“The effect of investment on the performance of Vietnamese listed firms: Moderating role of agency costs”

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THE EFFECT OF INVESTMENT ON THE PERFORMANCE OF VIETNAMESE LISTED FIRMS: MODERATING ROLE OF AGENCY COSTS

Abstract

This study investigates how investment influences firm performance, taking into account the moderating role of agency costs in an emerging market context. Using a balanced panel of 269 non-financial firms listed on the Ho Chi Minh City Stock Exchange from 2013 to 2022, the study applies the System Generalized Method of Moments (SGMM) to address potential endogeneity. The results reveal a nonlinear, inverted U-shaped relationship between investment and operational efficiency, indicating the existence of an optimal investment threshold. Beyond this level, further investment reduces performance due to overinvestment behavior. Moreover, agency costs are found to negatively affect both performance and the efficiency of investment decisions. Firms facing higher agency problems experience weaker performance improvements from increased investment, confirming the moderating effect of agency costs. The findings provide new evidence from a transitional market characterized by information asymmetry and weak governance structures, contributing to the literature on investment efficiency and agency theory. Policy implications highlight the need for governance transparency and effective monitoring mechanisms to mitigate agency-induced overinvestment.

Keywords agency costs, emerging market, investment, optimal investment, overinvestment, performance, SGMM, Vietnam

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INTRODUCTION

Investment decisions are among the most critical determinants of firm performance and long-term value creation. According to modern financial theory, firms invest in fixed and current assets to expand production capacity, enhance competitiveness, and sustain future growth. However, the effect of investment on firm performance is not always linear or positive. In imperfect capital markets, characterized by information asymmetry and weak monitoring mechanisms, investment outcomes often depend on the extent of agency conflicts between managers and shareholders.

Agency theory (Jensen & Meckling, 1976) suggests that managers, when controlling internal funds, may not always act in the best interests of shareholders. Instead of distributing excess cash as dividends, managers may pursue empire-building strategies or invest in unprofitable projects to expand their personal influence (Jensen, 1986). Such inefficient resource allocation and overinvestment lead to capital misallocation and ultimately to poor company performance. These issues are particularly relevant in emerging markets like Vietnam, where limited transparency and concentrated ownership structures exacerbate agency problems.

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Prior studies have reported mixed evidence regarding the relationship between investment and firm performance. While some research (Ehie & Olibe, 2010; Esther et al., 2003; Saleh, 2018) shows that investment enhances profitability and firm value, others find an inverted U-shaped pattern (Fu, 2010; Kim et al., 2018; Morgado & Pindado, 2003), suggesting the existence of an optimal investment level. Yet, little attention has been paid to how agency costs moderate this relationship, especially in developing economies where financial markets remain imperfect.

Vietnam offers a unique setting for examining this issue. Despite rapid capital market development, information asymmetry and weak governance mechanisms continue to distort investment efficiency. Firms often rely on internal financing due to limited access to external capital, while managerial discretion over cash flow creates fertile ground for agency-related inefficiencies. However, empirical evidence linking investment, performance, and agency costs in the Vietnamese context remains scarce.

By incorporating agency costs as a moderating factor, this paper provides a more comprehensive understanding of investment efficiency under imperfect financial market conditions. First, it provides new empirical evidence from an emerging market characterized by high information asymmetry. Second, it integrates agency theory with investment-performance analysis, highlighting the nonlinear nature of the relationship. Third, it offers policy implications for improving governance transparency and monitoring mechanisms to reduce agency-driven overinvestment.

1. LITERATURE REVIEW AND HYPOTHESES

Investment is widely recognized as a central driver of firm value and long-term growth. Under the assumptions of perfect capital markets (Modigliani & Miller, 1958), firms can freely choose between internal and external sources of finance without affecting firm value, and they will invest until the marginal benefit of investment equals the marginal cost of capital. In reality, however, financial markets are imperfect due to information asymmetry, making investment decisions sensitive to both financial constraints and managerial incentives.

According to Richardson (2006), firms may deviate from their optimal investment level when capital allocation is influenced by internal cash availability or agency problems. Two opposite forms of inefficiency can occur: underinvestment, when firms are unable to finance profitable projects because of limited funds, and overinvestment, when managers deploy excess internal resources into projects with negative net present value. Overinvestment typically arises when managerial discretion is strong and monitoring is weak, as described by Jensen (1986).

The relationship between investment and performance has been examined across various contexts, yet empirical results remain mixed. Studies that ignore market imperfections often report a positive association between investment and firm performance (Ehie & Olibe, 2010; Saleh, 2018), implying that expanding investment improves profitability and firm value. In contrast, research conducted in environments characterized by information asymmetry and capital market imperfections tends to reveal a nonlinear pattern. Morgado and Pindado (2003), Fu (2010), and Kim et al. (2018) find an inverted U-shaped relationship between investment and performance, suggesting that efficiency improves only up to a certain level of investment. Beyond this threshold, the marginal return on investment declines, and excessive spending reduces operational efficiency. Empirical evidence from emerging markets further supports this view. A study in China (Kim et al., 2018) confirm that overinvestment leads to diminishing returns and weaker firm performance. However, the magnitude and direction of this effect may vary depending on the institutional setting and the degree of managerial control. These findings imply that investment effectiveness is not only determined by financial capability but also by the governance mechanisms constraining managerial behavior.

