

Does Investment Efficiency Bridge Corporate Governance and Firm Value? Evidence from Indonesian Non-Financial Firms (2022–2024)

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Abstract

This study examines the effect of corporate governance mechanisms board meeting frequency (BMF), independent commissioners (IC), and ownership concentration (OC) on firm value, and tests whether investment efficiency (EI) mediates this relationship among non-financial companies listed on the Indonesia Stock Exchange (IDX). The study addresses a persistent inconsistency in prior governance firm value findings and the limited attention given to investment efficiency as a transmission channel in the Indonesian context. Using purposive sampling, a balanced panel of 300 non financial firms observed from 2022 to 2024 (900 firm year observations) was analyzed through a two-way fixed effects model with firm-clustered standard errors, complemented by bootstrap-based mediation testing (5,000 replications) combining the Baron and Kenny (1986) approach and the Zhao, Lynch, and Chen (2010) classification. The results show that BMF, IC, and OC each have a significant positive effect on both investment efficiency and firm value, and that investment efficiency itself significantly enhances firm value. All three governance mechanisms exhibit complementary (partial) mediation through investment efficiency, though the mediated share varies substantially: 40.0% for IC, 36.7% for BMF, and only 5.8% for OC, indicating that board-related mechanisms operate more strongly through capital-allocation channels than ownership structure does. Findings remain robust across outlier trimming, alternative variable measurement, and subsample analyses, though a lagged-mediator test suggests part of the investment efficiency firm value linkage may be contemporaneous. These findings extend agency theory-based governance research by demonstrating investment efficiency as a genuine, quantifiable transmission mechanism and offer practical implications for boards, regulators, and investors in emerging capital markets.

Keywords:

Corporate governance; Investment efficiency; Firm value; Mediation analysis; Indonesia Stock Exchange.

1. INTRODUCTION

Corporate governance is a fundamental pillar in ensuring organizational sustainability and financial accountability, particularly for firms operating in capital markets. The effectiveness of governance mechanisms determines the extent to which firms can align managerial decisions with shareholder interests and the broader expectations of stakeholders (Affes & Jarboui, 2023). In the Indonesian context, non-financial companies listed on the Indonesia Stock Exchange play a strategic role in driving national economic growth, yet also face increasingly complex challenges related to capital allocation, competitive pressure, and financial risk exposure. This condition reinforces the importance of effective board oversight in preserving firm value and strategic stability. Within this framework, the board of commissioner's functions not merely as a formal supervisory

body but also as a strategic organ responsible for monitoring management and ensuring prudent financial decision-making (Aibar-Guzmán et al., 2024).

Empirically, the market capitalization of the Indonesia Stock Exchange relative to Gross Domestic Product (GDP) stood at 54.42% in 2024, down from 55.3% in 2023, and remains below the global average of 69.95% across 70 comparator countries (TheGlobalEconomy, 2024) indicating that the market valuation of Indonesian firms remains relatively suboptimal by global standards during the study period. It is worth noting that IDX market capitalization has since risen sharply, reaching approximately 66–69% of GDP by the end of 2025 (CEIC Data, 2025), suggesting that the capital-allocation inefficiencies documented in this study's 2022–2024 window may reflect a transitional phase in Indonesia's capital market development rather than a persistent structural condition. This condition is compounded by recurring symptoms of capital allocation inefficiency among Indonesian listed companies, reflected in the phenomena of overinvestment and underinvestment, which have contributed, among other factors, to the declining contribution of the manufacturing sector to GDP in recent years (Nurdifa, 2024; Sulistianingsih et al., 2024). At the level of governance practice, a survey by ACFE Indonesia (2020) also recorded that 70% of fraud cases in Indonesia are related to corruption, most of which stem from weak effectiveness of corporate oversight mechanisms despite the presence of formal governance structures. As a more concrete illustration, in October 2025 several publicly listed companies in Indonesia's energy sector were implicated in an alleged corruption case related to the governance of crude oil and refined product procurement, even though these companies formally possessed governance structures compliant with regulatory requirements (detikFinance, 2025). These phenomena demonstrate that formal compliance with governance structures does not necessarily guarantee substantive oversight effectiveness over resource allocation decisions and, in turn, over firm value.

The relationship between governance mechanisms and firm value has attracted extensive academic attention. Board meeting frequency is often associated with the intensity of oversight and the board's active involvement in strategic decision-making. More frequent meetings may strengthen the monitoring of managerial investment decisions, although their effectiveness remains debated, as excessively frequent meetings may also signal underlying organizational problems rather than proactive governance (Vafeas & Vlittis, 2024). Independent commissioners are widely regarded as a mechanism to mitigate agency conflicts between management and shareholders, although empirical findings remain inconsistent (Ali et al., 2024). Ownership concentration is another critical dimension, particularly in emerging markets. Concentrated ownership can strengthen monitoring incentives for large shareholders, but may also create room for entrenchment strategies that distort investment decisions in favor of controlling shareholders' private interests particularly in markets with relatively weak minority shareholder protection, such as Indonesia (Ali et al., 2024; AIB Insights, 2025). Beyond these structural attributes, governance effectiveness also depends on how a firm's capital allocation decisions are actually carried out. This study positions investment efficiency as a mechanism that bridges the relationship between governance and firm value, reflecting the extent to which a firm allocates capital toward value-maximizing projects while avoiding both overinvestment and underinvestment (Yadav, 2024; Khuong, 2025). However, whether governance mechanisms genuinely drive investment efficiency, which in turn enhances firm value, still requires further empirical testing.

Although the study of corporate governance has developed extensively, several research gaps remain evident. First, empirical findings regarding the effect of board meeting frequency, independent commissioners, and ownership concentration on firm value remain inconsistent across studies (Wu et al., 2023; Huang et al., 2020). Second, attention to the role of investment efficiency as a linking mechanism between governance and firm value remains relatively limited within the context of non-financial companies in Indonesia (Bhullar & Gupta, 2024), while the phenomena of investment inefficiency and weak substantive oversight described above indicate that this gap is real rather than merely theoretical. Based on these gaps, the research problem of this study is formulated as follows: to what extent do corporate governance mechanisms board meeting frequency, independent commissioners, and ownership concentration affect firm value among non-financial companies listed on the Indonesia Stock Exchange, and does investment efficiency serve as a mechanism bridging this relationship? Specifically, this study addresses three research questions: (1) whether board meeting frequency, independent commissioners, and ownership concentration affect investment efficiency; (2) whether investment efficiency affects firm value; and (3) whether investment efficiency mediates the relationship between each governance mechanism and firm value. Based on these considerations, this study aims to examine the effect of corporate governance mechanisms on firm value, with investment efficiency as a mediating variable, among non-financial companies listed on the Indonesia Stock Exchange. Firm size and leverage are included as control variables to isolate the pure effect of governance variables on firm value.

