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MARKET VALUATION AS A MODERATOR OF INVESTMENT RISK AND INVESTMENT OPPORTUNITY SET ON STOCK RETURNS

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Abstrak: This study investigates the effect of investment risk and the Investment Opportunity Set (IOS) on stock returns, with market valuation examined as a moderating variable. The analysis employs panel data from companies included in the Kompas 100 Index over the 2018–2022 period and applies a Random Effect Model (REM) within a Moderated Regression Analysis (MRA) framework. The results reveal that investment risk has a negative and statistically significant effect on stock returns, indicating that higher risk levels tend to reduce realized returns in the Indonesian capital market. Conversely, the Investment Opportunity Set (IOS) exerts a positive and significant influence on stock returns, suggesting that firms with stronger growth prospects are more attractive to investors. Market valuation, however, does not significantly affect stock returns and does not moderate the relationship between investment risk and stock returns or between IOS and stock returns. These findings indicate that market valuation acts as an independent variable rather than a moderating factor. Overall, the study highlights the importance of firm-specific fundamentals in explaining stock return behavior in emerging markets.

Kata Kunci: Investment Risk; Investment Opportunity Set; Market Valuation; Stock Return; Panel Data Regression

1. INTRODUCTION

Stock returns remain a central concern for investors, academics, and policymakers, as they reflect the outcome of investment decisions and serve as an important indicator of capital market performance. In an increasingly dynamic financial environment, investors are required to evaluate not only potential returns but also the associated risks and growth opportunities embedded within firms. The interaction between risk, investment opportunities, and market perception plays a crucial role in shaping stock return behavior, particularly in emerging markets where information asymmetry and market inefficiencies are still prevalent.

Investment risk is one of the fundamental factors influencing stock returns. According to modern portfolio theory, higher levels of risk are generally associated with higher expected returns as compensation for uncertainty borne by investors (Sharpe, 1964). However, empirical evidence often shows mixed results, especially in developing capital markets, where risk may negatively affect returns due to market volatility, limited investor sophistication, and external economic shocks (Fama & French, 1992). As a result, understanding how investment risk translates into stock returns remains an important research issue.

In addition to investment risk, firms' growth prospects, commonly proxied by the Investment Opportunity Set (IOS), are widely recognized as determinants of stock returns. IOS reflects a firm's future investment opportunities and growth potential, which are expected to generate higher future cash flows (Myers, 1977). Companies with high IOS are often perceived as growth firms and tend to attract investors seeking long-term capital gains. Previous studies suggest that firms with greater investment opportunities are more likely to deliver higher stock returns, as the market responds positively to expected future performance (Smith & Watts, 1992).

Despite the importance of risk and IOS, stock returns are not determined solely by firm fundamentals. Market valuation, which represents how investors assess and price a firm's value in the capital market, also plays a significant role. Market valuation reflects collective investor perceptions, expectations, and reactions to available information (Bodie et al., 2018). Differences in market valuation

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may cause similar levels of risk or investment opportunities to result in different stock return outcomes, depending on how the market interprets and prices those factors.

From a signaling perspective, market valuation can influence how investment risk and IOS are transmitted into stock returns. Firms with favorable market valuations may be better positioned to mitigate the negative impact of investment risk, as investors tend to have greater confidence in firms that are positively valued by the market (Spence, 1973). Conversely, firms with unfavorable valuations may experience amplified negative effects of risk on returns, as market participants respond more sensitively to uncertainty.

Empirical findings regarding the moderating role of market valuation, however, remain inconclusive. Several studies report that market-based measures strengthen the relationship between firm characteristics and stock returns, while others find no significant moderating effect, suggesting that market valuation may not always function as an effective transmission mechanism (Fama & French, 2015). These inconsistencies highlight the need for further empirical investigation, particularly in emerging markets such as Indonesia, where investor behavior and market efficiency may differ from developed markets.

In the Indonesian capital market context, companies listed in the Kompas 100 Index represent firms with relatively high liquidity and large market capitalization. Nevertheless, stock returns among these firms continue to fluctuate significantly, indicating that market valuation, investment risk, and growth opportunities may interact in complex ways. Understanding these interactions is essential for investors seeking optimal portfolio decisions and for managers aiming to enhance firm value.

