“The moderating role of investor sentiment on profitability and investment premiums: Evidence from the Indonesian stock market”

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ARTICLE INFO	Zaida Rizqi Zainul, Khaira Amalia Fachrudin, Syahyunan and Nisrul Irawati (2025). The moderating role of investor sentiment on profitability and investment premiums: Evidence from the Indonesian stock market. *Investment Management and Financial Innovations*, *22*(2), 100-111. doi:10.21511/imfi.22(2).2025.09
DOI	http://dx.doi.org/10.21511/imfi.22(2).2025.09
RELEASED ON	Friday, 18 April 2025
RECEIVED ON	Saturday, 05 October 2024
ACCEPTED ON	Monday, 31 March 2025
LICENSE	This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
48	0	5

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

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THE MODERATING ROLE OF INVESTOR SENTIMENT ON PROFITABILITY AND INVESTMENT PREMIUMS: EVIDENCE FROM THE INDONESIAN STOCK MARKET

Abstract

Common market anomalies tested in developed markets have been considered adequate to explain behavior there. However, the different characteristics in emerging markets such as Indonesia make traditional asset pricing models inadequate. Furthermore, this study highlights the importance of integrating company fundamentals and investor sentiment. This study enriches the asset pricing method in Indonesia and supports the theory of market signals and anomalies. This study analyzes the moderating role of investor sentiment on the relationship between profitability premium, investment premium, and stock returns in one of the emerging markets, Indonesia. The study uses panel data from 93 companies in Indonesia from 2013 to 2023. Portfolio construction with the five-factor model is used. The analysis method used is moderated regression analysis or interaction testing. The study results show that profitability premium and excess return interact significantly with investor sentiment at the 1% level, so investment premium and excess return interact significantly with investor sentiment at the 1% level. This study shows that investor sentiment plays a role in strengthening the premiums for profitability and investment. The findings of this study indicate that considering a company's financial condition and sentiment level is essential for investors and investment managers in implementing long-term stock investment analysis strategies in emerging markets such as Indonesia. This study can support market stability policies, such as tighter supervision, when negative sentiment has the potential to cause a decline in stock prices that is disproportionate to fundamentals.

Keywords profitability, investment, investor sentiment, market anomalies, asset pricing, signaling theory

JEL Classification G41, G12, G11, G14

Received on: 5th of October, 2024
Accepted on: 31st of March, 2025
Published on: 18th of April, 2025

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Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

One of the asset pricing models widely used to explain stock price anomalies is the Three-Factor model, first introduced by Fama and French (1993). This model is an extension of the Capital Asset Pricing Model, used to explain asset returns. In its development, Fama and French (2015) added profitability and investment premiums to predict stock returns and examine anomalous patterns. Their study shows that adding profitability and investment factors makes the value factor in the three-factor model redundant in explaining average returns. Fama and French (2017) retested the model in international markets and found a weak relationship between average returns and profitability and investment.

Although there are many studies on profitability and investment anomalies, the findings still need to be more varied and conclusive. This study suspects that the inconsistent effects of the profitability premium and investment premium on returns are due to other factors

http://dx.doi.org/10.21511/imfi.22(2).2025.09

that determine the pattern of stock returns. The study focuses on two factors from the Fama and French (2015) model – profitability and investment premium – because these variables represent anomalies driven by a company's fundamentals. An increase in corporate profits is good news, while a decrease is bad news for investors. Companies with aggressive growth tend to retain a large portion of their earnings for investment, making them less attractive to investors.

The Indonesian stock market is one of the emerging markets with characteristics different from those of developed markets. Liquidity in developed stock markets is generally high, while liquidity is often lower in emerging stock markets like Indonesia. This can cause sharper price changes. Indonesia's more volatile stock market usually makes investors look for stocks that are considered stable. During the pandemic, the consumer confidence index dropped to 92, which negatively impacted the Indonesian stock market. In 2020, the Indonesian Composite Stock Price Index plunged by –5.7%. Based on initial observations from 2013 to 2023, it shows that one of the companies engaged in the banking sector, namely BBRI, with an operating profit of 37% and an asset growth rate of 1.13, was able to generate a relatively high average return of 29.3%. Meanwhile, PTPP, a company engaged in the construction and investment sector with a lower operating profit of 7% and a higher asset growth rate of 1.21, generated a lower average return of 6.3%. This could be caused by investor sentiment towards growth opportunities and company risks in the future.

Investor sentiment is an important variable influencing market behavior, especially in more emotional or volatile markets such as Indonesia. High levels of optimism or, conversely, excessive pessimism towards certain stocks and the financial market can increase or decrease stock trading. Pessimism towards a stock will cause its return to decrease, while optimism will cause increased trading activity. In this context, it is essential to understand how investor sentiment can moderate the relationship between profitability and investment premiums.

1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Market anomalies have long been of interest to academics and practitioners. Anomalies contradict efficient market theory because anomalies indicate the existence of opportunities for abnormal returns that should not be possible in a truly efficient market. Prospect theory provides insight into decision making under uncertainty and how investor behavior can deviate from rationality, contributing to anomalies and inefficient traders (Evstigneev et al., 2013). Different regions have different types of anomalies, and the significance of certain factors varies across regions (Kubota & Takehara, 2018). Anomalies in profitability and investment effects reveal patterns in stock returns that deviate from efficient market theory in which prices should reflect available information. Some investors may respond to news or market events with overreaction behavior, or conversely, investors may be slow to react (underreact) when answering questions and adjusting their portfolios to new information. Das and Krishnakumar (2016) found that overreaction is often a response to market inefficiencies, thus challenging the notion of market rationality. This behavior can create a gap between market prices and their intrinsic values, leading to anomalies. According to the market overreaction hypothesis (Bondt & Thaler, 1985), the market has overreacted to information. This hypothesis is supported by empirical evidence showing that stocks classified as winners or losers tend to experience subsequent reversals due to investor overreaction to news (Meiliani et al., 2021). Signaling theory states that companies use certain actions or signals to convey information to the market that affects investor perceptions and stock prices (Downes & Heinkel, 1982). Profitability strengthens a company's positive reputation signal in the eyes of investors (Alghifari et al., 2022). Profitability has an impact on increasing demand and stock prices (Amarudin et al., 2019; Jihadi et al., 2021). Companies with higher profitability ratios tend to outperform less profitable companies on a risk-adjusted basis (Delisle et al., 2020; Bouchaud

