



## **Exploring the Association Between Investment Efficiency and Firm Value with the Moderating Role of Institutional Ownership; A Case from Manufacturing Firms Of Pakistan**

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### **Abstract**

This study examines how investment efficiency affects firm value for companies listed on the Pakistan Stock Exchange (PSE), taking institutional ownership into account as a moderating factor. We looked at data from 63 manufacturing firms between 2013 and 2022. A popular market-based metric for assessing firm value, Tobin's Q offers a useful comparison tool. The findings indicate a relationship between investment efficiency and firm value. Additionally, this effect is moderated by institutional ownership. The influence of institutional ownership as a moderator and the effect of investment efficiency on company value are not studied in the context of emerging economy like Pakistan. This gap opens up the possibility of conducting in-depth studies on those variables. Due to the lack of research on the effect of investment efficiency on firm value that highlights the role of institutions, the study's findings might demonstrate the significance and necessity of this investigation and fill the gap in this sector.

**Keywords:** Firm Value; Investment Efficiency; Institutional Ownership

### **Introduction**

All financial operations involve valuation, which is crucial to the best possible capital allocation. One of the most important and intricate economic topics in many nations is company valuation. Investment banks and investment consultants use industry-specific standards to estimate a company's value in both established and developing nations with sophisticated capital markets. Investors and financial analysts have always found it difficult to evaluate a corporation's worth and the aspects influencing it in the capital markets. They try to ascertain the aspects that actually effect the value of company. Investment efficiency is a key component in determining the worth of company. The desire to own a firm



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and get dividends or capital gains is what drives investors to finance in the stock market. The investors will take into account the firm value and acceptable stock returns before making an investment.

The agency problem is a barrier to reaching the objective, even though a greater stock price equates to a larger corporate value and a highest firm value will boost revenue for shareholders (Suhadak et al. 2019; Husnan 2012).

Taking into consideration the information gap that exists between owners and managers as well as the idea of signalling, accounting can be seen as an instrument that facilitates the flow of appropriate and important internal information of an organisation to the outside of the business. This leads to signalling about the company's value, performance, and competitive advantage (Gumanti 2011) and improves investor decision-making (Vu 2020).

Enhancing investment efficiency also reduces investment distortion. The worth of the business rises because in a market that is ideal, any project that has a net present value positive is successfully funded. (Stein 2003). Additionally, by lowering the investment level, a CEO with a greater degree of managerial optimism might raise the investment efficiency of an underinvested company, hence increasing the firm's value. However, there is not enough data to demonstrate that a firm with a less optimistic CEO can successfully increase its investment efficiency by decreasing overinvestment and increasing value when companies plan to overinvest (Chen and Lin 2013). The efficiency of investments can be affected in the real world when management expropriate resources, choose a subpar project, or restrict companies' ability to finance a potential project because microfinance and the information available to institutional investors is different. (Stein 2003).

It is possible that the management perspective will influence the value of the business in the event that an investment that is skewed reduces the efficiency of the company's investment (Chen & Lin 2013). Therefore, board composition and governance procedures may adversely influence financial performance in a number of techniques and theoretically outcome in corporation downfall (Majeed et al. 2020). The agency issues between top management and shareholders may be handled by this arrangement (Hermalin & Michael 1991).

It is probable that a change in management will lead to an advancement in a company's financial performance, and measures taken by the board that are well-reasoned will also have an effect on the governance of the organisation. Therefore, the board structure of the company may have an affect on the company's financial success (Majeed et al. 2020). Reducing the asymmetric knowledge gap among shareholders and improving a company's image are two benefits of having a robust board of directors (Lokuwaduge & Heenetigala 2017). Variables like board independence affect stock prices, and in large economies, laws are in place to increase the in-dependence and qualifications of board members (Yermack 2006). The removal of monopolies and the establishment of a competitive environment in the Pakistani economy are contentious topics. The current study was conducted because of the fact that in emerging markets and developing nations like Pakistan, which has its own economic status, structure of ownership, legal system, culture, policies of government, and most importantly, system of corporate governance, and is subject to economic authorizations, the norms there, particularly with regard to corporate governance issues, can differ from those in other nations and have varying effects on firm value and financial



