# Institutional Ownership and Firm Performance – Role of Managerial Efficiency: Evidence from Thai Stock Exchange

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## Abstract

The purposes of this study are to investigate how institutional ownership (INS) impacts firm performance, and whether "managerial efficiency" can moderate the relationship between INS and firm performance. The study was conducted based on agency theory. The data were collected from the SETSMART database, which includes information on companies listed on the Thailand Security Exchange from 2016 to 2021. The study used a process regression analysis with 2,104 observations, examining the relationship between institutional ownership and firm performance (measured by ROA and Tobin's Q), while also taking into account the managerial efficiency. The findings suggest that managerial efficiency played an important role in the relationship between institutional ownership and firm performance. This should be considered prior to making an investment decision. This study addresses conflicting arguments and gaps in the literature regarding the relationship between institutional ownership and firm performance, together with highlighting the importance of managerial efficiency in creating effective efficiency.

**Keywords:** institutional ownership, managerial efficiency, firm performance

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## Introduction

Most corporate governance studies focus on internal governance mechanisms and board characteristics, such as board independence, board size, audit committee independence, audit committee size, CEO duality, board diversity. These are considered as indicators of a good corporate governance mechanism that affects the corporate added value (Butt et al., 2022, pp. 1-20; Farooq, Noor & Ali, 2022, pp. 42-46; Alajmi & Worthington, 2023, pp. 1-3). However, investment analyst or equity analysts are an integral part of the external governance mechanism that affects investment decisions of individual investors (Navissi & Naiker, 2006, pp. 247-256). With a role in investment analysis and the role of shareholders, institutional investors reflect good corporate governance mechanisms since their analysis focuses on investment with the goal of generating long-term returns. With an investment committee with expertise and administrative mechanism, they are able to manage risks to generate higher returns for the efficiency of the investments. Furthermore, with a shareholder who can audit the management, agency cost caused by major and minor shareholders and the management can be decreased (Jensen & Meckling, 1976, pp. 305–360). It has been widely accepted that institutional investors have an influence on managerial performance. A company with a high proportion of shares held by institutional investors indicates a higher performance since this can lead to a good corporate governance mechanism and the most efficient use of resources (Nurleni et al., 2018, pp. 979-982). Institutional shareholders are considered as a key investor group in the capital market due to the fact that their large proportion of investment helps promote the improvement of corporate governance in the capital market (SEC, 2022, pp. 1-2).

The above evidence suggests that the shares held by institutional investors reflect a good corporate governance mechanism since this type of investors is able to monitor the management to efficiently perform their duties which would add value to the company. In this regard, managerial efficiency is the use of skills, knowledge, and abilities reflected through operational strategies to achieve business success. Demerjian et al., (2012, pp. 1229-1235) defined managerial efficiency as a change in the corporate resources and high managerial efficiency was correlated with higher firm performance. According to Chen & Lin (2018, pp. 171-182), companies with high managerial efficiency generate higher returns on purchases and hold their investments over the long term. Furthermore, Khurana et al. (2018, pp. 547-575.) found that high managerial efficiency had an influence on effective investment in capital markets.

Thailand, as a developing country with huge stock market growth, was found to have a leap in investor growth in 2021 (SEC, 2022, p. 1-2). Despite the growth situation of listed companies in the Thai Stock Exchange, financial institution shareholders still need to study whether corporate governance can lead to performance and confidence among stakeholders. Academic evidence on institutional investor relations and performance reveals that

institutional investors with positive engagement and managerial perspectives can enhance allocating effective resources and benefits the company in building a good image. Retail investors can be confident that their investments will be protected and maximize their investment returns. It is expected that the results of this study can provide empirical evidence that enriches the literature on institutional shareholding structures on firm performance and managerial efficiency, which expands the scope of how institutional shareholder relationships impact firm performance.

## Research Objective

The objective of this paper is twofold: first, to study institutional ownership on firm performance relationship of Thai listed firms from agency theory; second, to highlight the role of managerial efficiency in moderating this relationship.

## Scope of the Research

The scope of the study is limited to non-finance firms listed in Thailand Stock Exchange because managerial efficiency measurement in finance firms has differences with other sectors and this criterion is highlighted to contribution of the findings.

## Conceptual Framework

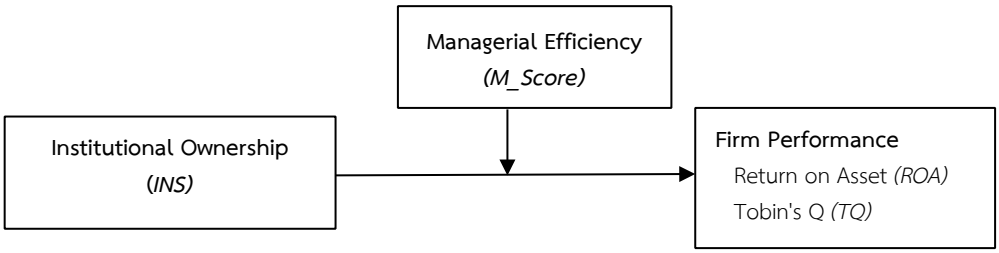


Figure 1 Research model

Figure 1 presents the research proposed model regarding a positive relationship between institutional ownership and firm performance moderated by managerial efficiency.

