 20-year government bond yield with a t-stats value of 3.73258 > 1.988966.

For the short-term relationship, it can be seen that the Inflation variable has a significant positive relationship at lag 1 to 3 on the 20-year bond yield, meaning that if there is an increase in Inflation in the previous 1 to 3 months, it will make the 20-year bond yield increase by 3.09, 4.4 and 3.4, BI Rate has no short-term relationship. The USD/IDR Exchange Rate variable has a significant negative short-term relationship at lags 1 to 3 to the 20-year bond yield, meaning that if there is an increase in the USD/IDR Exchange Rate in the previous 1 to 3 months it will make the 20-year yield in this month decrease by -5.9, -4.2 and -2.5. The GDP variable has no short-term relationship. And the CDS variable has a short-term positive relationship on lag 1 and 2, meaning that if there is an increase in CDS in the previous 1 and 2 months it will make the 20-year yield increase by 6.2 and 4.2.

In period 1, the variance of GTIDR 5YR explained by the variable itself is 100%. Only in subsequent periods can the GTIDR 5YR variant be explained by other variables, such as in period 2 where the GTIDR variant is influenced by its own variables by 81.95%, influenced by the Inflation variable by 1.98%, the BI Rate variable affects by 0.098, the Exchange Rate affects by 1.14% then GDP affects by 13.29% and finally CDS affects by 1.52%. In period 1, the variance of GTIDR 10YR explained by the variable itself is 100%. Only in subsequent periods can the GTIDR 10YR variant be explained by other variables, such as in period 2 where the GTIDR 10YR variant is influenced by its own variables by 77.77%, influenced by the Inflation variable by 1.47%, the BI Rate variable affects 1%, the Exchange Rate affects 2% then GDP affects 14.52% and finally CDS affects 3.15%. The larger the period, the smaller the variant will be to influence itself.

On the other hand, in period 1, the 15YR GTIDR variant explained by the variable itself is 100%. Only in subsequent periods can the 15YR GTIDR variant be explained by other variables, such as in period 2 where the 15YR GTIDR variant is influenced by its own variables by 73.45%, influenced by the Inflation variable by 0.66%, the BI Rate variable affects 1.52%, the Exchange Rate affects 5.05% then GDP affects 18.2% and finally CDS affects 1.09%. The larger the period, the smaller the variant will be to influence itself. In period 1, the variance of GTIDR 20YR explained by the variable itself is 100%. Only in subsequent periods can the GTIDR 20YR variant be explained by other variables, such as in period 2 where the GTIDR 20YR variant is influenced by its own variables by 82.94%, influenced by the Inflation variable by 1.99%, the BI Rate variable affects 0.53%, the Exchange Rate affects 0.19% then GDP affects 4.08% and finally CDS affects 10.%. The larger the period, the smaller the variant will be to influence itself.

Discussion

Long-term relationships for inflation variables on 5, 10 15 and 20 year yields are not significant with a value for the 5-year yield of -0.16290 still greater than the t stats value of -1.98996 and for the 10-year yield the t stats value of -1.05732 is greater than -1.98996, for the 15-year yield the value is -0.75333 greater than -1.98996 and the last for the 20-year yield of 1.49641 less than the t stats value of 1.98996. The results of these findings are the same as the results of research conducted by Listiawati & Paramita (2018) where the results of their research show that inflation has no effect on bond yields. This is because the inflation variable affects interest rates, when inflation is rising, the benchmark interest rate will also rise as a monetary policy carried out by the central bank so that the inflation variable does not cause a direct relationship to bond yields. For the short-term relationship, the 5-year yield has a negative short-term relationship at lag three with a significant value of -2.18213 and for the 10-year yield has a negative short-term relationship at lags 1 and 3. For the 15-year yield, the inflation variable has a significant negative relationship at lag 3 with a value of -2.42895 smaller than the t stats value of -1.98896.