performance, Arianpoor (2019). The interests of shareholders may be safeguarded throughout the corporate decision-making process by a number of corporate governance methods, including ownership structures and the makeup of the board of directors, Ashfaq and Rui (2019). Because institutional ownership is beneficial, cost-effective, and varied, it may also help with agency issues (Habib et al. 2015). According to earlier research, there is a discrepancy between the moderating effect of institutional ownership and the effect of investment efficiency on firm value. This disparity provides a chance to investigate those factors in further detail. The results of this study may demonstrate the significance and need of this research, which can fill a research gap in this area as the influence of investment efficiency on company value with a focus on the function of institutional ownership has not been examined. This research may assist investors in financial analysts and determine the investment behaviour of firms in the Pakistani economic environment, given the significance of a company's financial performance and investment efficiency in the growth of the Pakistani economy. Furthermore, a real move to boost the nation's economy may be made by granting officials access to the economic sector.

The literature review as well as hypothesis development are described first in the parts that follow. The third part provides a description of the research technique. The fourth part then presents the study results. Lastly, the conclusion and discussion are given.

### **Development of Hypotheses and Literature Review**

Economic development is one of the primary objectives of national economic policies and choices, and sustainable economic growth and development are significantly impacted by effective investment (Hall & Lerner 2010). Conversely, to attain sustainable development and optimum economic growth, competitiveness is a key consideration. One of the characteristics of a successful business is competitive strength. According to Nugroho and Stoffers (2020), market rivalry has a significant impact on agency costs, company value, and financial performance. It may also enhance investment and business efficiency. The division relating corporate ownership and corporate management is the source of the agency issue, which stands in the way of accomplishing the objective. According to Suhadak et al. 2019, the majority of large companies are managed by professional business executives who are under the impression that they have the authority to make decisions without keeping the interests of shareholders in mind.

Given the significant informational role that the competitive environment plays, a robust competitive environment fosters an efficient corporate governance culture and enhances management's control of investment and efficiency choices. Increased management effectiveness, openness, and accountability may result from this, which reduces the possibility of managing poor investment choices Paniagua et al., (2018). Managers are encouraged to fulfil their responsibilities in order to preserve the company's sustainability when there is competition, Alimov (2014). Companies with more market power assign money more efficiently as stock price information improves, which boosts the company's financial performance and investment efficiency Peress (2010). Thus, Hypothesis 1 is put out as follows in accordance with the theoretical underpinnings that have been presented:



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**Hypothesis 1 (H1).** The firm value is influenced by the investment efficiency. However, competition is a factor in corporate governance. According to Laksmana and Yang (2015), market rivalry bolsters corporate governance by increasing investment and the financial performance of a company via managerial authority. In addition, competition helps to enhance corporate governance. In addition, corporate governance encompasses a wide range of agreements, organisational structures, and procedures that are designed to strike a balance between the authority and responsibilities of the company's owners, management, directors board, and workers Zafar et al., (2008). Internal processes like ownership structure are the primary means by which corporate governance takes place (Mnasri and Ellouze 2015).

It improves the dependability of business operations and management policies concerning investment and safeguarding stakeholders' interests, and it is one of the most essential components influencing the appropriate application of corporate governance (Chen 2013). The economic environment is changing quickly and continuously in the modern world, which makes competition fierce in the global economy. Competitiveness has gained more attention as it leads to financial success in a variety of businesses.

Institutional ownership may put pressure on management to concentrate on the short term (Bushee 2001), but it also plays a critical supervisory function in lowering costs of agency, managing the directors, and enhancing present financial results and the effectiveness of investments, Rashed et al., (2018).

Thus, the following is how Hypothesis 2 is presented:

**H2.** The influence of investment efficiency on firm value is moderated by institutional ownership.

### Methodology

When choosing a research design, the study's objectives must be taken into account. The descriptive research design and quantitative research type were used for this investigation. In this research, we looked at manufacturing firms that were listed between 2013 and 2022 on the Pakistan Stock Exchange.

