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MAINTAINING BANKING ASSET QUALITY THROUGH INVESTOR SENTIMENT: EVIDENCE FROM KBMI 3 BANKS IN INDONESIA

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ABSTRACT

This paper investigates the transmission mechanism through which capital structure decisions shape bank credit quality, with investor sentiment serving as the mediating channel. Drawing on a balanced panel of 11 KBMI 3-classified commercial banks listed on the Indonesia Stock Exchange over the 2021–2025 post-pandemic period, the study employs the Debt-to-Equity Ratio (DER), Price-to-Book Value (PBV), and Non-Performing Loan (NPL) as proxies for the respective constructs. The empirical strategy combines Random Effect Model (REM) estimation with bootstrap-resampling mediation analysis (5,000 iterations) to yield robust inference across 55 balanced observations. Estimation results show that DER does not exert a statistically significant direct influence on PBV, yet PBV demonstrates a significant inverse relationship with NPL. More importantly, the indirect effect of DER on NPL through PBV is statistically significant under bootstrap confidence intervals that exclude zero, confirming full mediation. The evidence points to market perception—captured by PBV—as the primary conduit through which funding-structure choices ultimately affect loan portfolio quality. Theoretically, the findings reconcile Signaling Theory, Trade-Off Theory, and Market Discipline Theory within a single mediating framework, enriching the literature on bank risk transmission in emerging economies. Practically, the results underscore the strategic value of cultivating positive investor sentiment as an indirect lever for reducing credit risk and reinforcing financial stability.

Keywords: capital structure; credit risk; investor sentiment.

INTRODUCTION

Indonesia's banking system entered a new regulatory epoch with the enactment of POJK Number 12/POJK.03/2021, which replaces the former BUKU classification with the Group of Banks Based on Core Capital (KBMI). Under this framework, KBMI 3 designates institutions with core capital between IDR 14 trillion and IDR 70 trillion, a stratum that occupies a pivotal position as the primary

financier of mid-corporate and upper-retail segments. By mid-2025, the Financial Services Authority (OJK) noted that there are 14 banks in the KBMI 3 group that have shown solid performance as the backbone of mid-sized corporate and high-end retail financing in Indonesia (Stabilitas.id, 2026).

Empirical data from the eleven publicly listed KBMI 3 banks over the 2021–2025 window underscore the significance of these pressures. Loan-quality metrics show wide cross-bank dispersion: Bank Tabungan Negara (BTN) carried NPLs above 3% throughout the observation window, whereas Bank Mega maintained them below 1.2% across the same span. Such heterogeneity suggests that loan quality is co-determined by managerial capital-allocation choices alongside macroeconomic forces, and specifically by the signals those choices transmit to investors, signals that crystallize in the price-to-book value (PBV) ratio.

A survey of extant scholarship reveals three partially overlapping research strands that have yet to be fully synthesized. The first strand examines how leverage structure affects bank credit risk. Studies in this group found that high leverage tends to increase the risk of bankruptcy (Pinillos Villamizar et al., 2025), but most of these studies still use a direct effect approach without exploring the mechanisms of transmission that may occur (Beltrame, 2026). The second strand explores the connection between credit risk metrics and investor valuation multiples. Research Mensah et al., (2025) leveraging CCEMG and GMM estimation on 253 NYSE-listed banks, demonstrate that NPL ratios carry a significant negative effect on both PBV and the price-to-earnings multiple, confirming that deteriorating asset quality depresses market confidence. These findings confirm that high non-performing loans send negative signals that lower investor confidence, especially since NPLs threaten the profitability and sustainability of banks (Mohan & Ray, 2022). Nevertheless, the study did not examine how capital structure affects NPLs through the investor sentiment pathway. The third group examines how certain sentiments or signals can mediate the relationship between a company's characteristics and financial outcomes. Some studies have found

that investor sentiment can moderate the influence of corporate opacity on debt growth (Ferrer & Suárez Suárez, 2025), while (Jagirani et al., 2023; Linawati et al., 2022) find that credit risk can serve as a mediating conduit in the capital structure and firm value. However, there has been no study that specifically examines the role of investor sentiment mediates the relationship between capital structure and credit risk in KBMI 3 banks.