Based on the above discussion, this study aims to examine the effect of investment risk and Investment Opportunity Set on stock returns, as well as to analyze the moderating role of market valuation in these relationships. By focusing on firms listed in the Kompas 100 Index over the period 2018–2022, this research is expected to contribute to the empirical literature on capital market behavior and provide practical insights for investors, managers, and policymakers in making informed financial decisions.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Stock Returns

Stock return represents the gain or loss obtained by investors from holding a stock over a certain period, which can be derived from capital gains and dividends. Stock returns are commonly used as a primary indicator of investment performance and reflect investors' assessments of firm value and future prospects (Bodie et al., 2018). In efficient capital markets, stock prices and returns are assumed to incorporate all available information, both firm-specific and macroeconomic (Fama, 1970). However, in emerging markets, stock returns are often influenced by additional factors such as market sentiment, information asymmetry, and investor behavior, resulting in varying responses to firm fundamentals.

2.2 Investment Risk and Stock Returns

Investment risk refers to the uncertainty associated with expected investment outcomes, which may arise from market volatility, firm-specific conditions, or broader economic factors. According to Modern Portfolio Theory, investors demand higher expected returns as compensation for bearing higher levels of risk (Sharpe, 1964). This risk–return trade-off forms the basis of many asset pricing models, including the Capital Asset Pricing Model (CAPM).

Nevertheless, empirical evidence on the relationship between investment risk and stock returns remains mixed. While some studies find a positive relationship consistent with theoretical expectations, others report a negative or insignificant relationship, particularly in developing markets where higher risk may discourage investors and lead to lower stock returns (Fama & French, 1992). High investment risk may increase uncertainty and reduce investor confidence, resulting in downward pressure on stock prices and returns. Based on this reasoning, the following hypothesis is proposed:

H1: Investment risk has a significant effect on stock returns.

2.3 Investment Opportunity Set and Stock Returns

The Investment Opportunity Set (IOS) reflects a firm's growth opportunities and future investment prospects. Myers (1977) defines IOS as the combination of assets in place and future investment options available to a firm. Firms with high IOS are typically characterized by higher growth potential and are expected to generate greater future cash flows, making them attractive to investors.

Previous studies suggest that IOS has a positive influence on stock returns, as the market responds favorably to firms with strong growth opportunities (Smith & Watts, 1992). Investors often value firms with high IOS more optimistically, anticipating higher future performance. As a result, IOS is considered

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an important determinant of stock returns, particularly for growth-oriented firms. Therefore, the following hypothesis is formulated:

H2: Investment Opportunity Set has a significant effect on stock returns.

2.4 Market Valuation as a Moderating Variable

Market valuation represents the market's assessment of a firm's value based on available information, investor expectations, and perceived future performance. Market-based valuation measures capture how investors collectively interpret firm fundamentals and external signals (Bodie et al., 2018). From a signaling theory perspective, market valuation serves as a mechanism through which information asymmetry between managers and investors is reduced (Spence, 1973).

Market valuation may play a moderating role in the relationship between investment risk and stock returns. Firms with favorable market valuations may be better able to absorb or mitigate the negative effects of high investment risk, as investor confidence remains relatively strong. Conversely, firms with low market valuations may experience amplified negative reactions to risk, leading to lower stock returns. Based on this argument, the following hypothesis is proposed:

H3: Market valuation moderates the relationship between investment risk and stock returns.

Similarly, market valuation may also influence the relationship between IOS and stock returns. When firms with high investment opportunities are positively valued by the market, the impact of IOS on stock returns is expected to be stronger. In contrast, if the market undervalues a firm, the positive effect of IOS on stock returns may be weakened, as investors may discount future growth prospects. Therefore, the following hypothesis is developed:

H4: Market valuation moderates the relationship between Investment Opportunity Set and stock returns.

3. METHODS

3.1 Research Design

This study employs a quantitative research design with an explanatory approach, aiming to examine the effect of investment risk and Investment Opportunity Set (IOS) on stock returns, as well as to analyze the moderating role of market valuation in these relationships. The explanatory design is appropriate as this study seeks to test causal relationships between variables based on empirical data (Sugiyono, 2019).