et al., 2019). The profitability effect anomaly is a pattern that shows that more profitable firms have higher stock returns on average (Haugen & Baker, 1996; Cohen et al., 2002). In a five-factor model, Fama and French (2015) found a positive relationship between the profitability premium of firms and expected returns. The profitability premium is significant in both developed and emerging countries (Mosoeu & Kodongo, 2022). However, several other studies have shown that the profitability premium does not affect excess returns (Hossain, 2022; Nsibande & Sebastian, 2023). Profitability and investment factors only show a weak effect on excess returns in the Indonesian stock market (Sutrisno & Ekaputra, 2016).

In addition to profitability factors, Fama and French (2015) showed that companies with low investment (conservative) tend to have higher returns than companies with high investment (aggressive). This is supported by several studies which also state that companies that invest more (aggressive) have lower stock returns (Fairfield et al., 2003; Titman et al., 2004). Arsyad et al. (2021) stated that higher earnings retention is correlated with lower dividend payout ratios, which can reduce the attractiveness of stocks for those seeking fixed income. Cooper et al. (2008) found that investor interest in certain stocks drives asset growth anomalies. Sadhwani et al. (2018) stated that investment factors are important for understanding the impact of investor sentiment on premiums associated with investment patterns. Leite et al. (2018) found that investment premiums have a positive impact on excess returns in emerging stock markets. However, several other studies show different results, namely that investment premiums have a negative effect on excess returns in African stock exchanges (Cox & Britten, 2019). Investment premiums do not significantly affect excess returns in the five-factor model in emerging stock markets (Hanauer & Lauterbach, 2019).

When investors make investment decisions, sentiment can arise due to psychological conditions, which influence the decision (Blajer-Gołębiewska et al., 2018). Indonesian investors systematically overreact to unexpected information, resulting in extreme market responses (Nareswari et al., 2021). Several studies have examined the effect of investor sentiment on returns (Baker & Wurgler, 2006; Xu & Zhou, 2018). Kuo and Huang (2022) found that investor sentiment has a positive effect on excess returns. Rupande et al. (2019) found a significant relationship between investor sentiment and stock return volatility. Yang and Hu (2021) found that individual stock sentiment betas differed during different sample periods (bull and bear). Bouri et al. (2022) revealed that the lockdown policy during the COVID-19 pandemic had no significant impact on technology, health, and real estate stocks. Research by Daszyńska-Żygadło et al. (2015) found a positive relationship between the sentiment index/optimism index and excess stock market returns in Brazil and China. The impact of sentiment is particularly pronounced during crises, such as the COVID-19 pandemic that caused an overreaction in global stock markets (Liu et al., 2020). Other studies have shown that sentiment is important in explaining economic and financial impacts, including the COVID-19 outbreak (Al-Awadhi et al., 2020).

High stock turnover is often associated with bullish market sentiment and vice versa. Khan Saleem (2022) emphasized that stock turnover can be an indirect proxy for investor sentiment, reinforcing that active trading indicates a positive market attitude. Furthermore, the impact of investor sentiment on stock turnover is supported by Shams (2018), who identified stock turnover as one of the main measures of investor expectations in the Egyptian stock market. Liang et al. (2022) found that investor sentiment, as measured by turnover rate and other indicators, significantly affects stock market returns. Several studies have examined the effect of investor sentiment on returns (Baker & Wurgler, 2006; Xu & Zhou, 2018). Zhang et al. (2023) stated the importance of investor sentiment in the Australian stock market, where return anomalies become stronger after periods of high sentiment. Investor sentiment is a variable that can shape stock market prices due to investor beliefs about future cash flows (Beer & Zouaoui, 2013). Investor sentiment significantly increases the profitability premium (Habibah et al., 2021). Research shows that periods of high investor sentiment can strengthen the profitability effect anomaly (Dai, 2020). The existence of anomalies can be influenced by market conditions; for example, certain anomalies can become unprofitable over time or show varying levels of profitability depending on stock market developments (Czapkiewicz et al., 2019).

http://dx.doi.org/10.21511/imfi.22(2).2025.09

Profitability and investment anomaly effects are phenomena that contradict traditional financial theories, such as the efficient market hypothesis. This anomaly is influenced by psychological factors and reactions to market information. Investor sentiment can affect stock returns, but its effect on premiums from profitability and investment in the Indonesian stock market has not been widely explored. The paper explores investor sentiment, which plays an important role in moderating the relationship between profitability anomalies, investment, and excess returns in the Indonesian stock market. Based on the discussion above, the hypotheses of this study are as follows:

H1: Profitability premium has a positive effect with excess returns.

H2: Investment premium has a positive effect with excess returns.

H3: Investor sentiment moderates the relationship between profitability premium and excess returns.

H4: Investor sentiment moderates the relationship between investment premium and excess returns.