Regarding agency costs and performance, agency theory (Jensen & Meckling, 1976) provides the theoretical foundation for understanding how conflicts of interest between owners and man-

agers affect firm outcomes. When shareholders delegate decision-making authority to managers, asymmetric information and differing objectives give rise to agency costs. These costs include the expenses of monitoring and controlling managerial actions as well as the residual losses resulting from unaligned incentives.

Empirical research on the impact of agency costs on performance offers diverse conclusions. Several studies (Black & Kim, 2012; Hermalin & Weisbach, 2001; Liu et al., 2015) demonstrate that higher agency costs tend to reduce efficiency, as managers pursue self-serving objectives rather than maximizing firm value. Conversely, some authors (e.g., Chen, 2015) argue that certain governance structures associated with higher agency costs may enhance performance by increasing managerial involvement or external oversight. Differences in institutional settings, measurement approaches, and sample characteristics largely explain these inconsistencies. In emerging markets such as Vietnam, agency costs are often amplified by information opacity and concentrated ownership. Limited investor protection and weak monitoring mechanisms allow managers to exercise greater discretion in resource allocation, which can undermine investment efficiency and firm profitability. Consistent with the majority of empirical evidence, this study expects that greater agency costs will adversely affect firm performance.

The interaction between investment and agency costs has recently received growing attention. In firms with abundant free cash flow, managers may use discretionary funds to expand their control or prestige through excessive investment – commonly referred to as the "empire-building" phenomenon (Jensen, 1986). Agency problems thus amplify the likelihood of overinvestment and weaken the positive impact of investment on firm performance. Empirical studies provide strong evidence for this moderating mechanism. Titman et al. (2004) and Liu et al. (2021) document that the negative relationship between abnormal investment and profitability is particularly severe in firms with weak external monitoring and high agency costs. Nghia and Cong (2021) similarly find that when agency problems intensify, additional investment no longer enhances operational efficiency and may even destroy value.

In transitional economies such as Vietnam, where information asymmetry is pervasive and governance structures remain underdeveloped, the moderating role of agency costs becomes even more critical. Firms burdened with high agency costs tend to channel internal resources into less productive projects, especially when cash flows are abundant but growth opportunities are scarce. This behavioral tendency implies that agency costs distort the investment–performance relationship, shifting the optimal investment threshold downward.

The reviewed literature has provided valuable insights into the relationship between investment, agency costs, and firm performance. Previous studies have demonstrated that investment decisions play a pivotal role in determining corporate outcomes, yet their effects are not uniform across different contexts. Several scholars report a positive link between investment and performance, while others document a nonlinear, inverted U-shaped pattern. These mixed findings suggest that investment efficiency depends not only on financial capacity but also on the institutional environment and governance mechanisms that influence managerial behavior.

Although the role of agency costs in shaping firm performance has been widely discussed, most empirical evidence originates from developed economies with strong investor protection and transparent governance systems. In such settings, agency conflicts are relatively moderate, and external monitoring effectively constrains managerial opportunism. Consequently, the extent to which agency costs can distort investment efficiency under less effective governance structures remains underexplored. Moreover, only a limited number of studies have explicitly examined the moderating role of agency costs in the investment–performance relationship, leaving a conceptual and empirical gap in the literature.

Third, and most importantly, the Vietnamese stock market offers a distinctive but underexamined environment to test this mechanism. As one of the fastest-growing emerging markets in Southeast Asia, Vietnam exhibits several institutional features that make it ideal for investigating how agency problems affect investment efficien-

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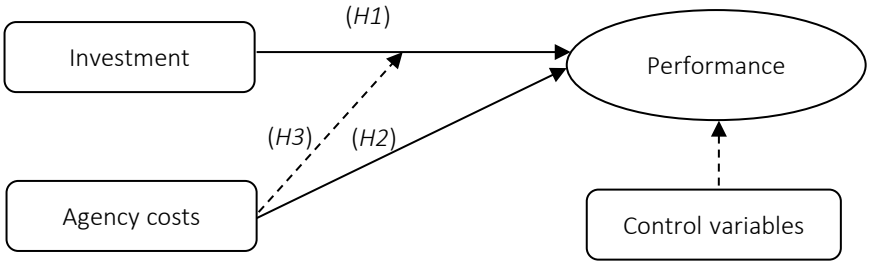

Notes: Agency costs are expected to moderate the relationship between investment and firm performance.

