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Risk and Return Analysis of Government Bonds in Indonesia: A Multifactor Model Approach

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Abstract

Understanding the relationship between risk and government bond returns is crucial for assessing the influence of risk factors on bond returns. This study investigates the dynamics of risk-taking behavior and its impact on the performance of government bonds in Indonesia. Using monthly data spanning from January 2017 to December 2021, we employ a multifactor model with GARCH analysis technique to analyze the data. The findings reveal that risk exposure exerts a negative and significant effect on government bond returns in Indonesia, while market factors also negatively and significantly influence bond returns. Conversely, the joint stock performance exhibits a positive relationship and significantly impacts returns in Indonesia.

Keywords:
GARCH Analysis, Government Bonds, Indonesia, Market Factors, Multifactor Model, Stock Performance

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1. Introduction

Investment is an important part of developing a country's economy because investment can increase the available capital stock. This increase in capital stock will increase community production and encourage the pace of national economic growth. In this case, the capital market as a forum for trading financial instruments plays a role in national economic development. Investment product choices that can be made in the capital market are stocks, bonds, and mutual funds. Government bonds are an important component of many investors' portfolios, even more than other equities. However, the academic literature often neglects risk and return on bonds.

Government bonds are simple financial products issued by the government, so the government has an obligation to pay a fixed coupon early and pay the principal when the bond matures. These bonds are issued to finance the state budget deficit, cover short-term cash shortfalls, and manage the state debt portfolio. Bond prices are based on calculating the current value of future cash flow. In the simplest approach, if the future cash flows are fixed and guaranteed, the value of the bond is the present value of those cash flows that have been discounted at a certain rate. The interest rate in financial terms is called the yield. Government bond yields have become a major concern either by the government as issuer or by bond investors.

Several studies link bond returns with risk and macroeconomic variables. There is a close relationship, especially between inflation volatility and interest rate volatility; it is also seen that macro volatility cannot be ignored to capture the risk-return trade-off in the US Treasury market accurately. The same was followed by Fan et al. (2021) and Bauer et al. (2018), who revealed that risk based on macroeconomic variables influences bond risk premiums. However, the study is more focused on corporate bonds than government bonds.

Febi et al. (2018) discuss the impact of liquidity risk on *green bonds* using a regression model. The findings show that LOT liquidity and /or bid-ask/ size positively relate to returns. However, only LOT size is relevant for the fixed effects model returns. His research also finds that the LOT effect dissipates over time, indicating that for rates of return, the impact of liquidity risk on returns has been negligible in recent years. Other research conducted by Nitschka (2018) shows that global exchange rate risk influences the returns on government bonds in developed countries. These results support research conducted, which found that the level of risk based on exchange rates, inflation, and interest rates affects returns from *US Treasury Bonds*. In addition, bond ratings fully mediate the effect of corporate governance and liquidity on bond yields, while for maturity, bond ratings partially mediate the effect of maturity on bond yields.

Some studies use the *Markowitz* portfolio selection approach to government bond portfolios. Such as research (Martin and Swanson, 2021) ; (Pasricha et al., 2020) ; (Korn and Koziol, 2006) recently estimated the expected yield, return variance, and covariance of government bonds. An empirical study was conducted on the German bond market. The results suggest that a few government bonds are risky enough to achieve a predictably very promising risk-return profile. In their research, Creal and Wu (2020) also show that the risk price channel largely drives the time variation in the bond term premium and affects the rate of return *on US Treasury Bonds*.

Another study by Kim et al. (2021) showed that most government bonds outperformed their benchmarks; this indicated that government bonds exhibited a risk character that differed from the benchmarks. Taking risks with greater risk exposure than the benchmark drives the difference between the index-adjusted and risk-adjusted performance.

Ouyang and Lu (2021) researched the risk evaluation of Chinese government bonds that focused on interest rate and stability risks using the EWMAVaR and SVM models. His research results show that interest rate risk increased rapidly in 2018–2020 while stability risk decreased slightly, and changes in this risk influence the rate of return on government bonds in China.

According to research, the returns on government bonds in 25 developed and developing countries from 1992 to 2016 were discussed using the *Fama-MacBeth cross-sectional model*. The results show that the four-factor model effectively explains various patterns of returns in the international government bond market. Volatility risk, credit risk, value effects and momentum are the main drivers of government bond returns. However, Haddad and Sraer (2020) showed different results in their research; they revealed that liquidity risk does not affect the rate of return on bonds. Pratama et al. (2021) show that the expected return on stocks exceeds the expected market return value. The yield generated from the bond portfolio is also more optimal when compared to the yield of one bond.