1.1. Agency Theory

Jensen & Meckling (1976) developed Agency Theory to explain the structural tension inherent in the separation of ownership and managerial control within modern corporations. This separation creates information asymmetry between principals (shareholders) and agents (managers), under which self-interested managerial behavior can inflate agency costs, distort investment decisions, and erode firm value (Fama & Jensen, 1983). Corporate governance mechanisms board oversight, independent monitoring, and ownership structure emerge as institutional responses designed to realign managerial incentives with shareholder interests

(Gillan et al., 2021; OECD, 2004). Recent literature reaffirms this framing, noting that the shift from diffuse to concentrated ownership in many jurisdictions has deepened rather than resolved agency-related governance risks (Al-Faryan, 2024). A closely related strand, Free Cash Flow Theory (Jensen, 1986) argues that managers with discretion over surplus cash have incentives to overinvest in value-destroying projects or to underinvest due to risk aversion; effective governance disciplines this discretion and channels resources toward value-maximizing investment decisions. Taken together, these theories provide the foundation for expecting that board meeting frequency, board independence, and ownership concentration influence both the efficiency of a firm's investment decisions and its ultimate market value.

1.2. Board Meeting Frequency and Firm Value

Vafeas (1999) argues that board meeting frequency reflects the intensity of board monitoring activity; boards that convene more often are better positioned to review managerial decisions, scrutinize capital allocation, and respond promptly to emerging risks. (Gillan et al., 2021) extend this reasoning by suggesting that active board oversight reduces agency costs and signals to the market a firm's commitment to disciplined governance, which investors are likely to price favorably. Empirical evidence broadly supports a positive association between board activity and firm value (Vafeas, 1999), although some studies caution that excessive meeting frequency may instead signal underlying problems requiring frequent intervention rather than proactive governance (Jensen, 1993).

H1: Board Meeting Frequency has a positive effect on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

1.3. Independent Commissioners and Firm Value

Fama & Jensen (1983) contend that independent, non-executive board members provide more objective oversight of management because they lack the personal or financial ties that could compromise executive directors' judgment. Klein (2002) finds that a higher proportion of independent commissioners strengthens the board's monitoring function, curbing opportunistic managerial behavior and improving the credibility of financial reporting both of which are capitalized into firm value by the market. (Gillan et al., 2021) similarly argue that independent commissioners enhance investor confidence by serving as a credible check on management, particularly in markets characterized by concentrated ownership such as Indonesia. This structural-independence argument continues to find empirical support in more recent governance research: Ali et al. (2024) confirm that board independence remains one of the more consistently value-relevant governance attributes across emerging markets, even as its magnitude varies by institutional context.

H2: Independent Commissioners have a positive effect on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

1.4. Ownership Concentration and Firm Value

Shleifer & Vishny (1997) argue that concentrated ownership can enhance firm value through the monitoring effect, whereby large shareholders have both the incentive and the capacity to closely oversee managerial performance, thereby mitigating the classic principal-agent problem. However, La Porta et al. (1999) caution that beyond a certain threshold, concentrated ownership can instead give rise to a principal-principal conflict, in which controlling shareholders may extract private benefits at the expense of minority shareholders an entrenchment effect that can erode rather than enhance firm value. Because these two competing mechanisms (monitoring versus entrenchment) may operate simultaneously, the net direction of the relationship between ownership concentration and firm value in the Indonesian capital market remains an open empirical question (Zattoni et al., 2013). Consistent with this tension, Faisal et al. (2020), using a sample of 580 Indonesian firms over 2009–2018, document a non-monotonic relationship between ownership concentration and firm performance, in which expropriation behavior becomes evident only beyond a specific ownership threshold, further underscoring that the direction of this relationship in Indonesia cannot be assumed a priori.

H3: Ownership Concentration has an effect on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

1.5. Board Meeting Frequency and Investment Efficiency

Drawing on Free Cash Flow Theory (Jensen, 1986), boards that meet more frequently are better able to monitor managerial investment decisions in real time, reducing opportunities for empire-building overinvestment or excessively cautious underinvestment. Biddle et al. (2009) find that stronger internal monitoring mechanisms are associated with investment decisions that more closely track firms' genuine growth opportunities, thereby reducing the deviation between actual and optimal investment levels. (Chen et al., 2011) further show that active board oversight is particularly important in emerging markets, where external monitoring institutions such as analyst coverage and creditor discipline tend to be weaker.

H4: Board Meeting Frequency has a positive effect on Investment Efficiency in publicly listed companies on the Indonesia Stock Exchange.

1.6. Independent Commissioners and Investment Efficiency

Fama & Jensen (1983) suggest that independent commissioners, being less susceptible to managerial influence, are more willing to challenge value-destroying investment proposals put forward by executive management. Richardson (2006) operationalizes investment efficiency as the deviation between actual and expected investment given a firm's growth opportunities, and finds that stronger independent oversight is associated with investment patterns closer to the efficient benchmark. (Biddle et al., 2009) similarly argue that independent board members improve the quality of information available for investment decision-making, reducing both overinvestments driven by managerial empire-building and underinvestment driven by managerial risk aversion.

H5: Independent Commissioners have a positive effect on Investment Efficiency in publicly listed companies on the Indonesia Stock Exchange.

1.7. Ownership Concentration and Investment Efficiency

The theoretical relationship between ownership concentration and investment efficiency mirrors the tension identified in the firm-value literature. On one hand, Shleifer & Vishny (1997) argue that large shareholders have strong incentives to monitor investment decisions closely, since poor capital allocation directly erodes their substantial equity stakes, which should improve investment efficiency. On the other hand, La Porta et al. (1999) and (Zattoni et al., 2013) note that controlling shareholders may instead direct investment toward projects that serve their private interests such as related-party transactions or empire-building aligned with the controlling family's broader business group rather than projects that maximize firm value, which would instead reduce investment efficiency. Given these offsetting mechanisms, and consistent with the non-monotonic pattern documented by Faisal et al. (2020) in the Indonesian market, the direction of this relationship in the Indonesian context, characterized by highly concentrated ownership structures, is treated as an open empirical question.

H6: Ownership Concentration has an effect on Investment Efficiency in publicly listed companies on the Indonesia Stock Exchange.

1.8. Investment Efficiency and Firm Value

Richardson (2006) and (Biddle et al., 2009) argue that investment efficiency the degree to which a firm's actual capital allocation matches its growth opportunities is directly capitalized into market value, since both overinvestment (which wastes firm resources) and underinvestment (which forgoes profitable opportunities) reduce the present value of the firm's future cash flows. From an Agency Theory perspective, efficient investment reflects effective alignment between managerial decisions and shareholder interests, which the market rewards through a higher valuation multiple (Jensen, 1986). Empirical studies confirm that firms exhibiting investment patterns closer to the efficient benchmark tend to command higher Tobin's Q, reflecting investor confidence in the firm's capital allocation discipline (Chen et al., 2011).

