Investment Decision on Government Bonds and Sukuk in Indonesia

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Abstract— **This research aims to find the factors that influence the decisions of institutional investors to invest in Government Bonds and Sukuk, as well as to disclose the oversubscribes of State Securities issued by Indonesian government. The investment decisions of investors in this study use a proxy data approach from variables that affect investment decisions. The type of research used is quantitative research using an econometric approach with the Auto Regressive Distributed Lag (Dynamic) Model. The research data used is a time series for eleven periods from 2009 to 2020. Data are analyzed using ARDL (Dynamic) Model with determination of lag using the Koyck model. The result of this research is that investment decisions with a rational approach to government bonds and sukuk are strongly influenced by macroeconomic and policy variables (inflation, exchange rates and the interest rate) and financial markets (financing interest rates, deposit rates, volumes and coupon rates).**

Keywords-Investment Decision; Dynamic Model; Government Bonds; Sukuk

I. INTRODUCTION

One of the instruments that meet the financing of the State Revenue and Expenditure Budget (APBN) is State Securities (SBN). State of Securities consists of Government Securities (SUN) and State Sharia Securities (SBSN) or known as Government Sukuk. Financing through Government Securities and Sukuk is an important source of funds from external parties for the government. There is a fairly fundamental difference between sovereign sukuk where sukuk are supported by assets, while bonds or debt securities are supported by debt [1]. The issuance of a fairly large government Sukuk is related to the fact that the sukuk allows the government to access a larger sharia liquidity market above the bond market in order to finance the country's debt [2].

Based on the factual phenomenon of Government Securities auction data conducted by the Government on the secondary market, where since 2008 the issuance of government sukuk until 2020, the government has always experienced oversubscribes on the auction offer.

Oversubscribes are excess liquidity that must be absorbed by investors, where oversubscribes are obtained from the indicative value of the auction target minus the bid value of the incoming investor minus the bid received by the government. Research on investors' investment decisions in government bonds, government sukuk and oversubscribes on government securities are related to one another. In addition, historical time series data on investment also affect investment decisions, where exploration of the data shows patterns of behavior in investing and then the pattern is translated into a mathematical model [3].

Investors try to maximize profits, they make decisions with a high level of satisfaction, so that the theory of maximum utility is in accordance with investor behavior. Utility depends on (stock and market characteristics) and perceptions of decision makers [3]. Investment decision-making behavior by investors is a rational and irrational decision [4]. Previous research using a rational approach with a questionnaire approach to test the level of rationality of investors when they build investment portfolios or make decisions about financing, where the research results state that investment decisions in bonds are very sensitive to changes in interest rates, inflation and balance of risk and return[5]. Then research on factors that influence investors' investment decisions in sukuk and bonds with a qualitative approach [6]. [1] The other research using dynamic model econometric techniques to test the Grager causality between sukuk and bonds related to return behavior. [7]. The other research conducted a study on the determinants of factors that affect the sukuk market. Although many efforts have been made by researchers, the main motivation for selecting the sukuk portfolio has not been determined [8]. There haven't been many researches in the context of testing the investment decisions of institutional investors in government bonds and sukuk with investment value data as a proxy. Therefore, this study discusses this knowledge gap to identify investors' decisions on government bonds and sukuk.

In addition, based on the existing facts that until December 2020, the total outstanding government sukuk only reached . 934.118 trillion rupiahs, contributing 18.43% to the total government securities, still quite small when compared to government bonds. Meanwhile, outstanding government bonds until December 2020 reached 4,134,620 trillion rupiahs

contributing 81,57% of state securities. The existence of this inequality raises several questions related to factors or variables that affect investors' investment decisions in government bonds and sukuk.

Based on the gap analysis in the research above and the phenomena that occur, as well as the lack of research on investors' investment decisions in government bonds and sukuk with a rational approach, this is what motivates the author to conduct this research. This study focuses on aspects of the economic factors that influence investment decisions for institutional investors in government bonds and sukuk, as well as on oversubscribes to government securities. Investors, in this case the actors and investors in the interbank market, can make purchases or sales, including the type of investment to be placed. This activity is determined by both macroeconomic factors such as domestic economic performance (especially economic growth), inflation, exchange rates, etc. as well as microeconomic factors such as indicators on financial markets, performance of securities issuing companies. Then this research was conducted to solve the following problems : The decision of investors to invest in government bonds and sukuk is very sensitive to economic factors that affect the government's strategy for issuing government securities; The issuance of government securities is highly determined and depends on the decision of investors to invest in government securities and sukuk and The dynamics of current and previous economic conditions and developments will determine and influence investors' decisions to invest in government bonds and sukuk formatter will need to create these components, incorporating the applicable criteria that follow.

