TESTING THE CAPITAL ASSET PRICING MODEL AND SENTIMENT ON STOCKS LISTED ON THE INDONESIA STOCK EXCHANGE

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Abstract

The Capital Asset Pricing Model (CAPM) provides a strong theoretical foundation for understanding stock returns; however, the dynamics of modern financial markets indicate that stock price movements are influenced not only by market risk but also by psychological factors, particularly sentiment. This study aims to analyze the effects of market risk premium, investor sentiment, and market sentiment on excess stock returns of companies listed on the Indonesia Stock Exchange (IDX). The sample consists of 93 companies listed on the IDX during the 2013–2023 period. Panel data regression analysis using the Common Effect Model is employed to test the research hypotheses. The results show that the market risk premium and investor sentiment have a positive and significant effect on excess stock returns in Indonesia. However, market sentiment does not have a significant effect on excess stock returns. These findings enrich the theoretical understanding of the relevance of the Capital Asset Pricing Model and stock market behavior in Indonesia. For investors, investment timing strategies can be implemented based on changes in market sentiment and market risk premium conditions to maximize potential returns.

Keywords: Capital Asset Pricing Model; Sentiment; Excess Return; Market Behavior

INTRODUCTION

In financial theory, one of the fundamental approaches used to explain the relationship between risk and stock returns is the Capital Asset Pricing Model (CAPM). CAPM is widely recognized and frequently applied in stock valuation due to its relatively simple framework in linking risk and return. The model introduces the core concepts of systematic risk and the market risk premium. Proposed by Sharpe (1964), CAPM asserts that a stock's return is determined by non-diversifiable systematic risk, which is reflected in its beta value. Beta represents the sensitivity of a stock's excess return to the excess return of the market. Although CAPM provides a strong theoretical foundation for understanding stock returns, the dynamics of modern financial markets indicate that stock price movements are not solely driven by fundamental factors such as market risk. In many cases, stock prices are influenced by psychological factors, particularly investor sentiment and market sentiment. Investor sentiment reflects the degree of optimism or pessimism held by individuals toward a particular stock, while market sentiment represents the collective mood of investors toward overall market conditions. These factors often lead investors to overreact to information, causing stock prices to deviate from their fundamental values.

Psychological factors frequently encourage investors to buy or sell stocks without strong fundamental analysis. In recent years, several events have contributed to downturns in the performance of the Indonesian stock market. In 2013 and 2015, declines in the Composite Stock Price Index (IHSG) coincided with weakening consumer confidence indices. Events during these periods included a 0.5% increase in the Federal Reserve's interest rate and a slowdown in China's economic growth to 6.9%. These conditions triggered investor pessimism toward financial markets and adversely affected IHSG performance. Furthermore, during the 2020 pandemic, the consumer confidence index experienced a sharp decline, reaching a level of 92. This decrease was followed by a contraction in the IHSG of up to −5.7%. However, as economic recovery progressed following the COVID-19 pandemic, consumer confidence rebounded in 2021 to 118.5. This improvement fostered increased investor optimism in the Indonesian stock market, as reflected by a 10.1% increase in the IHSG (www.idc.co.id).
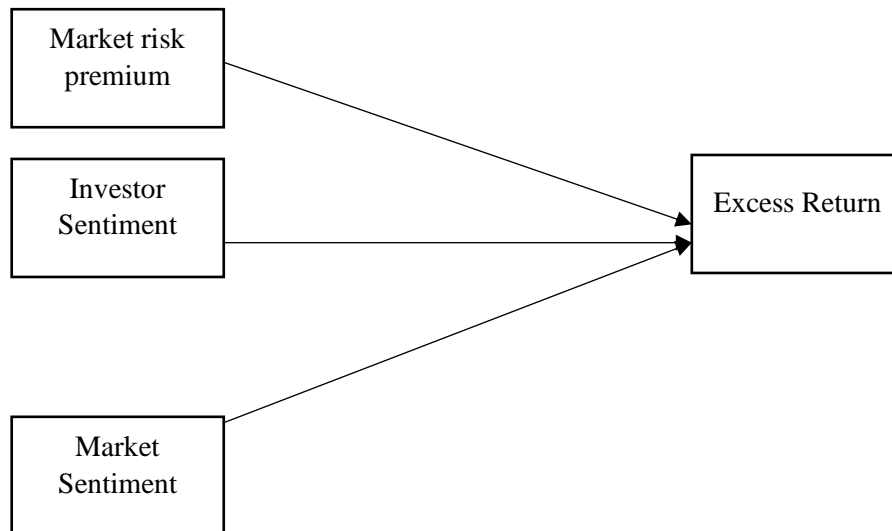
In the Indonesian stock market, these conditions are reflected in IHSG fluctuations, which experience sharp declines when negative sentiment dominates and recover when sentiment improves. Such fluctuations highlight the importance of understanding the relationship between investor sentiment and stock performance in anticipating risks