Other findings were obtained from research by Carpenter et al. (2022), which discussed risk through two components: the quantity of risk (volatility) and the value of the risk itself. His research focuses on the rate of return on government bonds in the US and China. Interestingly, these two components support each other positively in the US *Treasury market*. The factor structure of the risk premium in the Chinese government bond market is similar to that in the US *Treasury market*; even though it is for the majority of the sample, the bond market in China is effectively segregated from the bond market in the US. However, in China, the number and price of the two risk factors show a negative unconditional correlation. Moreover, this correlation varies significantly over time. The same results were shown by Daniel et al. (2020) and Feldhütter et al. (2016), who stated that the risk factor for price volatility affects the rate of return on government bonds.

Based on the background and inter-academic debates above, it is important to discuss the relationship between risk and government bond *returns to determine risk pressure in influencing government bond returns*. In addition, this study can analyze the phenomenon of risk-taking behavior on bond returns. This research focuses on the risk and performance analysis of government bonds in Indonesia. The performance of government bonds is measured using the rate of return as research has been conducted. Based on the problem description, this study will study whether risk exposure is problematic in the Indonesian bond market. This study provides additional information regarding the relationship between risk and bond *returns* in Indonesia. Therefore, this research has two main objectives. First, this study will analyze the risk exposure and yield on government bonds in Indonesia. Second, examining risk-taking behavior affecting the performance of government bonds in Indonesia.

2. Literature review

Signaling theory assumes that company managers or insiders know more about the quality of their companies than other people outside the company. This theory is often used in the entrepreneurship literature and is one of the important theories for human resource management in the employee recruitment process. This theory is also frequently used these days in the management literature. Signaling theory serves to describe how when the behavior of both individuals and companies has access to different information. This is because different information will affect the decision-making process for individuals, households, businesses, and the government.

The information provided to outsiders consists of public information that can be obtained freely and confidential or private information that can be obtained only for certain individuals. According to, this confidential information will eventually lead to asymmetric information. In other words, asymmetric information arises when individuals who know the confidential information can make decisions that benefit those with it. However, for more than a century, formal economic models of the decision-making process have been based more and more on the assumption of perfect information. In contrast, imperfect information has often been ignored. Many economists assume that companies or markets with imperfect information will still behave like markets with perfect information.

Based on the research, there are two important players in the *signaling theory*: those who give signals (*signalers*) and those who receive signals (*receivers*). The signal giver must determine and decide how they must do it to send the signal or information they have to other people. The signal giver in this case is like a manager who has complete information about the resources to the products they have that outsiders do not own. The information provided by insiders can be either positive or negative information considered useful to outsiders. However, companies should provide positive information to convince outsiders about the company's quality.

In short, not all confidential information is useful for passing signals to outsiders. Two characteristics can be said to make the signal effective. First is the ability to observe signals (*Signal Observability*), which means that insiders who observe outsiders can receive the signals they will give or not. Second, the signal cost *is* when a company realizes that giving signals to outsiders requires greater costs and is not in accordance with the expected benefits. This condition will then cause an incorrect signal to occur, and this condition can return to normal if the signal receiver can ignore the signal. Confidential information includes specific products or services owned by the company, the discovery or development of new products, the latest reports regarding company receipts, company legal entities, and cooperative organizations established by the company. Later, the signal receiver (receiver*)* needs to know how to describe the intent of the signal that has been given. The signal receiver is the third element in the signaling process; in this case, the receiver is an outsider who lacks information about a particular company.

In the latest year, Conterius et al. (2023) focused on understanding how the presence of foreign investors affects the yield and volatility of the domestic government bond market. The results indicate that an increased involvement of foreign investors reduces domestic government bond yields, both in the overall sample and developing countries, over the short and long term. A recent study by Shida (2023) highlights that the secondary market yield, issuer's syndication announcements, auction volume, and underpricing in preceding auctions have a notable positive impact on demand. Moreover, it indicates a favorable influence of central bank net purchases in the secondary market, particularly for short-term bonds. Still, it acknowledges adverse effects related to market volatility and the introduction of the leverage ratio for banks from a regulatory perspective.