II.   LITERATURE REVIEW

Investors have rational expectations that is, expectations formed with an awareness of the forces that determine market prices. In rational expectations, the forces that determine prices include decisions made by investors. Rational expectations make sense in the context of pricing models, including assumptions about investors' preferences and the information they have [9]. Rational investors can profit by investing in profitable securities and profitable opportunities that are not recognized by irrational investors. Increased bond risk causes bond demand to fall and the demand curve shifts to the left [10].

An investor's decision to buy is a way to accept ownership of an existing debt, transferred from another person who may not be the original lender [11]. Investors can be individuals or institutions. Institutional investors consist of central banks, commercial banks, pension funds, life insurance companies, mutual funds, and investment companies. Investors want to minimize risk and maximize profits [12]. Investors are assumed to make their choices consistently, according to their preferences, taking into account their beliefs about the future and the constraints on their wealth. The implications of this analysis provide a decision rule for selecting a portfolio[9]. Investors also do not make investment decisions every day, especially for long-term investments [3], [13]. Prior gains

increase an investor's risk taking, while prior losses reduce it. Investor's behavior is in line with standard utility theory with reduced risk aversion. In addition, investors perceive overall wealth and risk taking in financial markets to be affected by gains/losses in overall wealth, financial wealth and real estate wealth[14].

A.   Grand Theory

The key to the assumption that investors make investment decisions depends on the portfolio selection theory formulated by Markowitz. The main purpose of portfolio selection is to maximize the expected return that is consistent with the level of risk that is accepted individually [14]. A portfolio that provides the highest possible expected return for a given level of risk is called an efficient portfolio. To build an efficient portfolio, it is necessary to make some assumptions about how investors behave when making investment decisions. Modern portfolio theory explains how investors build efficient portfolios and select the best among all efficient portfolios. These parameters can be measured, which include the risk and expected return of an individual asset or a portfolio of assets. All of these parameters are estimated based on historical data and represent them in a statistical model. [15]. In general, the problem in portfolio selection is choosing a portfolio of assets to maximize the expected utility which is the subject of wealth [9].

B.   Capital Asset Pricing Model(CAPM)

Rational investment decisions are models based on expected returns and risks associated with investments, and decisions using risk-based asset pricing models such as the CAPM and other similar frameworks [16]. The expected return on the CAPM is as follows [14]

$$E(R_i) = R_f + \beta_i[E(R_M) - R_f] \qquad (1)$$

$E(R_i)$ is the expected return on the portfolio

i is a measurement of the systematic risk of asset i relative to the portfolio. In the economic model, the model can be modified by relaxing one or more assumptions. Some modifications constitute the CAPM. The only risk that rational investor value is systematic risk, because it cannot be eliminated by diversification and the only systematic risk is market risk. Diversification of the portfolio refers to the selection of a portfolio of assets designed to reduce the variability of the returns on the entire portfolio compared to the variability (variance or standard deviation) of the return on assets [16]. The assumption in CAPM is that if the asset market is assumed to be in equilibrium (supply=demand), then investors choose based on the mean-variance objective and investors behave according to the general average value and variance of asset returns. CAPM predicts that all investors hold the same portfolio risk (if the portion of the asset portfolio is proportional to the market) [9]. The capital asset pricing models and its extend variants are widely used for evaluation of the performance of investment portfolio[17]

C. Liquidity

One of the actions to absorb liquidity is through the issuance of government bonds [18]. Bonds vary in liquidity, for government bonds are very liquid, because bond dealers trade in large quantities every day. People can sell government bonds in that market at any time [12]. Underdeveloped bond markets and government securities markets add to excess liquidity, Lack of market due to government or central bank securities limits the ability of banks to reduce their holdings of excess liquidity by buying bonds [19]. In this context, excess liquidity is liquidity used by banks as a precaution and can be considered as optimization behavior by banks. Other important factors include the volatility of deposit holders' cash preferences, bank lending rates and variations in return on loans. In the short term, the cost of illiquidity is found to have a positive impact on excess liquidity. Excess liquidity may result from a decrease in demand for credit or under-borrowing which may be caused by weak growth prospects and loss of confidence. In such cases, low interest rates prove ineffective to stimulate demand [18]. In addition, excess liquidity can reduce the effectiveness of monetary policy in controlling inflation [20].

D. Islamic Financial Market

The government seeks to maximize the development of Islamic financial instruments and infrastructure; develop an investor and regulatory base; develop sharia liquidity management; establish cooperation both domestically and internationally in the deepening of the Islamic financial market [21]. Financial market deepening is a concept, (i) the banking sector and banking agents can use various financial instruments. For investment decisions, (ii) government intermediaries and market intermediaries can deploy a larger volume [22]. Deep financial markets and high quality risk-sharing assets and instruments enable borrowers to equally absorb various financing and risk management instruments [23].