The research gap is becoming clearer: Research that simultaneously integrates all three variables such as capital structure, investor sentiment and credit risk in a single mediation model has not been found, especially in the context of KBMI 3 banks in Indonesia. Previous research has not empirically tested whether PBV actually functions as a transmission channel that transfers capital structure signals into the perception of credit risk by the market. In other words, the black box mechanism that explains how a bank's funding policy is translated by investors into a perception of risk that in turn affects the quality of a bank's assets is still unclear. In addition, there has been no study that uses the latest post-pandemic data (2021-2025) in the KBMI 3 bank segment, which is entirely public and has PBV data available. Therefore, this study intends to fill the gap by testing the mediation model of Capital Structure (DER) → Investor Sentiment (PBV) → Credit Risk (NPL), which is theoretically explained through the framework of corporate finance theory (especially the integration of Signaling Theory, Trade-Off Theory, and Market Timing Theory). The novelty of this research lies in: (1) Testing the investor sentiment mediation model on the relationship between capital structure and credit risk that has never been done in KBMI 3 bank; (2) The use of a post-pandemic research period that includes the full implementation of KBMI grouping; and; (3) Analysis of panel data from 11 KBMI 3 banks, all of which are listed on the IDX. This study aims to examine and assess the effect of capital structure on investor sentiment in KBMI 3 banks (H1), the effect of investor sentiment on credit risk in KBMI 3 banks (H2), the mediating role of investor sentiment in the relationship between capital structure and credit risk in KBMI 3 banks over the 2021–2025 period (H3). A schematic representation of the conceptual

framework testing the mediating role of investor sentiment (PBV) in the relationship between capital structure (DER) and credit risk (NPL) is presented in Figure 1.

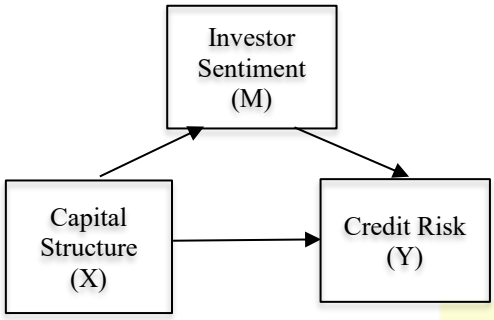

Figure 1. Research Concept

LITERATURE REVIEW

Capital structure, operationalized here via the Debt-to-Equity Ratio (DER), reflects the relative proportions of debt and equity financing that an institution deploys. Signaling Theory (Spence, 1973) posits that funding decisions signal a company's quality and prospects to the market, within banking, this signal must be interpreted contextually since high leverage naturally arises from deposit-based business models (Hofbauer & Pawlowitsch, 2025). Pham et al., (2022) found that in Vietnamese banks, capital structure affects profitability but not directly on the perception of market value. Meanwhile, the Trade-Off Theory predicts that companies balance the benefits of debt taxes with the costs of financial hardship; However, in banking, excessive leverage can trigger regulatory scrutiny which actually increases the risk (Pinillos Villamizar et al., 2025).

Investor sentiment is proxied by Price-to-Book Value (PBV), which reflects market expectations of the bank's outlook. According to Market Discipline Theory (Bliss & Flannery, 2002), investors exert discipline on banks via stock prices: banks possessing a high PBV obtain external funding more readily, which in turn allows them to enhance risk management (Chen, 2022). Agoraki et al., (2022) A large panel of US banks proved that bank lending declines when investor sentiment is low, especially in banks with high credit risk. Linawati et al., (2022) confirming that the value of Bank Indonesia's companies is indirectly influenced by fundamental variables through market perception channels.

Credit risk is measured by Non-Performing Loans (NPLs), which is the ratio of non-performing loans to total loans, with a regulator safe limit of 5%. High NPLs are suppressing profitability through increased loss reserves and limiting the capacity of

new credit disbursement. Pham & Le Ha Diem, (2024) found that the bank's funding structure has a direct effect on NPLs in Vietnamese commercial banks. Arhinful et al., (2025) confirms that NPLs have a significant negative effect on investor confidence (PBV and P/E) in 253 NYSE banks, confirming the reciprocal relationship between asset quality and market sentiment.

