# The Moderating Influence of Ownership Structure on the Association between Financial Reporting Quality and Investment Efficiency: Evidence from Egypt

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## Abstract

The key purpose of this study is to investigate the effect of Financial Reporting Quality (FRQ) on Investment Efficiency (IE) in Egypt. In addition, this research studies the moderating effect of various structures of ownership (concentration and managerial ownership) on the association between FRQ and IE. The structure of ownership is an essential internal corporate governance mechanism that could solve agency issues and reduce information asymmetry Chen (2013) and Fama and Jensen (1983). This study used a sample of 53 companies that were registered on the Egyptian stock exchange (EGX) market between 2015 and 2018. According to the findings, FRQ and IE have a substantial positive association. Second, organizations with significant managerial ownership show a stronger correlation between FRQ and IE. Finally, the link between FRQ and IE is not being moderated by concentrated ownership. The study's findings are consistent with the idea that managerial ownership could decrease agency problems and information

asymmetry. Therefore, providing managers with stock ownership as compensation will be quite advantageous.

**Keywords:** Financial Reporting Quality, Investment Efficiency, Managerial Ownership, Concentrated ownership.

## 1. Introduction

One of the managers' most crucial and critical decisions is investment decisions. Company investment is a vital issue because of its significant impact on firm value. The investment decisions are efficient when managers finance and execute only projects that have positive net present value (NPV). Therefore, the investment decision is only determined by firms' investment opportunities (Tobin, 1969). However, because of market imperfections like information asymmetry and agency costs, companies may suffer suboptimal investment decisions. Overinvestment and underinvestment are two categories of inefficient investments. Overinvestment occurs when managers follow their own interests and work for their own benefit, which might result in the adoption of negative NPV projects. In contrast, underinvestment occurs when firms face financial shortcomings that prevent it from implementing projects that have positive NPV (Myers and Majluf, 1984).

The impact of FRQ on IE has been the subject of recent accounting research. Enhancing business investment decisions to enable optimal capital allocation is one of FRQ's goals. Higher

FRQ also allows managers to make better investment decisions by giving internal decision-makers more accurate accounting data, which lowers information asymmetry and boosts IE Chen et al. (2011) and Bushman and Smith (2001). Prior literature has studied several factors, including audit quality, auditor specialization, debt maturity, board of directors' characteristics, and IFRS adoption, for their tendency to moderate the relationship between FRQ and IE.

The majority of earlier studies on the connection between FRQ and IE were carried out in developed nations. However, agency issues and information asymmetry are more highlighted in developing markets because of insufficient investor protection and a largely unregulated transparency policy. Therefore, Studying the effect of FRQ on IE in Egypt is the primary goal of the current research. Additionally, the moderating impact of different ownership structures (such as management ownership and ownership concentration) on the link between FRQ and IE is investigated in this study. According to Chen (2013) and Fama and Jensen (1983), the ownership structure is a crucial internal corporate governance tool that could address agency issues and information asymmetry. According to the author, this study is the first to look into that link in Egypt.

This research contributes to the existing literature on the association between FRQ and IE in multiple ways. First, limited literature presents the association between FRQ and IE for firms

functioning in developing countries such as Egypt. Secondly, the Egyptian market is less mature and has a weaker institutional, regulatory, and governance structure, making it interesting to consider the influence of ownership type in such a context. Third, although the presence of massive literature on the relation between FRQ and IE, and the association between ownership structure and IE; however, the interactive association among FRQ, ownership structure, and IE has not yet been explored. This will trigger the main contribution of the current research to explore whether ownership concentration and managerial ownership have a vital role in the FRQ-IE relation and whether they moderate the relationship.

The following sections of this study are organized as follows: Section 2 covers a review of related literature and the formulation of hypotheses. The variables measured, employed research models, sample selection, and data collection are all reported in Section 3, along with the research design. Section 4 then shows the analysis of data and a discussion of the results, followed by the study's conclusion in Section 5.