The financial market development strategy aims to optimize the role of the financial market as a source of development financing, by contributing to the formation of a market structure that can support financial system stability. This market structure is expected to make: (i) financial markets able to provide alternative sources of financing and investment for business actors and the public; (ii) efficient and secure financial markets; and (iii) financial markets that can facilitate risk mitigation for market participants. In the accelerated stage of 2020 to 2022, the expected results are strengthening of the domestic and foreign investor base on a wider scale, increasing transaction volume and enrichment of financial market instruments and their derivative products, as well as increasing the credibility of benchmark rates[21].

E. Government Sukuk

Sukuk is investment certificates that are asset-based rather than asset-backed securities, with the underlying asset being necessarily sharia compliance in both nature and use [24]. Referring based on Indonesian Law No. 19 of 2008 State Sharia Securities (SBSN) or goverment Sukuk are state securities issued based on sharia principles, as evidence of the share of participation in SBSN assets both in Rupiah and foreign currencies. SBSN issuance requires Assets as underlying. The assets are state property financing objects that have economic value, in the form of land and buildings as well as other than land and buildings. Government sukuk was first issued by the government on August 26, 2008. After the enactment of Law No.19 of 2008 on May 7, 2008, the government began issuing State Sharia Securities (SBSN / goverment Sukuk) as an effort to diversify sources of APBN financing. Through the issuance of SBSN, the government can provide safe and credible sharia-based financial instruments, which are needed by the Islamic finance industry

III.   METHODOLOGY

This research uses the Auto Regressive Distributed Lags (Dynamic) model. Because it wants to know the factors that influence investment decisions, the Dynamic Model can estimate the magnitude of the independent influence of the model variables by not only paying attention to the condition of the current variable but also the condition of the variable in the past. So that the dynamic model that best reflects investor behavior, investor behavior based on an economic approach is not only influenced by current economic conditions but is also influenced by past economic conditions [25]

In this study, the research sample is institutional investors (Banks, Central Bank of Indonesia, Pension fund and insurance). Using a quantitative method approach where the data used is secondary data to analyze investor behavior in investing in government bonds and sukuk. The data used is the time series from 2009 to 2020. The data source is based on data from the official website of Indonesian Ministry of Finance and other sources relevant to this research.

Market participants make financing and investment decisions in a dynamic financial environment. They must understand the role of government in the economy, and the financial markets and financial intermediaries operating within the financial system [3]. Previous research on investment behavior model is to create a framework that models investor decisions in the stock market. Investors take several sources of information in making decisions, namely based on information on the stock market which provides stock information and official data provided by each company, then the bank provides data related to indicators for these shares and each company. These indicators represent the state of the financial

market and the level of risk. Five indicators as explanatory variables (x), quality, sentiment, value, technique and price. Quality is measured by the fundamental quality of the company, seen from the company's financial data, sentiment is measured by a combination of estimates made by company analysts, technique is measured by a combination of indicators that analyze company activities by looking at the rhythm of prices, value is measured by price/earnings ratio. Price characteristics shows the price of the shares related to the company. The equation for the variation of relative performance is [3]:

$$Perf(X_{c,t}(k),t_H) = \frac{Xc,t(k) - Xc,t - tH(k)}{Xc,t - tH(k)} \tag{1}$$

$$Long((X_{c,t}(k),t_H) = \frac{1}{tH}\sum_{l=t-tH}^{t} X_{c,l}(k) \tag{2}$$

$$Short((X_{c,t}(k),t_H) = X_{c,t}(k) - Long((X_{c,t}(k),t_H) \tag{3}$$

$$Sigm((X_{c,t}(k),t_H) = \sqrt{\frac{1}{tH}\sum_{t=t-tH}^{t} X_{c,t}(k) - Long((X_{c,t}(k),t_H))^2} ..(4)$$

$X_{c,t} = \{X_{c,t}(k), Perf(X_{c,t}(k),t_H, Long((X_{c,t}(k),t_H), Short((X_{c,t}(k),t_H), Sigm((X_{c,t}(k),t_H)\} t_H \epsilon H,..(5)$

$Y_t = \{VIX_b, Perf(VIX_b,t_H), Long(VIX_b,t_H), Short(VIX_b,t_H), Sigm(VIX_b,t_H)\} t_H \epsilon H, k=1...K_x..(6)$

A. Auto Regressive Distributed Lags (ARDL)

This study uses secondary data. The analysis method uses the ARDL model, which combines the Koyck method (Dynamic model) in determining the lag. The reason for this research using ARDL/Dynamic Model is as follows:

(i) Each variable in government bonds and sukuk, oversubscribes of state securities can also function as an independent variable (explaining other variables) or can be a dependent variable (explained by other variables) in the equation.