## Literature review

### Theoretical background

Based on agency theory, Jensen & Meckling, (1976, pp. 305-360) stated that agency costs can arise when conflicts of interests between the management and the shareholders occur. Shareholders may require management to add value to shareholders. On the other hand, the management may want to operate in a differents direction which may cause conflicts of the interests of shareholders. As a result, shareholders have to encounter agency costs. For agency costs, institutional shareholders act as a good corporate governance

mechanism since they can monitor the management more closely and more systematically since they hold a large number of shares. Institutional investors can also increase firm value for shareholders (Navissi & Naiker, 2006, p. 247). In addition, institutional investors consist of fund managers and professional analysts with knowledge and expertise of finance, investment and macroeconomics that can drive strategies. This leads to advantages and increases company value (Nurleni et al., 2018, p. 979).

However, institutional shareholders may promote self-interest behavior. In other words, if institutional shareholders are involved with the company as an investor with voting rights from investing in securities and a business partner at the same time, this may lead to conflicts of interests. In addition, if the institutional shareholders and the company have mutual benefits, the institutional shareholders will not be able to fully monitor the management performance. As a result, institutional investors' holdings may also have a negative impact on firm performance (Pound, 1998, pp. 237-265; Sakawa & Watanabel, 2020, p. 1021; Saleh et al., 2022, pp. 1-2). Thus, the hypothesis is proposed as follows:

***H1.*** *There is a positive relationship between institutional ownership and firm performance*

**Current research on institutional ownership and firm performance**

Institutional ownership activism has played an increasing role in the stock market growth, together with laws and regulations that have increasingly empowered shareholders since the 2001 due to the scandal of the management in several big companies, such as Enron, Tyco and WorldCom, engaged in fraudulent account manipulation and embezzlement, which caused crash in the stock market and negatively affected the image of big business. Thus, investors in the United States have cooperated in monitoring the management more closely and systematically, especially institutional investors who have power due to their large number of shares with the ability to arrange private discussions to create social pressure, and use legal channels to gather other shareholders to increase the agenda at the shareholders' meeting, convince other shareholders to jointly vote on important issues, such as the removal of directors or executives who misbehave, propose business plan improvement, support or oppose the acquisition plan or oppose the plans of suspicious major shareholders (Sakawa & Watanabel, 2020, p. 1021). Previous research has taken different views of the relationship between institutional shareholder structure and corporate performance as follows:

Firstly, institutional shareholders have a positive relationship with firm performance. Ferreira & Matos (2008, p. 499) found that the role of institutional investors was monitoring the performance of a company. The higher percentage of institutional investors can increase firm performance since they are investors with knowledge, expertise, and the ability to monitor the management at a lower cost than retail investors. Likewise, Abedin et al., (2022, pp. 1-17) found a positive linear relationship between institutional shareholders and firm performance

(Tobin's Q and ROA). Cornett et al., (2007, p. 1771) suggested that institutional investors with the power to monitor the management performance or pressure insensitive investors can increase firm performance. On the other hand, the institutional investors with no power or pressure-sensitive investors were found to have no correlation with firm performance.

Secondly, institutional shareholders have a negative relationship to firm performance. Practical evidence suggests that major shareholders are concentrated ownership and able to access to internal information, which is important information for decision-making. The concentrated ownership of institutional shareholders can lead to agency problems since they have a lot of voting rights and the opportunity to determine financial and operational policies according to their own group's expectations. These can cause conflicts of interests between the majority of shareholders and the shareholders who do not have control over the business. Highly concentrated structure of shareholders can be easily exploited since the shareholders influence the decision of the board of directors. In other words, major shareholders influence corporate future performance. Daryaei & Fattahi (2020, pp. 1191-1203) suggested that large shareholders might not support the management to improve their performance according to the theory of profitability. In other words, if the management is unable to manage effectively, institutional shareholders will have the opportunity to take up management positions in the future upon the vote of the shareholders. Based on this assumption, corporate governance mechanisms may be reduced as institutional shareholders and the management do not operate for the best interest of the company, and do not support policies that are beneficial to minor shareholders (Bushee, 1998, pp. 305-333). Tsouknidis (2019, p. 509) found a significant negative correlation of non-strategic institutional investors who aim to hold stocks in the short term tend to have no incentive to constantly monitor the performance of management. Kirchmaier & Grant (2006, pp. 231-234) found that institutional investors who are major shareholders have a negative relationship with long-term share price performance of public companies in European economies, and indicated that it is difficult for institutional shareholders to contribute to the efficient operation of future interests.