Figure 1. Research framework

cy. The market is characterized by concentrated ownership, limited disclosure quality, and relatively weak investor protection – conditions that intensify information asymmetry and managerial discretion. At the same time, Vietnam has experienced substantial capital market reforms and a surge in corporate investment during the past decade, providing a unique setting to observe how firms allocate resources in the presence of governance imperfections. Despite these features, empirical research linking investment, agency costs, and performance in Vietnam remains scarce, and existing evidence is often fragmented or methodologically limited.

To address these gaps, this study investigates how investment affects firm performance under the moderating influence of agency costs in the Vietnamese context. To attain this goal, the study evaluates the subsequent hypotheses:

H1: Investment has an inverted U-shaped nonlinear effect on firm performance.

H2: Agency costs have a negative effect on firm performance.

H3: The impact of investment on firm performance is moderated by agency costs.

This study aims to fill this gap by analyzing how investment affects firm performance under the moderating influence of agency costs.

2. METHODOLOGY

Based on the theoretical framework and hypotheses developed in the previous section, this study examines how investment affects firm performance under the moderating influence of agency costs. The empirical model incorporates both direct and interaction effects to test the nonlinear nature of the investment-performance relationship. The baseline functional form is expressed as follows:

$$FP_{it} = \beta_0 + \beta_1 I_{it} + \beta_2 I_{it}^2 + \beta_3 AC_{it} + \beta_4 CF_{it} + \beta_5 DEBT_{it} + \beta_6 SIZE_{it} + \beta_7 SALE_{it} + \beta_8 AGE_{it} + \beta_9 COV_{it} + \beta_j \sum_{j=1}^{8} Industry + \varepsilon_{it}, \quad (1)$$

$$FP_{it} = \beta_0 + \beta_1 I_{it} + \beta_2 I_{it}^2 + \beta_3 AC_{it} + \beta_4 CF_{it} + \beta_5 DEBT_{it} + \beta_6 SIZE_{it} + \beta_7 SALE_{it} + \beta_8 AGE_{it} + \beta_9 COV_{it} + \beta_{10} \left(AC.I\right)_{it} + \beta_{11} \left(AC.I^2\right)_{it} + \beta_j \sum_{j=1}^{8} Industry + \varepsilon_{it}, \quad (2)$$

where FP_{it} denotes the business performance of firm i in period t, I_{it} is the level of investment, and AC_{it} represents agency costs. Equation (1) captures the direct effects, while Equation (2) incorporates the interaction terms $\left(AC_{it}.I_{it}\right)$ and $\left(AC_{it}.I_{it}^2\right)$ to test the moderating influence of agency costs. The remaining independent variables serve as controls. Specifically, CF_{it} is the cash flow of firm i in year t; $DEBT_{it}$ denotes the financial leverage, measured by the debt-to-assets ratio; $SIZE_{it}$ represents firm size, proxied by the natural logarithm of total assets; $SALE_{it}$ is the annual growth rate of sales; AGE_{it} is the number of years the firm has been in operation; and COV_{it} captures the COVID-19 pandemic effect. The models also include industry dummy variables

$$\left(\sum_{j=1}^{8} Industry\right)$$

to control for unobserved sectoral heterogeneity across firms. The research sample is classified into nine industry groups: Materials, Consumer Goods, Industries, Property, Pharmaceutical and Medical, Public Utilities, Consumer Services, Information Technology, and Oil & Gas. The residual term εit denotes the random error. Table 1 provides a more detailed definition of the variables.

From estimating Model (1), Equation (1a) is derived by differentiating firm performance with respect to the investment variable:

$$\frac{\partial FP_{it}}{\partial I_{it}} = \beta_1 + 2\beta_2 I_{it}. \quad (3)$$

The optimal investment threshold is then obtained by setting the first derivative equal to zero, as expressed in Equation (1b):

$$I_{it}^{*} = -\frac{\beta_1}{2\beta_2}. \quad (4)$$

Next, we examine the interactive role of agency costs using Model (2). Firms are classified into two categories: high agency cost (HAC) firms, where AC = 1, and low agency cost (LAC) firms, where AC = 0, indicating negligible agency conflicts. The procedure for identifying agency cost levels is described in the subsequent section. In Model (2), the coefficients β_1 and β_2 determine the optimal investment level for LAC firms (when AC = 0). Accordingly, the optimal investment level for these firms is calculated using Equation (1b). In contrast, for HAC firms (where AC = 1), the optimal investment level is given by the following expression:

$$I_{it}^{*} = -\frac{(\beta_1 + \beta_{10})}{2(\beta_2 + \beta_{11})}. \quad (5)$$

The study employs the sales-to-assets ratio (S/TA) together with the quality of investment opportunities to classify firms into high-agency-cost (HAC) and low-agency-cost (LAC) groups. The S/TA ratio serves as a measure of asset utilization efficiency and is expected to exhibit a negative relationship with agency costs. Firms with a high S/TA ratio are considered to have lower agency costs, whereas those with a low S/TA ratio are likely to experience higher agency costs. This approach aligns with the findings of Pawlina and Renneboog (2005) and Guariglia and Yang (2016), who suggest that firms with limited investment opportunities face a higher risk of overinvestment, particularly when internal funds are abundant. Following this logic, the current study calculates the average S/TA ratio for each firm during the sample period and ranks firms in descending order. The classification also considers the quality of investment opportunities (Q). Based on these criteria, firms are grouped as follows (see Table 2).