(ii) In addition to the level, the time lag of the variables in the ARDL model is also more precise and influential in explaining the dependent variable.

(iii) Generating multivariate equations (ARDL model) has the potential to track causal relationships between variables and interconnections between variables.

. The ARDL model can comprehensively explain the three models in this study, namely the investment decision model on government bonds and government sukuk; oversubscribe state of securities model.

Lag on ARDL model [26]:

$$y_t = \frac{\mu}{C(L)} + \frac{B(L)}{C(L)} x_t + \frac{1}{C(L)\delta w_t} + \frac{1}{C(L)} \varepsilon_t$$

$$= \frac{\mu}{1 - \gamma 1 - \cdots \gamma p} + \sum_{j=0}^{\infty} \alpha_{j x_{t-j}} + \delta \sum_{l=0}^{\infty} \theta_{1 w_{t-l}} + \sum_{l=0}^{\infty} \theta_{1 \varepsilon_{t-l}} \tag{7}$$

This determination is called the rational lag model. The lag coefficient of X_t, X_{t-1} in the ARDL model on individual polynomial ratios is seen in the distributed lag form, where the coefficient is

$$\alpha_0, \alpha_1, \alpha_2, \ldots = \text{coefficient of } 1, L, L^2, \ldots \text{at } \frac{B(L)}{C(L)} \tag{8}$$

The stability of the dynamic equation in the lag Koyck model, determined that the value of $\lambda < 1$, is needed for the model to be good, as well as for autoregressive, the autocorrelation parameter $\rho < 1$.

Koyck transformation

$$Y_t = \alpha(1-\lambda) + \beta_0 X_t + \lambda Y_{t-1} + v_1 \tag{9}$$

where $v_t = (\mu t - \lambda u_{t-1})$, moving average of u_t dan u_{t-1}

An advanced test of Koyck's method is the Durbin h test to detect autocorrelation in the dynamic autoregressive acceleration model of the investment model:

$$I_t = (X_t - X_{t-1}) > 0 \tag{10}$$

where it is the investment at t period, X_t is the output at time t and X_{t-1} is the output at time (t-1)

Since the ARDL (Dynamic) Model is a model with OLS, a unit root test is performed to check for the stationary of each variable. Two tests that can be used for this test are Augmented Dickey Fuller (ADF) and Phillip & Perron (PP) [27].

IV. RESULT AND DISCUSSION

The important finding is about the factors that affect the investment value and the factors that affect the oversubscribes on state securities. The investment value reflected in the outstanding government bonds and sukuk, is a fundamental thing that distinguishes the behavior of investors in choosing investments based on rational decisions on government bonds and sukuk. Likewise, the decision of the issuer, in this case the government, is reflected in the oversubscribed value of state securities issued by the government. There are several economic indicators used in measuring these rational decisions:

a. Macroeconomic indicators (inflation, changes in currency values, changes in interest rates)

b. Financial market indicators (financing rate, transaction volume, deposit rate, yield rate on government bonds and sukuk)

A. Analysis of Factors Affecting Investment Value in Government Bonds dan Sukuk

Econometric analysis begins with describing the variables and constructing a model, then testing the model whether it meets the classical assumption test and is in accordance with the BLUE standard, then explains the results of the interpretation of the model. Variables that affect investment value in Sukuk are divided into two, namely macroeconomic variables, namely interest rate, inflation, changes in exchange rates, then financial market variables, namely coupon rate and Sukuk transaction volume. With the details of the variables as follows

1) Investment Decision Model on Government Sukuk

This model represents the investment decision model on government sukuk. In this model the dependent variable is the outstanding investment value in government sukuk, while the independent variable is described as follows:
1. Changes in interest rates, one of the investment decision variables on government sukuk investment.
2. Changes in currency exchange rates. for government sukuk investment, this is a macroeconomic indicator that affects investment
3. The yield or return from government sukuk stated in the coupon rate. Coupon rate is an indicator of investors in making decisions whether to invest in sukuk or not.
4. Government sukuk transaction volume.

a) Stationary test

TABLE I Stationary Test of Government Sukuk

Variable	ADF (Augemented Dickey Fuller)	
	Level	**1st Difference**
Interest Rate	-1.041414	-7.498017***
Coupon rate	-2.348730	-14.33903***
Exchange rates	-0.568247	-7.664923***
Volume	-1.653775	-12.94155***
Outstanding	4.255247	-9.890101***

Notes:*** refers to 1% significance

b) Correlation and Causality test

To test the strength of the linear relationship between the independent variable and the dependent variable and the causal relationship, using the Grager causality test, where the variable has a positive linear relationship if r = 1 and has a negative linear relationship if r = -1 and has no linear relationship if r = 0