When the signal receiver understands the signal or information provided earlier, they can decide whether to buy, register, or invest according to the signal given; for example, a shareholder who receives a signal from a company that the company can provide greater profits in the future if the shareholder buys the assets that the company owns. The same thing applies to consumers who receive signals that the goods or services they buy will generate large profits if they buy them because the goods or services they buy later are of high quality. Briefly, the process of signaling according to time is explained as follows: the signal giver whether it is a person, the government, or a company owns goods in the form of bonds then gives a signal of information related to government bonds, the signal is then sent to outside parties. The signal receiver then interprets the signal and chooses the product offered.

When associated with government bonds, the signal can be in the form of financial or non-financial information that provides insight to investors. Information about government bonds is attractive to investors when they make decisions to invest because it illustrates the future prospects for government bonds. Investors will assess the performance of government bonds based on various aspects. This signal is information regarding the company's condition to owners or interested parties. The signal can also be given by disclosing information on government bond data such as maturity, coupon rate, type of bond, and number of bonds issued.

Market risk is caused by investors' reactions to tangible and intangible events. Stock prices fluctuate for many reasons. The frequency of price changes may be high or short or remain unchanged. A general rise in stock prices is a *bullish trend*, and vice versa. The reverse situation is referred to as a *bearish trend.* An investor can note this change from the stock price index on the stock market. Various factors affect market risk, from economic to political, entrepreneurial to social. The causes of this phenomenon are manifold. However, the magnitude depends on the attitude of investors. The initial reaction signals a fear of loss. Still, following the herd instincts of building a situation where it seems all investors are out for it, the emotional instability of such investors collectively leads to a growing overreaction. Market risk is a major constituent of systematic risk.

Default risk measures borrowers' probability of failing to repay their loan obligations. Borrowers have a higher risk of default with poor credit ratings and limited cash flow. For consumers, the risk of default can influence the rate and terms you will meet if the lender sees you as having a high risk of default. It can even cause you to be refused a loan. *Default* risk does not only apply to borrowers who want to take out loans. It also relates to the company issuing the bonds and whether they can make interest payments.

Inflation risk refers to the impact of inflation on investment. An increase in the price level of goods and services is generally called inflation. The direct impact of inflation is to delay consumption. In investment management, investment in securities is also considered as consumption. Thus, it means that an increase in the inflation rate reduces the purchasing power of investors and vice versa. Rational investors should include an allowance for purchasing power risk in their estimates of expected returns. Inflation risk impacts debt securities and equity markets in the same direction.

3. Research methods

The data used in this study are 1-year government bond *yield data, government bond index, composite bond index, and composite stock price index. Yield* government bonds with a tenor of 1 year are used to see the performance of bond mutual funds. The *benchmark* is measured using the government bond index and the composite bond index, while the JCI is used as a proxy for stock market performance. The data used is monthly, from January 2017 to December 2021.

The multi-factor analysis model commonly used in the bond performance literature; this model is the same as that used by (Blake et al., 1993) to look at the performance of bonds. The equation model in this study is:

$$r_{i,t} - r_{bench,t} = \alpha_i + \beta_{1,i}\left(Agg_t - r_{f,t}\right) + \beta_{2,i}\,Def_t + \beta_{3,i}\,Term_t + \beta_{4,i}\left(IHSG_t - r_{f,t}\right) + e_{i,t}$$

Information:

$r_{i,t} - r_{bench,t}$: The rate of return on bonds that exceeds the benchmark.

Agg : Aggregate bond market index returns and broad market risk capture.

Def: The difference in returns between the composite bond index and the government bond index index

IHSG: Stock market performance

This study used a multi-factor model to control risk exposure and investigate risk-adjusted returns on bond funds in a research sample.

Table 1. Variable Definition

No	Variable	Definition
1	Government Yields	The level of profit or yield actually obtained by investors with a 5-year tenor bond.
2	Yield benchmarks	The benchmark for bond yields is the 10-year government bond yield.
3	IOPs	Indonesian Government Bond Index
4	ICBI	Indonesia Composite Bond Index
5	JCI	Composite stock price index

4. Results and discussion

Table 2. Descriptive Statistics

Variable	Means	Standard Deviation	Min	Max	Number of Observations
Government Yield tenor of 5 years	6.410	0.850	5.040	8.400	60
Yield Benchmarks	7.030	0.590	5,942	8.600	60
JCI	6101.360	621.080	4538.930	7228.910	60
Government Bond Index	274.510	38.510	212.050	336.520	60
Composite Bond Index	277.410	42.340	209.110	344.060	60

The 5-year government yield is the level of profit or yield obtained by investors with a 5-year tenor bond. Based on the table, the lowest value of the 5-year tenor government yield is 5.04 and the highest value is 8.40, while the average value is 6.41 and has a standard deviation of 0.85. The yield benchmark is used as a benchmark for bond yields, namely the 10-year government bond yield. The average benchmark yield value is 7.03 with the highest value of 8.60 and the lowest of 5.94, while the standard deviation is 0.59.