This grouping method captures the combined effect of asset turnover and investment opportunities on agency behavior. Firms with lower asset utilization efficiency and fewer growth opportunities are categorized as HAC, reflecting greater managerial discretion and weaker monitoring mechanisms.

Table 1. Identification and measurement of variables

Variables	Symbol	Measurement	References
Firm Performance	FP	Net profit to total assets (ROA)	Fu (2010), Nghia and Cong (2021)
Investment	I	Growth rate of investment expenditures in fixed assets, financial investments, and investment real estate	Morgado and Pindado (2003), Richardson (2006), Nghia and Cong (2021)
Agency costs	AC	Dummy variable: 1 = firms classified as high-agency-cost group; 0 = otherwise	Ang et al. (2000), Pawlina and Renneboog (2005)
Cash flow	CF	Cash flow from operating activities / total assets	Richardson (2006), Guariglia and Yang (2016)
Debt	DEBT	Total debt/total assets	Richardson (2006), Guariglia and Yang (2016)
Operating scale	SIZE	Natural logarithm of total assets	Richardson (2006), Guariglia and Yang (2016)
Revenue growth	SALE	Annual growth rate of sales	Lima Crisóstomo et al. (2014), Guizani and Ajmi (2021)
Operating years	AGE	Natural logarithm of firm age	Nagy et al. (2009)
Covid-19 pandemic	COV	Dummy variable: 1 = 2020–2022; 0 = 2013–2019	Fu and Shen (2020), Shen et al. (2021)

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Table 2. Identifying agency costs

S/TA ratio	Investment opportunities	Agency costs category
S/TA < 1	Q < 1	High Agency Costs (HAC)
S/TA < 1	Q > 1	Low Agency Costs (LAC)
S/TA > 1	Q > 1	Low Agency Costs (LAC)
S/TA > 1	Q < 1	Low Agency Costs (LAC)

The empirical analysis is based on data collected from the FiinGroup database[1]. The study employs a balanced panel dataset consisting of 269 non-financial firms listed on the Ho Chi Minh City Stock Exchange (HOSE) over the period 2013–2022. Financial institutions are excluded due to their distinct regulatory environment and accounting practices. After data cleaning and consistency checks, the final dataset comprises 2,690 firm-year observations. This period captures the post-restructuring phase of Vietnam's capital market and includes significant macroeconomic and governance developments, making it suitable for analyzing the relationship between investment, agency costs, and firm performance. Table 3 presents the sample distribution by industry classification, based on the firms' main business activities and products.

Table 3. Sample distribution by industry classification

Sub-sectors	Number of firms	% of firms
Materials	45	16.73
Consumer goods	50	18.59
Industries	73	27.14
Property	39	14.50
Pharmaceutical and Medical	11	4.09
Public Utilities	23	8.55
Consumer Services	14	5.20
Information Technology	7	2.60
Oil and Gas	7	2.60

Before estimating the models, the stationarity of the panel data series is examined. If the variables are found to be non-stationary at their original level, appropriate transformations are applied to ensure valid estimation results. In panel data analysis, three conventional estimation techniques are commonly used: pooled Ordinary Least Squares (pooled OLS), random effects (RE), and fixed effects (FE) estimations. However, Roberts and Whited (2013) highlight that endogeneity may bias the results of these estimations, leading to inconsistent coefficient estimates and misleading inferences regarding firms' financial behavior.

To detect potential endogeneity, the Wu–Hausman test (Baum et al., 2007) is employed. Given the dataset's characteristics, specifically, a large cross-sectional dimension and a relatively short time span, the System Generalized Method of Moments (SGMM) estimator is adopted for the main analysis. This method effectively addresses simultaneity and omitted-variable bias while controlling for firm-specific effects. Consequently, SGMM is considered appropriate for the current study and ensures robust and consistent parameter estimation.

3. RESULTS

Before estimating the regression models, it is essential to examine the stationarity of the panel data to ensure the reliability of the results. Similar to time-series data, panel data contain a temporal dimension; thus, unit root tests are required to verify whether the statistical properties of the variables remain stable over time. The Levin–Lin–Chu (LLC) test (Levin et al., 2002) is employed for this purpose. The results, reported in Table 4, indicate that all variables are stationary at level I(0), as their t-statistics are statistically significant at the 1% level. This confirms that the mean and variance of the variables do not change over time, ensuring the robustness and consistency of the regression estimates.