### The dependent variable

**Valueit:** A popular metric for assessing a company's worth is Tobin's Q. This market-based metric is regarded as a primary dependent variable. It may capture the company's worth and is forward-looking (Gerged et al. 2021). The ratio of total assets less the book value of equity plus the market value of equity to total assets is known as Tobin's Q. According to Banos-Caballero et al. (2014), this metric outperforms more ratios of accounting and is fewer impacted by accounting procedures. According to the company's capital market value, it also takes firm risk into account (Smirlock et al. 1984). However, if businesses have access to debt finance, underinvestment may exaggerate the usage of this metric (Kose & Litov 2010; Dybvig & Warachka 2015;). This metric is a useful comparison tool since it takes into account the market worth of businesses (Xie et al., 2019; Abdi et al., 2020).

### Independent variable

**INV<sub>it</sub>** is the investment efficiency. Agreeing to Houcine (2017) and Biddle et al. (2009), this research calculated investment efficiency using Equation (1).



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Investment efficiency is a corporation conducting a project without market frictions that has a positive net present value.

Investment inefficiency is shown by mutually extreme and in-sufficient investment. Underinvestment refers to the act of ignoring investment opportunities that have a positive net present value, while overinvestment denotes to the act of investing in projects that have a negative value (Houcine 2017).

$$INV_{it+1} = \beta_0 + \beta_1 \text{sales}_{i,t} + \varepsilon_{i,t+1} \quad (1)$$

$INV_{it+1}$  is the total investment. It is represented as the difference relating firm I's capital spending and asset sales at year t, scaled by the company's initial capital stock.  $\text{Sales}_{i,t}$  represents the shift in sales for company I from year t - 1 to year t, scaled by previous sales.

For company I at year t + 1, the residuals generated from Equation (3) to represent investment inefficiency are denoted by  $\varepsilon_{i,t+1}$ . The model is used since, in a perfect market, the marginal Q ratio should only reflect business investment, as per the neo-classical paradigm (Hayashi 1982) (Houcine 2017).

However, sales growth serves as a stand-in for investment possibilities since it is difficult to construct the Q ratio (Biddle et al. 2009). Sales growth, in contrast to the Q ratio, lacks a theoretical foundation as a stand-in for investment prospects. However, it is supported by the following intuition: a rise in sales predicts a rise in demand for a company's goods in the future (Morck et al. 1990), and expanding production facilities may be required to meet the rising demand, which requires investment (Houcine 2013). Because it illustrates how the company's actual investment level deviates from its planned investment, the residuals in Equation (1) are employed as a firm-specific proxy for investment inefficiency. An inverse measure of investment efficiency is shown by the value of this divergence. Overinvesting is indicated by positive residuals or a positive divergence from projected investment, whereas underinvesting is indicated by negative residuals. When the absolute value of this error component is multiplied by a negative one, the result is the measure of investment efficiency. Accordingly, investment efficiency increases with the quantity (Richardson 2006).

### Modifier variables

**INSOWN<sub>it</sub>**: The proportion of shares owned by an institutional owner acts as a proxy for institutional ownership (Rashed et al. 2018; Alqatamin et al. 2017).

**Board<sub>i,t</sub>**: The ratio of independent, unaffiliated boards to all board members (Bhagat & Bolton 2019).

### Control variables

**SIZE<sub>it</sub>**: The natural logarithm of total assets is used to determine the size of the company. Firm size has been employed in a number of earlier research (Cassar & Holmes 2003; Al-Matari et al. 2012;). The size of the company is probably going to have a favourable influence on corporate performance. This variable is calculated using the log of total assets. Heteroscedasticity issues are lessened by the logarithm (Aliani and Zarai 2012).

**LEV<sub>it</sub>**, The ratio of total debt to total assets is used to compute leverage. Leverage and business performance have a complex connection. Lenders' oversight may have a beneficial consequence on business performance (Saidat et al. 2019).



Financial risk is represented by leverage (Shahwan 2015).

**ROA<sub>it</sub>**: The net profit divided by the total assets is known as return on assets. It is believed that businesses with greater ROA would perform better and take less risks (Aktas and Unal 2015).