TABLE 2 Value of Correlation Coefficient

Variable	Value of Correlation Coefficient			
	Interest rate	Coupon rate	Exchange rate	Volume
Sukuk	-0.6905	-0.6628	0.8623	0.8544

The correlation coefficient of the investment decision variables on government sukuk, is more than 50%. For the volume variable and exchange rate changes, it shows a positive linear correlation. This shows that every time there is an increase in volume and a change in the exchange rate, it will increase the value of investment in government sukuk, while the interest rate and coupon rate coefficient variables have a strong linear relationship, but in opposite directions. When the interest rate decreases, where the government sets the interest rate for Central Bank of Indonesia to fall, it will cause the investment value in government sukuk to increase. For government sukuk, coupon rates have a strong and negative linear relationship, this can be explained as follows

FIGURE I Historical of interest rate and coupon rate of government Sukuk

coupon rate and interest rate
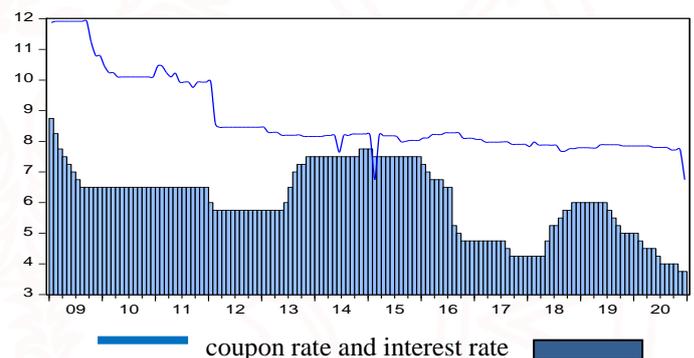
If viewed from the trend from month to month during 2009 to 2020, the coupon rate was always above the interest rate, only in February 2015 the coupon rate was lower (6.75%) than the Interest rate (7.5%). At that time there was a deflation of 0.36% where the price decline was for transportation, communication and financial services. The existence of a negative linear relationship indicates that the coupon rate is less attractive to investors and there are other needs that cause it to not be included in the investment in government sukuk.

2) Investment Decision Model on Government Bonds

This model represents the investment decision model on government bonds. In this model the dependent variable is the outstanding investment value in government bonds, while the independent variable is described as follows:
1. Changes in interest rates, one of the investment decision variables on government bonds investment.
2. Currency exchange rates. For government bonds investment, this is a macroeconomic indicator that affects investment
3. The yield or return from government bonds stated in the coupon rate.
4. Government bonds transaction volume

a) Stationary Test

TABLE 3 Stationary test of Government Bonds

Variable	ADF (Augemented Dickey Fuller)	
	Level	1st Difference
Interest Rate	-1.041414	-7.498017***
Coupon Rate	-1.787004	-13.82857***
Exchange Rate	-0.568247	-7.664923***
Volume	-0.402051	-17.89821***
Outstanding	1.210691	-11.42576***

Notes:*** refers to 1% significance

b) Correlation and Causality test

TABLE 4 Value of Correlation Coefficient

	Value of Correlation Coefficient			
	Interest Rate	Coupon Rate	Exchange Rate	Volume
Bonds	-0.6550	-0.5994	0.8893	0.8455

FIGURE 2 Historical of interest rate and coupon rate of Government Bonds

coupon rate and interest rate
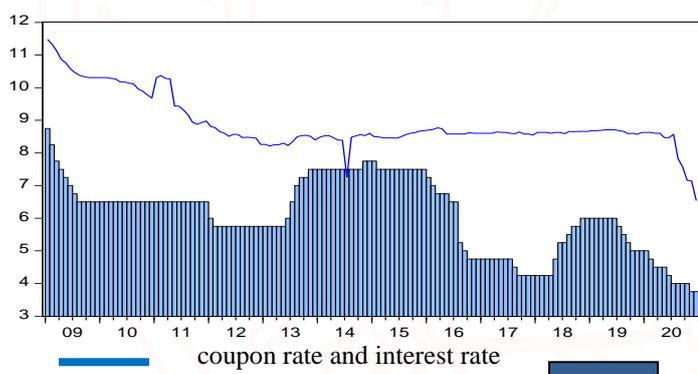
In the graph above, it can be seen that the coupon rate also experienced the same thing in the July 2014 period where the coupon rate was lower (7.26%) compared to the interest rate (7.5%). Indonesia's economic growth in 2014 experienced a slowdown, as for investment, although the global economy experienced a slowdown, in that year a new portfolio of IDR 177.75 trillion was formed during January to November 2014 which was higher than the previous year.