Based on Signaling Theory and empirical evidence on banking (Bui et al., 2023; Elviza et al., 2023), the increase in DER can be interpreted by the market as an increase in risk so as to potentially suppress PBV:

H1: There is a significant effect of capital structure (DER) on investor sentiment (PBV) in KBMI 3 banks.

Based on Market Discipline Theory (Bliss & Flannery, 2002, as cited in Chen, 2022) and empirical support (Agoraki et al., 2022; Jagirani et al., 2023), low PBV makes it difficult for banks to recapitalize and thus increase NPLs:

H2: There is a significant negative effect of investor sentiment (PBV) on credit risk (NPL) in KBMI 3 banks.

The integration of the three theories above the DER signal is absorbed by the market into PBV, and then PBV affects the NPL through market discipline results in a mediation proposition supported by Linawati et al., (2022); Pham & Le Ha Diem, (2024):

H3: Investor sentiment (PBV) mediates the influence of capital structure (DER) on credit risk (NPL) in KBMI banks 3.

RESEARCH METHOD

This inquiry adopts a quantitative causal-explanatory design, employing balanced panel data to capture cross-sectional heterogeneity across eleven banks and temporal dynamics across five annual observations. The study is longitudinal with an observation period of five years (2021–2025) that allows the capture of the dynamics of the relationship between variables in an adequate time span. The quantitative approach was chosen because it allows for objective measurement and statistical testing of hypotheses.

Population and Sample

The research population is all banks included in the Group of Banks Based on Core Capital (KBMI) 3 based on POJK Number 12/POJK.03/2021, namely banks with a core capital of

more than IDR 14 trillion to IDR 70 trillion. The sampling technique uses purposive sampling with the following criteria: (1) Banks included in the KBMI 3 group during the 2021–2025 period; (2) Banks listed on the Indonesia Stock Exchange (IDX) throughout the study period; (3) Banks that publish complete annual financial statements for the period 2021–2025 and provide the necessary data for the calculation of research variables. Based on these criteria, a sample of 11 KBMI 3 banks was obtained, all of which are go public banks on the IDX, namely Bank BTN, Bank CIMB Niaga, Bank Syariah Indonesia (BSI), Bank OCBC NISP, Bank Permata, Bank Danamon, Bank Panin, Bank BTPN/SMBCI, Bank Mega, Bank BJB, and Maybank Indonesia. With a total of 11 banks and an observation period of 5 years, the total observations obtained were 55 panel data (11 banks × 5 years).

Operational Definitions and Variable Measurements

This study employs three main variables. The independent variable (X) is capital structure, proxied by the Debt-to-Equity Ratio (DER). DER measures the proportion of total debt to total bank equity, calculated as total debt divided by total equity, and is expressed as a percentage (Khan & Zhang, 2023). The mediating variable (M) is investor sentiment, proxied by the Price to Book Value (PBV). PBV measures the ratio between the market price per share and the book value per share, calculated as the year-end closing stock price divided by the book value per share, and is expressed in times (Suryadi & Dana, 2023). The dependent variable (Y) is credit risk, proxied by Non-Performing Loans (NPL). NPL measures the ratio of non-performing loans to total loans disbursed, calculated as total non-performing loans divided by total loans disbursed, and is expressed as a percentage (Saliba & Naifar, 2023).

Data Sources and Data Collection Techniques

The type of data used is quantitative secondary data in the form of panel data, which combines time series (annual) data and cross-sectional (interbank) data. Secondary data is obtained from each bank's annual financial reports published through the official websites of the banks and the Indonesia Stock Exchange (IDX), as

well as supporting data from the Financial Services Authority (OJK). The research period is five years, namely from 2021 to 2025. All data collected is aggregated and public, does not involve individual customer data or personal information protected by law. This research has complied with the provisions of OJK Regulation No.11/POJK.03/2022 concerning the Implementation of Information Technology by Commercial Banks, which states that data published in the annual financial statements is valid information for use by the public. Thus, this study does not require ethics committee approval because it does not directly involve human subjects and uses only publicly available secondary data.