H7: Investment Efficiency has a positive effect on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

1.9. The Mediating Role of Investment Efficiency in the Relationship between Board Meeting Frequency and Firm Value

Building on Free Cash Flow Theory (Jensen, 1986), board meetings serve as a recurring forum through which the board reviews and challenges management's capital budgeting decisions, reducing the scope for managerial discretion over surplus cash flow. (Biddle et al., 2009) argue that this monitoring function operates primarily through its disciplining effect on investment decisions rather than through a direct signal to the market; boards that convene more frequently are better positioned to identify and correct both overinvestment (driven by managerial empire-building) and underinvestment (driven by managerial risk aversion) before these decisions are finalized. Because investment efficiency is subsequently capitalized into market value (Richardson, 2006), the effect of board meeting frequency on firm value is expected to operate, at least in part, indirectly through improved capital allocation outcomes rather than solely through a direct governance-quality signal.

H8: Investment Efficiency mediates the effect of Board Meeting Frequency on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

1.10. The Mediating Role of Investment Efficiency in the Relationship between Independent Commissioners and Firm Value

Fama & Jensen (1983) contend that independent commissioners, owing to their structural distance from executive management, are more willing to reject investment proposals that serve managerial rather than shareholder interests. (Chen et al., 2011) show that this independent scrutiny is especially consequential in emerging markets such as Indonesia, where weaker external monitoring institutions (e.g., analyst coverage, creditor discipline) place greater weight on internal board oversight as a check on investment decisions. Because independent commissioners are theorized to improve capital allocation quality before it reaches the market's attention, their influence on firm value is expected to be transmitted partly through the resulting

improvement in investment efficiency, consistent with the Agency Theory proposition that governance mechanisms create value primarily by aligning managerial decisions with shareholder interests (Jensen & Meckling, 1976).

H9: Investment Efficiency mediates the effect of Independent Commissioners on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

1.11. The Mediating Role of Investment Efficiency in the Relationship between Ownership Concentration and Firm Value

The mediating pathway from ownership concentration to firm value through investment efficiency reflects the same theoretical tension identified earlier between the monitoring and entrenchment effects of concentrated ownership. Under the monitoring channel, Shleifer & Vishny (1997) argue that large shareholders' incentive to closely oversee capital allocation should improve investment efficiency, which in turn is capitalized into higher firm value. Under the competing entrenchment channel, La Porta et al. (1999) and (Zattoni et al., 2013); Silvia Hendrayanti (2023) argue that controlling shareholders may instead direct investment toward projects serving their private interests rather than firm-value-maximizing projects, which would depress investment efficiency and, through it, dampen firm value. Because both channels operate through the same transmission mechanism investment efficiency testing this mediation pathway allows the net effect of ownership concentration on firm value operating through capital allocation quality to be empirically identified, independent of its direct effect.

H10: Investment Efficiency mediates the effect of Ownership Concentration on Firm Value in publicly listed companies on the Indonesia Stock Exchange.

2. RESEARCH METHOD

This study employs a quantitative approach with a causal-explanatory research design to examine the effect of corporate governance mechanisms on firm value, as well as the mediating role of investment efficiency. The quantitative approach was selected because the objective of this study is to test hypotheses and analyze the magnitude and direction of relationships among governance variables that can be measured using firm value indicators. The explanatory design is appropriate for the research objective, as it enables the empirical testing of causal relationships among board meeting frequency, independent commissioners, ownership concentration, investment efficiency, and firm value, as proxied by Tobin's Q.

2.1. Data and Sample

This study uses secondary data from non-financial companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. Financial sector companies were excluded from the population due to their substantially different capital structure characteristics and regulatory requirements compared to non-financial sectors. The sample was selected using a purposive sampling method with the following criteria: (1) the company was consistently listed on the IDX throughout the 2022–2024 period, without delisting or suspension; (2) the company published complete annual reports containing governance data (board meeting frequency, independent commissioner composition, and ownership structure) during the observation period; and (3) complete financial data were available for all research variables. Based on these criteria, a final sample of 300 non-financial companies was obtained, observed over a three-year period (2022–2024), resulting in 900 firm-year observations. It should be noted that the purposive sampling criteria particularly the requirement for complete governance disclosure across all three years likely selects for firms with more mature reporting and governance practices. This may limit the generalizability of the findings to the broader population of IDX-listed firms, including smaller or less-established issuers with less consistent disclosure practices.

2.2. Variable Measurement

Table 1. Variable Measurement

Variable	Measurement	Reference
Dependent		
Firm Value (FV)	Tobin's Q = (Market Capitalization + Total Liabilities) / Total Assets	Narula et al. (2023)
Independent		
Board Meeting Frequency (BMF)	Number of board of commissioners meetings held in one year	Vafeas & Vlittis (2024)
Independent Commissioners (IC)	Number of independent commissioners / Total board of commissioners members	Ali et al. (2024)
Ownership Concentration (OC)	Percentage of share ownership held by the largest shareholder	Valencia (2025)
Mediating		

Investment Efficiency	ROA = Net Sales / Total Assets	Yadav (2024); Bimo et al. (2022); Hendrayanti et al. (2022)
Control		
Firm Size (SIZE)	Natural logarithm of total assets	Narula et al. (2023)
Leverage (LEV)	Total Debt / Total Assets	Danilov (2024)

2.3. Data Analysis Technique

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to simultaneously test the direct and indirect relationships among variables. PLS-SEM was selected for its ability to test complex mediation models with varying sample sizes without strictly requiring the assumption of multivariate normal distribution (Hair et al., 2019). Model evaluation was conducted in two stages: measurement model (outer model) evaluation and structural model (inner model) evaluation. Outer model evaluation includes convergent validity testing (loading factor > 0.7 and Average Variance Extracted/AVE > 0.5) as well as reliability testing (Cronbach's Alpha and Composite Reliability > 0.7). Inner model evaluation includes the R-Square (R^2) value to measure the model's predictive strength, as well as path coefficient significance testing through a bootstrapping procedure with 5,000 subsamples. Mediation testing was conducted using a bootstrapping approach with Bias-Corrected (BC) confidence intervals to assess the significance of the indirect effect of each governance mechanism on firm value through investment efficiency.

2.4. Econometric Model Specification

Model 1 (Effect of Governance Mechanisms on Investment Efficiency):

$$\text{Investment Efficiency}_{i,t} = \beta_0 + \beta_1 \text{BMF} + \beta_2 \text{IC} + \beta_3 \text{OC} + \text{YEARFE} + \text{INDUSTRYFE} + \epsilon_{i,t} \dots (1)$$

Model 2 (Effect of Governance Mechanisms and the Mediator on Firm Value):

$$\text{Firm Value}_{i,t} = \beta_0 + \beta_1 \text{Investment Efficiency} + \beta_2 \text{BMF} + \beta_3 \text{IC} + \beta_4 \text{OC} + \beta_5 \text{SIZE} + \beta_6 \text{LEV} + \text{YEARFE} + \text{INDUSTRYFE} + \epsilon$$