Table 4. Unit root test results

Variables	Levin-Lin-Chu		Results
	t-statistic	P_value	
FP	–18.8391	0.0000	I(0)
I	–50.1023	0.0000	I(0)
I^2	–2.8e+02	0.0000	I(0)
CF	–35.5939	0.0000	I(0)
DEBT	–27.6230	0.0000	I(0)
SIZE	–27.6477	0.0000	I(0)
SALE	–12.6145	0.0000	I(0)
AGE	–76.8340	0.0000	I(0)

1 One of the most reliable financial information sources in Vietnam.

Table 5 presents the summary statistics for all variables, including the mean, minimum, maximum, standard deviation, and number of observations. The average return on assets (ROA), representing operating efficiency, is 6.62%, suggesting that Vietnamese firms have maintained moderate profitability over the study period. The average investment growth rate is 5.07%, with a relatively high standard deviation, indicating significant heterogeneity in investment intensity among firms. Some firms exhibit exceptionally high investment ratios (up to 314.56%), suggesting the existence of aggressive investment behavior in certain cases. Considerable variations are also observed in cash flow, leverage, firm size, sales growth, and operating years, reflecting the diversity of the sample and the distinct financial characteristics of Vietnamese listed firms.

Table 5. Descriptive statistics of variables

Variables	Obs.	Mean	Sdt.	Min	Max
FP	2,690	0.0662	0.0848	–0.9960	0.7837
I	2,690	0.0507	0.1635	–0.8832	3.1456
CF	2,690	0.0959	0.0933	–0.9033	0.8097
DEBT	2,690	0.4707	0.2067	0.0027	1.2945
SIZE	2,690	6,453	24,927	82,98	577,407
SALE	2,690	0.3192	3.3591	–2.6573	116.4356
AGE	2,690	25	13	3	66

Notes: SIZE is measured in billion VND; AGE represents the number of operating years.

Table 6 provides descriptive statistics for firms categorized by agency cost level: low agency cost (LAC) and high agency cost (HAC). Noticeably, firms in the HAC group exhibit higher investment rates but lower profitability compared to those in the LAC group. This observation is consistent with agency theory, which predicts that firms facing higher agency costs are more likely to overinvest, particularly when internal funds are abundant but profitable investment opportunities are scarce. Managers in such firms may allocate resources to projects that do not maximize shareholder value, reflecting inefficiencies associated with agency conflicts. Consequently, HAC firms demonstrate higher investment activity yet poorer performance relative to LAC firms.

Next, the regression results estimated using the System Generalized Method of Moments (SGMM) are presented in Table 7. All models satisfy the Hansen and Arellano–Bond diagnostic tests, confirming the validity of instruments and the absence of serial correlation in the residuals. Specifically, the p-values of the Hansen test exceed 0.05, indicating that the instruments are exogenous, while the Arellano–Bond AR(2) test fails to reject the null hypothesis of no second-order autocorrelation. Therefore, the SGMM estimation results are considered reliable and robust.

The coefficients of investment (I) and its squared term (I^2) are positive and negative, respectively, and both are statistically significant at the 1% level. This supports Hypothesis 1 *(H1)*, which posits that investment has an inverted U-shaped nonlinear effect on firm performance. At moderate levels, investment promotes productivity and profitability by expanding capacity, improving competitiveness, and fostering technological innovation. However, beyond an optimal threshold, further capital expansion leads to diminishing returns and efficiency losses. This pattern indicates that excessive investment may result in overcapacity, misallocation of resources, and declining profitability – a manifestation of the overinvestment hypothesis discussed in prior studies (Fu, 2010; Hsiao et al., 2011; Kim et al., 2018; Morgado & Pindado, 2003).

Table 6. Descriptive statistics by agency cost group

	LAC Group					HAC Group				
Biến	Obs.	Mean	Sdt.	Min	Max	Obs.	Mean	Sdt.	Min	Max
FP	2,010	0.08	0.09	-0.85	0.78	680	0.03	0.07	–0.99	0.29
I	2,010	0.04	0.16	-0.88	3.15	680	0.06	0.17	–0.53	2.67
CF	2,010	0.11	0.09	-0.78	0.81	680	0.05	0.07	–0.90	0.38
DEBT	2,010	0.47	0.21	0.01	1.29	680	0.46	0.21	0.00	0.95
SIZE	2,010	7,396	28,539	82.9	577.407	680	3,669	6,358	91.5	53,062
SALE	2,010	0.23	1.64	–1.03	44.5	680	0.58	6.05	–2.66	116
AGE	2,010	26	13	4	66	680	23	11	3	52

Notes: SIZE is measured in billion VND; AGE represents firm age in years. LAC – Low Agency Costs; HAC – High Agency Costs.