Thirdly, institutional ownership has an inverted U-shaped relationship with firm performance despite evidence of the uncertainty of the relationship of institutional investor shareholders with firm performance. Bushee (1998, p. 305) found that institutional shareholders had a non-linear relationship with firm performance. It was found that institutional investors must hold 30% of the shares and have long-term investment objectives in order to increase firm performance. However, the performance would decrease if the proportion of institutional investors is more than 30 percent. This is in line with Daryaei & Fattahi (2020, pp. 1191-1203), who found that the U-shaped relationship between institutional ownership and firm performance confirms the validity of the efficient monitoring. Navissi & Naiker (2006, pp. 247-256) and Daryaei & Fattahi (2020, pp. 1191-1203) confirmed that institutional investor ownership does not play a role in creating a corporate governance

mechanism that increases firm performance. Thus, the influence of institutional shareholders on operating results cannot be clearly concluded since the shares held by institutional investors also depend on other characteristics of the company (Bushee, 1998, pp. 305–333; Tsouknidis, pp. 509–528.; Daryaei & Fattahi, 2020, pp. 1191-1203).

**Moderating effect of managerial efficiency on firm performance**

The available data aforementioned have not provided obvious evidence regarding firm performance. According to Jensen & Meckling (1976, pp. 305-360), institutional investors can represent good corporate governance mechanisms, which leads to a question whether institutional investors actually increases firm performance.

Since the occurrence of economic crisis in 1997, Southeast Asia has become a concrete example of the importance of corporate governance in developing countries. The economic losses and losses of investor capital come from the inefficiency of corporate governance mechanisms due to lack of monitoring and directing of the management, fraud, and misconduct of the management. Obviously, the management has significant influence firm performance. Thus, the characteristics of the management become an important factor in determining firm performance. The management that produces maximum efficiency is one of the characteristics that ensure honesty, transparency, and teamwork. Thus, managerial efficiency refers to the ability of the management based on their business skills, knowledge, and expertise in the industry to maximize corporate benefits within limited resources (Hendriksen & Van Breda, 1992, p. 345; Demerjian et al., 2012, pp. 1229–1248).

Salehi et al., (2021, p. 150-173), Ting et al., (2021, pp. 1-2), and Demerjian et al., (2012, p. 1229) found a significant positive correlation between managers' efficiency and firm performance. Kumar & Zbib, (2022, p. 1) stated that during the COVID-19 pandemic, companies with high managerial efficiency have better stock price reactions than other companies in the same industry. It was also found that companies with high managerial efficiency witnessed higher raw and cumulative abnormal returns during the COVID-19 pandemic than those with low managerial efficiency. Companies with high managerial efficiency were found to achieve better returns on equity despite financial constraints caused by economic crisis. In this way, higher capabilities of the management can lead to more efficient management. In particular, the management decisions can positively affect firm performance during crisis (Andreou et al., 2015, p. 1-10)**.** Hambrick & Quigley, (2014, p. 473) discovered that capable managers can invest more than other managers. This is in line with Demerjian et al., (2012, pp. 1229-1248) who found higher levels of managerial discretion allow more capable managers to raise firm performance.

Conflicts in findings regarding the correlation of institutional ownership and firm performance show that institutional ownership has to be well managed to improve firm performance. Corporate governance mechanisms can be implemented effectively with institutional ownership can (Simamora, 2023, pp. 789-808). High and well-managed corporate

governance mechanisms are considered as a risk assessment, evaluation, monitoring, and controlling process when business uncertainty occurs, which can improve firm performance (Berthelot, Morris & Morrill, 2010, p. 635). Internal factors, such as manager contributions can also effectively improve firm performance. Since managers are in charge of business strategy, managerial efficiency is critical in determining the best shareholder value.

It is interesting to figure out whether managerial efficiency allows outlining better performance and value orientations that support the performance of Thai-listed companies. Thus, the hypothesis is proposed as follows:

***H2.*** *Managerial efficiency moderates the positive relationship between institutional ownership and firm performance*

ROA as an accounting-based measure and Tobin's Q as a market-based measure were used as dependent variables to assess firm performance (Kirchmaier & Grant, 2006 p. 231; Cornett et al., 2007, p. 1771; Abedin et al., 2022, pp. 1-17). For accounting-based measures, audited accounting data were used to measure firm performance. ROA shows managerial efficiency to obtain a return on corporate resources. Apparently, companies that use their assets properly have a higher ROA. Accounting-based measure has been criticized for being backward-looking and only partially estimating future occurrences in the form of depreciation and amortization.

On the other hand, Tobin's Q is heavily affected by a wide range of unstable factors, such as the psychology of investors and predictions about the market. In other words, if Tobin's Q value is larger than 1, the firm market value is overvalued, which is relative to the asset's book value. However, it is considered undervalued if the value is less than 1.

## Methodology

### Statistical analysis model

The hypotheses were tested with regression analyses in SPSS and the Hayes PROCESS for SPSS developed by Hayes (2013, p. 207-244). PROCESS is specifically designed to test complex models of moderation. With the Hayes PROCESS macro, it was possible to test the model in a more conservative and accurate way.