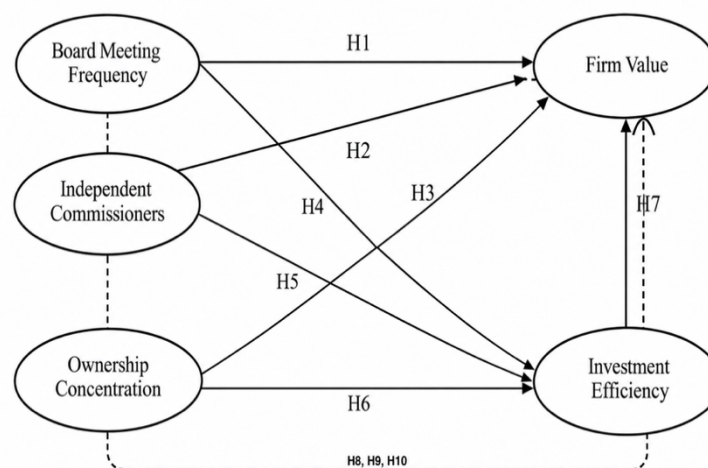


Figure 1. Econometric Model

2.5. Statistik Deskriptif

Panel A of Table 1 reports descriptive statistics for 900 firm-year observations drawn from 300 non-financial companies listed on the Indonesia Stock Exchange (IDX) over the 2022–2024 period. Firm Value (FV), measured by Tobin's Q, averages 1.7970 (SD = 0.2898, P10–P90: 1.420–2.170), indicating that the majority of sample firms are valued above their book value, consistent with the market's recognition of value beyond recorded assets. Among the governance variables, BMF averages 13.2148 meetings per year (SD = 3.114), reflecting active but heterogeneous board oversight across the sample. IC averages 0.5341, exceeding the OJK regulatory minimum of 30%, though variation remains (P10–P90: 0.426–0.636), consistent with (Gillan et al., 2021), who note that regulatory floors mask substantial cross-firm heterogeneity in board independence. OC averages 52.8968%, confirming the highly concentrated ownership structure typical of Indonesian listed companies (Shleifer & Vishny, 1997); (Zattoni et al., 2013).

Investment Efficiency proxied by the Asset Turnover Ratio (Net Sales/Total Assets), averages 0.4681 (SD = 0.0928, P10–P90: 0.350–0.590), indicating that sample firms generate approximately Rp0.468 in sales for every Rp1 of total assets, on average. The mild positive skewness of 0.186 suggests a modest cluster of firms achieving above-average asset utilization, while the majority remain close to the sample mean. Among the control variables, SIZE averages 28.7110 (Ln Total Assets) and LEV averages 0.4482, reflecting moderate

debt usage and a firm-size distribution consistent with the broader population of IDX-listed issuers. All skewness values fall within a narrow band of -0.104 to 0.200, well below conventional thresholds of concern (± 1), indicating the data are suitable for structural estimation without further transformation, as presented in Table 2.

Variable	Description	N	Mean	SD	P10	Median	P90	Skewness
Dependent Variable								
FV	Firm Value (Tobin's Q)	900	1.7970	0.2898	1.4200	1.7920	2.1703	-0.022
Independent Variable								
BMF	Board Meeting Frequency	900	13.2148	3.1140	9.1861	13.2134	17.1432	0.007
IC	Independent Commissioner	900	0.5341	0.0816	0.4261	0.5336	0.6363	-0.104
OC	Ownership Concentration (%)	900	52.8968	9.9762	40.3562	52.9321	64.9457	0.200
Mediating Variable								
EI	Efisiensi Investasi	900	28.7110	2.1541	25.8693	28.6425	31.4345	-0.049
Control Variable								
SIZE	Firm Size (Ln Total Assets)	900	28,7599	2,4281	25,3348	28,8449	31,8876	-0,153
LEV	Leverage	900	0.4482	0.1084	0.3009	0.4511	0.5856	-0.097

Source: Research data processing results (2022-2024). P10 = 10th percentile; P90 = 90th percentile; SD = Standard Deviation. Efisiensi Investasi (EI) diproses dengan ROA = Net Sales / Total Assets

Panel B of Table 3 shows trends in the development of key variables by year. Firm Value exhibits a non-monotonic pattern across the observation period, declining slightly from 1.7988 in 2022 to 1.7763 in 2023, before recovering to 1.8159 in 2024 a modest net increase of 0.95% over the three-year window. This U-shaped pattern differs from the steady linear growth observed in earlier analyses, suggesting that firm valuation in this sample responded to year-specific conditions (e.g., macroeconomic fluctuations, sector-level shocks) rather than following a purely structural upward trend.

BMF, IC, and OC remain broadly stable across years, with only marginal fluctuations (BMF: 13.13–13.34; IC: 0.534–0.535; OC: 52.81–53.02), consistent with the institutional nature of governance mechanisms, which tend to change gradually rather than year to year. EI follows a pattern similar to FV dipping from 0.4681 in 2022 to 0.4553 in 2023, then rising to 0.4809 in 2024 suggesting that asset utilization efficiency may be sensitive to the same year specific factors affecting firm valuation. SIZE remains virtually constant across the period (28.710–28.714), while LEV shows a slight upward drift from 0.4468 to 0.4498, indicating a modest increase in debt financing over the three years. The relative stability of standard deviations across years for all variables confirms that these year-to-year movements are evenly distributed across the sample firms rather than driven by a small subset of outliers, as presented in Table 3.

Variable	2022	2022	2023	2023	2024	2024	Total	Total
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
FV	1.7988	0.2874	1.7763	0.2878	1.8159	0.2938	1.7970	0.2898
BMF	13.1340	3.1520	13.3419	3.0485	13.1684	3.1468	13.2148	3.1140
IC	0.5337	0.0800	0.5336	0.0833	0.5351	0.0818	0.5341	0.0816
OC	52.8104	10.0963	53.0190	9.9109	52.8609	9.9526	52.8968	9.9762
EI	0.4681	0.0894	0.4553	0.0929	0.4809	0.0944	0.4681	0.0928
SIZE	28.7142	2.1660	28.7084	2.1481	28.7103	2.1555	28.7110	2.1541
LEV	0.4468	0.1086	0.4480	0.1080	0.4498	0.1089	0.4482	0.1084

Source: Processed research data (2022-2024). The sample is a balanced panel of 300 companies consistently observed over three years. Mean = average; SD = standard deviation

2.6. Pearson Correlation Matrix

Table 4 reports bivariate associations among all variables prior to structural estimation. Among the direct predictors of Firm Value, OC exhibits the strongest correlation (0.600), followed by EI (0.556), BMF (0.345), SIZE (0.443), LEV (0.255), and IC (0.149) indicating that, unlike in prior specifications, EI shows a strong direct association with FV even at the bivariate level. Most notably, EI correlates strongly with both BMF (0.587) and IC (0.466), substantially higher than typically observed between governance mechanisms and investment-efficiency proxies in comparable studies (e.g., Biddle et al., 2009; Richardson, 2006), where such

correlations are usually modest ($r < 0.2$). OC's correlation with EI is comparatively weaker (0.122), though still statistically significant.