3) Investment Decision Model from the Issuer Side (Government)

This model represents the decision model of the issuer (government) which is seen in oversubscribes of state securities. In this model, the dependent variable is oversubscribes of state securities, the oversubscribes is obtained from the indicative target value of state securities minus the total incoming bids then subtracted the total offers received, while the independent variables are described as follows:

1. Inflation, which is an independent variable in investment decisions from the issuer's perspective.
2. Currency exchange rates. For state of securities oversubscribes, this is a macroeconomic indicator that affects investment.
3. Yield or return from state securities. The value of the coupon rate is an indicator of investors in making decisions.
4. Deposit rate, this is an indicator in seeing oversubscribes because institutional investors always pay attention to which investments are profitable on deposits, the indicator is on the deposit rate offered.
5. Financing rate, this is one of the indicators in viewing state securities oversubscribes, because excess liquidity can be absorbed by channeling financing

a) Stationary Test of Oversubcribed State of Securities

TABLE 5 Stationary Test

Variable	ADF (Augemented Dickey Fuller)	
	Level	1st Difference
Inflation	-10.32493***	-11.43421***
Exchange rates	-0.568247	-7.664923***
Oversubcribed State Securities	-0.013404	-9.468222***
Rate deposito	-1.678019	-4.675500***
Financing rate	-1.121258	-5.896649***
Coupon rate	-1.977744	-11.41699***

Notes:*** refers to 1% significance

b) Correlation and Causality test

TABLE 6 Value of Correlation Coefficient

	Value of Correlation Coefficient				
	Inflation	Coupon rate	Exchange rate	Rate deposito	Financing rate
State of securities	0.1994	0.51571	0.6087	0.3517	0.55961

The correlation coefficient value on government issued state securities oversubscribes can be conveyed as follows, the linear relationship between independent variables (inflation, coupon rate, exchange rate changes, deposit interest rates and financing rates) and the government issued state securities oversubscribes variable (dependent variable) is all linearly related which is positive, meaning that if all independent

variables increase, it will increase the value of oversubscribes on securities issued by the government.

B. Estimation of Investment Decision Models in Government Bonds and Sukuk, and Oversubscribes

The estimation model of investment decisions on government bonds, sukuk and from the government side (state of securities oversubscribes) uses classical assumptions such as autocorrelation tests, heteroscedasticity tests and multicollinearity tests. The coefficients of the individual variables and the overall variables must also follow the BLUE standard.

1. Model of investor's investment decision on government sukuk.

TABLE 7 Estimated Investment Decision Model on Government Sukuk

Dependent Variable (Investment Value in government sukuk)		
Independent Variable	**Coefficient**	**P-Value**
Constant	5629.867	0.0000
D (Coupon rate(-2))	0.105523	0.0113
D (Interest rate(-6))	0.129156	0.0181
D (Exchange rate(-1))	-0.1031524	0.0005
D (Exchange rate(-4))	0.690870	0.0207
D (Volume(-8))	-0.142366	0.0416
D (Outstanding Sukuk(-1))	0.196766	0.0148
Analysis Diagnostic	**Value**	**P-Value**
R-Square	0.226667	
Residual Sum Square	1.64E+10	
Akaike Info Creation	21.55692	
F- Statistics	6.252877	0.000009
LM Test	0.482572	0.7856
Heteroskedasticity test	11.03445	0.0873

Based on the model in table 7, it can be seen that: (i) any change in the coupon rate in the 2nd lag period will cause an increase in investment in government sukuk by 10.5%. (ii) Every time there is a change in the percentage of the Interest rate in the 6th lag period, it will cause an increase in investment in government sukuk by 12.9%. (iii) Every time there is an increase in changes in currency exchange rates, it will increase investment by 58.7%. This shows that the interest rate has an effect on investors in deciding to invest in government sukuk. The interest rate has an influence on government sukuk investment decisions. Every time central bank stipulates, an increase or decrease in the benchmark interest rate is ensured because there are conditions that must

be balanced and stabilized, so that this interest rate has a broad impact on the economy, especially the financial market and will indirectly have an impact on other sectors. Likewise for changes in exchange rates, every time there is an increase in the exchange rate, the investment value in government sukuk will increase. The overall independent variables are proven to be able to explain changes or movements in government sukuk investment by 22.66%, this shows that although the independent variables are sufficient to represent domestic and international instruments, in general there is still a shortage of variables or there are other variables that can explain the analysis of investors' decisions on investment. Government sukuk (there are other variables that are not included), because this research focuses on this variable only.