Data Validity and Reliability

The validity data in this research is based on the accuracy of secondary sources, namely audited annual financial reports issued by the respective banks, in addition to official data obtained from the IDX and OJK. Data reliability is ensured through consistency of measurement variables from year to year with the same operational definition. In addition, to ensure the reliability of the estimation results, classical assumption tests (normality, multicollinearity, heteroscedasticity) and panel model selection tests (Chow and Hausman) were carried out before hypothesis analysis. In mediation analysis, the bootstrap method with 5,000 resampling times was used to produce a robust confidence interval against violations of normality assumptions.

Data Analysis Techniques

Data analysis was carried out using the EViews 14 software. The selection of EViews is based on its excellence in processing panel data, including its ability to perform model selection tests (Chow, Hausman, and Lagrange Multiplier) as well as classical assumption correction. The mediation analysis was carried out with a multiple regression approach followed by the bootstrap method (5,000 resampling) following the PROCESS Macro Model 4 protocol (Hayes, 2018) and the Sobel Test as a sensitivity test.

Classic Assumption Test

Prior to model estimation, a classical assumption test was carried out which included a normality test

using the Jarque-Bera test on residuals, the multicollinearity test employs the Variance Inflation Factor (VIF) with a criterion of VIF < 10, while the heteroscedasticity test employs the White Test and the Breusch-Pagan-Godfrey Test. The normality test was carried out on each variable and residual model. If a violation of normality is found, a bootstrap method that does not require normality will be used in the mediation analysis.

Panel Model Selection Test

Because the data is panel data, a model selection test was carried out to determine the most appropriate estimation model. The Chow (Redundant Fixed Effects Test) is used to choose between a Common Effect Model (CEM) and a Fixed Effect Model (FEM). Criteria: if the probability value of Cross-section F < 0.05, then FEM is better than CEM. The Hausman Test is then applied as a selection test between the Fixed Effect Model (FEM) and the Random Effect Model (REM). Criteria: if the chi-square probability value < 0.05, then FEM is selected; if ≥ 0.05, then REM is more efficient and consistent. If needed, a Lagrange Multiplier Test (Breusch-Pagan) can be used to compare CEM with REM.

Panel Regression Model Estimation

The model selection test results indicate that REM is selected for both equations. Therefore, estimation proceeds using that model. Estimates were made for two structural equations. The first equation estimated the influence of DER on PBV (line a): $PBV = \alpha + c_1(DER) + \varepsilon_1$. The second equation estimates the influence of DER and PBV on NPL (lines b and c'): $NPL = \beta + c'(DER) + c_2(PBV) + \varepsilon_2$. For the REM model, the estimation uses the EGLS (Cross-section Random Effects) Panel method.

Mediation Analysis with Bootstrap and Sobel Tests

Mediation hypothesis testing (H3) was conducted using the bootstrap method with 5,000 resamples, following the PROCESS Macro Model 4 protocol (Hayes, 2018). This method was chosen because it does not require the assumption of distribution normality, results in a more accurate confidence interval in moderate samples (n = 55) and is recommended as the best method for mediation tests.

The criterion for mediation significance is that the Bootstrap Confidence Interval (CI) of 95% for indirect effects (indirect effect = $c_1 \times c_2$) does not include zero. Direct effects (c'), total effects (c), indirect effects, and mediation proportions are calculated and reported.

As a sensitivity test, the Sobel Test was carried out (Ma et al., 2025) which assumes the normality of the distribution of product coefficients AB. The Sobel test statistics are calculated by the formula $Z = (a \times b) / \sqrt{(b^2 \times SE_a^2 + a^2 \times SE\_b^2)}$. The results of the Sobel Test are compared with the results of bootstrap to assess the consistency of the mediation conclusions.

Hypothesis Testing

All hypothesis testing is performed at a 5% significance level ($\alpha = 0.05$). H1 (the effect of DER on PBV) was tested using the coefficient c_1 in the first equation. H2 (the effect of PBV on NPL) was tested using the coefficient of c_2 in the second equation. H3 (PBV mediation) was tested using bootstrap confidence interval indirect effects. The conclusion of acceptance or rejection of each hypothesis is based on the criteria of statistical significance of each one.