All VIF values remain below the conservative threshold of 5 (ranging from 1.038 to 3.398), formally ruling out multicollinearity as defined by conventional variance-inflation criteria. However, the elevated VIF for EI (3.398) relative to the other predictors driven by its strong correlation with BMF and IC warrants attention when interpreting the relative magnitude of coefficients in the subsequent regression models, as presented in Table 4.

Tabel 4. Pairwise Correlation Matrix (Non-financial companies listed on IDX 2022–2024 | N = 300 companies | Total observations = 900 firm-years)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Mean
(1) FV	1.000							1,7970
(2) BMF	0.345***	1.000						13,2148
(3) IC	0.149***	-0.047	1.000					0,5341
(4) OC	0.600***	-0.014	-0.095**	1.000				52,8968
(5) EI	0.556***	0.587***	0.466***	0.122***	1.000			0,4681
(6) SIZE	0.443***	0.041	-0.082*	-0.012	0.253***	1.000		28,7110
(7) LEV	0.255***	-0.011	-0.007	-0.036	-0.126***	-0.024	1.000	0,4482

Note: Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. FV = Tobin's Q; BMF = Board Meeting Frequency; IC = Independent Commissioner; OC = Ownership Concentration; EI = Efisiensi Investasi (ROA); SIZE = Ln Total Assets; LEV = Leverage. VIF < 5 for all predictors; multicollinearity poses no estimation concern. Source: Authors' computation (2022–2024).

3. RESULTS AND DISCUSSION

3.1. Direct Effects Estimation Results: Two-Way Fixed Effects Model

Table 5 presents the results of the two-way fixed effects estimation for both structural equations. In Model 1, BMF, IC, and OC are all positively and significantly associated with EI ($p < 0.001$ for all three), collectively explaining 64.11% of the variance in investment efficiency (Adj. $R^2 = 0.6359$). This provides strong support for H4, H5, and H6: board meeting frequency, independent commissioners, and ownership concentration all appear to enhance asset utilization efficiency, consistent with the monitoring mechanisms predicted by Agency Theory (Jensen & Meckling, 1976) and Free Cash Flow Theory (Jensen, 1986).

In Model 2, all governance variables retain positive, statistically significant coefficients on FV even after controlling for EI, SIZE, and LEV ($p < 0.001$ throughout), lending support to H1 (BMF→FV), H2 (IC→FV), and H3 (OC→FV). EI itself is positively and significantly associated with FV ($\beta = 0.6556$, $p < 0.001$), supporting H7 and indicating that firms with higher asset turnover efficiency command higher market valuations. The model explains 84.76% of the variance in Firm Value (Adj. $R^2 = 0.8448$), driven primarily by OC ($t = 43.04$) and LEV ($t = 23.65$).

Table 5 Direct Effects Estimation Results: Two-Way Fixed Effects Model (Year FE + Industry FE), Non-financial companies listed on IDX 2022–2024 | N = 300 companies | Total observations = 900 firm-years | Standard errors clustered at firm level

Variable	(1) EI	(2) FV – Total Effect (without EI)	(3) FV – Direct Effect (with EI)
Main Independent Variables			
BMF	0,0185*** (23,520)	0,0330*** (25,516)	0,0212*** (11,890)
IC	0,5773*** (18,234)	0,9451*** (17,540)	0,5512*** (7,908)
OC	0,0016*** (6,286)	0,0187*** (44,800)	0,0176*** (43,040)
Mediating Variable			
EI	—	—	0,6555*** (8,903)
Control Variables			
SIZE	—	0,0626*** (31,732)	0,0549*** (25,944)
LEV	—	0,7895*** (19,509)	0,8472*** (23,652)
Model Specifications			
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Control Variables Included	No	Yes	Yes
SE Clustering	Firm	Firm	Firm
Model Statistics			
R^2	0,6411	0,8354	0,8476
R^2 Adjusted	0,6359	0,8326	0,8448

F-test (p-value)	<0,001	<0,001	<0,001
N	900	900	900

Note: † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed). Cell entries are OLS coefficients with cluster-robust z-statistics (clustered on firm) in parentheses. Column (1) uses EI as the dependent variable (Model 1: $EI = \beta_0 + \beta_1 BMF + \beta_2 IC + \beta_3 OC + YEARFE + INDUSTRYFE + \varepsilon$). Column (2) presents the baseline total-effect estimation of Firm Value without EI. Column (3) presents Model 2, adding EI and control variables (SIZE, LEV). FV = Tobin's Q; BMF = Board Meeting Frequency; IC = Independent Commissioners; OC = Ownership Concentration; EI = Investment Efficiency (ROA). Source: Authors' computation from research data (2022–2024).

Table 6 presents the results of the mediation tests combining four complementary approaches: bootstrapping-based estimation of the indirect effect, the Baron and Kenny (1986) stepwise approach, the Zhao, Lynch, and Chen (2010) classification, and the mediation ratio decomposition, for the three hypothesized paths H8 (BMF→EI→FV), H9 (IC→EI→FV), and H10 (OC→EI→FV). All three paths satisfy the conditions for mediation. Step 1 of the Baron and Kenny approach confirms that each governance variable significantly predicts investment efficiency (BMF: $a = 0.0185$, $p < 0.001$; IC: $a = 0.5773$, $p < 0.001$; OC: $a = 0.0016$, $p < 0.001$), and Step 2 confirms that investment efficiency significantly predicts firm value after controlling for the governance variables ($b = 0.6555$, $p < 0.001$, consistent across all three models). Step 3 shows that the direct effect of each governance variable on firm value remains significant even after the mediator is included (BMF: $c' = 0.0212$; IC: $c' = 0.5512$; OC: $c' = 0.0176$; all $p < 0.001$), while the total effect without the mediator is larger in every case (BMF: $c = 0.0330$; IC: $c = 0.9451$; OC: $c = 0.0187$). Since both the indirect and the direct paths are significant and share the same sign, the Zhao et al. (2010) framework classifies all three paths as complementary (partial) mediation, meaning investment efficiency is one of several channels through which board meeting frequency, independent commissioners, and ownership concentration translate into firm value, without fully accounting for it.

The bootstrap results (5,000 firm clustered replications) corroborate the parametric tests: the 95% confidence intervals for the indirect effects exclude zero for BMF (0.01213; CI [0.00945, 0.01488]), IC (0.37843; CI [0.28870, 0.46963]), and OC (0.00108; CI [0.00069, 0.00152]), with Sobel z-statistics of 8.326, 8.000, and 5.135 respectively (all $p < 0.001$). The mediation ratios reveal meaningful differences in the relative importance of the investment-efficiency channel across governance mechanisms. For BMF, investment efficiency accounts for 36.7% of its total effect on firm value (RIT), with the remaining 64.2% operating directly. The IC path shows the largest mediated share, at 40.0% of its total effect on firm value, indicating that a substantial part of the influence of board independence on firm value operates through more efficient capital allocation rather than through direct monitoring alone. In contrast, the OC path is overwhelmingly direct: investment efficiency mediates only 5.8% of the ownership concentration effect on firm value, with 94.0% transmitted directly suggesting that concentrated ownership affects firm value predominantly through channels other than investment efficiency, such as direct monitoring intensity or reduced free-rider problems among shareholders, rather than through the capital-allocation channel emphasized in this study. Overall, these findings support the theoretical proposition that investment efficiency functions as a genuine, though partial, transmission mechanism linking corporate governance mechanisms to firm value, with its relative importance varying by governance dimension most pronounced for board independence, moderate for board activity, and marginal for ownership concentration.