and exploiting opportunities in the Indonesian capital market. These dynamics suggest that a combination of market risk as a fundamental factor and sentiment as a psychological factor plays a crucial role in determining excess returns in the Indonesian stock market. Sentiment refers to excessive optimism or pessimism toward a particular stock, economic conditions, and financial markets. Many studies do not distinguish between measures of investor sentiment and market sentiment; however, this study explicitly differentiates between these two factors to enrich the analysis and examine the extent of their effects on stock price movements. Investor sentiment represents the general feelings and beliefs held by individuals toward a specific stock, while market sentiment reflects the level of confidence in overall financial market conditions. This study tests the Capital Asset Pricing Model by incorporating investor sentiment and market sentiment factors. The findings are expected to assist investors and policymakers in designing investment strategies that are more adaptive to changes in market dynamics, while also contributing theoretical value. Understanding the relationship among these three variables is essential in stock pricing, as it enables investors to identify the risk factors influencing stock prices. This research also enriches the literature on the relevance of capital asset pricing and market behavior within the Indonesian context.

Hossan and Abedin (2019) found that, using the Capital Asset Pricing Model, the market risk premium has a positive and significant effect on excess returns across all portfolios on the Dhaka Stock Exchange. Similarly, Imran (2021) reported that the market risk premium drives total expected stock returns and serves as a primary determinant of the cost of equity. Maheu et al. (2013) demonstrated that jump risk and jump dynamics are significantly related to market equity premiums and excess returns. CAPM is an asset pricing model used to determine the relationship between risk and expected returns. One limitation of CAPM is that it considers only the market risk premium as a factor influencing expected returns. Subsequent studies have shown that market risk premium alone is insufficient to predict stock returns. CAPM has been challenged on the grounds that abnormal returns are not proportional to beta (Fama & French, 1992). Several studies have examined investor sentiment. Rupandee et al. (2019) found a significant relationship between investor sentiment and stock return volatility. Batten and Vo (2014) reported that share turnover is positively correlated with stock returns. Stambaugh et al. (2014) demonstrated that investor sentiment can predict anomaly returns in the cross-section of stock returns. Nabosu and M'ithiria (2022) concluded that higher investor sentiment leads to higher stock returns. Yang et al. (2021) found that individual stock sentiment betas differ across sample periods (bull and bear markets). Xu and Zhou (2018) also examined the effect of investor sentiment on returns. Zhang et al. (2023) highlighted the importance of investor sentiment in the Australian stock market, showing that return anomalies become stronger following periods of high sentiment. This suggests that stocks with higher sentiment may generate greater returns. Market liquidity also increases when sentiment indices rise (Shuming Liu, 2015).

Investor sentiment is a variable that can shape stock market prices through investors' beliefs about future cash flows (Beer & Zouaoui, 2013). Yang et al. (2021) further showed that individual stock sentiment betas vary across different market conditions (bull and bear). Excess stock returns are positively associated with future excess returns during periods of positive market mood, and vice versa (Li, 2022). Declining sentiment and the implementation of lockdowns during the COVID-19 pandemic led to poor market liquidity and stability (Baig et al., 2020). However, price declines did not occur uniformly across all sectors. Lockdown policies during the COVID-19 pandemic did not significantly affect technology, healthcare, and real estate stocks (Bouri et al., 2021). Research also supports the notion that the Indonesian stock market is not fully efficient (Rambeli et al., 2022), implying that past, public, and private information is not fully reflected in stock prices. Based on the reviewed studies, it can be concluded that investor sentiment has a positive influence on stock returns, either directly or indirectly through volatility.