## 2. Review of literature and Formulation of Hypotheses

### 2.1 FRQ and IE.

The success of corporate investments is a major concern in corporate finance. According to Biddle et al. (2009), investment efficiency is the amount of money invested by organizations in projects that, assuming no market friction, have a positive NPV.

In a perfect capital market with no market friction, a firm's investment strategy is exclusively influenced by its investment opportunity. However, due to information asymmetry and agency problems, corporations might not always choose the optimal investments in reality.

FRQ is essential for accurately representing an organization's financial position and financial performance to all stakeholders, including present and future investors, lending institutions, governmental entities, and tax authorities. FRQ improves the efficiency of capital allocation. It aids in evaluating investment prospects and the optimum project selection for managers and investors Rad et al. (2016) and Li & Wang (2010). Consequently, several studies investigated the association between FRQ and IE in various countries.

Higher FRQ in the US, according to Biddle et al. (2009), makes firms' profitable projects more transparent to outside capital providers, which lessens information asymmetry between companies and those capital providers. Higher FRQ also lessens the problem of adverse selection. In addition, managerial motivations to make investments with no or low value are restricted by higher FRQ such as investing in expanding personal empire because of surplus cash flows. Because of this, businesses with higher FRQ stray from planned investment levels less and are less sensitive to macroeconomic changes.

The influence of the FRQ and audit quality on the IE in Pakistan was studied by Shahzad et al. 2019. The results showed that a higher FRQ reduces the issue of excessive and inadequate investment. In contrast, Assad and Alshurideh (2020) investigated how FRQ and audit quality affected IE in the Gulf Cooperation Council (GCC) economies. The results of the study show FRQ and IE have a significant positive association. Results, however, show that audit quality neither directly nor indirectly improves IE. Additionally, Shahzad et al. (2018) studied the effect of FRQ and family ownership as monitoring tools on IE in Pakistan. According to the findings, higher FRQ and family ownership are linked to higher IE, and higher FRQ helps to solve the over- and underinvestment issue. Furthermore, the results observed that family ownership played a significant role in increasing IE.

Elaouda and Jarbouib (2017) studied how the quality of accounting information affected the IE for Tunisian businesses with specialized auditors. The outcome indicates that the overinvestment problem seems to be lessened by the quality of accounting information. Similar to this, it has been demonstrated that auditor specialization considerably raises IE while lowering underinvestment. Additionally, in companies where the auditor is an industry expert, the quality of the accounting information is linked to IE. Additionally, Houcine (2017) looked at the economic effects of FRQ in the context of Tunisia. The findings

demonstrate that FRQ fails to lower the costs related to management control and overinvestment issues while increasing information asymmetry and underinvestment.

Gomariz and Ballesta (2014) looked at how debt maturity and FRQ affected Spanish-listed firms' IE. According to the findings, increased FRQ and use of short-term debt (debt with a shorter maturity) boost IE. FRQ, however, contributed to lowering overinvestment when the study made a distinction between overinvestment and underinvestment. Lower debt maturity, on the other hand, is a mechanism that favorably influences IE in both cases.

Houcine et al. (2021) examined the potential effects of FRQ, IFRS, and corporate governance on the IE of French-registered firms. FRQ decreases overinvestment but has little impact on underinvestment, according to the results. The findings also show that the association between FRQ and IE is strengthened by stronger corporate governance and the application of IFRS. Furthermore, Bzeouich (2019) examined how IE and earnings management are related in the French setting. The study also investigated the moderating influence of the characteristic of the board of directors on this relationship. The study finds that board attributes like size, independence, and gender diversity improve managerial supervision and are essential governance tools for ensuring the success of corporate investment. Additionally, the

results demonstrate that when firm governance is strong, earnings quality influences managers' decisions to make the proper investments more.