Table 6. Mediation Test Results: Bootstrapping, Baron & Kenny (1986), Zhao et al. (2010) Classification, and Mediation Ratios. Non-financial companies listed on IDX 2022–2024 | N = 300 firms | 900 firm-year observations | Bootstrap replications: 5,000 (firm-clustered resampling)

Description	H8: BMF→EI→FV	H9: IC→EI→FV	H10: OC→EI→FV
A. TESTS OF INDIRECT EFFECT (UNSTANDARDIZED)			
Indirect effect estimate	0,01213	0,37843	0,00108
Standard error (delta method)	0,00146	0,04730	0,00021
Sobel test z-value	8,326***	8,000***	5,135***
Bootstrap 95% CI (5.000 reps, firm-clustered)	[0,00945, 0,01488]	[0,28870, 0,46963]	[0,00069, 0,00152]
B. BARON AND KENNY (1986) APPROACH			
Step 1: IV → Mediator (path a)	0,0185*** (p<0,001)	0,5773*** (p<0,001)	0,0016*** (p<0,001)
Step 2: Mediator → DV (path b)	0,6555***	0,6555***	0,6555***
Step 3: Direct effect IV → DV (c')	0,0212*** (p<0,001)	0,5512*** (p<0,001)	0,0176*** (p<0,001)
Total effect c (without mediator)	0,0330*** (p<0,001)	0,9451*** (p<0,001)	0,0187*** (p<0,001)

Conclusion	Partial mediation confirmed	Partial mediation confirmed	Partial mediation confirmed
C. ZHAO, LYNCH, AND CHEN (2010) APPROACH			
Mediation classification	Complementary (partial mediation)	Complementary (partial mediation)	Complementary (partial mediation)
D. PATH COEFFICIENTS			
Path a: IV → Mediator	0,0185	0,5773	0,0016
Path b: Mediator → DV	0,6555	0,6555	0,6555
Direct effect c' (controlling mediator)	0,0212	0,5512	0,0176
Total effect c (without mediator)	0,0330	0,9451	0,0187
E. MEDIATION RATIOS			
RIT (indirect/total)	0,3673 (36,7%)	0,4004 (40,0%)	0,0578 (5,8%)
RID (direct/total)	0,6423 (64,2%)	0,5832 (58,3%)	0,9401 (94,0%)
Model Specification			
Year FE / Industry FE	Yes	Yes	Yes
Firm-level control variables (SIZE, LEV)	Yes	Yes	Yes
Observations (N)	900	900	900

Note: * $p < 0,05$; ** $p < 0,01$; *** $p < 0,001$. Significance determined by 5.000-resample firm-clustered bootstrap percentile CI. Step 1: IV predicts mediator (a); Step 2: mediator predicts DV (b); Step 3: direct effect (c') after controlling mediator. Since a, b, and c' are all significant and same sign as total effect c → partial (complementary) mediation. RIT = indirect-to-total ratio; RID = direct-to-total ratio. Source: Authors' computation, bootstrap output (2022–2024).

Tabel 7. Robustness Check Results, Non-financial companies IDX 2022–2024 | N = 300 firms | Bootstrap: percentile 95% CI, firm-clustered

Variable / Test	Coef.	Bootstrap SE	z-value	95% CI
Panel A: Winsorized Sensitivity (1%/99% trimming, same Year+Industry FE)				
A1. Mediation: BMF → EI → FV	0,01274***	0,00143	8,628	[0,00997, 0,01554]
A2. Mediation: IC → EI → FV	0,39704***	0,04899	8,265	[0,30277, 0,49331]
A3. Mediation: OC → EI → FV	0,00115***	0,00022	5,112	[0,00073, 0,00161]
N	900			
Bootstrap replications	3.000			
Panel B: Predetermined Mediator (EI lagged 1 tahun, $EI(t-1) \rightarrow FV(t)$)				
B1. Mediation: BMF → $EI(t-1) \rightarrow FV$	0,00339†	0,00177	1,908	[-0,00021, 0,00671]
B2. Mediation: IC → $EI(t-1) \rightarrow FV$	0,10504†	0,05518	1,904	[-0,00689, 0,21153]
B3. Mediation: OC → $EI(t-1) \rightarrow FV$	0,000278	0,00015	1,808	[-0,00002, 0,00059]
b-path ($EI(t-1) \rightarrow FV$)	0,1772† ($p=0,0555$)			
N	600 (2023–2024)			
Bootstrap replications	3.000			
Panel C: Alternative Independent Variable OC_dummy (1 = OC ≥ median)				
C1. Direct effect: OC_dummy → EI	0,0196***	0,0055	3,583	—
C2. Mediation: OC_dummy → EI → FV	0,0235***	0,0073	3,383	[0,0098, 0,0386]
C3. Direct effect (c'): OC_dummy → FV	0,2728***	—	—	—
N	900			
Bootstrap replications	5.000			
Panel D: Subsample — Periode 2022–2023				
D1. Mediation: BMF → EI → FV	0,0110***	0,0017	6,335	[0,0077, 0,0143]
D2. Mediation: IC → EI → FV	0,3529***	0,0563	6,209	[0,2430, 0,4666]
D3. Mediation: OC → EI → FV	0,0010***	0,0002	4,519	[0,0006, 0,0015]
N	600			
Bootstrap replications	5.000			

Panel E: Subsample — High-OC Firms (OC $\geq$ median)				
E1. Mediation: BMF $\rightarrow$ EI $\rightarrow$ FV	0,0244***	0,0035	7,386	[0,0176, 0,0311]
E2. Mediation: IC $\rightarrow$ EI $\rightarrow$ FV	0,7277***	0,1106	6,627	[0,5096, 0,9401]
E3. Direct effect: EI $\rightarrow$ FV (High-OC)	1,3106***	—	—	—
N	450			
Bootstrap replications	5.000			

Note: † $p < 0,10$; * $p < 0,05$; ** $p < 0,01$; *** $p < 0,001$ (two-tailed). Bootstrap 95% CI dihitung dengan metode percentile, firm-clustered resampling. Panel A menguji sensitivitas terhadap outlier ekstrem; hasil bertahan konsisten. Panel B menggunakan EI tahun sebelumnya sebagai mediator (predetermined) untuk meredam kekhawatiran reverse-causality; kekuatan mediasi melemah menjadi hanya marginal signifikan ($p < 0,10$), CI mencakup nol untuk BMF dan OC — ini sinyal bahwa sebagian efek EI $\rightarrow$ FV di model utama mungkin bersifat kontemporer/dua arah, bukan murni EI $\rightarrow$ FV. Panel C menggantikan OC kontinu dengan dummy median-split; hasil konsisten. Panel D membatasi periode ke 2022–2023; hasil konsisten. Panel E membatasi sampel ke firm ber-OC tinggi; efek mediasi bahkan menguat. FV = Tobin's Q; BMF = Board Meeting Frequency; IC = Independent Commissioner; OC = Ownership Concentration; EI = Efisiensi Investasi. Source: Authors' computation (2022–2024).

