

# **DOES LEVERAGE MATTER? INVESTIGATING THE IMPACT OF INVESTMENT EFFICIENCY ON FIRM PERFORMANCE IN SAUDI ARABIA**

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## **Abstract**

This study investigates the impact of investment efficiency on firm performance, with a particular focus on the moderating role of leverage in the context of the Saudi Stock Exchange. Utilizing a panel dataset comprising 496 firm-year observations from 62 non-financial listed companies between 2016 and 2023, the analysis employs fixed-effects models to estimate the relationships. The findings indicate that investment efficiency positively influences firm performance over the long term, as firms that invest efficiently in capital tend to achieve superior performance. Additionally, the results demonstrate that leverage significantly moderates the relationship between investment efficiency and firm performance. The study's originality lies in its examination of this moderating effect within the Saudi market, offering novel insights into capital structure and performance dynamics in emerging economies. The findings have practical implications for policymakers, corporate managers, and stakeholders by providing evidence-based guidance on fostering investment efficiency and leveraging financial strategies to enhance firm performance.

## **Keywords**

Leverage, Investment Efficiency, Firm Performance, Saudi Stock Exchange

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## **1. Introduction**

Firm performance is commonly understood as the anticipated increase in a firm's future earnings (Taouab & Issor, 2019). According to Esplin (2022), expanding market share or entering new markets can lead to greater revenue and earnings. Several studies (Ibhagui & Olokoyo, 2018; Salehi et al., 2022; Schommer et al., 2019) have identified various factors influencing firm performance, including the introduction of new products or services that meet customer needs or offer differentiation from competitors, thereby driving growth. Additionally, cost reduction and enhanced operational efficiency are crucial for improving profit margins (Bae et al., 2022). Investment in technology is also seen as a key driver of productivity and long-term growth (Pora & Wilner, 2020). Furthermore, the strategic adoption of competitive practices contributes significantly to the sustainability of earnings (Taouab & Issor, 2019). Previous research (Danso et al., 2019; Godoy-Bejarano et al., 2020; Schommer et al., 2019) has established that investment efficiency, defined as the optimal allocation of resources to productive assets, plays a critical role in supporting sustainable earnings. Thus, assessing firm performance requires consideration of both historical financial results and future expectations, taking into account quantitative economic and financial data alongside qualitative factors related to the firm and its operating environment.

Investment efficiency reflects how effectively a firm allocates capital to long-term assets that enhance productivity and future growth (Benlemlih & Bitar, 2018). Efficient investment often includes expanding operations, upgrading equipment, adopting advanced technologies, and developing innovative products and services (Biddle et al., 2009). The goal is to increase operational efficiency and production capacity (Gao & Yu, 2020). Technology-related investments, such as in information systems, cloud computing, and artificial intelligence, are increasingly important for reducing costs and improving productivity (Hurry et al., 2022). Innovation-driven firms often pursue new product development as a core element of their growth strategy (Jun, 2003). Infrastructure investment, such as building facilities or optimizing supply chains, also contributes to long-term competitiveness (Dabla-Norris et al., 2012). In some cases, firms pursue mergers or acquisitions to gain

market share or enter new sectors (Benlemlih & Bitar, 2018; Gao & Yu, 2020). Given the high costs and risks involved, such investment decisions require careful planning and evaluation.

Leverage, meanwhile, represents external financial pressures that can significantly shape internal decision-making (Novy-Marx, 2011; Santos & Veronesi, 2022). These pressures may compel firms to modify or adapt their strategies to align with changing circumstances. Leverage encompasses a range of external factors, including economic, political, social, technological, legal, and environmental, that may impact a firm's ability to achieve its objectives (Korteweg, 2010; Geanakoplos, 2010). Financial leverage specifically refers to the obligations and burdens a firm assumes through its investment, financing, and operational activities, which can affect future earnings flows (Danso et al., 2019; Ibhagui & Olokoyo, 2018; Santos & Veronesi, 2022). To navigate these challenges, firms must develop flexible, strategic plans, regularly assess their external environment, and conduct rigorous risk analyses.