2. METHOD

The sample included 93 companies with a study period of 2012–2023, resulting in 1,023 observations. The target population used as the research sample was determined based on the following criteria: 1) Shares of companies that were consistently listed during the observation period from January 2011 to December 2023 because this study also uses t-2 data, 2) Shares of companies whose trading volume is not zero for 12 consecutive months, this criterion is to avoid inactive shares or shares with low liquidity levels. 3) Shares whose operating profit margin value is never negative, 4) shares whose book-to-market value is never negative. The sample companies are spread across eight industrial sectors as classified by the Indonesia Stock Exchange (IDX). These sectors are agriculture, primary and chemical industries, consumer goods industry infrastructure, utilities and transportation, mining, miscellaneous sector, property, real estate, building construction, trade, services, and investment.

This study uses financial report data from Indonesia Stock Exchange (IDX) companies. Other data used in this study are the Indonesia composite index, BI 7-day reserve repo rate, and Indonesia consumer confidence index. The data set of companies listed on the Indonesian Stock Market from 2013 to 2023 was taken from the Indonesian Stock Exchange database, while the BI seven-day repo rate and consumer confidence index data were obtained from Bank Indonesia.

This study analyzes the moderating impact of investor sentiment on profitability and investment premiums in the Indonesian stock market. The analysis model used is moderated regression analysis with a standard effect model. The following is a multiple regression equation without interaction:

$$R_{it} - R_f = \alpha_0 + \alpha_1\left(R_{mt} - R_f\right) + \alpha_2 SMB_t + \alpha_3 HML_t + \alpha_4 RMW_t + \alpha_5 CMA_t + \varepsilon_{it}, \quad (1)$$

where R_{it} is the excess return of a company's stock in period *t*. R_{mt} is the excess return of the market, SMB_t is small minus big in period *t*; HML_t is High Minus Low in period *t*; RMW_t is Robust Minus Weak in period *t* and CMA_t is conservative minus aggressive in period *t*; ε_{it} is the error term; α_1-α_5 are each regression coefficient of the variables.

The following is a regression equation with interaction:

$$R_{it} - R_f = \beta_0 + \beta_1\left(R_{mt} - R_f\right) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 RMW_t + \beta_5 CMA_t + \beta_6 IS_{it} + \beta_7 RMW_t \cdot IS_{it} + \beta_8 CMA \cdot IS_{it} + e_{it}, \quad (2)$$

where $RMW_t \cdot IS_{it}$ is the interaction between profitability premium and investor sentiment; $CMA \cdot IS_{it}$ is the interaction between investment premium and investor sentiment; β_0 is a constant, $\beta_1 - \beta_8$ are the respective regression coefficients of the variables.

Portfolio formation is used based on the Five-Factor model (Fama & French, 2015) to measure the factors influencing excess stock returns: size, value, profitability, and investment. The 2×3 sorts portfolio is grouped annually based on market

capitalization, operating profit, book-to-market, and growth assets. In this study, investor sentiment is added, which interacts with profitability and investment premiums. The definition and measurement are as follows:

Size premium is the average return of a portfolio of small-cap stocks minus the average return of big stocks. Size premium can be calculated as follows:

$$SMB = \frac{SMB_{B/M} + SMB_{OP} + SMB_{INV}}{3}, \quad (3)$$

where

$$SMB_{(B/M)} = \frac{(SH + SN + SL)}{3} - \frac{(BH + BN + BL)}{3}, \quad (4)$$

$$SMB_{(OP)} = \frac{(SR + SN + SW)}{3} - \frac{(BR + BN + BW)}{3}, \quad (5)$$

$$SMB_{(INV)} = \frac{(SC + SN + SA)}{3} - \frac{(BC + BN + BA)}{3}, \quad (6)$$

SH is the average return of stocks with small market capitalization and a high book to market ratio; *SL* is the average return of stocks with small market capitalization and a low book to market ratio; *BH* is the average return of stocks with big market capitalization and a high book to market ratio; *BL* is the average return of stocks with big market capitalization and a low book market ratio; *SR* is the average return on stocks with small market capitalization and robust profitability; *SW* is the average return of stocks with small market capitalization and weakness profitability; *BR* is the average return on stocks with big market capitalization and robust profitability; *BW* is the average return of stocks with big market capitalization and weakness profitability; *BC* is the average return on stocks with big market capitalization and conservative asset growth; *BA* is the average return on stocks with big market capitalization and aggressive asset growth; *SN* and *BN* are the average return on neutral stock return (median); $SMB_{B/M}$ is the average return formed from market capitalization minus book to market portfolio; SMB_{OP} is the average return of the market capitalization minus operating profitability portfolio; SMB_{INV} is the average return of the market capitalization minus asset growth portfolio; *SMB* is Small Minus Big.

Value premium is the average of the returns of the portfolio with high book-to-market (value stocks) minus the average of the two returns of the portfolio with low book-to-market (growth stocks). Value premium can be calculated as follows.

$$HML = \frac{(SH + BH)}{2} - \frac{(SL + BL)}{2}, \quad (7)$$

where *HML* is high minus low.

Profitability premium is the average of the returns of the portfolio with high operating profit (robust stocks) minus the average of the two returns of the portfolio with low operating profit (weak stocks). The profitability premium can be calculated as follows:

$$RMW = \frac{(SR + BR)}{2} - \frac{(SW + BW)}{2}, \quad (8)$$

where *RMW* is robust minus weak.

The investment premium is the average of the returns of the low-growth asset portfolio (conservative stocks) minus the average of the two returns of the high-growth asset portfolio (aggressive stocks). Investment premium can be calculated as follows:

$$CMA = \frac{(SC + BC)}{2} - \frac{(SA + BA)}{2}, \quad (9)$$

where *CMA* is conservative minus aggressive.