Low financial liquidity is indicated by high profitability ratios. Conversely, the liquidity ratios are large (Zimon et al. 2022; Zimon & Zimon 2019; Banos-Caballero et al. 2014).

The financial year-end control variable is called EndYear. It is 1 if the company's fiscal year ends in March, and 0 otherwise.

## Model

Equation (2) was used to test Hypothesis 1, and Equation (2) tested Hypotheses 2.

$$\text{Value}_{it} = \beta_0 + \beta_1 \text{INV}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{ROA}_{it} + \text{End Year} + \text{Year} + \text{Industry} + \varepsilon_{it} \quad (2)$$

$$\text{Value}_{it} = \beta_0 + \beta_1 \text{INV}_{it} + \beta_2 \text{INSOWN}_{it} + \beta_3 \text{INSOWN}_{it} \times \text{INV}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \beta_6 \text{ROA}_{it} + \text{End Year} + \text{Year} + \text{Industry} + \varepsilon_{it} \quad (3)$$

## Empirical Results

### Data on Descriptive Statistics

Table 1 displays descriptive data for the primary variables used in this study.

A score over 1 indicates that the company is adding value, whereas a score below 1 indicates that the company is destroying wealth, according to Tobin's Q. This study's mean value variable (Tobin's Q) is 2.573, indicating that the businesses generate value.

Table 1. Descriptive statistics of main variables.

Variable	Observation	Mean	SD	Minimum	Maximum
Value	630	2.573	2.310	0.515	20.758
INV	630	-0.036	0.689	-0.618	7.974
SIZE	630	28.231	1.558	24.133	34.579
LEV	630	0.554	0.216	0.013	1.567
ROA	630	0.134	0.153	-0.404	0.830
INSOWN	630	0.602	0.271	0.000	0.989

### Correlation Matrix

The correlation analysis of the research variables is shown in Table 2. At the 99% confidence level, the findings indicate a positive relationship between investment efficiency and company value (coefficient: 0.001).

Table 2: Correlation Analysis



Variable	1	2	3	4	5	6
Value	1					
INV	0.004 ***	1				
SIZE	0.215 **	0.325 **	1			
LEV	-0.283 **	0.023	0.032	1		
ROA	0.132 **	0.044 *	0.223 **	-0.087 ***	1	
INSOWN	0.126 **	-0.021	0.133 **	0.217 **	0.164 **	1

\*\*\*, \*\*, and \* signify statistical significance at the 10%, 5%, and 1% levels, respectively

### GLS Analysis

Table 3 shows that, with 99% confidence (sig < 0.01 and coefficient = 0.298), the investment efficiency has a positive and substantial impact on the company value based on Equation (2).

Hypothesis 1 is therefore validated. Leverage has a negative impact on firm value (sig < 0.01 and coefficient = -0.342) among the control variables in Equation (2), although company size has a positive impact (sig < 0.01 and coefficient = 0.267). The moderating effect of institutional ownership was examined using a modified multiple regression technique. The link between investment efficiency and company value is moderated by institutional ownership, as seen by Equation (3) in Table 3 (sig < 0.05 and Coefficient = 0.124). Consequently, Hypothesis 2 is likewise validated. Equation (3) indicates that although company size has a positive impact on firm value (sig < 0.01 and Coefficient = 0.472), leverage has a negative impact (sig < 0.01 and coefficient = -0.198).

Table 3. GLS for the impact of investment efficiency, institutional ownership, and board independence on firm value.

Variable	Equation 2	Equation 3
INV <sub>i,t</sub>	0.278 *** (4.230)	0.431 *** (3.860)
INSOWN <sub>i,t</sub>		0.321 (0.840)
INSOWN <sub>i,t</sub> × INV <sub>i,t</sub>		0.124 ** (2.210)
SIZE <sub>i,t</sub>	0.287 *** (6.760)	0.472 *** (4.326)
LEVI <sub>i,t</sub>	-0.342 *** (-3.123)	-0.178 *** (-3.960)
ROA <sub>i,t</sub>	0.235 (1.140)	0.066 (1.135)
Cons	2.361 *** (4.230)	2.340 *** (5.180)
END YEAR fixed effect	Yes	Yes



YEAR fixed effect	Yes	Yes
INDUSTRY fixed effect	Yes	Yes
N	630	630
$\chi^2$ statistic	489.27 (0.000)	460.62 (0.000)
R <sup>2</sup>	0.564	0.551
Adjusted R <sup>2</sup>	0.568	0.578
Durbin-Watson statistic	1.886	1.861

\*\* and \*\*\* show statistical significance at the 5%, and 1% levels, respectively.