This study offers several contributions that distinguish it from previous research. First, it focuses on non-financial firms listed on the Saudi Stock Exchange, an emerging market context that has received limited attention compared to studies based in developed countries. Second, it uniquely examines the moderating effect of leverage on the relationship between investment efficiency and firm performance. While the literature on firm performance remains rich, ongoing economic uncertainty has heightened the relevance of understanding the drivers of long-term performance (Ali et al., 2022; Taouab & Issor, 2019). As such, this study enhances the literature by addressing how investment efficiency impacts firm performance and how leverage shapes this relationship. Additionally, the study is grounded in empirical data drawn from audited financial statements of Saudi firms—offering contextual insights that may differ from those in other regulatory and institutional environments.

The primary aim of this research is to assess the effect of investment efficiency on firm performance and to explore the moderating role of leverage within the Saudi context. The analysis is based on 496 firm-year observations from 62 non-financial companies over the period 2016–2023. The results confirm a positive association between investment efficiency and firm performance and reveal that leverage moderates this relationship. This study makes several key contributions: it advances the literature on investment efficiency, firm performance, and leverage in emerging markets; it highlights the critical role of leverage as a governance mechanism; and it offers actionable insights for corporate managers, investors, policymakers, and stakeholders aiming to enhance future earnings and competitive positioning.

## 2. Literature review

### 2.1. *Studies related to investment efficiency and firm performance*

Stakeholder theory posits that firm performance is shaped by a broad range of parties who are either directly or indirectly involved in the firm's operations. These stakeholders include shareholders, customers, employees, and local communities (Freeman, 2015). The theory highlights the critical role of these groups in influencing the firm's strategic goals and decision-making processes (Schaltegger et al., 2019). As stakeholder expectations intensify, firms face increasing pressure to adopt decisions that align with the interests of these diverse groups (Elmashtawy, Che Haat, et al., 2024; Freeman, 2023). A firm's awareness of stakeholder importance and its effective engagement with them can positively influence its overall performance (Schommer et al., 2019).

Investment efficiency, on the other hand, pertains to the optimal allocation of capital to long-term projects that drive sustainable earnings growth (Hodgson et al., 2000). As Jun (2003) explains, it involves deploying financial resources into initiatives expected to yield the highest returns given risk considerations. A key challenge in achieving investment efficiency lies in balancing the firm's goal of maximizing shareholder value while addressing the needs of broader stakeholder groups (Ibhagui & Olokoyo, 2018). Stakeholder theory supports this balance by promoting sustainable and reputation-enhancing strategies, while investment efficiency focuses on maximizing performance outcomes (Danso et al., 2019). Consequently, firms guided by stakeholder principles can craft investment strategies that support both earnings growth and long-term sustainability. Moreover, external pressures such as leverage can influence stakeholder priorities, further compelling firms to adjust their strategies accordingly (Fan & Zhao, 2017).

Research on firm performance and its influencing factors is essential for understanding how investment decisions contribute to corporate growth and economic development. The literature encompasses various dimensions including financial metrics, market behavior, managerial strategies, and broader macroeconomic conditions (Ibhagui & Olokoyo, 2018; Schommer et al., 2019). Notably, firm performance plays a pivotal role in shaping investment behavior (Ma & Jin, 2016). High-performing firms are more likely to attract both internal investment in innovation and external investor interest (Wu et al., 2024). Strong performance also facilitates the financing of new projects and expansion of working capital, thereby generating additional growth opportunities (Pora & Wilner, 2020). Several studies (Bae et al., 2022; Ma & Jin, 2016; Wu et al., 2024) emphasize the importance of maintaining a balance between financing growth through earnings and limiting excessive debt to ensure long-term financial stability. Technological advancement is also identified as a critical driver of firm performance (Lahr & Mina, 2016). According to Hurry et al. (2022), firms that consistently invest in innovation

and emerging technologies tend to improve operational efficiency and increase revenue, thereby enhancing their competitive position.