Long-term relationship for the BI Rate variable to the 5, 10, 15-year government bond yield has a significant positive relationship with a value for the 5-year yield of 4.10464 greater than the t stats of 1.98896 for the 10-year yield its t stats value of 5.41087 greater than 1.98896 and for the 15-year yield its t statistical value of 5.15818 greater than 1.98896. The results of this finding are the same as Sundoro's research (2018) and Listiawati & Paramita where the results of research conducted by them show positive results between BI Rate and bond yield. The results of this finding are in accordance with the theory that when interest rates are greater, investors will prefer to invest in interest rates so that the government will reduce bond prices, when bond prices fall, bond yields will increase. For the 20-year yield, the BI Rate variable does not have a long-term relationship because its significant value of -0.229282 is still greater than the t-stats value of -1.98896. The short-term relationship for the BI Rate variable on bond yields for 5-year tenors is positive at lags 1 and 2 with significant values of 3.97621 and 2.39649, respectively. For 10-year yield, the short-term relationship is also positive and significant with significant values of 4.8777 and 3.52931, respectively. For the 15-year yield has a short-term relationship on lag 1 and 2 with significant values of 5.10395 and 3.46823. And for the 20-year yield, the BI Rate variable does not have a significant short-term relationship at all lags.

The Exchange Rate variable has a negative long-term relationship to the 5, 10, 15 and 20-year tenor bond yields with a significance value at the 5-year yield of -5.47475 smaller than the t stats value of -1.98896. Yield with a tenor of 10 years has a significance value of -4.98629 which is still smaller than -1.98896. The 15-year yield has a significance value of -5.57565 which is smaller than -1.98896 which means there is a significant short-term relationship. And for the yield with a tenor of 20 years the statistical value is -3.39010 which is smaller than -1.98896. The results of these findings are the same as the results of research conducted by Ichsan et. al., (2018) and Huda et. al., (2018) where they also use the VECM model as a research method and the result is that the exchange rate variable has a negative long-term relationship. The short-term relationship for the exchange rate variable on the 5-year tenor yield is significant at lag 1 to 3, as well as the 10-year, 15-year and 20-year tenor yields show a negative short-term relationship.

The GDP variable has a negative long-term relationship with the government bond yield with a tenor of 5, 10 and 15 years with a significant value of -6.64871 for the 5-year yield, -4.77746 for the 10-year yield, and -4.89272 which is smaller than the t stats value of -1.98896. This shows that when GDP increases, the Indonesian economy is good so that bond prices become expensive and make bond yields decrease. Meanwhile, the yield

with a tenor of 20 years does not have a long term relationship with the GDP variable because its significant value is 0.82331 which is smaller than its t-stats value of 1.98896. As for the short-term relationship between the GDP variable and the 5-year government bond yield, it is significantly negative at lags 1 and 2. For the 10-year yield, it has a significant negative relationship at lag 1 with a significance value of -3.47349 which is smaller than the t-stats value of -1.98996. For the short-term relationship between GDP and 15-year yield occurs at lag 1 with a significant value of -3.52831. And for the short-term relationship between GDP and 20-year yield does not have a short-term relationship.

The long-term relationship between the CDS variable and the yield of government bonds with a tenor of 5, 10, 15 and 20 years has a positive long-term relationship with a significance value of 2.07966 for the 5-year yield, 4.21046 for the 10-year yield, 3.56517 for the 15-year yield, and 3.73258 for the 20-year yield where the significant value is greater than the t stats value of 1.98896 which indicates that there is a positive long-term relationship between the CDS variable and the government bond yield. These results are the same as the results of research conducted by Gustiar & Wijaya (2015) where there is a positive influence between CDS and bond yields. Since CDS reflects the risk contained in bond investments, this result is in accordance with the high risk high return theory where when CDS (risk) rises, the yield also rises. As for the short-term relationship between the CDS variable and the bond yield with a tenor of 5 years is significantly positive at lag 1. At 10 years yield is significantly positive at all lags. The 15-year yield is also positively significant at all lags. And for the 20-year yield is significant at lag 1 and 2.

Conclusion

This study concludes that the effect of Inflation, BI Rate, USD/IDR Exchange Rate, Gross Domestic Product (GDP), and Credit Default Swap (CDS) variables on government bond yields with five, ten, fifteen, and twenty years tenors have different patterns. Inflation has no long-term influence on yields with all tenors. In the short term, there is a negative relationship in some lags, depending on the tenor of each yield. BI Rate Has a long-term positive effect on yields with five, ten, and fifteen-year tenors. In the short term, there is a positive relationship in some lags, depending on the tenor of each yield. USD/IDR Exchange Rate Has a long-term negative effect on all tenors. In the short run, the negative relationship is consistent across all lags for all tenors. GDP Negatively affects the long-run at five, ten, and fifteen-year tenors. In the short run, the negative relationship differs at some lags, depending on the tenor of each yield. CDS has a long-term positive effect on all tenors. In the short term, the positive relationship is consistent across all tenors, with lag variations depending on the tenor of the yield.

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