In 2011, Chen et al. studied the association between FRQ and IE of private companies in emerging regions. The study's conclusions supported the idea that by facilitating better capital allocation, FRQ is critical in enhancing enterprises' investment decisions. Furthermore, the effects of environmental, social, and governance (ESG) disclosure and FRQ on IE were investigated by Ellili (2022). The results show a strong and positive relationship between ESG disclosure, FRQ, and IE, proving that following best practices for ESG disclosure boosts company transparency, reduces information asymmetry, and enhances IE. Consequently, the first hypothesis is:

H1: There is a significant positive relationship between FRQ and IE.

## 2.2Ownership Structure and IE.

According to agency theory, separating ownership from control would result in agency issues. The Agency problem can be either a principal-agent problem in which there is a conflict of interests between owners and managers Jensen and Meckling (1976) or a principal-principal problem in which there are conflicts of interest between the controlling and noncontrolling shareholders Shleifer and Vishny (1997). The ownership structure is an

essential internal corporate governance characteristic that can directly affect the agency problem. The ownership structure is divided into managerial, foreign, institutional, and ownership concentration.

Wahla et al. (2012) defined managerial ownership as the total portion of shares owned by the managers, board of directors, and insiders. When the managers have partial ownership of the firm, that causes interest alignment between managers and other shareholders, thus reducing information asymmetry and, as a result, will mitigate the problems of moral hazard and adverse selection. Eventually, it will enhance IE because the managers undertake investments with optimal returns Bimo et al. (2021). Several studies found a positive relationship between managerial ownership and IE, such as Vijayakumaran (2021), Anelia and Prasetyo (2020), Azhar et al. (2019), and Chen et al. (2017).

Ownership structure can be either concentrated or dispersed ownership. Ownership concentration is when a single owner owns and controls most of the firm's shares usually adopted in emerging markets such as China. While dispersed (wide) ownership is when many shareholders own and control small shares and is usually adopted in advanced nations such as the UK and US. Ownership concentration is when there are ten percent or more shares owned by a shareholder, also known as block holders Khan et al. (2013) and Ehikioya (2009). Previous studies showed mixed results

regarding ownership concentration. For instance, Azhar et al. (2019) and Chen et al. (2017) both demonstrate a negative correlation between ownership concentration and IE. In contrast, ownership concentration did not significantly affect IE, according to Anelia and Prasetyo (2020).

The prior studies were an inspiration to study the moderating consequence of ownership structure (managerial and concentrated ownership) on the association between FRQ and IE. Therefore, the second and third hypotheses are:

**H2:** The positive relationship between FRQ and IE is more stronger for firms with high degree of managerial ownership.

**H3:** The positive relationship between FRQ and IE is more stronger for firms with low degree of ownership concentration.

## 3. Research design

### 3.1Data gathering and sample selection.

This study used a sample of registered firms in the EGX during 2015–2018. The researcher did not extend the study period after 2018 because of the Covid-19 pandemic. During this disaster, the investment decisions were subject to external and global factors other than FRQ and ownership structure. Banks, insurance, and other financial companies are excluded as they apply special regulations. In addition, companies with incomplete data during the selected period are excluded, and only firms with complete

data are employed in the analysis. After applying the considerations mentioned earlier, the final sample comprises of 53 companies and 212 observations over this period. The distribution of observations by industry is shown in Table (1).

The information was gathered via annual reports of the companies, particularly the board of directors BOD annual reports, which were obtained from Egypt for Information Dissemination Company EGID in order to gather details about ownership structures. Additionally, the published financial statements of these organizations are the primary source of financial and accounting data.

**Table 1: Sample Description by the Industry Group**

| **Industry Group** | **Number of observations** |
|---|---|
| Basic Resources | 20 |
| Industrial Goods and Services and Automobiles | 32 |
| Food and Beverage | 40 |
| Real Estate | 40 |
| Chemicals | 20 |
| Personal and Household Products | 16 |
| Construction and Materials | 28 |
| Leisure and Travel | 16 |
| **Total** | **212** |

## 3.2Description and Measurement of the Research Variables

The research variables are divided into dependent, independent, moderator, and control variables. Table (2)

summarizes all the research variables and how they are computed.