RESULT AND DISCUSSION

Results

Descriptive Statistics

Based on data from the panel of 11 KBMI 3 banks for the 2021–2025 period (n = 55), a summary of descriptive statistics was obtained for the three research variables. Table 1 presents the mean value, standard deviation, minimum, median, and maximum value of Debt-to-Equity Ratio (DER), Price to Book Value (PBV), and Non-Performing Loan (NPL) as well as their development per year.

Table 1. Descriptive Statistics and Annual Development of Research Variables

Statistics	DER (%)	PBV (times)	NPL (%)
Red	5.763,05	1,018	2,372
Std. Deviation	3.154,11	0,888	0,743
Minimum	2.020,00	0,400	1,110
Median	5.081,00	0,600	2,360
Maximum	15.308,00	4,100	3,700
2021 average	6.099,73	1,195	2,694
2022 average	5.907,91	0,978	2,500
2023 average	5.751,09	0,933	2,193
Average 2024	5.654,73	0,944	2,228
Average 2025	5.401,82	1,040	2,244

DER shows wide variation with a minimum of 2,020% (BSI, 2025) and a maximum of 15,308% (BTN, 2021). PBV has a tight distribution to the right (median 0.600 < mean 1.018). NPLs on average are below the regulator's safe limit of 5% with a downward trend from 2021 to 2023 then slightly increasing.

Classic Assumption Test and Panel Model Selection

Before the model estimation, normality tests (Jarque-Bera), multicollinearity (VIF), heteroscedasticity (White and Breusch-Pagan-Godfrey), and panel model selection tests (Chow Test and Hausman Test) were performed. Table 2 summarizes all the test results.

Table 2. Summary of Classical Assumption Test and Panel Model Selection

Testing	Indicator	Model 1 (PBV~DER)	Model 2 (NPL~DER+PBV)	Conclusion
Normality (JB)	Prob. Residual	0,0000	0,2922	Model 2 normal residual; Model 1 is abnormal
Multicollinearity	VIVID	1,0413	1,0413	Multicollinearity-free
Heteroscedasticity	Prob. White	0,3618	0,2718	Homoscedastic
Chow Test	Prob. F	0,0000	0,0000	EMF > EMF
Hausman Test	Prob. Chi-Sq	0,4595	0,9443	REM > FEM

Based on the Chow Test, the Fixed Effect Model (FEM) is better than the Common Effect Model (CEM) in both models. Furthermore, the Hausman Test showed that the Random Effect Model (REM) was more efficient than FEM, so REM was used for the final estimate. Panel Model Estimation Results (Random Effect Model)

Table 3 presents the results of the REM estimation for the first equation (the effect of DER on PBV) and the second equation (the effect of DER and PBV on NPL).

Table 3. Random Effect Model Estimation Results

Models	Variable	Coefficients	Std. Error	t-Statistics	Prob.
Model 1: PBV = f(DER)	C	1,1069	0,4673	2,3686	0,0215
	THE ER	-0,001542	0,006934	-0,2224	0,8249
Model statistics: R^2(within)=0.0009; F=0.0495; prob(F)=0.8249; DW=1,284*					
Model 2: NPL = f (DER, PBV)	C	2,5045	0,3987	6,2809	0,0000
	THE ER	0,001046	0,005542	0,1888	0,8510
	PBV	-0,1898	0,1280	-1,4821	0,1443
Model statistics: R^2(within)=0.0421; F=1.1421; prob(F)=0.3270; DW=1,547*					

Bootstrap Mediation Analysis and Sobel Test

Mediation hypothesis testing (H3) was carried out using the 5,000 resampling bootstrap method using PROCESS Macro Model 4. Table 4 presents the results of the estimated path effect and indirect effects along with a 95% bootstrap confidence interval.

Table 4. Bootstrap Mediation Analysis Results (n Bootstrap = 5,000)

Strips/Components	Estimation	Boat SE	LLCI (2.5%)	ULCI (97.5%)
Line a: DER → PBV	-0,005602	0,003788	-0,0132	0,0020
Line b: PBV → NPL	-0,234246	0,112838	-0,4602	-0,0083
Direct Effect (c'): DER → NPL	0,001745	0,003175	-0,0047	0,0082
Total Effect (c): DER → NPL	0,003057	0,003208	-0,0034	0,0095
Indirect Effects ($c_1 \times c_2$)	0,001312	0,000720	0,000033	0,002852

Mediation type: Full Mediation; Proportion of mediated effects: 42.9%

As part of the sensitivity analysis, the Sobel Test is conducted, and the results are shown in table 5. The results of the Sobel Test (p = 0.2284) are different from bootstrap (CI does not include zero). This discrepancy is due to a violation of the assumption of normality (a condition overcome by bootstrap).