Al-Awadhi et al. (2023) found that market sentiment plays an important role in explaining economic and financial impacts. Several studies have identified a positive relationship between investor sentiment and excess stock market returns (Daszyńska-Żygadło et al., 2015). Daszyńska-Żygadło et al. (2015) also found a positive relationship between sentiment indices/optimism indices and excess stock market returns in Brazil and China. The predictive power of sentiment for excess returns appears to increase under favorable market conditions (Yadav & Naik, 2023). This suggests that investor sentiment levels are influenced by confidence in economic conditions, which in turn affects investor mood in investment decision-making. Kuo and Huang (2022) found that market sentiment has a positive effect on excess returns. Based on these previous studies, the proposed research framework is as follows:

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┌─────────────────┐
│  Market risk    │
│  premium        │──────────────┐
└─────────────────┘              │
                                  ▼
┌─────────────────┐        ┌─────────────────┐
│  Investor       │        │                 │
│  Sentiment      │───────▶│  Excess Return  │
└─────────────────┘        │                 │
                           └─────────────────┘
                                  ▲
┌─────────────────┐              │
│  Market         │──────────────┘
│  Sentiment      │
└─────────────────┘
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Based on the background and literature review presented above, the following hypotheses are formulated:

H1: The market risk premium has a positive effect on stock excess returns.
H2: Investor sentiment has a positive effect on stock excess returns.
H3: Market sentiment has a positive effect on stock excess returns.

RESEARCH METHODOLOGY

This study uses data from companies listed on the Indonesia Stock Exchange (IDX). The research sample consists of 93 companies over the period 2012–2023. The target population selected as the research sample is determined based on the following criteria: (1) company stocks that are consistently listed throughout the observation period from January 2011 to December 2023, as this study also employs lagged data (t−2); (2) company stocks with non-zero trading volume for 12 consecutive months, a criterion applied to exclude inactive stocks or those with low liquidity.

The sectors examined in this study include agriculture; basic and chemical industries; consumer goods industries; infrastructure, utilities, and transportation; mining; miscellaneous industries; property, real estate, and building construction; as well as trade, services, and investment.

To test the hypotheses, this study employs stock excess returns $(R_{i,t} - R_{f,t})$, market risk premium $(Rm_t - Rf_t)$ investor sentiment (IS) dan market sentiment (MS) in the following econometric model:

$$R_{i,t} - R_{ft} = \alpha_0 + \beta_1(Rm_t - Rf_t) + \beta_2 IS_{i,t} + \beta_3 MS_t$$

where Ri,tR_{i,t}Ri,t denotes the stock return of firm i in period t, calculated as $R_{i,t} = \ln \frac{\text{Closing Price}_t}{\text{Closing Price}_{t-1}}$; Rf_t is the risk-free rate of return; Rm_t is the market return in period t, calculated as $Rm_t = \ln \frac{\text{IHSG}_t}{\text{IHSG}_{t-1}}$; ISit denotes investor sentiment toward a firm in period t, calculated as $\text{Adjusted share turnover} = \frac{R_{i,t}}{|R_{i,t}|} \times \frac{\text{trading volume}}{\text{number of outstanding shares}}$; MS_t is the market sentiment represented by Indonesia's Consumer Confidence Index in period t; $\propto_1$ is a constant; β_1, β_2, β_3 is the regression coefficient of each variable; εit is the error term.

RESULT AND DISCUSSION

Based on descriptive statistics consisting of 1,023 observations, the following results are obtained:

Tabel 1. Hasil Statistik Deskriptif

	Ri-Rf	Rm-Rf	IS	MS
Rata-rata	-0.029	-0.012	0.005	116.027
Median	-0.035	-0.024	0.000	119.100
Maksimum	2.152	0.179	1.642	124.200
Minimum	-1.307	-0.211	-0.917	92.000
Standar Deviasi	0.327	0.112	0.105	9.399
Observasi	1023	1023	1023	1023

Sumber: Data Diolah dengan Eviews, 2025

The average values of Ri–Rf and Rm–Rf are both negative, amounting to −0.029 and −0.012, respectively, indicating that during the observation period investors did not achieve maximum returns, either at the individual stock level or at the overall market level. The standard deviation of Ri–Rf is 0.327, which is higher than that of Rm–Rf at 0.112, suggesting that the volatility of individual stocks is relatively greater than overall market volatility. Meanwhile, IS has an average value close to zero, reflecting that investor sentiment toward stocks in the Indonesian capital market tends to be neutral, although it exhibits higher volatility than market risk. On the other hand, MS records an average value above 100, indicating that overall market sentiment remains optimistic

Tabel 2. Correlation Matrix

	Ri-Rf	Rm-Rf	IS	MS
Ri_Rf	1			
Rm_Rf	0.303***	1		
IS	0.325***	0.056*	1	
MS	0.121***	0.337***	0.018	1

Notes: *** significant at 1%; ** significant at 5%; * significant at 10%
Source: Data processed using EViews, 2025