The performance of the stock market was seen using the JCI; the highest value of the JCI in this study was 7228.91 and the lowest value was 4538.93. The standard deviation of the JCI is 621.08 with an average of 6101.36. The government bond index is used to see the performance of bonds issued by the government. The average value of the government bond index is 274.51, with the highest value being 336.52 and the lowest value being 212.05, while the standard deviation is 38.51.

The performance of corporate bonds is seen from the composite bond index, which has the lowest value of 209.11 and the highest value of 344.06. The average value of the composite bond index is 277.41 and the standard deviation is 42.34. The unit root test is a test that must be used before estimating the ARDL (Autoregressive Distributed Lag) test. This test is carried out to see whether there is a unit root, using the ADF (Augmented Dickey Fuller) test. The criteria that must be shown in this test are the T-test value < ADF Ttes with a level of 5 percent and ADF probability < Significant level with a value of 5 percent so that declared stationary. The ADF stationarity test can be seen in Table 3

Based on the unit root test results in Table 3, the GDP variable is stated to be stationary at the level level. The ADF value is greater than the critical value at the level of 1%, 5% or 10%. Likewise, with the probability (<0.05), whereas at the first different level all variables are stationary except for the PDB variable; this is evidenced by a probability of 0.3897 (>0.05).

The cointegration test is a test used to determine whether there is a long-term balance between variables. The cointegration test in this study uses the *Bound Test approach.* In this approach, cointegration can be seen from the F-statistic value with a critical value. There are two asymptotic limit values for testing cointegration when the independent variables are integrated into I(d) where ($0 \leq d \leq 1$). The lowest value (lower bound) assumes that the regressor is integrated at 1(0), while the highest value (upper bound) assumes that the regressor is integrated at I (1). If the F-statistic value is below the lower bound value, it can be concluded that cointegration does not occur. If the F-statistic value is above the upper bound value of 0, it can be concluded that cointegration has occurred. However, the result is inconclusive if the F-statistic is between the lower and upper bound values. The cointegration test results using the bound test approach can be seen in Table 5 below.

Table 3. Level Unit Root Test

Variable	ADF	Levels	t-statistic	Probability	Information
Government Yield tenor of 5 years	-1.828	1%	-3.525	0.363	Not Stationary
		5%	-2.902		Not Stationary
		10%	-2.588		Not Stationary
Yield Benchmarks	-2.279	1%	-3.525	0.181	Not Stationary
		5%	-2.902		Not Stationary
		10%	-2.588		Not Stationary
JCI	-8.430	1%	-3.525	0.000	stationary
		5%	-2.902		stationary
		10%	-2.588		stationary
Government Bond Index	0.559	1%	-3.528	0.987	Not Stationary
		5%	-2.904		Not Stationary
		10%	-2.589		Not Stationary
Composite Bond Index	0.560	1%	-3.528	0.987	Not Stationary
		5%	-2.904		Not Stationary
		10%	-2.589		Not Stationary

Source: Data processed with Eviews 10

Table 4. First Different Level Unit Root Test

Variable	ADF	Levels	t-statistic	Probability	Information
Government Yield tenor of 5 years	-7.236	1%	-3.527	0.000	stationary
		5%	-2.903		stationary
		10%	-2.589		stationary
Yield Benchmarks	-8.102	1%	-3.527	0.000	stationary
		5%	-2.903		stationary
		10%	-2.589		stationary
JCI	-9.951	1%	-3.528	0.000	stationary
		5%	-2.904		stationary
		10%	-2.589		stationary
Government Bond Index	-7.907	1%	-3.528	0.000	stationary
		5%	-2.904		stationary
		10%	-2.589		stationary
Composite Bond Index	-7.675	1%	-3.528	0.000	stationary
		5%	-2.904		stationary
		10%	-2.589		stationary