A growing body of research explores the relationship between investment efficiency and firm performance (Bae et al., 2022; Ma & Jin, 2016; Wu et al., 2024). This relationship depends on how effectively financial resources are directed toward projects capable of generating future returns (Taouab & Issor, 2019). While certain investments may take time to produce measurable outcomes and often entail varying degrees of risk (Cumming et al., 2017), firms that demonstrate effective risk management tend to realize better returns on investment (Bergman, 2021). Salehi et al. (2022) assert that investment efficiency reflects a firm's capacity to utilize capital effectively to achieve long-term, sustainable earnings growth, thereby enhancing firm value. Similarly, Conti et al. (2019) concluded that investment efficiency contributes positively to earnings sustainability, as increased investment activity is generally followed by improved long-term profitability.

## **2.2. Studies related to leverage, investment efficiency, and firm performance**

Leverage can become a burden for firms seeking to enhance investment efficiency and achieve long-term earnings growth (Munawar, 2019). While leverage is often viewed as a necessary outcome of increased investment activity (Ling & Wu, 2022), firms must be prepared to manage the financial obligations associated with such capital expansion to sustain future profitability (Guo et al., 2021). Prior research has established a positive association between leverage and firms' strategic objectives, suggesting that leverage may play a constructive role in achieving growth targets (Ali et al., 2022; Danso et al., 2019; Lang et al., 1996). Additionally, several studies (Ibhagui & Olokoyo, 2018; Ling & Wu, 2022) have found a significant positive relationship between leverage and investment efficiency, implying that leverage may support optimal capital allocation when managed effectively.

According to Wang et al. (2023), leverage substantially influences firms' investment and capital allocation decisions, with factors such as global economic conditions, government policies, exchange rate fluctuations, commodity prices, and debt burdens playing pivotal roles. In adverse conditions, such as high inflation, geopolitical instability, or trade conflicts, uncertainty may rise, prompting firms to adopt conservative investment strategies, which could suppress capital expenditure (Munawar, 2019). Conversely, favorable economic policies and investment incentives can promote capital inflows and stimulate investment in new opportunities (Ling & Wu, 2022).

Firm performance, commonly measured using indices based on financial indicators, is significantly influenced by leverage, which shapes the broader business environment by impacting competitiveness, cost structures, and profitability (Ali et al., 2022; Elmashtawy, Ateeq, et al., 2024; Schommer et al., 2019; Taouab & Issor, 2019). Fan and Zhao (2017) highlighted that excessive leverage may constrain growth-driven investments or force firms to implement austerity measures, thereby negatively affecting performance outcomes. Based on this evidence, it is reasonable to propose that the relationship between investment efficiency and firm performance is contingent upon the level of leverage to which a firm is exposed. In this context, leverage is hypothesized to moderate the relationship between investment efficiency and firm performance, as it influences both the firm's capacity to invest and the outcomes of such investments. Consequently, determining the optimal level of leverage is essential for firms and their stakeholders, as it plays a crucial role in investment decisions and long-term performance sustainability.

## **3. Methodology**

### **3.1. Data and sample**

The study population comprises joint stock companies listed on the Saudi Stock Exchange (Tadawul). A judgmental sampling technique was employed to select a homogeneous sample based on specific inclusion criteria. The final sample consisted of 62 non-financial companies across 12 sectors, covering the period from 2016 to 2023. This yielded a total of 496 firm-year observations. The study utilized secondary data sources to collect the relevant variables for analysis.