2. Estimated Investment Decision Model on Government Bonds

TABLE 8 Estimated Investment Decision Model on Government Bonds

Dependent Variable (Investment Value in government Bonds)		
Independent Variable	**Coefficient**	**P-Value**
Constant	14666.14	0.0000
D (Coupon Rate)	-0.462650	0.0001
D (Interest rate (-10))	-0.252253	0.0414
D (Exchange rate)	0.357707	0.0000
D (Volume)	0.039975	0.0035
D (Volume(-1))	0.034734	0.0124
D (Outstanding(-1))	0.235881	0.0046
Analysis Diagnostic	**Value**	**P-Value**
R-Square	0.382145	
Residual Sum Square	8.99E+10	
Akaike Info Creation	23.27521	
F- Statistics	12.98858	0.000000
LM Test	1.990181	0.1410
Heteroskedasticity test	0.677293	0.6682

From table 8 it can be explained that every time there is a percentage increase in the interest rate in the 10th lag period, this causes a decrease in investment in government bonds by 25.2%, this happens because if the interest rate decreases, investors will invest in government bonds and if the interest rate increases, then investors will invest in central bank. For investment in government bonds, changes in the interest rate have an effect on investment in government bonds after 10 periods. This can be a concern, where the interest rate has a significant effect on the investment value after 10 periods. By looking at the model on the coupon rate variable, changes in the exchange rate and the volume of government bonds, it can be concluded that investors in government bonds tend to look at the coupon rate value of the government bonds so that the

size of the coupon rate greatly affects investor interest. Then, because the nominal value of government bonds at each auction is quite large, changes in the exchange rate and volume have a fairly rapid impact on the value of investment in government bonds. All independent variables are proven to be able to explain changes or movements in the value of investment in government bonds by 38.21% This shows that although the independent variables are sufficient to represent domestic and international instruments in investment decisions in government bonds, in general there is still a lack of variables or there are other variables that can be used.

3. State of Securities Oversubscribes Model Estimation

The last model is the state securities oversubscribe model issued by the government. The government-issued state securities oversubscribes model is shown in table 9,

TABLE 9 State Securities Oversubscribes Model Estimation

Dependent Variable (State Securities Oversubcribed)		
Independent Variable	Coefficient	P-value
Constant	-9367175	0.1315
D (Coupon rate(-1))	-0.8600919	0.0446
D (Exchange rate)	0.905700	0.0000
D (Inflation(-2))	-0.2106608	0.0626
D (Rate deposito(-1))	-0.179224	0.0000
D (financing rate (-5))	0.170269	0.0000
D (Oversubcribed(-1))	-0.546266	0.0000
Analysis Diagnostic	Value	P-Value
R-Square	0.504887	-
Residual Sum Square	6.35E+17	-
Akaike Info Creation	39.00504	-
F- Statistics	22.26436	0.00000
LM Test	2.356273	0.0988
Heteroskedasticity test	1.309931	0.2571

The government oversubscribes model issued by the government is influenced by various factors, including the coupon rate, changes in exchange rates, inflation, deposit rates, and financing rates. State securities oversubscribes are excess liquidity that must be channeled. Coupon rates and deposit rates have an effect on the first lag period, while inflation in the second lag period and financing rates have an influence on the value of state securities oversubscribes in the 5th lag period. All independent variables are proven to be able to explain changes or movements in state securities oversubscribes by 50.4%

C. Output Model

Investors' investment decisions in government bonds and Sukuk are influenced by several factors where the influencing factor is the coupon rate listed on each issued government bonds and sukuk. Each auction offers a different coupon rate and this value is usually above the interest rate, so investors are interested in investing in government bonds and sukuk. The coupon rate is used as a reference for investors who will buy or invest in government bonds and sukuk. Then after the next coupon rate is the interest rate, this increase in interest rates becomes a reference for investors in investing in government bonds and sukuk. If Central Bank of Indonesia takes action to increase the interest rates, investors will try to invest their funds in deposits. So that to be more competitive, the coupon rate must be higher than the interest rate, so that investors get the desired expected return. The third factor is the change in the currency exchange rate, the change in the exchange rate is a factor that affects the investment value in government bonds and sukuk. Investors are very concerned about this factor, because if the exchange rate significantly, it will affect the value of their investment. This is because exchange rate can cause the price of sukuk in the market to change, so that the expected rate of return does not match expectations, or even losses. The fourth factor is the volume of transactions on government bonds and sukuk, seen from the trend that the volume of these transactions continues to increase so that the outstanding value of investments in government bonds and Sukuk also increases. The last factor that affects the investment value in government bonds and sukuk is the change in the outstanding value of government bonds and sukuk where the investment value in previous government bonds and sukuk affects the current government bonds and sukuk value. For inflation, it is not included in the model because its value is not economically significant in time period. This inflation has been calculated in the interest rate, so investors refer to the interest rate. Then there is this inflation which is surprising and temporary in nature, which will disappear by itself over time.