3.2 Population and Sample

The population of this study consists of all companies listed in the Kompas 100 Index on the Indonesia Stock Exchange (IDX). The Kompas 100 Index represents firms with high market capitalization and liquidity, making it a suitable proxy for relatively active and well-established companies in the Indonesian capital market.

The sample is selected using a purposive sampling technique, with the following criteria: (1) companies consistently listed in the Kompas 100 Index during the period 2018–2022, (2) companies with complete financial and stock price data available during the observation period, and (3) companies that did not experience prolonged trading suspension. Based on these criteria, the final sample comprises firms that meet the data availability and consistency requirements for panel data analysis.

3.3 Data Type and Data Collection

This study utilizes secondary data, obtained from published financial reports, annual reports, and stock price data. Data collection is conducted through documentation techniques and internet searching from official and reliable sources, such as the Indonesia Stock Exchange and other publicly accessible financial databases. Secondary data are deemed appropriate for capital market research due to their objectivity and consistency across firms and time periods (Arikunto, 2019).

3.4 Variable Measurement

The dependent variable in this study is stock return, which reflects the rate of return obtained by investors from holding a stock over a certain period. Stock return is calculated based on changes in stock prices from one period to the next.

The independent variables consist of investment risk and Investment Opportunity Set (IOS). Investment risk represents the uncertainty associated with stock investment outcomes and is proxied using market-based risk measures as applied in prior empirical studies. IOS reflects the firm's growth

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opportunities and future investment prospects, measured using commonly employed IOS proxies derived from market and accounting data (Myers, 1977).

The moderating variable in this study is market valuation, which represents the market's assessment of firm value. Market valuation is measured using market-based indicators that capture investors' perceptions and expectations regarding firm performance.

3.5 Data Analysis Technique

Data analysis is conducted using panel data regression, as the dataset combines cross-sectional data (firms) and time-series data (years). Panel data analysis provides more informative data, greater variability, and reduced multicollinearity compared to purely cross-sectional or time-series approaches (Gujarati & Porter, 2010).

To determine the most appropriate panel data model, several specification tests are performed, including the Chow test, Hausman test, and Lagrange Multiplier (LM) test. Based on the results of these tests, the Random Effect Model (REM) is selected as the most suitable estimation model for this study.

To test the moderating effect of market valuation, this study employs Moderated Regression Analysis (MRA) by including interaction terms between market valuation and the independent variables. The regression model can be expressed as follows:

$$Return_{it} = \alpha + \beta_1 Risk_{it} + \beta_2 IOS_{it} + \beta_3 MV_{it} + \beta_4 (Risk_{it} \times MV_{it}) + \beta_5 (IOS_{it} \times MV_{it}) + \varepsilon_{it}$$

where $Return_{it}$ denotes stock return, $Risk_{it}$ represents investment risk, IOS_{it} is the Investment Opportunity Set, MV_{it} denotes market valuation, and ε_{it} is the error term.

All statistical analyses are conducted using **EViews** software. Hypothesis testing is performed at a significance level of 5 percent. The regression results are used to evaluate both the direct effects of investment risk and IOS on stock returns, as well as the moderating role of market valuation.

4. RESULT AND DISCUSSION

Descriptive Statistics

Table 1. Descriptive Statistics

Statistic	Stock Return	Investment Risk	IOS	Market Valuation
Mean	11.459	12.946	19.313	0.8870
Median	0.0136	13.350	0.6009	0.1377
Maximum	366.399	21.110	229.912	862.554
Minimum	−0.9943	0.3690	0.00004	−31.2166
Std. Deviation	48.916	0.3514	31.808	78.851

Table 1 presents the descriptive statistics of stock returns, investment risk, investment opportunity set (IOS), and market valuation for firms included in the sample.

Stock Return

Stock return, as the dependent variable, has a mean value of 1.1459, indicating a positive average return during the observation period. The median value of 0.0136 suggests that more than half of the observations cluster around relatively low returns. The maximum return reaches 36.6399, recorded by PT Unilever Indonesia Tbk in 2022, while the minimum return of −0.9943 was observed for PT Aneka Tambang Tbk. The standard deviation of 4.8916 exceeds the mean, indicating high variability and heterogeneous stock return movements among firms.