### Research and sampling design

This research uses the non-probability sampling method, specifically the purposive sampling method, to choose a sample from the available population. In this method, the sample is chosen based on how well it meets the research needs. The sample has no negative shareholders' equity value. This sample research also uses listed firms with a book value of equity positive. According to Simamora (2023, pp. 789-808), companies with negative equity are more likely to engage in divestments than investments. It denotes that no risk investments in businesses with negative equity will be made. Furthermore, the positive book value of

equity is used to avoid the bias inherent in Tobin's Q measurement. The samples include 373 non-financial firms (2,140 firm- year observations) listed on the Market of the Stock Exchange of Thailand (SET), for which data are manually collected from 2016 to 2021. The data are collected from SETSMART, which provides the financial statement information as well as financial market data of Thailand companies.

**Table 1** Research samples

| *Sample selection process* | *Firms* | *Firm-year observations* |
|---|---|---|
| Non- finance firms listed in Thailand Stock Exchange 2016–2021 | 523 | 3,890 |
| Data missing (insufficient data to construct variables) | (150) | (772) |
| Total | 373 | 2,238 |
| Negative equity | | (14) |
| Data outlier | | (120) |
| *Net samples* | | *2,104* |

**Variables**

Return on assets *(ROA)* and Tobin's q ratio *(TQ)* is applied to evaluate firm performance as a dependent variable. The institutional ownership *(INS)* and the interaction term between institutional ownership and managerial efficiency *(INS*M_Score)* is the major independent variable while the control variables are firm size *(FS),* firm leverage *(FL),* sales growth (SG) and industry and year fixed effect. The description of all variables used in this study is presented in Table 2.

**Table 2** Definition of variables

| **Variables** | **Notation** | **Description** |
|---|---|---|
| Return on assets | ROA | Net income divided by total assets multiplied by 100 |
| Tobin's Q | TQ | This ratio calculated by market values divided by the book value of total assets. |
| Institutional ownership | INS | The percentage of shares held by the top five institutional investors with an ownership interest (%TOP5). |
| Managerial efficiency* | M_Score | Following Demerjian et al. (2012). |
| Firm size | FS | Logarithm of total assets |
| Firm leverage | FL | The firm debt-to-equity ratio |
| Sales growth | SG | The firm annual sales growth rate |

**Note:** * The moderator variable is managerial efficiency (M_Score), M_Score is the hero of this paper. M_Score happened by using data envelopment analysis (DEA). DEA is a statistical method for evaluating the relative effectiveness of decision-making units (DMUs) in converting inputs into outputs. In this case, DEA is used to assess the relative efficiency of a company. According to Demerjian et al. (2012, pp. 1229–1248), firm efficiency occurred through the usage of seven inputs (cost of goods sold: COGS, sales general and administration expenses: SG&A, operating lease: OpsLease, property plant and equipment: PPE, goodwill: GW, other intangible assets: OtherInt, and research and development cost: R&D) to maximize output (revenue).

$$\theta = \frac{Sales}{COGS + SG\&A + OpsLese + PPE + GW + OtherInt + R\&D}$$

$\theta$ is firm efficiency. Sale revenue is the output, as firms' main goal is to generate sales. Firm efficiency refers to the maximization of sales at the lowest possible cost per sale. The cost to produce sales has seven inputs (Demerjian et al., 2012, pp. 1229–1248).

There are firm and top manager-specific factors that contribute to the firm's efficacy. Factors unique to top managers are used to evaluate managerial skills. This research regresses six firm characteristics (firm size, firm market, free cash flow, firm age, business segment, and foreign currency indicator) on firm efficiency using a sector industry-effect and year-effect regression model (Demerjian et al., 2012, pp. 1229–1248). The following model is proposed:

$$\theta = \beta_0 + \beta_1 FirmSize + \beta_2 FirmMarket + \beta_3 FreeCashFlow + \beta_4 FirmAge + \beta_5 BusinessSegment + \beta_6 ForignCurrency + YearDummy + \varepsilon$$

**Research Model**

$$Y_{i,t} = \beta_0 + \beta_1 INS_{i,t} + \beta_2 M\_Score_{i,t} + \beta_3 INS_{i,t} \times M\_Score_{i,t} + \beta_4 FS_{i,t} + \beta_5 FL_{i,t} + \beta_6 SG_{i,t} + \partial_t + \varphi_i + \varepsilon_{i,t}$$

Where $Y_{i,t}$ is ROA and Tobin's Q ratio, $\beta_3 INS_{i,t} \times M\_Score_{i,t}$ is the interaction term between INS and M Score, and the other variables are controls. $\partial_t$ is the dummy variable for the years 2016–2021, and $\varphi_i$ is the dummy variable for industry.