### **3.2. Variables measurements**

Firm performance (FP) is the expected increase in a company's or project's earnings over time. According to numerous studies (Elmashtawy, Che Haat, et al., 2024; Taouab & Issor, 2019; Wu et al., 2024), FP can be measured by the ratio of net income before tax to the book value of total assets. Furthermore, investment efficiency (IE) is the amount of funds spent by companies or governments to purchase long-term assets or improve existing assets to generate long-term economic returns. According to several studies (Benlemlih & Bitar, 2018; Dabla-Norris et al., 2012; Gao & Yu, 2020), IE can be measured by the ratio of capital expenditure to total assets for firm  $i$  in year  $t$ . Moreover, leverages (LEV) are factors or forces that affect the work of organizations or individuals from outside the system or internal environment. According to several studies (Fan & Zhao, 2017; Novy-Marx, 2011; Santos & Veronesi, 2022), LEV can be measured by the ratio of total debt to total assets. Regarding the control variables, the study relied on some of the control variables that are related to the study variables, which are: company size (LSize), audit firm size (Big 4), working capital (WC), and sales growth (SG).

### 3.3. Regression models' specifications

The study investigated two models to measure the influence of IE on FP and the moderating role of LEV on the effect of IE on FP. The study's models can be formulated as regression models, as follows:

The direct effect model assesses the effect of IE on FP in Saudi non-financial firms.

$$FP_{it} = \alpha + \beta_1 IE_{it} + \beta_2 LSize_{it} + \beta_3 Big\ 4_{it} + \beta_4 WC_{it} + \beta_5 SG_{it} + \varepsilon_{it}$$

This model answers hypothesis 1, which is:

**H1: IE have a significant and positive effect on FP.**

Furthermore, the moderating role model investigates the moderating role of LEV on the effect of IE on FP in Saudi non-financial firms.

$$FP_{it} = \alpha + \beta_1 IE_{it} + \beta_2 LEV_{it} + \beta_3 IE * LEV_{it} + \beta_4 LSize_{it} + \beta_5 Big\ 4_{it} + \beta_6 WC_{it} + \beta_7 SG_{it} + \varepsilon_{it}$$

This model answers hypothesis 2, which is:

**H2: LEV moderates the effect of IE on FP.**

## 4. Results and discussion

### 4.1. Diagnostic, descriptive, and correlation analysis

The study relied on statistical models suitable for analyzing intermittent time data (panel data) in testing its hypotheses, which combine the cross-sectional data method and the time series data method (Hayes, 2017). The variance inflation factor (VIF) test was used to ensure that the independent variables of the study do not suffer from the problem of duplication multicollinearity (Pallant, 2020). Moreover, other influential factors that may affect the results (control variables) were taken into consideration. The study conducted the Wooldridge test to ensure that there is no problem of autocorrelation of the residuals. In addition, Kolmogorov-Smirnov and Shapiro-Wilk were used in this study for normality analysis. The correlation findings reveal that all values of the correlation coefficients within the matrix amounted to less than 0.80. This result indicates that the results of the correlation analysis between the study variables are free from multicollinearity (Gujarati & Porter, 2013; O'brien, 2007).

### 4.2. Direct effect analysis

Table 1 displays the regression findings of the direct effect analysis. This analysis is allocated to the effect of investment efficiency on firm performance. The findings concluded a significant positive effect of investment efficiency on firm performance at a significant level of 1% (0.04). This finding indicates that firms exhibiting elevated investment efficiency demonstrate a greater degree of firm performance, and these firms can increase their earnings through increased investment efficiency. This finding is supported by the stakeholder theory and is consistent with the findings of the studies (Bae et al., 2022; Salehi et al., 2022; Wu et al., 2024). Therefore, H1 is supported. The adjusted R<sup>2</sup> value is 35%, indicating that the research variables account for approximately 35% of the firm's performance. The model evaluated additionally demonstrated that the D-W result values elaborated that variables do not have autocorrelation issues.