Table 5. Sobel Test Results
Source: Hypothesis Testing

Pathway	a	b	Sobel Z	Prob.
DER → PBV → NPL	-0,0056	-0,2342	1,2044	0,2284

Table 6 summarizes the test results of the three hypotheses based on their respective significance criteria (α=0.05 for H1 and H2; Bootstrap CI 95% for H3).

Table 6. Recapitulation of Hypothesis Testing Results

Hypothesis	Statement	Test Statistics	Prob. / Bootstrap CI	Verdict
H1	DER has a significant effect on PBV	c_1 = -0.001542 (REM)	p = 0.8249	Rejected
H2	PBV has a significant effect on NPLs	c_2 = -0.234246 (EMF)	p = 0.0429	Accepted
H3	PBV mediates the influence of DER on NPLs	Indirect effect= 0.001312	95% CI [0.000033; 0.002852]	Accepted (Full Mediation)

Based on Table 6, H1 was rejected (DER had no significant effect on PBV), H2 was accepted (PBV had a significant negative effect on NPLs), and H3 was accepted with a full mediation type (PBV fully mediated the effect of DER on NPL in KBMI 3 banks for the 2021 – 2025 period).

Discussion

This study aims to examine the role of investor sentiment mediation (PBV) in the relationship between capital structure (DER) and credit risk (NPL) in KBMI 3 banks listed on the IDX for the 2021–2025 period. The three main findings obtained are: (1) Capital structure does not have a significant effect on investor sentiment; (2) Investor sentiment has a significant negative effect on credit risk; and (3) Investor sentiment fully mediates (full mediation) the influence of capital structure on credit risk. These findings provide a new understanding of the mechanism of transmission of

bank funding policies to credit risk through the lens of the market.

The Influence of Capital Structure on Investor Sentiment (H1)

The first finding showed that DER had no significant effect on PBV in KBMI 3 bank (negative but not significant coefficient, p=0.8249). These results reject the H1 hypothesis and are inconsistent with the predictions of Signaling Theory (Spence, 1973, as cited in Hofbauer & Pawlowitsch (2025) under which a firm's financing decision is expected to generate a signal that can be interpreted by the market. In the context of banking, this insignificance can be explained by several factors. First, the banking business structurally has a very high debt-to-equity ratio due to its business model that is based on the collection of third-party funds (customer deposits). An investor with experience in the banking market may have "discounted" the DER information as an inherent characteristic, rather than as a relevant bankruptcy signal. Second, previous research has shown that investors in the banking sector prioritize profitability indicators (ROA, ROE) and capital adequacy (CAR) over DER alone in assessing the bank's prospects (Setyaning et al., 2026; Yonfrayogo & Lisnawahnida, 2025). Third, the homogeneity of the KBMI 3 bank sample, which has a core capital of between Rp14-70 trillion, causes wide variations in DER but is not responded to linearly by the market due to disruptive factors such as asset quality or risk management.

These results are consistent with the findings (Jagirani et al., 2023) on banks listed on the Pakistani stock exchange (2009–2021) found that NPLs and cost-to-income ratios had a significant negative effect on the company's value (Tobin's Q), but capital structure was not the only factor to which investors responded. In line with that, Linawati et al., (2022) At bank BUKU 4 Indonesia found that the relationship between capital structure and company value is mediated by profitability, indicating that DER is not directly a relevant signal for banking investors. From a different perspective, (Bui et al., 2023) in companies listed on the Vietnamese stock market found that the capital structure has a positive effect on the value of the company, especially through the use of long-term

debt tax shields. The findings differ from the results of this study, which can be explained by the difference in context: Non-banking companies are more sensitive to leverage signals than banks whose high leverage is an inherent characteristic of business models.