The correlation matrix among variables presented in Table 2 shows that the Ri–Rf variable has a positive and statistically significant correlation at the 1% level with Rm–Rf (0.303), IS (0.325), and MS (0.121), indicating the need to examine the effects of Rm–Rf, IS, and MS on Ri–Rf. Other variables that exhibit a statistically significant positive correlation at the 1% level are MS and Rm–Rf (0.337). In addition, IS and Rm–Rf show a positive correlation at the 5% significance level, whereas MS and IS do not exhibit a statistically significant correlation

Table 3. Model Estimation Selection

Type of Statistical Test	Value
Chow Test (LR Tst)	
Cross-sectional Chi-square	92.99
Hausman Test	
Cross-section random, Chi-Sq statistic	0.000
Lagrange Multiplier Test Breusch-Pagan	0.101

Notes: ** significant at 5%
Source: Data processed using EViews, 2025

"This study employs panel data regression; therefore, the selection of the estimation model is conducted using the Chow test, Hausman test, and Lagrange Multiplier (LM) test. These tests aim to determine the most appropriate model among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Based on the test results presented in Table 3, the probability values of the Chow test, Hausman test, and

Lagrange Multiplier test are not statistically significant at the 5% significance level. Accordingly, the most appropriate estimation model for this study is the Common Effect Model (CEM)."

Table 4. Results of Panel Data Regression Analysis

Variable	Coefficient	t-Statistic	Prob.
C	-0.111	-0.913	0.362
Rm-Rf	0.811	9.265	0.000***
IS	0.958	10.931	0.000***
MS	0.001	0.720	0.472
R-squared	0.188		
Adjusted R-squared	0.185		
F-statistic	78.390		
Prob(F-statistic)	0.000		

Notes: *** significant at 1%; ** significant at 5%; * significant at 10%
Source: Data processed using EViews, 2025

"Based on Table 4, Rm–Rf has a positive effect on Ri–Rf at the 1% significance level, with a coefficient value of 0.811. Similarly, IS also has a positive effect on Ri–Rf at the 1% significance level, with a coefficient value of 0.958. However, MS does not have a statistically significant effect on Ri–Rf. The adjusted R-squared value is 0.185, indicating that the regression model is only able to explain 18.5% of the variation in Ri–Rf based on the variables Rm–Rf, IS, and MS. The results of hypothesis testing are summarized in Table 5 as follows:"

Table 5. Hypothesis Testing Results

No	Hypothesis Statement	Result
1	The market risk premium has a positive effect on stock excess returns.	Accepted
2	Investor sentiment has a positive effect on stock excess returns.	Accepted
3	Market sentiment has a positive effect on stock excess returns.	Rejected

The results of the study show that the market risk premium has a positive and significant effect on stock excess returns for companies listed on the Indonesia Stock Exchange, indicating that **H1 is accepted**. Market risk premium is a variable used in the Capital Asset Pricing Model (CAPM). The coefficient of the market risk premium is referred to as beta, which represents market risk. These findings are consistent with CAPM, which posits that market risk, as measured by beta (market risk premium), is positively correlated with stock returns (Sharpe, 1964; Lintner, 1965; Mossin, 1968). The higher the beta, the more sensitive stock returns are to market fluctuations. CAPM is a market equilibrium theory under conditions of risk. It assumes that, in equilibrium, capital asset prices adjust in such a way that rational investors (who diversify their portfolios) can obtain higher expected returns by bearing additional risk. This model is based on the theory that investors demand a premium for taking on higher levels of risk. When market risk increases, investors require higher returns on their investments, which is ultimately reflected in excess returns.

In the Indonesian and Malaysian stock markets, market risk premium tends to move in the same direction as excess returns, indicating that the performance of individual stocks is largely influenced by overall market fluctuations. Both Indonesia and Malaysia are classified as emerging markets, which tend to be more sensitive to changes in market risk premium. This sensitivity is driven by higher volatility, lower liquidity, and greater macroeconomic risk typically present in emerging markets. The Indonesian stock market is dominated by sectors that are highly dependent on macroeconomic conditions and market risk, such as the financial and banking sectors. When the market risk premium increases, these sectors generally exhibit higher excess returns due to greater risk exposure and higher expected returns demanded by investors. The positive effect of market risk premium on excess returns is also consistent with findings from several previous studies (Hossan & Abedin, 2019; Imran, 2021; Nabosu & M'ithiria, 2022). The hypothesis testing results indicate that **investor sentiment has a positive and significant effect on excess returns in the Indonesian stock market**, meaning that **H2 is accepted**. A higher level of share turnover reflects increased optimism or positive investor sentiment toward a stock. The significant relationship between investor sentiment and stock returns is supported by prior studies (Rupandee et al., 2019). Higher share turnover