Investment Risk

Investment risk shows a mean value of 1.2946 with a median of 1.3350, reflecting a relatively stable distribution. The highest risk value of 2.1110 was observed at PT Adaro Energy Tbk in 2018, while the lowest value of 0.3690 occurred at PT Mayora Indah Tbk. The standard deviation of 0.3514 is lower than the mean, indicating low variability and relatively homogeneous investment risk across firms.

Investment Opportunity Set (IOS)

The Investment Opportunity Set has a mean value of 1.9313 and a median of 0.6009, indicating the presence of firms with substantial growth opportunities. The maximum IOS value of 22.9912 was recorded by PT HM Sampoerna Tbk in 2022, while the minimum value of 0.00004 was observed at PT Bank

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Tabungan Negara Tbk in the same year. The standard deviation of 3.1808, which exceeds the mean, suggests high dispersion and heterogeneous growth opportunities among firms.

Market Valuation

Market valuation, as the moderating variable, has an average value of 0.8870 with a median of 0.1377. The maximum value of 86.2554 was recorded by PT Mitra Keluarga Karyasehat Tbk in 2018, while the minimum value of −31.2166 indicates substantial undervaluation for certain firms. The standard deviation of 7.8851, which is considerably higher than the mean, reflects significant variation in market valuation across firms.

Panel Data Regression Model

Panel data regression is employed to examine the effect of predictor variables on the response variable across multiple firms observed over a specific period. This method combines cross-sectional and time-series data, allowing for more efficient estimation and greater variability in the dataset. Panel data regression is particularly useful in capturing both firm-specific characteristics and temporal dynamics. Prior to selecting the most appropriate estimation model, several alternative panel regression approaches must be considered. According to Ghozali (2019), three main approaches are commonly applied in panel data regression analysis, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Each model is based on different assumptions regarding individual heterogeneity and time effects.

Common Effect Model (CEM)

The Common Effect Model is the simplest panel regression approach, which pools cross-sectional and time-series data and estimates the parameters using the Ordinary Least Squares (OLS) method. This model assumes that there are no individual-specific or time-specific effects, implying that all firms share a common intercept. However, this assumption often fails to reflect real conditions, as firms may exhibit heterogeneous characteristics over time.

Table 2. Common Effect Model (CEM) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	5.4841	10.949	5.0088	0.0000
Investment Risk	−3.6381	0.7894	−4.6087	0.0000
IOS	0.2087	0.0861	2.4248	0.0160
Market Valuation	−0.0356	0.0351	−1.0131	0.3120

Source: EViews Output (2024)

Fixed Effect Model (FEM)

The Fixed Effect Model accounts for unobserved heterogeneity by allowing each cross-sectional unit to have its own intercept. This approach captures firm-specific characteristics that remain constant over time through the inclusion of dummy variables, also known as the Least Squares Dummy Variable (LSDV) technique. FEM assumes that differences across firms can be explained by time-invariant characteristics.
Random Effect Model (REM)

Table 3. Fixed Effect Model (FEM) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	2.0695	1.2642	1.6370	0.1032
Investment Risk	−1.1880	0.9369	−1.2679	0.2063
IOS	0.3125	0.0888	3.5181	0.0005
Market Valuation	0.0122	0.0245	0.4984	0.6188

Source: EViews Output (2024)

The Random Effect

Model assumes that individual-specific effects are random and uncorrelated with the explanatory variables. In this model, differences in intercepts are captured through the error term. REM is estimated using the Generalized Least Squares (GLS) method and is particularly advantageous when dealing with heteroskedasticity and unobserved random disturbances across firms and time periods.

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Table 4. Random Effect Model (REM) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	3.0034	1.2297	2.4425	0.0153
Investment Risk	−1.8638	0.8262	−2.2558	0.0250
IOS	0.2849	0.0812	35.079	0.0005
Market Valuation	0.0055	0.0239	0.2314	0.8172

Model Statistics

Indicator	Value
R-squared	0.0761
Adjusted R-squared	0.0648
F-statistic	6.7551
Prob(F-statistic)	0.0002
Durbin–Watson	1.6338

Source: EViews Output (2024)

Model Selection Tests

Model selection tests are conducted to determine the most appropriate panel data regression model among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The selection process is essential to ensure that the estimated model accurately captures individual heterogeneity and produces efficient and unbiased parameter estimates. Three statistical tests are applied sequentially, namely the Chow test, Hausman test, and Lagrange Multiplier (LM) test.