Further, Pham et al., (2022) a study of Vietnamese banks found that capital structure has a significant effect on the profitability of banks, not on the perception of market value directly. These findings reinforce the argument that in the banking sector, capital structure is an input to operational performance, rather than a direct signal to investors. Research Arhinful, Gyamfi, et al., (2025) on companies listed on the New York Stock Exchange also affirm that determining the optimal capital structure affects financial performance, but the market response is more influenced by the quality of the assets and the profitability generated. Thus, the rejection of H1 actually enriches the literature by showing that the effectiveness of capital structure signals is contextual and depends on industry segments and investor profiles.

Elviza et al., (2023) in their research on Islamic banks listed on the IDX, report that DER significantly and negatively affects PBV. Similar results were also found by Jennifer & Wirawan Endro Dwi Radianto (2023) in the banking subsector in Indonesia, which shows that the increase in DER tends to reduce the value of companies proxied with PBV. The discrepancy in findings between this study and other studies is most likely caused by the different characteristics of the samples used: Islamic banks have a unique funding structure (without interest-based instruments) so that DER signals become sharper, while conventional KBMI 3 banks have a higher complexity so that investors do not solely rely on DERs. On the other hand, Ferrer & Suárez Suárez (2025) Finding that investor sentiment affects debt growth, suggests a dynamic relationship between investor perception and funding decisions even though the causality direction tested differs from this study.

The Influence of Investor Sentiment on Credit Risk (H2)

The second hypothesis is accepted: PBV has a significant negative effect

on NPL (coefficient -0.2342; p= 0.0429). These findings are in line with Market Discipline Theory (Bliss & Flannery, 2002, as cited in Chen (2022) which states that investors provide discipline to banks through the stock price mechanism. Banks that are positively assessed by the market (high PBV) have easier access to external funding sources (rights issue, bonds), thus being able to strengthen credit risk management. In contrast, low PBVs reflect market distrust, which makes it difficult for banks to recapitalize and ultimately increase NPLs.

These results align with the research by Arhinful, Gyamfi, et al., (2025) on 253 New York Stock Exchange banks employing CCEMG and GMM methods. Their study reports that NPLs significantly and negatively affect investor confidence (using PBV and P/E as proxies), despite the difference in tested causality direction their study examines how NPLs influence PBV. Meanwhile, this study tested the effect of PBV on NPL. This mutual confirmation strengthens the argument that NPLs and PBVs are two sides of the same coin in the mechanism of market discipline. Pham & Le Ha Diem, (2024) The Journal of Banking Regulation also found that capital structure through funding composition has a direct impact on NPLs in Vietnamese commercial banks, which supports the proposition that the bank's funding conditions shape its credit risk profile.

In line with the findings of this study, Agoraki et al., (2022) A large data panel of U.S. banks during 1999Q1–2015Q4 found that bank lending declined when investor sentiment was low, and this effect was stronger in banks with higher levels of credit risk. The findings, published in the Journal of Economic Behavior and Organization (Scopus Q1), provide strong confirmation that the relationship between investor sentiment and credit risk is two-way: banks with non-performing loans experience a decline in investor sentiment, and low investor sentiment worsens banks' credit conditions. In addition, Jagirani et al., (2023) found that non-performing loans had a significant negative relationship with firm value (Tobin's Q) in banks in Pakistan. This finding is consistent with our study's results, where low PBV (reflecting negative investor

sentiment) is associated with higher NPL levels.

Meanwhile, there are also studies that give a different view. Yudaruddin et al., (2024) The SAGE Open found that fintech development plays a role in moderating the relationship between liquidity and credit risk in Indonesia. This indicates that technology and financial innovation factors can weaken the influence of market conditions on non-performing loans. This implies that the influence of PBV on NPLs can vary depending on the level of penetration of financial technology in a banking system. In the context of KBMI 3 banks, digital banking penetration still varies between banks, so the impact of investor sentiment on NPLs may not be uniform, although in aggregate significant negative effects are still found.

In the context of KBMI Bank 3, these findings have important implications that stock price fluctuations (PBV) are not only a reflection of past conditions, but also a leading indicator for the health of the credit portfolio in the future. For bank management, maintaining positive investor sentiment through transparency and good financial performance is an indirect strategy to reduce NPLs.