**Table 3** Normality test of sample distribution

| Variables | *N* | Skewness | | Kurtosis | |
|---|---|---|---|---|---|
| | statistic | statistic | Std. error | statistic | Std. error |
| Dependent: ROA | 2,104 | .373 | .053 | 2.071 | .107 |
| TQ | 2,104 | .998 | .053 | -.185 | .107 |
| Independent: INS | 2,104 | .999 | .053 | -.050 | .107 |
| Moderator: M_SCORE | 2,104 | .867 | .053 | 1.167 | .107 |
| Control: FS | 2,104 | .670 | .053 | .063 | .107 |
| FL | 2,104 | .442 | .053 | -1.037 | .107 |
| SG | 2,104 | .519 | .053 | .208 | .107 |

***Note(s):*** Please refer to Table 3 for variable definition

The results indicate that all skewness and kurtosis values fell within the range of +3 to -3, which is an insufficient demonstration of a normal univariate distribution (Hood et al., 2009, pp. 385-403). To circumvent this issue, the natural logarithms of these variables were taken into account

### 3.4 Variables diagnostics

**Table 4** Correlation among variables

| Variables | INS | M Score | INS * M_Score | LNFS | FL | SG | ROA | TQ | VIF | TL |
|---|---|---|---|---|---|---|---|---|---|---|
| INS | 1.000 | | | | | | | | 1.049 | 0.953 |
| M_Score | .066** | 1.000 | | | | | | | 1.141 | 0.876 |
| INS*M Score | -0.036 | 0.040 | 1.000 | | | | | | 1.020 | 0.980 |
| LNFS | .067** | -.096** | -0.032 | 1.000 | | | | | 1.374 | 0.728 |
| FL | 0.028 | -.114** | -.054* | .428** | 1.000 | | | | 1.314 | 0.761 |
| SG | -0.002 | .138** | 0.026 | .066** | .064** | 1.000 | | | 1.111 | 0.900 |
| ROA | .068** | .484** | .092** | -0.001 | -.298** | .284** | 1.000 | | | |
| TQ | .102** | .461** | .098** | -0.011 | -.083** | .138** | .478** | 1.000 | | |

**Note(s):** **Correlation is significant at the 0.05 level (two- tailed); *Correlation is significant at the 0.10 level (two-tailed), Please refer to Table 3 for variable definition

Prior to analyzing the linear model depending on the hypothesis, it must be checked for multicollinearity issues, using Pearson's correlation, variance inflation factors (VIF) and tolerance (Tl) for each variable. Table 4 shows the pair-wise correlation between the variables used. The correlation coefficients between INS and ROA, as well as INS and TQ, were both positive and significant (0.068, 0.102 respectively), which means that these independent and dependent variables are related and move in the same direction. Additionally, the correlation coefficient between interaction terms (INS×MA) and firm performance (ROA and TQ) were positive and significant (0.092, and 0.098), which means that the variables were related. In brief, when the interaction effect increases, ROA and TQ also increases.

Hair et al., (2018, p. 202) proposed that the cut-off value of VIF be less than 5.0 in order to avoid multicollinearity. No multicollinearity is found if the VIF values are less than 5. As shown in Table 4, all VIF values were less than 5.0, indicating that there was no multicollinearity. Chatterjee & Simonoff (2013, p. 343) explained that the values with a VIF > 5 or a tolerance < 0.20 may contribute significantly to multicollinearity and should be investigated further. Similarly, Menard (2002, pp. 265-266) stated that a tolerance of less than 0.20 is cause for concern, and a tolerance of less than 0.10 almost certainly indicates a serious collinearity. Hence, based on the findings, there is no multicollinearity problem within the explanatory variables.

## Result

This section presents the analysis of the data, including the descriptive statistics analysis. The final hypothesis test is based on the analyzed data derived from PROCESS regression.

**Table 5** Descriptive statistics for all variables

| Variables | Obs. | Mean | Median | SD | Min | Max |
|---|---|---|---|---|---|---|
| ROA *(%)* | 2,104 | 4.94% | 4.33% | 7.24% | -19.27% | 29.88% |
| TQ | 2,104 | 1.423 | 1.165 | 0.700 | 0.524 | 3.055 |
| INS *(%)* | 2,104 | 20.078 | 12.620 | 19.948 | 0.000 | 70.920 |
| M_SCORE | 2,104 | 0.743 | 0.714 | 0.355 | 0.002 | 1.799 |
| LNFS | 2,104 | 15.934 | 15.677 | 1.540 | 13.016 | 20.848 |
| FL | 2,104 | 0.876 | 0.736 | 0.599 | 0.102 | 2.356 |
| SG | 2,104 | 0.037 | 0.022 | 0.217 | -0.389 | 0.594 |

***Note(s):*** Please refer to Table 3 for variable definition

Table 5 presents that the lowest value of ROA is –19.27%, the highest value is close to 29.88%, and the average value is 4.94%. For Tobin's Q, the lowest value is 0.524, the highest value is 3.055, and the average value is 1.423. For institutional investors (INS), the lowest value is 0, the maximum is 70.92%, and the average value is 20.078%. For firm size (FS), the lowest value is 450 million Baht, the highest value is 3,078,019 million Baht, and the average value is 39,868 million Baht. For *LnFS,* the lowest value is 13.016, the highest value is 20.848, and the average value is 15.934. For firm leverage (FL), the lowest value is 0.102, the highest value is 2.356, the average value is 0.876. For sale growth (SG), the average value is -0.389, the highest value is 0.594, and the average value is 0.037.