Investor sentiment is an optimistic or pessimistic attitude toward a stock in general (Baker and Wurgler, 2006. Investor sentiment is calculated using the formula (Yang et al., 2017) as follows:

$$Adjusted\ share\ Turnover = \frac{R_{it}}{|R_{it}|} \cdot \frac{trading\ volume}{number\ of\ outstanding\ shares}. \quad (10)$$

http://dx.doi.org/10.21511/imfi.22(2).2025.09

3. RESULT

As reported in Table 1, the average excess return of companies in Indonesia was negative, –0.0292, in the 11-year study period. This value aligns with the average market risk premium, which only reaches –0.0118. Although some companies achieve the highest return value of 2.1515, this value has yet to increase the average excess return of stocks in Indonesia because many companies still generate low returns. The standard deviation value of the excess return of 0.3268 indicates a high volatility risk in investing in the Indonesian stock market.

The number of samples consists of 93 companies with a research period of 2013–2023 so the total observations are 1,023. *Ri-Rf* is the excess return; *Rm-Rf* is the excess return market; *SMB* is Small Minus Big; *HML*: High Minus Low; *CMA* is Conservative Minus Aggressive; *RMW* is Robust Minus Weak; *IS* is Investor Sentiment.

Based on observation, the size, profitability, and investment premiums are lower than the value premium. This is indicated by the *SMB*, *CMA*, and *RMW* averages of only 0.0261, –0.0056, and 0.0101, respectively, while the average for *HML* is 0.1445. However, *SML*, *HML*, *RMW*, and *CMA* have reached maximum values of 0.1677, 0.5258, 0.1401, and 0.1510, respectively. The minimum value of *SMB* is –0.0575, which indicates that there is still a tendency for anomalies due to the size effect in the Indonesian stock market, although, on average, it is small. A standard deviation of only 0.07 supports this. The minimum values of *HML*, *CMA*, and *RMW* have been negative, namely –0.10, –0.18, and –0.12, respectively. This shows that Indonesian investors do not always consider the condition of the company's financial statements or the company's fundamentals when assessing stocks. Indonesian investors tend to believe in market conditions and price volatility.

The number of samples consists of 93 companies with a research period of 2013–2023 so the total observations of 1,023 each year are 93 companies. *Ri–Rf* is the excess return; *Rm–Rf* is the excess return market; *SMB* is Small Minus Big; *HML*: High Minus Low; *CMA* is Conservative Minus Aggressive; *RMW* is Robust Minus Weak; *MS* is Market Sentiment.

The correlation matrix between variables is presented in Table 2. *Ri–Rf* has a significant positive correlation at the 1% level with *HML* (0.1191), *CMA* (0.0885), and *IS* (0.3252). The significant correlation between IS and *Ri–Rf* indicates that investor sentiment can be a moderating factor. SMB shows a very weak or insignificant correlation with *Ri–Rf*, indicating that the effect of market capitalization on returns needs to be seen strongly in this data. *Rm–Rf* has a significant positive correlation at the 1% level with *HML* (0.2554), *RMW* (0.0920), and *CMA* (0.2622). *SMB* has a significant positive correlation at the 1% level with *CMA* (0.04734), while it has a significant negative correlation at the 1% and 5% levels with *HML* (–0.3320) and *RMW* (–0.0697), respectively. *HML* has a significant pos-

Table 1. Descriptive statistics

	Ri–Rf	Rm–Rf	SMB	HML	CMA	RMW	IS
Mean	–0.0292	–0.0118	0.0261	0.1445	–0.0056	0.0101	0.0045
Max	2.1515	0.1788	0.1677	0.5258	0.1401	0.1510	1.6421
Min	–1.3069	–0.2114	–0.0575	–0.1006	–0.1817	–0.1156	–0.9172
Std Dev	0.3268	0.1122	0.0692	0.1673	0.0876	0.0893	0.1055

Table 2. Correlation matrix

	$Ri_{it}–Rf_t$	$Rm_t–Rf_t$	SMB_t	HML_t	RMW_t	CMA_t	IS_t
$Ri_{it}–Rf_t$	1						
$Rm_t–Rf_t$	0.3030***	1					
SMB_t	–0.0216	–0,070	1				
HML_t	0.1191***	0.2554***	–0.3320***	1			
RMW_t	–0.0397	0.0920***	–0.0697**	0.0550*	1		
CMA_t	0.0885***	0.2622***	0.04734***	0.1321***	0.1771***	1	
IS_t	0.3252***	0.0565	0.0185	–0.0008	–0.0005	–0.0289	1

Table 3. Test results for the appropriate estimating models

Type of Statistical Test	Model 1	Model 2
Chow Test (LR Tst) Cross-sectional Chi-square	94.0036	89.8524
Hausman Test Cross-section random, Chi-Sq statistic	0.0000	6.2084
Lagrange Multiplier Test Breusch-Pagan	0.0608	0.3074

Note: ** Significant at 5%.

itive correlation at the 1% and 5% levels with *CMA* (0.1321) and *RMW* (0.0550), respectively. *RMW* has a significant positive correlation at the 1% level with *CMA* (0.1771).