Chow Test

The Chow test is used to determine whether the Common Effect Model or the Fixed Effect Model is more suitable for panel data estimation. The test results indicate that the probability value is 0.0000, which is lower than the 5 percent significance level. This finding suggests that the Fixed Effect Model is preferable to the Common Effect Model. Consequently, further testing using the Hausman test is required to choose between the Fixed Effect Model and the Random Effect Model.

Table 5. Chow Test Results

Effects Test	Statistic	df	Prob.
Cross-section F	121.026	(49, 197)	0.0000
Cross-section Chi-square	3.472.154	49	0.0000

Source: EViews Output (2024)

Hausman Test

The Hausman test is conducted to determine whether the Fixed Effect Model or the Random Effect Model is more appropriate. The test result shows a probability value of 0.3250, which is greater than the 5 percent significance level. This indicates that the Random Effect Model is more suitable, as there is no significant correlation between the individual effects and the explanatory variables.

Table 6. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.
Cross-section random	34.674	3	0.3250

Source: EViews Output (2024)

Lagrange Multiplier Test

The Lagrange Multiplier (LM) test is applied to determine whether the Random Effect Model or the Common Effect Model is more appropriate. The Breusch–Pagan probability value is 0.0000, which is lower than the 5 percent significance level. This result confirms that the Random Effect Model is superior to the Common Effect Model.

Table 7. Lagrange Multiplier Test Results

	Cross-section	Test Hypothesis Time	Both
Breusch–Pagan	226.5077 (0.0000)	2.1149 (0.1459)	228.6227 (0.0000)

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Model Selection Summary

Based on the results of the Chow test, Hausman test, and Lagrange Multiplier test, the Random Effect Model (REM) is identified as the most appropriate panel data regression model for this study. The selected model is subsequently used to examine the moderating role of market valuation on the relationship between investment risk, investment opportunity set, and stock returns of companies listed in the Kompas 100 Index during the period 2018–2022.

Table 8. Summary of Panel Data Model Selection

No.	Test Method	Model Comparison	Selected Model
1	Chow Test	Common Effect vs Fixed Effect	Fixed Effect Model
2	Hausman Test	Fixed Effect vs Random Effect	Random Effect Model
3	Lagrange Multiplier Test	Common Effect vs Random Effect	Random Effect Model

Classical Assumption Tests

Classical assumption tests are conducted to ensure that the panel regression model meets the fundamental statistical requirements and produces valid and reliable estimates. The tests performed include the normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

Normality Test

The normality test aims to examine whether the regression residuals are normally distributed. In this study, the Jarque–Bera (JB) test is applied with a significance level of 5 percent. The test results indicate that the Jarque–Bera statistic is greater than the critical value, with a probability value below 0.05, suggesting that the residuals are not perfectly normally distributed. However, given the relatively large sample size of 250 observations, the residuals can be assumed to follow an approximately normal distribution based on the central limit theorem (Winarno, 2017; Ghozali & Ratmono, 2017). Therefore, the normality assumption is considered acceptable.

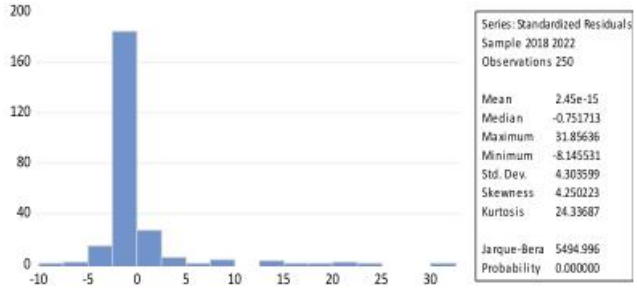

Figure 1. **Normality Test**

Multicollinearity Test

The multicollinearity test is conducted to identify potential linear correlations among independent variables. This study employs the Variance Inflation Factor (VIF) approach. According to Ghozali (2018), multicollinearity is not a concern if the VIF value is below 10. The results show that all centered VIF values are close to one and well below the threshold, indicating the absence of multicollinearity among the independent variables.