This state securities oversubscribe is seen from the issuer's perspective, namely the government, to see how much excess liquidity the government has to distribute. Judging from the historical point of view, every auction always oversubscribes the issued state securities, meaning that the number of interested parties (investors) bidding is far higher than the issued state securities. The factor that affects the oversubscribed value is the coupon rate, every coupon rate offered is above the interest rate (only in certain periods there are anomalies). This coupon rate becomes a reference for investors and the government in issuing state securities. Second, changes in currency exchange rates, these exchange rate changes become macroeconomic factors that affect the overall model. This exchange rate change has a fairly broad impact, so the government always strives to keep the value stable, so that it does not cause a wide impact and is difficult to control. In the case of excess liquidity oversubscribed on state securities, changes in the exchange rate may cause excess liquidity to increase or lead to short liquidity. The third factor is inflation, the value of which fluctuates at any time has an influence on the value of state securities oversubscribes. The fourth factor is the yield on bank deposits, this factor affects the value of excess liquidity state securities oversubscribes because investors tend to invest in deposits with short periods of time (weekly, monthly, and 3-month periods) So that they tend liquid, but they can be withdrawn at any time and moved to other places. In line with this, the next factor is financing

interest rates, state securities oversubscribes which can cause excess liquidity to be absorbed, one of which is through bank financing, so that excess liquidity can be absorbed

V.   CONCLUSION

. Investment decisions in government bonds and sukuk are strongly influenced by the prevailing macroeconomic and financial market conditions. The state securities yield value stated in the state securities coupon rate is a very crucial factor for investors who will invest in state securities. The value of this coupon rate, with the increasing number of investment alternatives, the value is contrary to investment decisions because there is a tendency for the value of investment in state securities to increase even though the value of the coupon rate is decreasing. Macroeconomic conditions that influence investment decisions are changes in currency exchange rates. The currency exchange rate is a crucial macroeconomic factor for investors in their decision to invest in government bonds and sukuk. The next crucial factor in terms of macroeconomic policy, which affects investment decisions is the interest rate, if further examined changes in the interest rate affect the coupon rate so that it has an impact on investors' investment decisions. When the interest rate decreases, there is a tendency for the coupon rate to also decrease, so if the interest rate increases, the coupon rate value also increases. However, the value of investment in state securities continues to increase in the value.

Investment decisions between investors in government bonds and sukuk are influenced by the same variables, namely coupon rate, exchange rate changes, interest rate and transaction volume, but the crucial difference is in the lag period for the interest rate, government sukuk tends to be affected more quickly by the interest rate value, namely at short-term period in the middle of the year (at lag 6) Meanwhile, investment in government bonds value is affected by changes in the interest rate in the long term, namely the 10th lag period. Then next is the transaction volume for government sukuk, the transaction volume has a long-term impact, namely the 8th lag period, because the value of government sukuk transaction volume is indeed quite far when compared to investment in government bonds. For changes in exchange rates and coupon rates, these two variables affect investment in government bonds and sukuk in the short term.

State securities oversubscribes, seen from the issuer's investment decision is influenced by the coupon rate variable, exchange rate , inflation, deposit rate, financing rate and all of these variables have an impact on the short-term state securities oversubscribed value. state securities oversubscribes which are excess liquidity must be channeled immediately so that they can be absorbed properly, so that it is in line with the model that all of these factors have an impact in the short term.

From the results of the analysis and discussion above, the things that researchers can recommend are as follows

1. The government as the issuer of state securities should pay attention to the value of the coupon rate, although the interest (investors) is still quite high, but the tendency of investors is to continue to look at the value of the yield (coupon rate) obtained by investors.

2. Policy formulation regarding the structure of state securities ownership should still be conditioned so that institutional investors (Banking, Central Bank, Pension Funds and Insurance) are still dominant in SBN ownership).

3. Policies related to state securities oversubscribe, in which the government can absorb oversubscribes so that in development it can open wider access to alternative Islamic investments.

4. Facilities and infrastructure that support investor investment in state securities so that it can be improved such as strengthening electronic-based systems, management of state assets that become the underlying government sukuk, documentation so that it is more well integrated

This study only focuses on macroeconomic and policy variables (inflation, exchange rates and interest rate) and financial markets (financing interest rates, deposit rates, volumes and coupon rates). However, based on the model that has been generated and analyzed, there are still other variables that greatly determine the analysis of investment decisions on government bonds and sukuk such as internal management decisions, government regulations related to the Islamic capital market and general economic conditions (crisis or normal).

For further researchers, it is hoped that they can conduct more in-depth research on investment decisions in government bonds and sukuk because there are still many shortcomings in this study. It is also expected to add psychological factors, social factors, environmental factors and other matters such as foreign investors' investment decisions in global financial markets, the influence of economic policy in analyzing institutional investors' investment decisions on government bonds and sukuk.

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