Observation about Equations (2) and (3): The results of the Levin–Lin–Chu unit-root test indicate that every variable is stationary. The panel data hypothesis was accepted at the 95% confidence level, according to the F-Limer (Chow) findings. Thus, the Hausman test was employed to choose either fixed-effects or random models. The Hausman test's findings indicate that the fixed effects approach is the best choice for evaluating hypotheses. There is no significant autocorrelation of the error term according to the Durbin-Watson statistics. Variance heterogeneity did not exist., according to the findings. The study model had autocorrelation, according to the Wooldridge test findings. To address the issue and the problem of variance heterogeneity, the model's coefficients were estimated using the GLS test.

### Additional Analysis

The statistical findings of evaluating the hypotheses constructed on the robust regression are shown in Table 4. Robust regression indicates that the company value is positively and significantly impacted by investment efficiency, with a size of 0.420 (sig < 0.01). Furthermore, company size has a positive impact on firm value (sig < 0.01 and coefficient = 0.464), whereas leverage has a negative impact (sig < 0.01 and coefficient = -0.180). Equation (3) indicates that the connection between investment efficiency and company value is moderated by institutional ownership. Institutional ownership has a 0.165 (sig < 0.01) impact on the connection between investment efficiency and business value. As a consequence, the outcomes of this test and GLS are in agreement.

Table 4. Robust regression analysis

Variable	Equation 2	Equation 3
INV <sub>i,t</sub>	0.420 *** (4.740)	0.267 *** (3.630)
INSOWN <sub>i,t</sub>		0.096 (0.250)
INSOWN <sub>i,t</sub> × INV <sub>i,t</sub>		0.165 *** (4.220)
SIZE <sub>i,t</sub>	0.464 *** (4.040)	0.754 *** (5.970)
LEV <sub>i,t</sub>	-0.180 *** (-3.240)	-0.231 *** (-4.140)
ROA <sub>i,t</sub>	0.124 (1.130)	0.082 (1.230)
Cons	4.084 *** (4.162)	3.572 *** (7.140)
END YEAR fixed effect	Yes	Yes
YEAR fixed effect	Yes	Yes





INDUSTRY effect	fixed	Yes	Yes
N		630	630
$\chi^2$ statistic		185.65 (0.000)	210.67 (0.000)
R <sup>2</sup>		0.528	0.533
Adjusted R <sup>2</sup>		0.478	0.539
Durbin-Watson statistic		1.784	1.824

\*\* and \*\*\* denote statistical significance at the 5%, and 1% levels, correspondingly.

## Discussion

According to this research, the business value is positively and significantly impacted by investment efficiency. The price of the company's shares reflects the worth of the business. The worth of the firm increases with the stock price (Husnan 2012). Improvements in stock price information lead to more effective capital allocation, which raises the corporation's investment efficiency, firm performance, and firm value (Peress 2010). This outcome is likewise predicted by the hypothesis. According to the theoretical and empirical literature, ownership structure is a crucial factor in determining a company's value (Mnasri and Ellouze 2015). Previous research has also produced conflicting findings, and the degree of ownership and its relative efficacy in monitoring and disciplining managers probably varies by nation (Lemma et al. 2018). But according to this research, institutional ownership results in more firm-specific investments, which boost investment efficiency by generating higher long-term productivity. Research indicates that institutional investors possess the resources, opportunity, and capacity to oversee business management and enforce discipline (Chung et al. 2002). These large-share investors may directly suffer the agency costs of ownership and control separation because they can take advantage of economies of scale in information gathering (Koh 2003). According to Jensen and Meckling (1976), Ramsay and Blair (1993), and Shleifer and Vishny (1986), the incremental benefits of increased monitoring are likely to outweigh the incremental costs of monitoring, and large institutional investors have greater incentives to monitor management myopia and reduce information asymmetries between management and external stakeholders (Lev 1988).