indicates stronger investor optimism toward a stock, reinforcing the findings of Batten and Vo (2014), who reported a positive correlation between share turnover and stock returns. This result can be explained by market overreaction, which refers to excessive investor responses to information or events that enter the market. Such information may be either positive or negative. Once information is announced, investors form new expectations, which in turn trigger market reactions. The findings suggest that positive market sentiment—when investors feel optimistic and confident about a stock's prospects—is closely associated with higher returns above the risk-free rate. Conversely, when negative sentiment dominates and investors become pessimistic, excess returns tend to decline. Investors often make decisions based on perceptions and emotions rather than purely on fundamental analysis. In this context, investor sentiment can directly influence market movements, particularly in more reactive markets such as Indonesia and Malaysia. For example, these markets tend to be highly sensitive to news, policy changes, and external factors that can rapidly alter investor perceptions.

The positive impact of investor sentiment on excess returns in the Indonesian and Malaysian stock markets also indicates the presence of market inefficiency. Stock prices do not fully reflect fundamental values but are influenced by external factors such as investor sentiment. In this case, positive investor sentiment drives stock prices upward, thereby increasing excess returns. When positive sentiment dominates the market, stock prices tend to rise sharply, generating higher excess returns for investors. Positive sentiment toward a stock tends to increase when investors are optimistic about a company's performance, as reflected in rising stock prices driven by higher demand. Such positive sentiment is typically triggered by factors such as strong financial performance, favorable news or announcements, profitable expansions or acquisitions, supportive economic conditions, and favorable industry trends. These factors enhance investor optimism regarding a company's stock performance, ultimately leading to higher excess returns. These findings are supported by Nabosu and M'ithiria (2022), who concluded that higher investor sentiment leads to higher stock returns. Conversely, negative sentiment intensifies in response to poor financial reports, unfavorable news or announcements, deteriorating economic conditions, and declining industry trends. These factors foster investor pessimism regarding company performance, ultimately resulting in lower stock prices and reduced excess returns. The results also indicate that **market sentiment does not have a positive and significant effect on excess returns**, meaning that **H3 is rejected**. This finding suggests that changes in market sentiment do not exert a strong

Conclusion

Based on the results of the study and the discussion presented above, it can be concluded that the market risk premium has a positive and significant effect on stock excess returns of companies listed on the Indonesia Stock Exchange; therefore, the first hypothesis (H1) is accepted. This finding indicates that the higher the market risk reflected in beta values, the higher the excess return demanded and obtained by investors. This result is consistent with the Capital Asset Pricing Model (CAPM), which states that systematic risk is a primary determinant of stock returns, and aligns with the seminal studies of Sharpe (1964), Lintner (1965), and Mossin (1968). In addition, the study finds that investor sentiment has a positive and significant effect on stock excess returns, leading to the acceptance of the second hypothesis (H2). High share turnover reflects investor optimism, which increases stock demand and ultimately raises excess returns. This finding indicates the presence of investor overreaction to market information, particularly in emerging stock markets such as Indonesia and Malaysia, which are relatively more sensitive to sentiment changes. Thus, investment decisions are not solely based on fundamental factors but are also influenced by psychological and emotional considerations.

Conversely, the results show that market sentiment does not have a significant effect on excess returns; therefore, the third hypothesis (H3) is rejected. This finding suggests that aggregate market sentiment has not yet become a major factor in explaining variations in stock excess returns. Changes in market sentiment tend to have statistically inconsistent effects on excess returns, making their influence relatively weaker compared to market risk premium and individual investor sentiment. This result implies that general market sentiment information has not been fully or efficiently incorporated by investors in the Indonesian and Malaysian stock markets. Overall, the findings indicate that the Indonesian and Malaysian stock markets are not yet fully efficient, as stock price movements are influenced not only by systematic risk factors but also by investor sentiment. This underscores the importance of combining classical financial approaches (CAPM) with behavioral finance perspectives to better understand the formation of stock excess returns in emerging markets. For investors, the analysis of market sentiment and market risk premium can be used as part of an investment strategy, particularly for short-term decision-making. Since sentiment and market risk premium are proven to have a positive impact on stock returns, investors may engage in market timing strategies based on changes in sentiment and market risk premium conditions to maximize potential

returns. Investors should also pay close attention to information that influences market sentiment, such as economic news, government policies, and global developments that may increase optimism or pessimism in the stock market.

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