Variables	Model 1	Model 2
	Direct effect analysis FP	Moderating effect analysis FP
Constant	-0.30**	-0.41**
	0.01	0.01
IE	0.04***	0.16***
	0.00	0.00
LEV		-0.01***
		0.00
IE * LEV		0.04***
		0.00
LSize	0.06***	0.11**
	0.00	0.02
Big 4	0.02	0.01
	0.29	0.38

WC	0.13***	0.21***
	0.00	0.00
SG	0.08***	0.09***
	0.00	0.00
Number of Obs.	496	496
R-squared	0.36	0.39
Adjusted R-squared	0.35	0.38
F-statistic	18.05	16.78
Prob (F-statistic)	0.00	0.00
Durbin-Watson stat	1.67	1.51

**Table 1: Direct and moderating effect regression analysis****Source: Table by author**

\*\*\* p&lt;.01, \*\* p&lt;.05, \* p&lt;.1

#### 4.3. Moderating effect analysis

Table 1 presents the moderating influence of leverage on the effect of investment efficiency on firm performance. The findings of the moderating role indicate that leverage, as a moderating variable, strengthens the relationship between investment efficiency and firm performance. These results indicate that firms can enhance their future earnings by paying attention to investment efficiency to meet the needs of various stakeholders. In addition to paying attention to leverage, it has a negative effect on enhancing future earnings. These findings are consistent with the findings of studies (Ali et al., 2022; Fan & Zhao, 2017; Guo et al., 2021). Hence, H2 is supported. Noteworthy is that the leverage has strengthened the association between investment efficiency and firm performance across the conducted model (at a significance level of 1%), which was obtained when the leverage was added to the model. This indicates the critical role of leverage as a moderating variable.

It is clear from the results of the regression analysis of the direct effect and the moderating effect that the values of adjusted R<sup>2</sup> reached 0.35 for the direct effect regression model and 0.38 for the moderating effect regression model. This indicates the positive effect of inserting the interaction between investment efficiency and leverage variables in the moderating model. Additionally, it signifies the precision of the models and the autonomy of the factors influencing firm performance. Moreover, the outcomes demonstrated that the significance levels were 0.00 across the regression analysis models. The results of the moderating effect analysis can be supported by stakeholder theory. According to stakeholder theory, having investment efficiency with leverage leads to working to meet the needs of different stakeholders, which has a long-term impact on enhancing the firm's future earnings.

## 5. Conclusion

This study examined the impact of investment efficiency on firm performance and the moderating role of leverage in this relationship. Using a comprehensive database of 496 firm-year observations from 62 Saudi non-financial companies between 2016 and 2023, the findings revealed that investment efficiency has a significant and positive effect on firm performance. Moreover, the study demonstrated that leverage moderates the relationship between investment efficiency and firm performance, with leverage enhancing the strength and direction of this relationship. While leverage negatively impacts firm performance in isolation, its moderating role transforms this effect, suggesting that leverage, when properly managed, can strengthen the link between investment efficiency and future earnings growth.

This study makes several key contributions to the existing literature. Theoretically, it expands the understanding of firm performance, investment efficiency, and leverage, particularly in the Saudi context. It is the first to investigate the moderating role of leverage in the relationship between investment efficiency and firm performance. Practically, the study offers valuable insights for policymakers, firms, and stakeholders. Policymakers can leverage the findings to create regulations that promote investment efficiency and the integration of leverage, thereby fostering future earnings growth. Stakeholders, in turn, can focus on improving investment efficiency to enhance future returns.

The study also has limitations. First, the analysis was confined to non-financial firms in Saudi Arabia over an eight-year period, which limits the generalizability of the findings and restricts control over all influencing variables. Additionally, the quantitative approach using secondary data may not fully capture the complex relationships between some variables and future earnings. Furthermore, the study's measure of future earnings may not encompass all aspects of firm performance, given its multidimensional nature. Future research could explore the impact of leverage on the relationship between investment efficiency and firm performance using alternative performance metrics. Additionally, future studies might extend this analysis to include both financial and non-financial companies and replicate the models across different countries and over a longer period to provide a more comprehensive understanding.

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