**Table 2: Definitions and Measurements of Variables**

| Variable | Acronym | Measure |
|---|---|---|
| **Dependent Variable** | | |
| Investment Efficiency | $IE_{it}$ | measured by calculating the absolute values of the residuals of the investment model established by Biddle et al. (2009), it can be applied as an investment inefficiency firm-specific proxy: $$IE_{i,t} = \alpha + \alpha_1 \, Revenue\ Growth_{i,t-1} + \varepsilon_{i,t}$$ where $IE_{i,t}$ represents the amount of investment in plant, property, and equipment over lagged total assets. Revenue $Growth_{i,t-1}$ the rate of change in a company's revenues from year t- 2 to year t-1. For each industry and year, the model is computed cross-sectionally. The absolute value in this model detects all changes associated with business investment decisions. An underinvestment is shown by a negative residual, whereas an overinvestment is shown by a positive residual. The absolute value is then multiplied by -1, so a larger value denotes a more efficient investment. |
| **Independent Variables** | | |
| Financial reporting quality | *FRQ* | The modified Jones model by Dechow *et al.* (1995) is used as an indicator for FRQ. $TACC_{it} / A_{it-1} = \beta 1\ (1 / A_{it-1}) + \beta 2\ (\Delta REV_{it} - \Delta AR_{it} / A_{it-1}) + \beta 3\ (PPE_{it} / A_{it-1}) + e_{it}$ where TACCit is the firm i's total accruals for the year t. It is computed as the variance between net income after taxes and operating cash flows; Ait-1 is the total amount of assets owned by firm i in year t-1; REV is the change in revenues from the prior year (REVt - REVt-1); AR is the change in net accounts receivables from the prior year (ARt- ARt-1); PPEit is the gross value of property, plant, and equipment owned by firm i in year t. Finally, FRQ is calculated by multiplying the absolute value of discretionary accruals by -1, so a higher FRQ corresponds to larger discretionary accruals, and vice versa. |
| **Moderator Variables** | | |
| Managerial ownership | $MOWN_{it}$ | % of shares held by corporate officers and executive directors at the end of year (t-1) |
| Concentrated ownership | *COWN* | % of shares outstanding held by major shareholders (own 5% or more of the firm's stock) at the end of year (t-1) |
| **Control Variables** | | |
| Firm size | $SIZE_{it}$ | Log of total assets at the end of year (t-1) |
| Leverage | $LEV_{it}$ | The ratio of total debt to total equity in the capital structure of the firm at the end of year (t-1) |
| Return on Equity | $ROE_{it}$ | The ratio of net income after tax to total equity at the end of year (t-1) |
| Cash flow from operation | $CFO_{it}$ | The total of operating cash flows at the end of year (t-1) |

### 3.3Research Models

To test the validity of the research hypotheses, multiple regression analysis is applied using the Statistical Packages for Social Sciences SPSS (version 22). The first model focuses on the effect of FRQ on IE. **Model 1** is used to test H1:

$$IE_{it} = \alpha + \beta_1 FRQ_{it-1} + \beta_2 SIZE_{it-1} + \beta_3 LEV_{it-1} + \beta_4 ROE_{it-1} + \beta_5 CFO_{it-1} + \varepsilon_{it}$$

The second model tests the moderation consequence of MOWN on the association between FRQ and IE. **Model 2** is used to test H2:

$$IE_{it} = \alpha + \beta_1 FRQ_{it-1} + \beta_2 MOWN_{it-1} + \beta_3 FRQ_{it-1} * MOWN_{it-1} + \beta_4 SIZE_{it-1} + \beta_5 LEV_{it-1} + \beta_6 ROE_{it-1} + \beta_7 CFO_{it-1} + \varepsilon_{it}$$