Table 9. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
Constant (C)	1.1988	16.3741	NA
Investment Risk	0.6232	15.3114	1.0467
IOS	0.0074	1.3975	1.0199
Market Valuation	0.0012	1.0554	1.0422

Source: EViews Output (2024)

Heteroskedasticity Test

The heteroskedasticity test is performed to determine whether the variance of the residuals is constant across observations. This study applies the White heteroskedasticity test. The probability value of the

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Obs*R-squared statistic exceeds the 5 percent significance level, indicating that the null hypothesis of homoskedasticity cannot be rejected. Thus, the regression model does not suffer from heteroskedasticity.

Table 10. Heteroskedasticity Test Results (White Test)

Statistic	Value	Probability
F-statistic	0.1155	1.0000
Obs*R-squared	2.2299	1.0000
Scaled explained SS	23.4091	0.1754

Source: EViews Output (2024)

Autocorrelation Test

The autocorrelation test is conducted to examine whether residuals are correlated across time periods. The Breusch–Godfrey Serial Correlation LM test is used for this purpose. The test results show probability values greater than 0.05, indicating that the null hypothesis of no serial correlation cannot be rejected. Therefore, the regression model is free from autocorrelation.

Table 11. Autocorrelation Test Results (Breusch–Godfrey LM Test)

Statistic	Value	Probability
F-statistic	0.7997	0.4507
Obs*R-squared	16.971	0.4280

Summary of Classical Assumption Tests

Overall, the results of the classical assumption tests indicate that the panel regression model satisfies the required statistical assumptions. Consequently, the selected Random Effect Model (REM) is deemed appropriate for further hypothesis testing and interpretation of results.

Panel Data Regression Analysis without Moderation

This study applies panel data regression analysis to examine the relationship between investment risk and investment opportunity set (IOS) on stock returns, without including the moderating variable. The regression results are presented in Table 12.

Table 12. Panel Data Regression Results without Moderation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	3.0034	1.2297	2.4425	0.0153
Investment Risk	−1.8638	0.8262	−2.2558	0.0250
IOS	0.2849	0.0812	3.5079	0.0005

Source: EViews Output (2024)

The estimated panel regression equation is expressed as follows:

$$Stock\ Return = 3.0034 - 1.8638 Investment\ Risk + 0.2849 IOS$$

The constant term indicates the expected stock return when all independent variables are held constant. The coefficient of investment risk is negative, suggesting an inverse relationship between investment risk and stock returns. Conversely, the IOS coefficient is positive, indicating a direct relationship between investment opportunity set and stock returns.

Hypothesis Testing

Simultaneous Significance Test (F-test)

The F-test is conducted to examine whether investment risk and IOS jointly affect stock returns. The results show that the F-statistic value is 10.1426, which exceeds the critical value, with a probability value of 0.000058, lower than the 5 percent significance level. This finding indicates that investment risk and IOS simultaneously have a significant effect on stock returns.

Table 13. Simultaneous Significance Test (F-test)

Indicator	Value
R-squared	0.0759
Adjusted R-squared	0.0684

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F-statistic	10.1426
Prob (F-statistic)	0.000058
Durbin–Watson	1.6374

Source: EViews Output (2024)

Partial Significance Test (t-test)

The t-test is employed to examine the partial effect of each independent variable on stock returns.

Table 14. Partial Significance Test Results (t-test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	3.0034	1.2297	2.4425	0.0153
Investment Risk	−1.8638	0.8262	−2.2558	0.0250
IOS	0.2849	0.0812	3.5079	0.0005
Market Valuation	0.0055	0.0239	0.2314	0.8172

Source: EViews Output (2024)

The t-test results indicate that investment risk (X1) has a negative and statistically significant effect on stock returns, as evidenced by the absolute t-statistic exceeding the critical value and a significance level below 0.05. This finding suggests that higher investment risk tends to reduce stock returns. Furthermore, the t-test results show that the investment opportunity set (X2) has a positive and statistically significant effect on stock returns, indicated by a t-statistic greater than the critical value and a probability value below 0.05. This implies that firms with greater investment opportunities are more likely to generate higher stock returns.