**Table 6** PROCESS regression results (full sample)

| **Variables:** | **Model 1 (ROA)** | | | | **Model 2 (TQ)** | | | |
|---|---|---|---|---|---|---|---|---|
| | *coef* | *t-value* | *p-value* | *Sign* | *coef* | *t-value* | *p-value* | *Sign* |
| constant | -0.033 | -2.158 | 0.031 | | 1.549 | 10.621 | 0.000 | |
| INS | 0.0001 | 2.222 | 0.026 | ** | 0.002 | 3.913 | 0.000 | *** |
| M_SCORE | 0.088 | 23.699 | 0.000 | *** | 0.832 | 23.308 | 0.000 | *** |
| Int_1 | 0.001 | 3.248 | 0.001 | *** | 0.008 | 4.198 | 0.000 | *** |
| LNSIZE | 0.008 | 8.375 | 0.000 | *** | 0.010 | 1.093 | 0.274 | |
| FL | -0.040 | -16.654 | 0.000 | *** | -0.064 | -2.836 | 0.005 | *** |
| SG | 0.074 | 12.283 | 0.000 | *** | 0.170 | 2.953 | 0.003 | *** |
| TIME | *YES* | | | | *YES* | | | |
| INDUS | *YES* | | | | *YES* | | | |
| R -square | 38.98% | | | | 40.01% | | | |
| F-stat | 78.389 *(***)* | | | | 81.822 *(***)* | | | |

Conditional effects of the focal predictor at values of the moderator(s):

| *M_SCORE* | *Effect* | *t* | *p-value* | *M_SCORE* | *Effect* | *t* | *p-value* |
|---|---|---|---|---|---|---|---|
| -0.355 | -0.0001 | -0.851 | 0.395 | -0.355 | -0.0003 | -0.373 | 0.709 |
| 0.000 | 0.0001 | 2.222 | 0.026** | 0.000 | 0.0024 | 3.913 | 0.000* |
| 0.355 | 0.0004 | 3.826 | 0.000** | 0.355 | 0.0051 | 5.647 | 0.000* |

***Note(s):*** *Statistical significance is designated by "*** " at 1%, "** " at 5% and "* " at 10%.*

Please refer to Table 3 for variable definition

Table 6 shows that the structure of institutional investors has a positive relationship with the performance of both models. In Model 1 (ROA), the coefficient value is 0.0001, and the p-value is 0.026 (p<0.05). In Model 2 (TQ), the coefficient value is 0.002, and the p-value is 0.000 (p<0.01). Institutional shareholder structure can enhance corporate governance mechanisms and operational capability. Thus, the hypothesis H1 is accepted since the positive relationship between institutional ownership and firm performance is at statistical significance

levels of 0.05 and 0.01, which is in line with agency theory (Jensen & Meckling, 1976, pp. 305-360) and the studies conducted by Navissi & Naiker (2006, pp. 247-256) and Nurleni et al., (2018, p. 979). The results of the analysis of the influence of the control variable (Int_1) and the analysis of the influence of managerial efficiency (M_Score) for both models show that managerial efficiency has a significant influence on the relationship between shareholder structure, institutional investors and performance. In Model 1 (ROA), the coefficient value is 0.001 and a p-value is 0.001 (P<0.01), while the coefficient value is 0.008 and the p-value is 0.000 (p<0.01) in Model 2. Obviously, managerial efficiency moderates the positive relationship between institutional ownership on firm performance and conditional effects of the focal predictor at values of the moderator, plots of the effects of institutional ownership on firm performance (Figure 2) at different levels of managerial efficiency. As in Figure 2, it shows that institutional ownership has no effect on firm performance at low managerial efficiency, institutional ownership has a level effect on firm performance at medium managerial efficiency, and institutional ownership has a significantly positive influence on firm performance at high managerial efficiency.


Figure 2 Effect of managerial efficiency on institutional ownership and firm performance relationship (full sample)

For the control variables, financial leverage (FL) and sales growth (SG) were found to have a negative and positive relationship with operating results (ROA and TQ), respectively at the statistical significance level of 0.01. Moreover, firm size (FS) was found to have a positive correlation with ROA, but no relationship with TQ at the statistical significance level of 0.01

**Additional Analysis (Additional Tests)**

To clarify the findings of Models 1 and 2, the data regarding the influence of managerial efficiency (M_Score) on the relationship between institutional shareholder structure and performance were analyzed. Model 1 and Model 2 were analyzed by year and by industry. A clear influence of the dependent variable has not been found. However, the influence of the

regulatory variable according to the firm size based on the classification of listed companies and market capitalization groups, namely Group 1: >100,000 million Baht, Group 2: 30,000 -100,000 million Baht, Group 3: 10,000-30,000 million, group 4: 3,000-10,000 million Baht, and Group 5: <3,000 million Baht were furthur examined. However, the test results only showed the influence of the regulator in Group 5: <3,000 million Baht with a total of 823 samples, representing 39.12% (823/2,104).