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Table 7. Estimation results

[1]	[2]	[3]	[4]	[5]
Variables	Coefficient	Std error	Coefficient	Std error
	Model 1		Model 2	
I_{it}	0.0610***	0.0179	0.0749**	0.0381
I^2_{it}	−0.0629***	0.0180	−0.0472***	0.0162
AC_{it}	−0.0532***	0.0054	−0.0506***	0.0047
CF_{it}	0.0737***	0.0136	0.0722***	0.0129
$DEBT_{it}$	−0.1716***	0.0114	−0.1687***	0.0113
$SIZE_{it}$	0.0060**	0.0027	0.0083***	0.0029
$SALE_{it}$	0.0017***	0.0006	0.0005*	0.0003
AGE_{it}	0.0007	0.0042	0.0027	0.0041
COV_{it}	−0.0108***	0.0021	−0.0116***	0.0024
$(AC.I)_{it}$			−0.1024***	0.0389
$(AC.I^2)_{it}$			0.0516***	0.0165
Constant	−0.0153	0.0763	−0.0912	0.0756
Industry Indicators	Yes		Yes	
Observation	2,690		2,690	
Instruments rank	73		84	
F-statistics	95.4		120.23	
Prob F	0.000		0.000	
Hansen test	63.72		75.43	
Prob Hasen test	0.197		0.177	
Prob AR(1)	0.009		0.002	
Prob AR(2)	0.106		0.054	

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The turning point of the curve, estimated as $I^* = 48.49\%$ following Equation (1b), represents the optimal investment ratio that maximizes firm performance. Beyond this level, the marginal benefit of additional investment becomes negative.

Regarding the effect of agency costs on performance, the coefficient of agency costs (AC) is negative and statistically significant, indicating that higher agency costs are associated with lower firm performance. This result supports Hypothesis 2 *(H2)* and is consistent with agency theory (Jensen & Meckling, 1976), which posits that conflicts of interest between managers and shareholders lead to inefficiencies and value erosion.

The interaction terms between investment and agency costs (AC.I and $AC.I^2$) are both negative and statistically significant, suggesting that agency costs moderate the investment–performance relationship. This result supports Hypothesis 3 *(H3)*, which suggests that the impact of investment on firm performance is moderated by agency costs. Specifically, higher agency costs weaken the positive impact of investment on performance and intensify the adverse effects of overinvestment. This result implies that the efficiency of investment decisions depends strongly on governance quality. When agency costs are low, indicating effective monitoring, transparent information, and well-aligned managerial incentives, investment contributes positively to firm performance. However, when agency costs are high, managerial opportunism or risk aversion may lead to inefficient capital allocation.

Regarding control variables, the results are largely consistent with theoretical expectations. Cash flow (CF), Firm size (SIZE), and sales growth (SALE) all have the same influence on business performance. In contrast, debt (DEBT) and the Covid-19 pandemic (COV) exert a negative and significant influence on performance. The results also highlight that industry-specific characteristics influence the degree of resilience among firms. Sectors dependent on global trade and high fixed costs, such as manufacturing, transportation, and logistics, experienced more severe performance declines, while technology and service-based industries demonstrated greater adaptability.

3.1. Robustness test

This section reassesses the stability of the research findings. The results indicate that firms with higher agency costs are more likely to engage in overinvestment, leading to poorer performance compared to firms with lower agency costs. This finding suggests that overinvestment reflects an inefficient investment state that ultimately diminishes firm performance, with agency costs identified as a key factor driving this inefficiency.

To further examine this relationship, we compare the effects of investment on operational efficiency between firms with high agency costs (HAC) and those with low agency costs (LAC). The results presented in Table 8 show that, compared with LAC firms, those facing significant agency problems, evidenced by high agency costs and abundant internal funds, are more inclined to make investment decisions that prioritize managerial self-interest rather than the overall benefit of the firm. This tendency leads to overinvestment, which, even when resources are available, may negatively affect the firm's operational efficiency. Consequently, for firms with high agency costs, investment exerts a detrimental impact on efficiency, underscoring the prevalence of overinvestment behavior.

Next, following the investment measurement framework proposed by Richardson (2006)[2], we estimate the investment demand equation to obtain the residuals from the model. These residuals serve as indicators of the deviation between actual and expected investment levels. By examining these residuals in conjunction with firms' growth opportunity characteristics, we identify cases of potential overinvestment. Specifically, firms exhibiting positive investment residuals and a Tobin's Q ratio of less than one are classified as overinvesting, implying that their actual investment exceeds the optimal level suggested by their growth opportunities. This classification enables us to distinguish between efficient and inefficient investment behavior across firms.

Subsequently, we evaluate how overinvestment influences operating efficiency, as reported in Table 9. The analysis provides further evidence on whether excessive investment - often associated with higher agency costs – detrimentally affects firm performance, thereby reinforcing the moderating role of agency conflicts in shaping investment outcomes.