Because this study uses a panel data regression model, the Chow, Hausman, and Lagrange tests are used to select the appropriate analysis model with the following results:

Table 3 shows the results of the Chow test, Hausman test, and Lagrange Multiplier (LM) test. This test is carried out to decide whether the model is Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM). If the probability of the Chow test and the Hausman test is less than the significance level (α = 5%), the appropriate model must be FEM. However, if the results of the Hausman test show a significance above 5%, the next step is to conduct a range of multiple tests. If the Lagrange Multiple Test results are more than the significance level (α = 5%), then the appropriate model is CEM. The results are shown in Table 3. After testing and comparing the robustness test results using the Chow Test, Hausman Test, and Lagrange Multiple Tests, it was determined that the appropriate model for this study was CEM. Based on the Chow, Hausman, and Lagrange multiplier tests, Models 1 and 2 show insignificant values at the 5% level. Therefore, the appropriate model for Models 1 and 2 is CEM.

Table 4 shows multiple regression analysis without interaction (equation (1)) and with interaction (equation (2)). The Adjusted R-square value in equation 1 is 0.0951 or 9,51%, which shows that the regression model can explain 9,51% of the variation in the excess stock return variable based on the variables *Rm–Rf*, *SMB*, *HML*, *CMA*, and *RMW*. The results show that *Rmt–Rft* (Coef. = 0.8508, t-stat= 9.2019) has a significant positive effect on excess return at the 1% level, while RMW (Coef. = –0.2834, *t*-stat. = –2.5158) has a significant negative impact on excess return at the 5% level. The results also show that *SMB*, *HML*, and *CMA* do not significantly affect Indonesia's excess return on stock.

This study focuses on the interaction between *IS* with *RMW* and *CMA*. Therefore, Equation (2) investigates the effect of each variable and its inter-

Table 4. Regression analysis (*N* = 1,023)

Variables	Equation 1		Equation 2	
	Coef	*t*-stat	Coef	*t*-stat
C	–0.0204	–1.2392	–0.0271*	–1.7703
Rm_t–Rf_t	0.8508***	9.2019	0.7758***	8.9947
SMB_t	–0.1634	–0.8975	–0.2102	–1.2409
HML_t	0.0631	0.9413	0.0807	1.2934
RMW_t	–0.2834**	–2.5158	–0.2757***	–2.2689
RMW_t * IS_t			4.0780***	3.3050
CMA_t	0.14086	0.9942	0.1571	1.188
CMA_t * IS_t			4.0896***	5.066
IS_t			1.2308***	12.6656
Adj. *R*–Square	0.0951		0.2178	
F–stat.	22.4828		36.5803	
Prob(*F*–statistic)	0.0000		0.0000	

Note: * Significant at 1%; ** Significant at 5%; *** Significant at 10%.

http://dx.doi.org/10.21511/imfi.22(2).2025.09

Table 5. Hypothesis testing results

No.	Statement Hypothesis	Results
1	*H1*: Profitability premium has a positive effect with excess returns.	Non-Supported
2	*H2*: Investment premium has a positive effect with excess returns.	Non-Supported
3	*H3*: Investor sentiment moderates the relationship between profitability premium and excess returns.	Supported
4	*H4*: Investor sentiment moderates the relationship between investment premium and excess returns.	Supported

action. The Adjusted *R*-square value in equation (2) is 0.2178 or 21.78%, which shows that the regression model can explain 21.78% of the variation in the excess stock return variable based on the variables *Rm–Rf*, *SMB*, *HML*, *CMA*, *RMW*, *IS*, *RMW*IS*, and *CMA*IS*. The results show that RMW (Coef. = 4.0673, *t*-stat. = 3.2937) and *CMA* (Coef. =4.1042, t-stat. = 5.0770) significantly interact with the investor sentiment variable at the 1% level. In model 2, the F test produces a calculated F value of 36.5805, which is significant at 1%, indicating that *Rm–Rf*, *SMB*, *HML*, *RMW*, *CMA*, *IS*, *RMW*IS*, and *CMA*IS* simultaneously affect excess stock returns. Table 5 presents the verification of hypothesis testing results.

4. DISCUSSION

This study examines the moderating role of investor sentiment in the relationship between profitability premium, investment premium, and stock returns in the Indonesian stock market for 2013–2023, contributing to a deeper understanding of how sentiment influences asset pricing anomalies in an emerging market context. The results of the study indicate that hypothesis 1 is not supported. The results show that profitability premium significantly negatively affects excess return. In emerging stock markets such as Indonesia, companies with high profitability are often perceived to have reached their peak performance and have lower growth opportunities, so investors prefer companies with low profitability but higher growth potential. In addition, in emerging markets, investors often undervalue fundamental information. Stock prices may reflect other factors, such as sentiment or news, rather than company profitability. During macroeconomic instability, such as the COVID-19 pandemic, the observation period means that robust stocks may show lower returns than speculative stocks. This finding differs from the results of Fama and French (2015), which showed that the profitability premium is a significant factor in developed markets such as the United States. However, several other studies have shown that the profitability premium does not affect excess returns (Hossain, 2022; Nsibande & Sebastian, 2023).

The results of the study indicate that hypothesis 2 is not supported. Investment premium also has no significant effect on excess return. This could be because investors in the Indonesian stock market may be more affected by price volatility than by a company's investment performance. This result differs from the research by Fama and French (2015), where the investment premium was shown to be significant. This result could occur because investors in emerging markets are often influenced by behavioral biases such as herding or overreaction so market sentiment has a more significant influence than fundamental analysis. This result aligns with Hanauer and Lauterbach (2019), who stated that investment premiums do not significantly affect excess returns in the five-factor model in emerging stock markets.