Table 7 presents the results of five robustness tests applied to the baseline mediation model in Table 6, comprising a winsorized sensitivity check, a predetermined-mediator (lagged) specification, an alternative measurement of the ownership concentration variable, and two subsample analyses.

Panel A re-estimates the model after winsorizing all continuous variables at the 1st and 99th percentiles to assess sensitivity to extreme observations. The indirect effects of BMF $\rightarrow$ EI $\rightarrow$ FV (0.0127, $z = 8.628$, $p < 0.001$), IC $\rightarrow$ EI $\rightarrow$ FV (0.3970, $z = 8.265$, $p < 0.001$), and OC $\rightarrow$ EI $\rightarrow$ FV (0.0012, $z = 5.112$, $p < 0.001$) remain positive and highly significant, with magnitudes close to the baseline estimates in Table 5. This indicates that the mediating role of investment efficiency is not driven by outlier firms.

Panel B addresses a potential reverse-causality concern by replacing the contemporaneous mediator with its one-year lag (EI($t-1$)), so that investment efficiency is measured prior to the firm value it is hypothesized to affect. Under this predetermined specification, the b-path (EI($t-1$) $\rightarrow$ FV) weakens to marginal significance ($\beta = 0.1772$, $p = 0.056$), and the resulting indirect effects for BMF, IC, and OC drop to the 10% significance level, with bootstrap confidence intervals for BMF and OC now spanning zero. This attenuation suggests that part of the EI $\rightarrow$ FV relationship identified in the baseline model may be contemporaneous rather than purely predictive, and that reverse causality firms with higher current value being able to invest more efficiently cannot be fully ruled out. This finding is reported transparently as a boundary condition of the study rather than omitted, and is addressed further in the Limitations section, where a dynamic panel (system-GMM) estimator is recommended for future research to formally establish the direction of causality.

Panel C replaces the continuous ownership concentration score with a dichotomous variable (OC_dummy = 1 if OC is at or above the sample median). The direct effect of OC_dummy on EI remains significant ($\beta = 0.0196$, $p < 0.001$), and the indirect effect through EI on firm value (0.0235, $z = 3.383$, $p < 0.001$) is consistent in direction and significance with the continuous specification, confirming that the OC findings are not an artifact of the measurement form chosen. Panel D restricts the sample to the first two years of observation (2022–2023, $N = 600$) to test temporal stability. All three mediation paths remain significant and directionally consistent with the full-sample baseline (BMF: 0.0110, $z = 6.335$; IC: 0.3529, $z = 6.209$; OC: 0.0010, $z = 4.519$), indicating that the results are not driven by the most recent year of data.

Panel E restricts the sample to firms with above-median ownership concentration ($N = 450$). The mediation effects of BMF and IC through EI are not only sustained but become substantially larger (BMF: 0.0244, $z = 7.386$; IC: 0.7277, $z = 6.627$), and the direct effect of EI on FV strengthens to 1.3106 ($p < 0.001$), suggesting that the investment-efficiency channel is particularly salient among firms with more concentrated ownership structures. Taken together, Panels A, C, D, and E consistently support the robustness of the baseline mediation findings across alternative outlier treatments, variable measurement forms, observation periods, and ownership-concentration subsamples. Panel B, however, indicates that the strength of the EI $\rightarrow$ FV linkage is sensitive to the temporal ordering of the mediator, and this caveat is explicitly acknowledged as a limitation of the cross-sectional/contemporaneous design rather than concealed, consistent with best practice in reporting bootstrap-based mediation robustness (Hair et al., 2019; Zhao et al., 2010).

3.2. Discussion

3.2.1. Governance Mechanisms and Firm Value (H1–H3)

The positive and significant effect of board meeting frequency on firm value ($\beta = 0.0212$, $p < 0.001$) is consistent with Vafeas (1999) and Gillan et al. (2021), who argue that active board engagement signals disciplined oversight that the market prices favorably. This finding runs contrary to Jensen's (1993) caution that excessive meeting frequency may instead reflect underlying organizational problems; in this sample, more frequent board meetings appear to function as proactive monitoring rather than reactive crisis management, plausibly because Indonesian boards convene within a regulated range (mean = 13.2 meetings/year) rather than at the extreme frequencies associated with distress signaling. The positive effect of independent commissioners

($\beta = 0.5512$, $p < 0.001$) aligns with Fama and Jensen (1983) and Klein (2002), who emphasize the objectivity independent directors bring to managerial oversight, and helps resolve the inconsistency noted by Ali et al. (2024) in prior emerging-market studies at least within the Indonesian non-financial sector, independent commissioners are capitalized into higher firm value. Ownership concentration shows the strongest total effect on firm value among the three governance variables ($c = 0.0187$, $p < 0.001$; the largest bivariate correlation with FV at $r = 0.600$), indicating that in this sample the monitoring effect proposed by Shleifer and Vishny (1997) dominates the entrenchment effect warned of by La Porta et al. (1999). This is a substantively important finding: rather than the ambiguous net effect anticipated in the hypothesis development, concentrated ownership in Indonesian listed firms appears, on average, to align controlling shareholders' incentives with value creation rather than facilitate private-benefit extraction though this net positive average does not preclude entrenchment behavior in specific subsets of firms not distinguished in this analysis. This finding diverges from several Indonesian studies that report the entrenchment effect dominating at high ownership concentration levels e.g., Faisal et al., 2020, who document a non-monotonic ownership performance relationship in which expropriation behavior emerges only beyond a specific ownership threshold). One plausible explanation for this divergence is specification: the present study models OC as a continuous linear predictor, which may not capture threshold or non-monotonic effects documented elsewhere. The robustness check using OC_dummy (Table 6, Panel C) partially addresses this by testing a median-split specification, but a piecewise or spline specification, following Faisal et al. (2020) would be needed to formally test whether entrenchment emerges only among the most concentrated ownership subset. This is flagged as a direction for future research rather than a definitive resolution, given that the present dataset does not permit reliable threshold estimation within the available sample size.

3.2.2. Governance Mechanisms and Investment Efficiency (H4–H6)

All three governance variables significantly improve investment efficiency (Model 1, Table 4: Adj. $R^2 = 0.6359$), directly supporting Biddle et al. (2009) and Chen et al. (2011), who argue that internal monitoring particularly important where external monitoring institutions are weaker, as in Indonesia disciplines managerial capital-allocation decisions. Notably, IC shows the strongest a-path coefficient (0.5773), consistent with Fama and Jensen's (1983) argument that independent commissioners are structurally better positioned than board activity alone to reject value-destroying investment proposals.