Table 8. Impact of investment on performance between LAC and HAC groups

[1]	[2]	[3]	[4]	[5]
Variables	LAC		HAC	
	Coefficient	Std error	Coefficient	Std error
I_{jt}	0.0025***	0.0004	−0.0196***	0,0021
AC_{it}	−0.0199***	0.0067	−0.0119***	0.0038
CF_{jt}	0.0649***	0.0156	0.0647***	0.0052
$DEBT_{jt}$	−0.2347***	0.0159	−0.0761***	0.0089
$SIZE_{it}$	0.0129***	0.0035	0.0092***	0.0033
$SALE_{jt}$	0.0025***	0.0009	0.0010***	0.0001
AGE_{it}	−0.0046	0.0053	−0.0029	0.0032
COV_{jt}	−0.0158***	0.0028	−0.0051**	0.0019
Constant	−0.1539*	0.0907	−0.1858*	0.1017
Industry Indicators	Yes		Yes	
Observation	2,010		680	
Instruments rank	55		55	
F-statistics	98.86		2,844	
Prob F	0.000		0.000	
Hansen test	70.78		35.61	
Prob Hasen test	0.201		0.625	
Prob AR(1)	0.002		0.006	
Prob AR(2)	0.101		0.187	

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. LAC – Low Agency Costs, HAC – High Agency Costs.

2 See Richardson (2006) for a framework to measure the over-investment.

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Table 9. Impact of overinvestment status on performance

[1]	[2]	[3]
Variables	**Coefficient**	**Std error**
$OverI_{it}$	−0.0166***	0.0033
AC_{it}	−0.0033***	0.0046
CF_{it}	0.1486***	0.204
$DEBT_{it}$	−0.1670***	0.0171
$SIZE_{it}$	0.0089**	0.0039
$SALE_{it}$	0.0007*	0.0004
AGE_{it}	−0.0028	0.0061
COV_{it}	−0.0175***	0.0026
Constant	−0.0804	0.1064
Industry Indicators	Yes	
Observation	2,421	
Instruments rank	50	
F-statistics	69.04	
Prob F	0.000	
Hansen test	37.96	
Prob Hasen test	0.254	
Prob AR(1)	0.001	
Prob AR(2)	0.060	

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The results reveal that the overinvestment variable (OverI) exerts a negative and significant effect on firm performance. This finding is consistent with previous studies, such as Liu and Bredin (2010) and Shi (2019), and further reinforces the robustness of the identified nonlinear, quadratic relationship between investment and performance. When investment exceeds its optimal level, firm performance declines because the marginal cost of capital surpasses the marginal return on each additional unit of investment. Moreover, the adverse impact of overinvestment can be theoretically explained through the agency cost perspective. Firms characterized by higher agency problems often experience a mismatch between abundant internal funds and limited growth opportunities, which increases the likelihood of managerial overinvestment. Such behavior reflects inefficient resource allocation, where managers pursue projects that maximize private benefits rather than shareholder value.

Consequently, the negative association between overinvestment and performance underscores the importance of corporate governance mechanisms in mitigating inefficient investment behavior. These robustness test results confirm that the main findings of this study remain stable: the investment-performance relationship is nonlinear, and agency costs play a critical moderating role in shaping this relationship within the context of Vietnamese listed firms.

4. DISCUSSION

Overall, the findings reveal that firm performance is shaped by the complex interaction between investment behavior and governance quality. First, the research result showed that investment has an inverted U-shaped nonlinear effect on firm performance. This relationship underscores that investment enhances performance only up to an optimal point, beyond which inefficiency and agency problems dominate. This pattern indicates that excessive investment may result in overcapacity, misallocation of resources, and declining profitability – a manifestation of the overinvestment hypothesis discussed in prior studies (Fu, 2010; Hsiao et al., 2011; Kim et al., 2018; Morgado & Pindado, 2003). This empirical finding also confirms that while investment is essential for growth, its effectiveness critically depends on the firm's ability to allocate capital efficiently and avoid overexpansion. Importantly, this nonlinear pattern provides fresh evidence from an emerging market context, where capital markets are less efficient, and internal financing often dominates. In such environments, firms may pursue investment projects for managerial motives or signaling purposes rather than economic efficiency, thus reinforcing the importance of governance and monitoring mechanisms. The moderating effect of agency costs provides a deeper understanding of the agency-investment-performance nexus. It confirms that governance mechanisms are not merely background factors but active determinants of how firms convert investment into value. In the Vietnamese context, where investor protection and monitoring mechanisms are still evolving, the moderating influence of agency costs is particularly strong, highlighting the vulnerability of emerging markets to overinvestment.

Research indicates that agency costs negatively impact performance, highlighting an inverse relationship between these two factors. This result

is in line with Ang et al. (2000), Black and Kim (2012), and Liu et al. (2015), who documented similar negative effects of agency costs on firm performance in other markets. However, the magnitude observed in Vietnam suggests that agency problems are intensified by the transitional nature of the economy and its evolving institutional environment. In the Vietnamese context, the relationship between agency costs and performance is particularly salient. Many listed firms operate under concentrated ownership structures, with dominant shareholders exerting control while minority investor protection remains limited. Additionally, weak disclosure practices and limited enforcement of governance regulations exacerbate information asymmetry, allowing managers greater discretion over resource use. As a result, agency problems – manifested through excessive expenses, perquisite consumption, or empire building – can significantly impair firm efficiency and profitability.