The third model tests the moderation result of COWN on the association between FRQ and IE. **Model 3** is used to test H3:

$$IE_{it} = \alpha + \beta_1 FRQ_{it-1} + \beta_2 COWN_{it-1} + \beta_3 FRQ_{it-1} * COWN_{it-1} + \beta_4 SIZE_{it-1} + \beta_5 LEV_{it-1} + \beta_6 ROE_{it-1} + \beta_7 CFO_{it-1} + \varepsilon_{it}$$

## 4. Data Analysis and Discussion of Results

### 4.1Descriptive Statistics

The results of the descriptive analysis are represented in Table (3). On average, the descriptive statistics show that investment inefficiency is very high, representing 57% of total assets. The mean value of FRQ is -29.1%, indicating that the level of earning

management is extremely high. Regarding the ownership structure, the descriptive result shows that ownership concentration has a mean of 62.19% with a standard deviation of 19.8%, which indicates that the ownership structure is highly concentered. In contrast, the mean value of MOWN is 23.27% with a standard deviation of 25.83%, which suggests that managerial ownership is extremely low in the sample. All variables are normally distributed because the skewness values are between -3 and 3, and the kurtosis values are between -10 and 10.

**Table (3): Descriptive Statistics**

| | N | Mean | Std. Deviation | Minimum | Maximum | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| **Investment inefficiency** | 212 | -0.56915 | 0.48563 | -3.17484 | -0.01229 | -1.69917 | 4.58166 |
| **FRQ** | 212 | -0.29059 | 0.32381 | -1.94833 | -0.01832 | -2.66474 | 8.12555 |
| **COWN** | 212 | 0.62192 | 0.19985 | 0.104000 | 1.000000 | -0.22216 | -0.35176 |
| **MOWN** | 212 | 0.23279 | 0.258392 | 0.00000 | 0.779170 | 0.64286 | -1.05385 |
| **ROE** | 212 | 0.14091 | 0.17346 | -0.21936 | 0.79497 | 1.03743 | 1.65608 |
| **LEV** | 212 | 0.52034 | 0.76751 | -0.86752 | 3.98000 | 2.22530 | 5.31916 |
| **CFO** | 212 | 2.99019 | 5.63372 | -4.03093 | 26.0881 | 2.20303 | 4.71862 |
| **SIZE** | 212 | 9.14201 | 0.89039 | 5.88636 | 10.66526 | -1.24268 | 2.30771 |

## 4.2Pearson Correlation Test

The degree and direction of the linear relationship between two variables are assessed using the Pearson correlation test. The assumption of multicollinearity between independent variables, which is regarded as a prerequisite for regression analysis, is also

tested. The results of Pearson's Correlation with a two-tailed significance test are presented in Table (4). The results display a significant positive correlation between FRQ and IE. In addition, there is no correlation between COWN and IE. However, the findings indicate that MOWN and IE have a positive correlation. Further, ROE and firm size are significantly and positively correlated with IE. Table (4) also indicates that the independent variables with the strongest correlation is (r= -0.369) between ROE and LEV. Thus, there are no multicollinearity problems among the independent variables.

**Table (4): Matrix of Pearson's Correlation**

| | IE | FRQ | COWN | MOWN | ROE | LEV | CFO | SIZE |
|---|---|---|---|---|---|---|---|---|
| **IE** | 1.000 | | | | | | | |
| **FRQ** | **0.136*** | 1.000 | | | | | | |
| | 0.048 | | | | | | | |
| **COWN** | -0.001 | -0.126 | 1.000 | | | | | |
| | 0.990 | 0.067 | | | | | | |
| **MOWN** | 0.052 | 0.055 | -0.062 | 1.000 | | | | |
| | 0.453 | 0.427 | 0.368 | | | | | |
| **ROE** | **0.142*** | **0.165*** | 0.122 | -0.031 | 1.000 | | | |
| | 0.039 | 0.016 | 0.076 | 0.651 | | | | |
| **LEV** | -0.009 | **-0.338**** | 0.039 | **0.151*** | **-0.369**** | 1.000 | | |
| | 0.902 | 0.000 | 0.570 | 0.028 | 0.000 | | | |
| **CFO** | 0.082 | 0.122 | **0.200**** | 0.121 | **0.164*** | -0.011 | 1.000 | |
| | 0.236 | 0.076 | 0.003 | 0.078 | 0.017 | 0.870 | | |
| **SIZE** | **0.316**** | 0.037 | 0.060 | -0.065 | -0.028 | **0.188**** | **0.347**** | 1.000 |
| | 0.000 | 0.590 | 0.383 | 0.347 | 0.690 | 0.006 | 0.000 | |
| * significant at the 0.05 level. | | | | | | | | |
| ** significant at the 0.01 level. | | | | | | | | |