Coefficient of Determination (R^2)

The coefficient of determination (R^2) is used to measure the explanatory power of the regression model. The adjusted R-squared value of 0.0684 indicates that approximately 6.84 percent of the variation in stock returns can be explained by investment risk and IOS. The remaining variation is explained by other factors not included in the model, suggesting that stock returns are influenced by a wide range of firm-specific and macroeconomic variables.

Moderated Panel Data Regression Analysis

This study further applies moderated panel data regression analysis to examine whether market valuation moderates the relationship between investment risk, investment opportunity set (IOS), and stock returns. The moderation analysis is conducted using the Moderated Regression Analysis (MRA) approach. Prior to estimating the moderation model, panel regression model selection is performed to determine the most appropriate estimation technique.

Table 15. Random Effect Model (REM) – Moderated Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant (C)	3.0547	12.453	2.4529	0.0149
Investment Risk	−1.9026	0.8388	−2.2682	0.0242
IOS	0.2839	0.0817	3.4731	0.0006
Market Valuation	0.0721	0.0931	0.7740	0.4397
Risk × Market Valuation	−0.0814	0.1205	−0.6758	0.4998
IOS × Market Valuation	0.0198	0.0577	0.3433	0.7317

The results of the moderated regression analysis using the Random Effect Model (REM) provide insights into the effects of investment risk, investment opportunity set (IOS), market valuation, and their interaction terms on stock returns. The constant coefficient is 3.0547 and statistically significant at the 5% level (p = 0.0149). This indicates that when investment risk, IOS, market valuation, and the interaction terms are held constant, the average stock return is positive. The significant constant reflects the presence of baseline factors influencing stock returns beyond the explanatory variables included in the model.

Investment risk has a negative and statistically significant coefficient of −1.9026 (p = 0.0242). This finding suggests that higher investment risk leads to lower stock returns, holding other variables constant. The result is consistent with the notion that increased uncertainty and volatility reduce investor confidence and expected returns. The coefficient of IOS is positive and statistically significant at 0.2839 (p = 0.0006).

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This implies that firms with greater growth opportunities tend to generate higher stock returns. The result supports the view that investors value firms with strong future investment prospects, which are reflected in higher returns. Market valuation shows a positive but statistically insignificant coefficient of 0.0721 (p = 0.4397). This indicates that market valuation does not have a direct significant effect on stock returns within the model. Consequently, market valuation alone is insufficient to explain variations in stock returns when investment risk and IOS are taken into account.

The interaction between investment risk and market valuation has a negative but insignificant coefficient of −0.0814 (p = 0.4998). This result indicates that market valuation does not moderate the relationship between investment risk and stock returns. In other words, changes in market valuation do not strengthen or weaken the effect of investment risk on stock returns. Similarly, the interaction between IOS and market valuation yields a positive but statistically insignificant coefficient of 0.0198 (p = 0.7317). This suggests that market valuation does not moderate the relationship between IOS and stock returns.

Discussion

This study investigates the effect of investment risk and the Investment Opportunity Set (IOS) on stock returns, as well as the moderating role of market valuation, using companies listed in the Kompas 100 Index during the 2018–2022 period. The empirical findings provide several important insights into the behavior of stock returns in an emerging market context, particularly Indonesia.

Investment Risk and Stock Returns

The results show that investment risk has a negative and statistically significant effect on stock returns, both in the baseline model and in the moderated regression model. This finding indicates that higher investment risk tends to reduce stock returns. Although classical financial theory suggests a positive risk–return trade-off (Sharpe, 1964), empirical evidence from emerging markets often contradicts this assumption. In markets characterized by higher volatility, information asymmetry, and less sophisticated investors, risk is frequently perceived as a threat rather than an opportunity (Fama & French, 1992).

The negative relationship observed in this study suggests that investors in the Indonesian capital market are relatively risk-averse. Higher investment risk increases uncertainty regarding future cash flows, leading investors to demand safer assets or shift their portfolios away from risky stocks. This behavior places downward pressure on stock prices and ultimately lowers realized returns. Similar findings have been reported in previous studies in developing markets, where high risk discourages investment rather than being compensated by higher returns (Graham & Harvey, 2001; Goyal & Santa-Clara, 2003).