**Table 7** PROCESS regression analysis result (small Thai listed company)

| **variables:** | **Model 3 (ROA)** | | | | **Model 4 (TQ)** | | | |
|---|---|---|---|---|---|---|---|---|
| | *coef* | *t-value* | *p-value* | *Sign* | *coef* | *t-value* | *p-value* | *Sign* |
| constant | -0.055 | -1.244 | 0.214 | | 3.373 | 9.446 | 0.000 | |
| INS | 0.0004 | -1.597 | 0.111 | | -0.005 | -2.504 | 0.013 | ** |
| M_SCORE | 0.081 | 8.242 | 0.000 | *** | 0.605 | 7.674 | 0.000 | *** |
| Int_1 | 0.001 | 2.556 | 0.011 | ** | 0.012 | 4.404 | 0.000 | *** |
| LNSIZE | 0.004 | 1.180 | 0.238 | | -0.189 | -7.663 | 0.000 | *** |
| FL | -0.034 | -8.470 | 0.000 | *** | 0.097 | 2.995 | 0.003 | *** |
| SG | 0.051 | 5.102 | 0.000 | *** | 0.069 | 0.869 | 0.385 | |
| TIME | *YES* | | | | *YES* | | | |
| INDUS | *YES* | | | | *YES* | | | |
| R -square | 35.29% | | | | 36.11% | | | |
| F-stat | 40.205*(***)* | | | | 41.678*(***)* | | | |

Conditional effects of the focal predictor at values of the moderator(s):

| *M_SCORE* | *Effect* | *t* | *p-* | *M_SCOR* | *Effect* | *t* | *p-value* |
|---|---|---|---|---|---|---|---|
| 0.395 | -0.0001 | -0.514 | 0.607 | 0.395 | -0.0005 | -0.454 | 0.650 |
| 0.721 | 0.0002 | 1.909 | 0.057 | 0.721 | 0.0033 | 3.899 | 0.000*** |
| 1.045 | 0.0005 | 3.110 | 0.002* | 1.045 | 0.0071 | 5.776 | 0.000*** |

***Note(s):*** *Statistical significance is designated by "***" at 1%, "**" at 5% and "*" at 10%.*

Please refer to Table 3 for variable definition

After analyzing the relationship of institutional shareholder structure to the performance of listed companies with a market capitalization of less than 3,000 million Baht, the coefficient value of Model 3 (ROA) is 0.0004 and the p-value is 0.111 (p>0.05), indicating that the institutional shareholder structure has no relationship with ROA. This is consistent with the results of the study conducted by Navissi & Naiker (2006, pp. 247-256) and Daryaei & Fattahi (2020, pp. 1191-1203), who explained that institutional investor ownership did not play a role in creating a corporate governance mechanism that affects higher corporate performance in smaller firms. However, from examining the influence of the indicative variable (Int_1), it was found that managerial efficiency had a significant influence on the relationship between institutional shareholder structure and performance. In Model 3 (ROA), the coefficient value is 0.001, and the p -value is 0.011 (p<0.05).

In Model 4 (TQ), the coefficient value is -0.005, and the p-value is 0.013 (p<0.05), which indicates that the institutional shareholder structure has a negative relationship with ROA. Likewise, Bushee (1998, pp. 305-333), Kirchmaier & Grant (2006, p. 231), and Daryaei & Fattahi (2020, pp. 1191-1203) explained that institutional shareholders cannot be good corporate governance mechanisms in small companies as aforementioned. However, from examining the influence from the instigator (Int_1), it was found that managerial efficiency had a significant influence on the relationship between the institutional shareholder structure and performance. In Model 3 (TQ), the coefficient value is 0.012, and the p-value is 0.000 (p<0.01). The results of additional data analysis indicate that managerial efficiency acts as a regulating variable that can change the relationship and the relationship of the institutional shareholder structure and firm performance.