The moderating effect of agency costs provides a deeper understanding of the agency-investment-performance nexus. It confirms that governance mechanisms are not merely background factors but active determinants of how firms convert investment into value. Managers might continue investing in unprofitable projects to pursue personal objectives such as job security, prestige, or expansion of control, consistent with the arguments of Jensen (1986) and Pawlina and Renneboog (2005). The findings thus reinforce the moderating role of governance mechanisms in translating investment into firm value. They also extend the literature by demonstrating that this relationship remains robust in a developing market setting, where information asymmetry and governance constraints are more severe. These results echo the conclusions of Guariglia and Yang (2016) for Chinese firms and contribute new evidence for Southeast Asia, emphasizing that governance quality is a key determinant of investment efficiency. In the Vietnamese context, where investor protection and monitoring mechanisms are still evolving, the moderating influence of agency costs is particularly strong, highlighting the vulnerability of emerging markets to overinvestment.

From a theoretical perspective, this study strengthens the integration of agency theory and investment efficiency frameworks by empirically validating the moderating channel. It shows that agency costs distort not only the level of investment but also its effectiveness in generating value. From a policy perspective, the results highlight the need to improve corporate governance standards, disclosure transparency, and board oversight in Vietnam. Regulators should enhance minority shareholder protection and promote stricter information disclosure to reduce agency costs. From a managerial perspective, firms should carefully assess the marginal productivity of capital expenditures and adopt incentive structures that align managerial objectives with long-term shareholder value. Strengthening internal audit, reducing free cash flow misallocation, and linking executive compensation to performance can help mitigate agency problems and enhance investment efficiency.

Regarding control variables, the study supports the pecking order theory, suggesting that internal funds serve as the primary source of investment financing, thereby reducing the reliance on costly external capital and mitigating underinvestment problems. Firms with stronger internal financing capacity tend to perform better. In addition, larger firms benefit from economies of scale, better access to credit, and stronger market positioning. These advantages enhance operational efficiency and profitability by allowing firms to spread fixed costs and negotiate more favorable terms with suppliers and creditors. Moreover, firms with expanding sales are more likely to utilize resources effectively, benefit from economies of scale, and achieve better asset turnover. High sales growth often reflects improved market competitiveness and demand conditions, which, in turn, translate into stronger profitability and higher returns on assets.

On the other hand, consistent with the trade-off theory, excessive leverage raises financial distress risk and constrains managerial discretion. The study also suggests that high debt levels may also reduce flexibility in investment and working capital management, thereby dampening profitability. This research also confirms that the pandemic adversely affected the operating efficiency of Vietnamese firms. The result is consistent with the growing body of empirical research documenting the negative effects of COVID-19 on business performance worldwide (Fu & Shen,

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2020; Shen et al., 2021). The pandemic disrupted supply chains, reduced demand, and tightened credit conditions, significantly constraining firms' production capacity and profitability. These impacts were particularly severe in emerging economies such as Vietnam, where firms faced limited access to external financing and slower institutional responses. Furthermore, the pandemic exacerbated existing agency and investment inefficiencies, as managerial decision-making became more risk-averse or distorted under uncertainty.

CONCLUSION

This study investigates the effect of investment on the performance of Vietnamese listed firms across various industrial sectors, particularly within the context of imperfect financial markets where agency problems influence investment decisions. Investment is recognized as a critical determinant of firm value and long-term performance. The empirical findings confirm that investment positively affects performance, but the relationship follows a quadratic nonlinear pattern, indicating that performance improves with higher investment up to an optimal point and declines thereafter. This result highlights the existence of an optimal investment threshold, beyond which overinvestment reduces operational efficiency.

The study further reveals that agency costs play a significant moderating role in the investment-performance relationship. Firms with higher agency costs tend to experience weaker investment efficiency because managerial decisions are more likely to deviate from value-maximizing objectives. The negative coefficient of the interaction term (AC.I) suggests that when agency costs are high, investment effectiveness diminishes. This finding is particularly relevant for firms with excess internal funds but limited growth opportunities, where managers may overinvest in projects that serve personal or short-term interests rather than maximizing shareholder value.

From a theoretical standpoint, these findings contribute to the corporate finance and agency theory literature by providing empirical evidence from an emerging market context. The results confirm that agency problems remain a crucial determinant of investment efficiency and firm performance, even in developing economies like Vietnam. By integrating agency costs into the nonlinear investment–performance framework, this study extends the understanding of how governance mechanisms and capital market imperfections jointly shape corporate behavior.

In practical terms, the results emphasize the importance of enhancing corporate governance and information transparency to mitigate agency-related inefficiencies. Firms should establish mechanisms that align managerial incentives with long-term organizational goals, such as performance-based compensation systems, transparent reporting standards, and independent monitoring of major investment decisions. Limiting discretionary managerial power, particularly in large-scale investment projects, can reduce overinvestment tendencies and ensure that financial resources are allocated efficiently.

Overall, this study underscores that improving governance quality and reducing agency costs are essential strategies for Vietnamese firms seeking to enhance investment efficiency and sustainable performance in a competitive and rapidly evolving financial environment.

AUTHOR CONTRIBUTIONS

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