Investment Opportunity Set and Stock Returns

The Investment Opportunity Set (IOS) is found to have a positive and statistically significant effect on stock returns, indicating that firms with greater growth opportunities tend to generate higher returns. This result is consistent with the theoretical framework proposed by Myers (1977), which argues that firms with abundant investment opportunities are expected to produce higher future cash flows and thus attract investor interest.

From a signaling perspective, high IOS serves as a positive signal regarding a firm's growth potential and long-term prospects (Smith & Watts, 1992). Investors interpret high IOS as an indication of managerial optimism and strategic expansion, which increases demand for the firm's shares and drives up stock returns. The empirical result confirms that, within the Kompas 100 Index, growth-oriented firms are rewarded by the market, reinforcing the importance of IOS as a determinant of stock performance.

Market Valuation and Its Direct Effect on Stock Returns

Market valuation is found to have no significant direct effect on stock returns. This suggests that market valuation alone is insufficient to explain variations in stock returns when firm-specific fundamentals such as investment risk and IOS are taken into account. In other words, valuation measures reflect investor perceptions but do not necessarily translate into short-term return realization.

This finding aligns with the efficient market hypothesis in its semi-strong form, which posits that publicly available valuation information is already incorporated into stock prices (Fama, 1970). As a result, market valuation may affect stock prices at a certain point in time but does not independently drive returns unless accompanied by new information or changes in firm fundamentals.

The Moderating Role of Market Valuation

The most important contribution of this study lies in the examination of market valuation as a moderating variable. The results indicate that the interaction terms between market valuation and

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investment risk, as well as between market valuation and IOS, are statistically insignificant. This finding implies that market valuation does not strengthen or weaken the influence of investment risk or IOS on stock returns.

These results suggest that market valuation functions more as an independent explanatory variable rather than a moderating mechanism. Although signaling theory (Spence, 1973) suggests that market-based indicators can amplify or dampen the effects of firm fundamentals, this mechanism does not appear to operate effectively in the context of this study. One possible explanation is that investors in the Indonesian market rely more heavily on observable financial fundamentals than on valuation-based perceptions when forming return expectations. Moreover, the insignificance of the moderating effect may reflect market inefficiencies or behavioral factors. In emerging markets, valuation signals may be noisy, delayed, or inconsistently interpreted by investors (Bodie et al., 2018). Consequently, market valuation does not meaningfully alter how investment risk or growth opportunities affect stock returns.

Similar findings have been reported in prior studies, which conclude that market-based variables do not always act as effective moderators, particularly in markets where speculative behavior and short-term trading dominate investment decisions (Fama & French, 2015). Therefore, the absence of moderation in this study reinforces the argument that firm fundamentals remain the primary drivers of stock returns.

Implications of the Findings

The findings highlight that investment risk and IOS are robust determinants of stock returns, while market valuation does not play a moderating role. This implies that investors should prioritize firm-level risk and growth indicators rather than relying solely on market valuation metrics. For corporate managers, the results suggest that reducing investment risk and enhancing growth opportunities are more effective strategies for improving stock performance than attempting to influence market perceptions alone.

5. CONCLUSION

This study examines the effect of investment risk and the Investment Opportunity Set (IOS) on stock returns, as well as the moderating role of market valuation, using panel data from companies listed in the Kompas 100 Index over the 2018–2022 period. The empirical results provide important insights into the determinants of stock returns in an emerging market context. The findings indicate that investment risk has a negative and significant effect on stock returns, suggesting that higher risk levels tend to reduce investor confidence and lower realized returns. This result reflects the risk-averse behavior of investors in the Indonesian capital market, where uncertainty is more likely to be avoided rather than compensated by higher returns. In contrast, the Investment Opportunity Set (IOS) shows a positive and significant effect on stock returns, confirming that firms with stronger growth opportunities are more attractive to investors and are rewarded with higher returns. Market valuation, however, does not exhibit a significant direct effect on stock returns and fails to moderate the relationship between investment risk and stock returns or between IOS and stock returns. This indicates that market valuation functions as an independent factor rather than a moderating mechanism, and it does not strengthen or weaken the influence of firm fundamentals on stock performance. This study emphasizes the dominant role of firm-specific fundamentals—particularly investment risk and growth opportunities—in explaining stock returns. The results imply that investors and managers should focus more on managing risk and enhancing investment opportunities than on market valuation indicators alone.

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