Source: Data processed with Eviews 10

Table 5. Cointegration Test Results of *Johansen Trace Statistics*

Hypothesized No.of CE(s)	Eigenvalue	Trace Statistics	critical values 5 Percent	Prob**
None*	0.535	156.613	125.615	0.000
At most 1*	0.469	104.460	95.753	0.011
At most 2	0.322	61.390	69.818	0.195
At most 3	0.242	34.950	47.856	0.450
At most 4	0.178	16.077	29.797	0.706
At most 5	0.038	2.722	15.494	0.978
At most 6	0.000	0.021	3.841	0.882

Information:
*(**) indicates rejection of the hypothesis at the 5% level of confidence
Trace indicates five cointegration equations at α = 5%
Trend assumption: Linear deterministic trend
Series: RRBENCH, DEF, IHSGR, MKTRF, SMB, HML, RF

SC: *Schwarz information criterion*
Interval lag: 1 to 2 *(in first differences)*
When viewed from a trace statistic greater than *the critical value* at a confidence level of α = 5%, based on the trace statistic, one form of the cointegration equation is obtained at a confidence level of 95%. Meanwhile, the results of the Johansen cointegration test based on *the max-eigen value statistics* indicate that there is one form of the cointegration equation at the 95% *confidence level.*

Table 6. The Johansen Maximum Eigenvalue Cointegration Test Results

Hypothesized No.of CE(s)	Eigenvalue	Maximum Eigenvalue	critical values 5 Percent	Prob**
None*	0.535	52.153	46.231	0.010
At most 1*	0.469	43.069	40.077	0.022
At most 2	0.322	26.440	33.876	0.294
At most 3	0.242	18.873	27.584	0.424
At most 4	0.178	13.354	21.131	0.420
At most 5	0.038	2.700	14.264	0.964
At most 6	0.000	0.021	3.841	0.882

Source: Data processed with Eviews 10

Information:
*(**) indicates rejection of the hypothesis at the 5% level of confidence
Trace indicates five cointegration equations at α = 5%
Trend assumption: Linear deterministic trend
Series: RRBENCH, DEF, IHSGR, MKTRF, SMB, HML, RF
SC: Schwarz information criterion
Interval lag: 1 to 2 (in first differences)

Table 7. Estimation Results

Variable	Coefficient	t-statistic	Prob.
Constant	-0.668	-19,673	0.000
DEF	-0.052	-12,219	0.000
IHSGR	4,840	1,773	0.076
MKTRF	-0.018	0.019	0.327
RF	48,658	9,846	0.000
SMB	-0.007	-0.240	0.810
HML	-0.010	-0.535	0.723
Resid (-1)^2	0.586	1,409	0.158
GARCH(-1)	0.297	1,052	0.292
R-squared		0.719	
Adjusted R-Square		1.017	

Source: Eviews 12 data processing

Table 7 in this study shows the results of the goodness of fit model test shown in the coefficient of determination, which explains the influence of the magnitude of the independent variables, namely DEF, IHSGR, MKT, SMB, HML and RF on the dependent variable RRbench. The coefficient of determination R2 Square obtained is 0.719, meaning that all independent variables can explain the dependent variable, namely the firm value of 71.9%.
The estimation results of the model are as follows:

- The DEF variable was found to have a negative relationship and a significant effect on the return on bonds. The DEF variable has a coefficient of -0.052 with a probability value of 0.000.
- The IHSGR variable found that IHSGR has a positive relationship and significant effect at

the 10% level on government bond returns in Indonesia. This is evidenced by the statistical results obtained, namely the coefficient on the IHSGR of 4,840 and a probability value of 0.076.

- The MKTRF variable shows that the *Market Factor* has a negative relationship and does not significantly influence government bond returns. The market factor regression coefficient obtained is -0.018 with a probability value of 0.327.
- *The risk factor* variable has a positive relationship and significantly affects government bond returns in Indonesia. This is because the coefficient value obtained is 48,658 and the probability value is 0.000.
- The SMB variable shows that *small minus big* has a negative relationship and does not significantly influence Indonesia's government bond return. Associated with large capitalization, it has a relatively smaller level of risk and provides a relatively smaller rate of return as well. This can be seen from the SMB variable, which has a coefficient of -0.007 and a probability of 0.810.
- The HML variable shows that *small minus big* has a negative relationship and does not significantly influence government bond returns in Indonesia. The high minus low variable does not affect government bond returns. Many investors only invest based on the game to gain relatively short profits. This can be seen from the HML variable which has a coefficient of -0.010 and a probability of 0.723.