Bushee (1998) supported this claim by pointing out that when institutional investors have very high ownership levels in a company, their high turnover and momentum trading encourage myopic investment behaviour; otherwise, institutional ownership lessens the pressure on managers to engage in myopic investment behaviour. Management may be forced to increase productivity and efficiency by large shareholders (Shleifer & Vishny 1986; Vintila & Gherghina 2014). Due to their capacity to educate shareholders and keep an eye on the organization's performance, institutional shareholders are able to keep an eye on the company's executive management, which increases efficiency (Rashed et al. 2018). This claim that management is monitored effectively and institutional investors' performance is improved was backed by Elyasiani et al. (2010).

However, non-executive managers now trust the knowledge and expertise of internal managers since they are more efficient and driven than external



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managers (Riyadh et al. 2019). They have thus appointed qualified internal managers (Riyadh et al. 2019) as a result of non-executive managers' emphasis on financial matters and corporate management operations (Uyar et al. 2020). Generally speaking, the findings of the study are predicted by the agency theory (Jensen and Meckling 1976), which asserts that owner supervision should be used as a tool to check managerial behaviour that benefits them in order to improve efficiency, which can ultimately improve financial performance and firm value. This theory is based on the idea that owner supervision should be implemented through the independent board, institutional ownership, and public ownership.

### **Conclusions**

This study highlighted the importance of institutional ownership while demonstrating how investment efficiency affects corporate value. Because of its distinct ownership structure and corporate governance system, as well as its distinct economic environment and conditions as a developing nation, Pakistan may experience different outcomes from other nations when it comes to the impact of executive structure and ownership on firm value. Consequently, it seems that ownership and executive structures that adhere to Pakistani requirements will be required. Information from 63 firms from 2013 to 2022 was analysed for this purpose, and the most important accounting-based performance metric was used to gauge company worth.

According to the research, business value is impacted by investment efficiency. Institutional ownership also mitigates this effect. Empirical evidence of the impact of institutional ownership on business value is presented in this paper. The results have significant ramifications for scholars, decision-makers, and business boards, suggesting that they should concentrate on institutional ownership to increase significant value. Managers must properly monitor their behaviour and answer to shareholders in order to accomplish strategic objectives and boost business value. Because of the board of directors' and management's collaboration, institutional shareholders may lead to opportunistic behaviour (Suhadak et al. 2019). The theoretical underpinnings of this investigation are provided by agency theory. The findings of this research may be used by practitioners to improve business value and create corporate financial strategy. The findings imply that investors should take investment efficiency into account when determining the firm's worth. In order to boost company value, businesses may also reduce information asymmetry.

### **Future Research**

To get more definitive findings, it is advised that future study take into account risk variables and macroeconomic dynamics. Further research in this field would be extremely desired. It is advised that further study be done in order to compare businesses with varying levels of institutional ownership and to create observations with a variety of sectors.

According to Black and Scholes (1974), there are three categories of investors: those who like stocks with high dividend yields, those who favour capital gains and dividend returns, and those who choose stocks with low dividend yields. As a result, investor behaviour is crucial to investing. Therefore, it is recommended that future research take psychological traits and financial psychology into



account.

This study adds to the body of knowledge about the Pakistani environment, clarifies the findings, enhances the existing literature, and helps scholars make strategic judgements.

## 6.2 Restrictions

Because of the time and geographical constraints of this research, care should be exercised when extrapolating the findings to other statistical populations and other periods. The findings of this research, which focusses on Pakistani businesses, are indicative of the country's business climate and economy. Additionally, the findings are restricted to the factors that were chosen. Firm value and financial performance are influenced by several internal and external variables. Investor behaviour is impacted by interest rate variations caused by market anomalies as well (Natarajan et al. 2020). Thus, the value of the company is also impacted. Additionally, we selected the crucial accounting-based performance indicator in this study since other studies have suggested different ways to measure the business worth. Other methods of determining business value, however, may have different outcomes

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