The results of the study indicate that hypothesis 3 is supported. This shows that when investor sentiment is high, they are more optimistic and pay more attention to the company's profitability. Conversely, fundamental factors such as profitability will be ignored when sentiment is low. This aligns with the signal theory, which states that information in a company's financial statements can be a signal that influences investors' perceptions of assets or companies. An increase in company profits is good news, but a decrease is bad news for investors. Companies that have historically generated profits are assumed to have good prospects in the future. Profitability anomaly is reinforced by good sentiment towards the stock. If investors are optimistic (sentiment increases) towards the stock's prospects, companies with high profits (robust) can get

a more significant premium so that excess returns also increase, and vice versa. This creates investor sentiment that moderates the relationship between profitability premiums and excess returns. The result is consistent with the findings of Baker and Wurgler (2006), which show that investor sentiment can influence stock returns. The results of this study are also in line with Habibah et al. (2021), who state that investor sentiment significantly increases profitability premiums.

This study also supports hypothesis 4. Investor sentiment moderates the relationship between investment premiums and excess returns. Investment anomalies refer to stock return patterns that deviate from the efficient market hypothesis (EMH) predictions, which state that asset prices reflect all available information. This anomaly can also be attributed to behavioral biases and market pricing errors that collectively disrupt the rationality assumed in traditional financial theory. Increased asset growth should be positive information for investors so that stock prices increase. However, due to behavioral bias, the opposite occurs, namely, the cost of conservative stocks (stocks with a lower investment level) increases. Conservative companies are considered more capable of distributing profits to shareholders more significantly than aggressive companies. This is because aggressive companies use most of their profits to increase the growth of the company's assets. Another reason investors are less interested in stocks with a high investment level is explained in the study by Titman et al. (2004), which states that investors tend to react badly when there is an indication of an increase in capital for investment. This is because investors need greater trust in managers, especially 'empire builder' managers (managers who have played a role in building the company).

This result is in line with financial behavior. Behavioral biases such as loss aversion make investors reluctant to take risks in companies that make significant investments, especially during times of uncertainty. When many investors think this way, the demand for conservative stocks creates an investment premium. In conditions of high investor sentiment, investors try to enter the stock market. However, not all investors have a high-risk tolerance. The study results show that investors in the Indonesian stock market are more careful in choosing stocks with a higher risk profile. Conservative stocks provide good stability. Therefore, when sentiment increases, demand for conservative stocks also increases, so the price of these stocks also increases. Research that supports the relationship between investor sentiment and investment premiums was conducted by Sadhwani et al. (2018), who stated that the investment factor is significant in understanding the impact of investor sentiment on premiums related to investment patterns.

Thus, the future outlook of the Indonesian stock market indicates that investors need to consider sentiment factors more carefully, given their significant influence on stock price movements, especially in a dynamic and uncertain market. In addition, policies that can improve information transparency and investor understanding of fundamental analysis will help create a more efficient and stable market.

CONCLUSION

This study finds that fundamental factors such as profitability and investment premiums are not strong predictors of excess returns in the Indonesian stock market from 2013 to 2023. These premiums do not significantly affect stock returns without considering the role of investor sentiment. However, investor sentiment plays a significant moderating role. When sentiment is high, the relationship between profitability, investment behavior, and excess returns becomes stronger – profitable and conservative stocks tend to yield higher returns. Conversely, when sentiment is low, fundamental factors are largely ignored. These findings highlight the importance of psychological factors in investment decision-making, particularly in emerging markets like Indonesia, where retail investors dominate and tend to respond more to news and sentiment than to fundamental analysis.

http://dx.doi.org/10.21511/imfi.22(2).2025.09

ACKNOWLEDGMENTS

The authors would like to thank the Indonesian Capital Market for providing data supporting this study's results. Thanks also to the promoter, co-promoter, and reviewer for their suggestions and input, which were very helpful in preparing this article. In addition, the family has provided prayers and patience in supporting the author in carrying out this research. This research was supported by funding from Universitas Syiah Kuala.

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REFERENCES

1. Al-awadhi, A. M., Alsaifi, K., Al-awadhi, A., & Alhammadi, S. (2020). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance, 27,* 1-5. https://doi.org/10.1016/j.jbef.2020.100326
2. Amarudin, Adam, M., Hamdan, U., & Hanafi, A. (2019). Effect of growth opportunity, corporate tax, and profitability toward value of firm through capital structure (listed manufacturing companies of Indonesia). *Finance: Theory and Practice, 23*(5), 18-29. Retrieved from https://ideas.repec.org/a/scn/financ/y2019i5p18-29.html
3. Alghifari, E. S., Gunardi, A., Suteja, J., Nisa, I. K., & Amarananda, Z. (2022). Investment decisions of energy sector companies on the Indonesia stock exchange: theory and evidence. *International Journal of Energy Economics and Policy, 12*(6), 73-79. https://doi.org/10.32479/ijeep.13642
4. Arsyad, M., Haeruddin, S. H., Muslim, & Pelu, M. F. A. R. (2021). The effect of activity ratios, liquidity, and profitability on the dividend payout ratio. *Indonesia Accounting Journal, 3*(1), 36-44. http://dx.doi.org/10.32400/iaj.30119
5. Baker, M., & Wurgler, J. (2006). Investor Sentiment and the Cross-Section of Stock Returns. *The Journal of Finance, 61*(4), 1-38. https://doi.org/10.1111/j.1540-6261.2006.00885.x
6. Beer, F., & Zouaoui, M. (2013). Measuring stock market investor sentiment. *Journal of Applied Business Research, 29*(1), 51-68. Retrieved from https://ideas.repec.org/p/dij/wpfarg/1110901.html
7. Blajer-Gołębiewska, A., Wach, D., & Kos, M. (2018). Financial risk information avoidance. *Economic Research-Ekonomska Istrazivanja, 31*(1), 521-536. Retrieved from https://ideas.repec.org/a/taf/reroxx/v31y2018i1p521-536.html
8. Bondt, W. F. M. De, & Thaler, R. (1985). Does the Stock Market Overreact? *The Journal Of Finance, 40*(3), 793-805. https://doi.org/10.1111/j.1540-6261.1985.tb05004.x
9. Bouchaud, J.-P., Uger, P. K. R., Landier, A., & Thesmar, D. (2019). Sticky Expectations and the Profitability Anomaly. *The Journal of Finance, 74*(2), 639-674. https://doi.org/10.1111/jofi.12734
10. Bouri, E., Naeem, M. A., Nor, S. M., Mbarki, I., & Saeed, T. (2022). Government responses to COVID-19 and industry stock returns. *Economic Research-Ekonomska Istrazivanja, 35*(1), 1967-1990. https://doi.org/10.1080/1331677X.2021.1929374
11. Cohen, R. B., Gompers, P. A., & Vuolteenaho, T. (2002). Who