The Role of Investor Sentiment Mediation (H3)

The most significant finding in this study is that investor sentiment (PBV) fully mediates the influence of DER on NPLs. The indirect effect (0.001312) had a bootstrap confidence interval of 95% [0.000033; 0.002852] that did not include zero, while the direct effect of the DER on NPLs was insignificant. The proportion of mediated effects reached 42.9%. This means that the influence of capital structure on credit risk only occurs through indirect channels, namely through changes in investor sentiment.

This discovery makes an important theoretical contribution. First, this study integrates three main theories (Signaling Theory, Trade-Off Theory, and Efficient Market Hypothesis) in one coherent mediation model. Leverage signals from bank management (through DERs) are absorbed by the efficient market and are reflected in PBV. This condition subsequently influences the bank's capacity to manage credit risk. Second,

the full mediation findings indicate that there is no significant direct pathway from DER to NPL that does not pass through PBV. In other words, a bank's funding decision does not automatically change the quality of an asset without going through investor perception first. This is different from the simple assumption that too high debt directly causes bad credit; Instead, the transmission mechanism is through a decrease in market confidence which then makes it difficult for banks to restructure or fund new loans to save non-performing loans.

Comparisons with previous research reinforce this novelty. Linawati et al., (2022) found that the capital structure mediates the relationship between profitability and company value in bank Indonesia, but the configuration of different variables (capital structure as mediators, not independent variables) shows a symmetrical and complementary mediation pattern. This study complements these findings by showing that PBV as a proxy for investor sentiment acts as a mediator between DER and NPL in a direction that is theoretically coherent with market discipline theory. Meanwhile, Jagirani et al., (2023) shows that credit risk (NPL) has a direct impact on the value of a company in a non-mediated configuration, which indicates that this study found a more complete transmission line: DER → PBV → NPLs.

Study Corbet et al., (2024) In Finance Research Letters found that investor sentiment moderates the relationship between policy uncertainty and corporate risk-taking, which supports the proposition that market sentiment is not merely a passive reflection but also an active mechanism that shapes risk taking behavior. These findings are conceptually aligned with our study's mediation model, where PBV serves as an active signal influencing banks' credit risk management behavior. On the other hand, the study Ferrer & Suárez Suárez, (2025) who found that investor sentiment moderated on debt growth provides a different perspective: in such configurations, sentiment acted as a moderator, not a mediator. These differing roles depend on the theoretical model applied and the context of the industry under study.

Further, the significant bootstrap results while the Sobel test was

insignificant (p= 0.2284) reflect the advantages of the bootstrap method in dealing with violations of normality assumptions, as recommended by Hayes (2018) Because DER and PBV data are not normally distributed, bootstrap confidence intervals become more reliable. This is also in line with the findings Arhinful, Amin, et al., (2025) in Cogent Economics & Finance that uses dynamic estimation methods to determine the optimal capital structure, where the abnormal distribution of variables requires a more robust estimation approach. Study Pham & Le Ha Diem (2024) in the Journal of Banking Regulation also uses SysGMM as a robust method for endogeny and non-normality, supporting the methodological choice of this study to prioritize bootstrap over Sobel test in the context of banking data that is generally not normally distributed.

CONCLUSION

This research successfully shows that banks' strategies in maintaining asset quality are not only determined by capital structure policies but also influenced by how the market responds to bank conditions through investor sentiment. Based on the results of the analysis on KBMI Bank 3 for the 2021-2025 period, the capital structure does not have a significant direct effect on investor sentiment. However, investor sentiment has proven to have a significant negative effect on credit risk proxied with Non-Performing Loans (NPLs). Furthermore, investor sentiment is capable of mediating the relationship between capital structure and credit risk. These findings show that investor perception is an important mechanism in the process of transmitting bank funding policies to bank credit quality.

The study results confirm that maintaining investor sentiment through information transparency, strengthening market confidence, and managing good financial performance can be an important strategy for banks in reducing credit risk and maintaining asset quality.

Therefore, bank management is advised to not only to focus on managing the capital structure but also pay attention to the aspects of market communication and investor relations as part of the risk management strategy. For future research, it is advisable to include additional variables such as

profitability, liquidity, or corporate governance and expand the research object on KBMI 4 banks or the Islamic banking sector to obtain more comprehensive results.

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