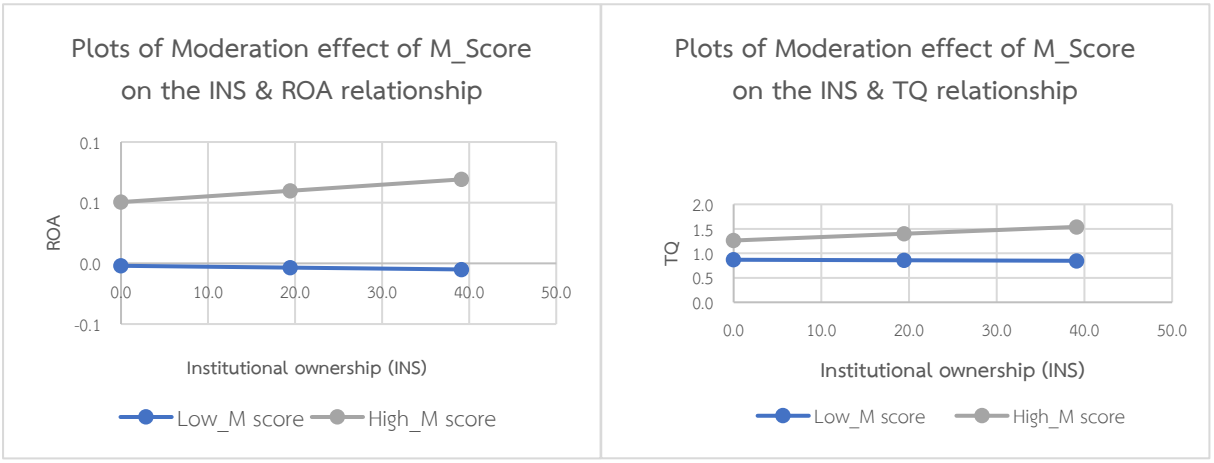


Figure 3 Effect of managerial efficiency on institutional ownership and firm performance relationship (small Thai listed company)

To examine the natures of the interactions, the effects of institutional ownership on firm performance at various score of managerial efficiency were plotted. According to Figure 3, managerial efficiency (M_score) as a moderating variable must be at a high level in order to influence the relationship between institutional ownership and higher ROA. However, managerial efficiency must be at a medium level so that institutional ownership has an effect on TQ (p<0.05). In this case, since the M_score is 1.045, which is considered as a high level, institutional ownership is assumed to have a significantly positive influence on TQ (p<0.01).

## Conclusion

In this paper, we investigate the impact of institutional ownership on firm performance using accounting and market-based measures. We find that, overall, institutional ownership has a positive effect on firm performance. Further, the authors find that the positive relationship between institutional ownership and firm performance is moderation by managerial efficiency. Next, we focus on a situation where we expect institutional ownership and managerial efficiency

to be more beneficial. Based on prior literature, we found that listed small firms that need high managerial efficiency will benefit more from the concentrated conflict generated by institutional ownership. Interestingly, a company with a high level of managerial efficiency can lead to a positive relationship between the proportion of institutional shareholding and firm performance.

## Discussion

The results of the study showed that the institutional ownership had a positive relationship with firm performance (ROA and Tobin's Q) as hypothesized by revealing that when the company shares are held by institutional investors, firm performance would increase, which reflects a good corporate governance mechanism in terms of monitoring the management as a policy maker of the company. As a result, a large number of shares are held by institutional investors can lead to advantages (Navissi & Naiker, pp. 247-256) and increase firm performance (Nurleni et al., 2018, p. 979). The results of the managerial efficiency (M_Score) influence test showed that managerial efficiency had a positive influence on firm performance (ROA and Tobin's Q) that are affected by the structure of institutional investors. In other words, shares held by institutional investors, together with efficient management are important factors affecting firm performance (Simamora, 2023, p. 789).

The study examined insights of the managerial efficiency whether it affects firm performance influenced by institutional ownership. The study was conducted based on firm size and the results showed that large companies did not find the influence of managerial efficiency as a correlation variable. However, the influence of managerial efficiency in small firms was found to be different since the number of shares held by institutional investors did not affect firm performance. Interestingly, a company with a high level of managerial efficiency can lead to a positive correlation between the proportion of shareholding and firm performance. This indicates that institutional investors in small companies with a good corporate governance mechanism can lead to efficient management. For Tobin's Q, it was found that managerial efficiency had an influence on the relationship of institutional shareholder structure towards firm performance. It can be explained that shares held by institutional investors can negatively affect firm performance. In other words, the concentration of institutional shareholders can lead to agency problems and conflicts of interest between major shareholders and minor shareholders in small companies since the ones with power might easily gain benefits by taking advantages of the decisions made by the board of directors (Daryaei & Fattahi, 2020, pp. 1191–1203), or not objecting when the company makes unfair decisions (Bushee, 1998, pp. 305–333. However, high managerial efficiency is considered as a sign that the institutional investors are not seeking self-interests.

## Recommendations

This study provides new evidence of managerial efficiency as an indicator to examine corporate governance mechanisms. Shareholder structure should be considered in conjunction with managerial efficiency in order to examine managerial efficiency and to reflect whether institutional shareholding structure can be deemed as a corporate governance mechanism.

The limitations of this study are that the structure of institutional investor shareholding was not analyzed based on the proportion of concentration groups according to Bushee (1998, pp. 305-333) and Daryaei & Fattahi (2020, pp. 1191-1203). Moreover, the financial crisis, such as the COVID-19 pandemic, was not taken into account in order to group the types of the sample. Thus, future studies should fill in remaining gaps and conduct a study on managerial ownership and foreign ownership since they have been found to represent good corporate governance mechanisms.

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