Underreacts to Cash-Flow News? Evidence from Trading Between Individuals and Institutions. *Journal of Financial Economics, 01,* 1-23. https://doi.org/10.1016/S0304-405X(02)00229-5

12. Cooper, M. J., Gulen, H., & Schill, M. J. (2008). Asset growth and the cross-section of stock returns. *The Journal of Finance, 63*(4), 1609-1651. https://doi.org/10.1111/j.1540-6261.2008.01370.x

13. Cox, S., & Britten, J. (2019). The Fama-French five-factor model: Evidence from the Johannesburg Stock Exchange. *Invesment Analysts Journal, 48*(3), 240-261. https://doi.org/10.1080/10293523.2019.1647982

14. Czapkiewicz, A., Zaremba, A., & Szczygielski, J. J. (2019). Predicting the performance of equity anomalies in frontier emerging markets: a Markov switching model approach. *Economic Research-Ekonomska Istrazivanja, 32*(1), 3077-3093. Retrieved from https://ideas.repec.org/a/taf/reroxx/v32y2019i1p3083-3099.html

15. Dai, J. (2020). Investor Sentiment and Mispricing Anomalies. *International Journal of Economics, Business, and Entrepreneurship, 3*(1), 29-36. https://doi.org/10.23960/ijebe.v3i1.76

16. Das, V. S., & Krishnakumar, D. (2016). Over Reaction and Underreaction in Indian Stock Market: Comparison Based on Analysis Considering Two Different Sets of Stocks – Short Term and Long Term. *International Journal of Industrial Engineering Research and Development, 7*(2), 63-74. Retrieved from https://iaeme.com/MasterAdmin/Journal_uploads/IJIERD/VOLUME_7_ISSUE_2/IJIERD_07_02_007.pdf

17. Daszyńska-Żygadło, K., Szpulak, A., & Szyszka, A. (2015). Investor sentiment, optimism and excess stock market returns. Evidence from emerging markets. *Business and Economic Horizons, 10*(4), 362-373. Retrieved from https://ideas.repec.org/a/ags/pdcbeh/246045.html

18. Delisle, R. J., Yuksel, H. Z., & Zaynutdinova, G. R. (2020). What's in a name? A cautionary tale of profitability anomalies and limits to arbitrage. *The Journal of Financial Research, 43*(2), 305-344. https://doi.org/10.1111/jfir.12208

19. Downes, D. H., & Heinkel, R. (1982). Signaling and the Valuation of Unseasoned New Issues. *The Journal of Finance, 37*(1), 1-10. https://doi.org/10.2307/2327113

20. Evstigneev, I. V., Schenk-Hoppé, K. R., & Ziemba, W. T. (2013). Introduction: Behavioral and evolutionary finance. *Annals of Finance, 9*(2), 115-119. Retrieved from https://ideas.repec.org/a/kap/annfin/v9y2013i2p115-119.html

21. Fairfield, P. M., Whisenant, J. S., & Yohn, T. L. (2003). Accrued earnings and growth: Implications for future profitability and market mispricing. *Accounting Review, 78*(1), 353-371. Retrieved from. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=322520

22. Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics, 116*(1), 1-22. https://doi.org/10.1016/j.jfineco.2014.10.010

23. Fama, E. F., & French, K. R. (2017). International tests of a five-factor asset pricing model. *Journal of Financial Economics, 123*(3), 441-463. https://doi.org/10.1016/j.jfineco.2016.11.004

24. Fama, F., & French, R. (1993). Common risk factors in the return stocks and bonds. *Journal of Financial Economics, 33,* 3-56. https://doi.org/10.1016/0304-405X(93)90023-5

25. Habibah, U., Bhayo, Mu. U. R., & Iqbal, M. S. (2021). Investor Sentiments and Fama–French Five-Factor Premia. *SAGE Open, 11*(2), 1-12. https://doi.org/10.1177/21582440211027846

26. Hanauer, M. X., & Lauterbach, J. G. (2019). The cross-section of emerging market stock returns. *Emerging Markets Review, 38,* 265-286. https://doi.org/10.1016/j.ememar.2018.11.009

27. Haugen, R. A., & Baker, N. L. (1996). Commonality in the determinants of expected stock returns. *Journal of Financial Economics, 41*(3), 401-439. https://doi.org/10.1016/0304-405X(95)00868-F

28. Hossain, M. S. (2022). Asset Pricing Puzzle: New Evidence of Fama-French Five-Factors in Emerging Market Perspectives. *Real Estate Management and Valuation, 30*(3), 73-85. Retrieved from https://ideas.repec.org/a/vrs/remava/v30y2022i3p73-85n3.html