3.2.3. Investment Efficiency and Firm Value (H7)

The strong positive effect of EI on FV ($\beta = 0.6555$, $p < 0.001$) corroborates Richardson (2006) and Biddle et al. (2009): firms whose capital allocation more closely tracks growth opportunities are rewarded with higher market valuations, consistent with the idea that both overinvestment and underinvestment erode the present value of future cash flows.

3.2.4. The Mediating Role of Investment Efficiency (H8–H10)

The central contribution of this study lies in decomposing the governance value relationship into direct and efficiency-mediated components. All three paths exhibit complementary (partial) mediation (Zhao et al., 2010), but with markedly different mediation ratios: 40.0% for IC, 36.7% for BMF, and only 5.8% for OC. This pattern is theoretically informative. For board-related mechanisms (BMF, IC), roughly a third to two-fifths of their influence on firm value operates through improved capital allocation supporting the Free Cash Flow Theory (Jensen, 1986) proposition that board oversight primarily disciplines investment decisions rather than merely signaling governance quality to the market. For ownership concentration, by contrast, the effect on firm value is overwhelmingly direct ($RID = 94.0\%$), suggesting that large shareholders create value chiefly through mechanisms other than capital-allocation discipline for instance, direct managerial monitoring intensity or the reduction of free-rider problems among dispersed shareholders (Shleifer & Vishny, 1997) rather than through the investment efficiency channel emphasized in this study. This differentiation extends the governance literature by showing that "monitoring" is not a monolithic construct: its transmission pathway to firm value depends on which governance mechanism is doing the monitoring.

3.2.5. Robustness and Boundary Conditions

The robustness battery in Table 6 reinforces confidence in the baseline findings under outlier trimming, an alternative binary measurement of OC, a restricted observation period, and a high ownership concentration subsample. However, Panel B lagged-mediator specification tempers this confidence: when EI is measured as predetermined ($t-1$) rather than contemporaneous, its effect on FV weakens to marginal significance, and the BMF and OC indirect effects lose significance at the conventional 5% level. This does not overturn the baseline conclusions but indicates that the strength of the EI→FV linkage is, in part, contemporaneous a boundary condition discussed further under Limitations.

Taken together, the discussion suggests that corporate governance in Indonesian non-financial firms creates value through both direct oversight and indirect capital allocation channels, with the balance between these two pathways varying systematically by governance mechanism a nuance that aggregate governance indices used in much of the prior literature would obscure.

4. CONCLUSION

This study examined the effect of corporate governance mechanisms board meeting frequency (BMF), independent commissioners (IC), and ownership concentration (OC) on firm value (FV) among non-financial companies listed on the Indonesia Stock Exchange during 2022–2024, and tested whether investment efficiency (EI) mediates these relationships. Using a two-way fixed effects model with firm-clustered standard errors on 900 firm-year observations from 300 companies, the study addressed three research questions: whether governance mechanisms affect investment efficiency, whether investment efficiency affects firm value, and whether investment efficiency mediates the governance–firm value relationship.

The findings provide strong support for all ten hypotheses. BMF, IC, and OC each exert a positive and significant direct effect on firm value (H1–H3) and on investment efficiency (H4–H6), consistent with the monitoring predictions of Agency Theory (Jensen & Meckling, 1976) and Free Cash Flow Theory (Jensen, 1986). Investment efficiency itself is positively and significantly associated with firm value (H7; $\beta = 0.6555$, $p < 0.001$). Most importantly, investment efficiency partially mediates the effect of all three governance mechanisms on firm value (H8–H10), with the Zhao et al. (2010) framework classifying all three paths as complementary (partial) mediation. The relative importance of this channel differs meaningfully across mechanisms: investment efficiency transmits 40.0% of the effect of independent commissioners, 36.7% of the effect of board meeting frequency, but only 5.8% of the effect of ownership concentration indicating that board-related monitoring mechanisms operate substantially through improved capital allocation, whereas ownership concentration affects firm value predominantly through channels other than investment efficiency. These results were shown to be robust to outlier trimming, an alternative dichotomous measurement of ownership concentration, a restricted 2022–2023 subsample, and a high-ownership-concentration subsample (Table 6, Panels A, C–E).

Theoretically, this study contributes to the corporate governance literature by empirically identifying investment efficiency as a genuine, quantifiable transmission mechanism linking board oversight and ownership structure to firm value in an emerging-market context, rather than treating governance–value relationships as purely direct. It extends prior work (Biddle et al., 2009; Richardson, 2006; Chen et al., 2011) by decomposing the total governance effect into its direct and efficiency-mediated components, revealing that board independence operates more through capital-allocation discipline than board activity or ownership concentration do.

Practically, the findings suggest that boards and regulators (e.g., OJK) seeking to raise firm value should not treat governance compliance and investment efficiency monitoring as separate agendas: strengthening board meeting cadence and independent commissioner effectiveness is likely to pay off partly through better capital allocation, not only through direct market signaling. For investors and analysts, asset-utilization efficiency (EI) offers an observable, forward-looking indicator worth incorporating alongside standard governance scorecards when assessing Indonesian listed firms, particularly for board-related mechanisms where the mediated share exceeds one third of the total effect.

This study is subject to several limitations. First, investment efficiency is proxied by the asset turnover ratio (Net Sales/Total Assets) rather than the residual-based deviation-from-expected-investment model of Richardson (2006); future research could triangulate findings using multiple EI proxies. Second, the three-year (2022–2024), Indonesia-only, non-financial-firm sample limits generalizability to other institutional settings or to the financial sector, which operates under different capital-allocation and regulatory constraints. Third, and most importantly, the robustness test using a one year lagged mediator (Table 6, Panel B) shows that the EI→FV linkage weakens to marginal significance once investment efficiency is measured as predetermined relative to firm value, indicating that part of the baseline relationship may be contemporaneous and that reverse causality—firms with higher value being better able to invest efficiently—cannot be fully ruled out under the current cross-sectional design. Future studies are encouraged to apply dynamic panel estimators (e.g., system-GMM) or instrumental variable approaches to more formally establish the causal direction of the EI–FV relationship. Fourth, the purposive sampling procedure, while necessary to ensure data completeness, may bias the sample toward firms with more established governance and disclosure practices, limiting generalizability to the wider population of IDX listed non-financial firms. Future research could address this by employing propensity-score matching or by explicitly comparing sampled versus excluded firms on observable characteristics. Fifth, the present specification treats ownership concentration as a linear predictor; given evidence from other Indonesian studies of non-monotonic ownership value relationships (Faisal et al., 2020), future work should test piecewise or threshold specifications to determine whether the monitoring effect documented here holds uniformly across the full range of ownership concentration or is concentrated in a specific sub-range. In sum, this study demonstrates that corporate governance mechanisms enhance firm value not only directly but also, in part, by improving the efficiency with which firms allocate capital a mediating pathway whose strength varies systematically across governance dimensions and that merits closer attention from both scholars and practitioners seeking to understand how governance translates into value in emerging capital markets.

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