Based on the research results, the default factor negatively and significantly affects government bond returns in Indonesia. Various previous studies examined bond performance, including Ferson et al. (2006) who found that bond market risk factors were sufficient to capture various bond fund risk exposures. The study used a multi-factor model to control for a fund's risk exposure regardless of the bond fund. We include factors and fundamentals related to economic conditions for a robustness check. The results are qualitatively similar to the results obtained in this study. Based on the model, α in Equation (1) can be interpreted as the part of the index-adjusted return that cannot be explained by this risk factor.

Table 7 shows risk returns were significantly negative over the full sample period. Def is the difference in returns between the high and medium yield indexes, $Term$ is the return spread between the medium- and short-term government bond indexes, and IHSGR is the return on the composite stock price index. Our analysis above shows that the performance of the two mutual funds with different evaluation approaches yields very different results. The index-adjusted returns show significant differences and variations in performance, which are consistent across fund styles. On the other hand, risk-adjusted returns are stable and consistently negative over time. If we measure the performance of bond funds relative to their benchmarks, many bond funds outperform their benchmarks even after the issuance of funds. The outstanding performance shown by the fund also varies over time and is correlated with the condition of the bond market. However, suppose we assess the performance of government bond funds based on the standard multifactor model. In that case, bond funds exhibit negative risk-adjusted returns, and negative risk-adjusted returns are mostly stable and persisting over the sample period. The risk exposure of bond funds differs substantially from their benchmarks.

This study found that joint stock performance has a positive relationship and significantly influences government bond returns in Indonesia. Baker and Wurgler (2008) found interesting things about the relationship between bonds and stocks associated with investor sentiment changes.

In addition, this study found that the *Market Factor* has a negative relationship and does not significantly influence the return on government bonds in Indonesia. This government bond has a low credit risk because it is backed by full trust and credit from the government. Government bonds do present market risk if sold before maturity, and they also carry some inflation risk in that their relatively lower returns will not offset inflation. While not risk free, government bonds tend to be less risky than equity investments because they are issued by national governments, not corporations or stocks. Government bonds are considered relatively low risk compared to other debt securities.

Aside from credit risk, government bonds have a few other pitfalls to watch out for interest rate, inflation, and currency risks. Table 4 shows that the estimated spread yields positively both the realized covariance returns of stocks and bonds and the normalization afforded by the CAPM of bond betas. The coefficients on the distribution of yields are statistically significant except at the 12-month horizon in the covariance regression and significant across all bond horizons. These results suggest that at least part of the countercyclical variation in expected excess bond returns is driven by the countercyclical variation in bond risk as measured by the movement of bond returns over stock returns.

When the yield differential widens, bonds' real cash flow risk (or inflation) decreases. This encourages increased aggregate risk and discourages investors from all risky assets. The risk premium (or risk aversion) more than offsets the cash flow effect, and the bond risk moves cyclically.

Risk Factors found that it has a positive relationship and significant effect on government bond returns in Indonesia. *Small minus big (SMB)* has a negative relationship and has no significant effect on government bond returns in Indonesia. This is in accordance with Fama and French (1992), which is related to large capitalization having a relatively smaller risk level that provides a relatively lower rate of return. Some investors have recognized that increasing capitalization value means using certain stocks to get optimal stock returns with minimal risk (Bauer et al., 2018). Companies with large capitalization tend to have a level of stability to changes both internally and externally (Nitschka, 2018).

5. Conclusion

Based on the results of the research and the results of the analysis that has been tested in the previous chapters, the following conclusions can be drawn:

The default factor negatively and significantly affects government bond returns in Indonesia. Bond market risk factors are believed to be sufficient to capture the various risk exposures of bond funds.

Joint stock performance has a positive relationship and significantly influences government bond returns in Indonesia.

Market Factor has a negative relationship and has no significant effect on government bond returns.

The study results concluded that the risk exposure factor has a positive relationship and significantly affects yields on government bond returns in Indonesia.

The SMB variable shows that *small minus big* has a negative relationship and does not significantly influence Indonesia's government bond return. Associated with large capitalization, it has a relatively smaller level of risk and provides a relatively smaller rate of return as well.

High minus low does not affect government bond returns. Many investors only invest based on the game to gain relatively short profits.

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