29. Jihadi, M., Vilantika, E., Hashemi, S. M., Arifin, Z., Bachtiar, Y., & Sholichah, F. (2021). The Effect of Liquidity, Leverage, and Profitability on Firm Value: Empirical Evidence from Indonesia. *Journal of Asian Finance, Economics and Business, 8*(3), 423-431. Retrieved from https://koreascience.kr/article/JAKO202106438543370.pdf

30. Khan, S., & Saleem, F. (2022). Nexus between Investor Sentiment and Equity Returns in Pakistan Stock Exchange. *Audit and Accounting Review, 2*(2), 26-47. Retrieved from https://ideas.repec.org/a/ris/aarumt/3591.html

31. Kubota, K., & Takehara, H. (2018). Does the Fama and French Five-Factor Model Work Well in Japan? *International Review of Finance, 18*(1), 137-146. https://doi.org/10.1111/irfi.12126

32. Kuo, Y., & Huang, J.-T. (2022). Factor-Based Investing in Market Cycles: Fama–French Five-Factor Model of Market Interest Rate and Market Sentiment. *Journal of Risk and Financial Management, 15*(460), 2-24. https://doi.org/10.3390/jrfm15100460

33. Leite, A. L., Klotze, M. C., Carlos, A., Pinto, C. F., & Ferreira, A. F. (2018). Size, value, profitability, and investment: Evidence from emerging markets. *Emerging Market Review, 36,* 45-59. https://doi.org/10.1016/j.ememar.2018.04.006

34. Liang, W., Sui, J., & Tian, Y. (2022). Investor Sentiment and Stock Returns during the COVID-19 Pandemic: Evidence from Chinese Stock Market. *BCP Business & Management, 26,* 373-382. https://doi.org/10.54691/bcpbm.v26i.1985

http://dx.doi.org/10.21511/imfi.22(2).2025.09

35. Liu, H., Manzoor, A., Wang, C., Zhang, L., & Manzoor, Z. (2020). The COVID-19 Outbreak and Affected Countries Stock Markets Response. *International Journal of Environmental Research and Public Health Article, 17*(8), 1-19. https://doi.org/10.3390/ijerph17082800

36. Meiliani, M., Puspita, D., Tarigan, M., & Fathoni, A. F. (2021). Comparative Analysis of Market Overreaction in Indonesia and Singapore Stock Exchange 2016-2019. *International Journal of Economics, Business and Applications, 6*(2), 19-43. https://doi.org/10.31258/ijeba.63

37. Mosoeu, S., & Kodongo, O. (2022). The Fama-French five-factor model and emerging market equity returns. *Quarterly Review of Economics and Finance, 85,* 55-76. https://ideas.repec.org/a/eee/quaeco/v85y2022icp55-76.html

38. Nareswari, N., Balqista, A. S., & Negoro, N. P. (2021). The Impact of Behavioral Aspects on Investment Decision Making. *Jurnal Manajemen Dan Keuangan, 10*(1), 15-27. https://doi.org/10.33059/jmk.v10i1.3125

39. Nsibande, L. M. Q., & Sebastian, A. (2023). Is the environmental, social and corporate governance score the missing factor in the Fama-French five-factor model? *South African Journal of Economic and Management Sciences, 26*(1), 1-9. https://doi.org/10.4102/sajems.v26i1.4835

40. Rupande, L., Muguto, H. T., & Muzindutsi, P. (2019). Investor sentiment and stock return volatility: Evidence from the Johannesburg Stock Exchange. *Cogent Economics & Finance, 7*(1), 1-16. Retrieved from https://ideas.repec.org/a/taf/oaefxx/v7y2019i1p1600233.html

41. Sadhwani, R., Kumar, S., Rajput, O., & Habibah, U. (2018). Cogent Economics & Finance Do sentiment indices impact the premium of prominent pricing factors? *Cogent Economics & Finance, 6*(1), 1-50. https://doi.org/10.1080/23322039.2018.1550898

42. Shams, S. M. H. (2018). The Impact of Investor Sentiment on Stock Prices in the Egyptian Stock Market. *The Scientific Journal of Commercial and Environmental Studies, 9*(2), 58-82. https://doi.org/10.21608/jces.2018.50972

43. Sutrisno, B., & Ekaputra, I. A. (2016). Uji Empiris Model Asset Pricing Lima Faktor Fama-French Di Indonesia [Empirical Test of the Fama-French Five Factor Asset Pricing Model in Indonesia]. *Jurnal Keuangan Dan Perbankan, 20*(3), 343-357. (In Indonesian). http://dx.doi.org/10.26905/jkdp.v20i3.287

44. Titman, S., Wei, K. C. J., & Xie, F. (2004). Capital Investments and Stock Returns. *Journal of Financial and Quantitative, 39*(4), 677-700. Retrieved from https://ideas.repec.org/p/nbr/nberwo/9951.html

45. Xu, H., & Zhou, W. (2018). A weekly sentiment index and the cross-section of stock returns. *Finance Research Letters, 27,* 135-139. https://doi.org/10.1016/j.frl.2018.02.009

46. Yang, C., & Hu, X. (2021). Individual stock sentiment beta and stock returns. *North American Journal of Economics and Finance, 55,* 1-47. https://doi.org/10.1016/j.najef.2020.101306

47. Yang, H., Ryu, D., dan Ryu, D. (2017). Investor Sentiment, Asset Returns And Firm Characteristics: Evidence From The Korean Stock Market. *Investment Analysts Journal, 46*(2), 1-16. https://doi.org/10.1080/10293523.2016.1277850

48. Zhang, X., Bissoondoyal-Bheenick, E., & Zhong, A. (2023). Investor sentiment and stock market anomalies in Australia. *International Review of Economics and Finance, 86,* 284-303. https://doi.org/10.1016/j.iref.2023.03.024