## 4.3Regression Analysis

Multiple regression analysis is applied to test the research hypotheses. In this research, there are three models. The first model tests the relationship between FRQ and IE. The second model examines the moderating impact of MOWN on the association between FRQ and IE. The third model examines the moderating consequence of COWN on the association between FRQ and IE.

### 4.3.1 Testing the impact of FRQ on IE

The results of Model 1 are presented in Table (5). As shown in Table (5), Panel A, the F-test (8.322) shows that the model is significant. The $R^2$ demonstrates that all independent variables together account for 17.1% of the variance in the IE. According to the results in Panel B of Table (5), the coefficient of FRQ is (0.170) and statistically significant at 1% level. The findings show that businesses with higher FRQ levels make better investment decisions. Hence, the first hypothesis H1 is accepted. This result is consistent with Ellili (2022), Ullah et al. (2020), Chen et al. (2011), Biddle et al. (2009), and Gomariz and Ballesta (2014). A considerable positive relation between ROE, firm size, and IE is also demonstrated by the results. Unexpectedly, the regression results show an insignificant relationship between leverage, CFO, and IE. The outcome is in

line with Ullah et al. (2020), who discover an insignificant relation between LEV, CFO, and IE.

**Table (5): The Impact of FRQ on IE**

| **Panel A: Model** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **R** | **$R^2$** | **Adjusted $R^2$** | **Std. Error** | **F-test** | **Sig.** |
| 1 | 0.413 | 0.171 | 0.150 | 0.40759 | 8.322 | 0.000 |
| **Panel B: Coefficients** | | | | | | |
| **Independent Variables** | **Unstandardized** | | **Standardized** | **t** | **Sig.** | |
| | **B** | **Std. Error** | **Beta** | | | |
| (Constant) | -1.855 | 0.264 | | -7.033 | 0.000 | |
| FRQ | 0.103 | 0.042 | 0.170 | 2.468 | **0.014**** | |
| ROE | 0.297 | 0.120 | 0.173 | 2.467 | **0.014**** | |
| LEV | 0.006 | 0.024 | 0.018 | 0.238 | 0.812 | |
| CFO | -4.401 | 0.000 | -0.091 | -1.298 | 0.196 | |
| SIZE | 0.147 | 0.029 | 0.352 | 5.027 | **0.000**** | |
| Dependent Variable: IE | | | | | | |

### 4.3.2 Testing the moderating effect of MOWN on the association between FRQ and IE

The second hypothesis H2 is testing the impact of FRQ on the IE, considering the level of managerial ownership. The second model focuses on the interaction consequences of FRQ and MOWN (FRQ*MOWN) on the IE. The regression results of H2 are displayed in Table (6). As shown in Table (6), Panel A, the F-test (22.887) shows the model is significant. The $R^2$ demonstrates that all independent factors account for 40.1% of the variation in the IE. Model 2 contains all the variables that were entered in Model 1, in addition to the interaction term (FRQ*MOWN). The change of R Square in Model 2 is due to the contribution of the interaction effect. The R square change value is 0.23. This means that FRQ*MOWN explains an *additional* 23% of the variance in IE, even when the effects of other independent variables are statistically controlled for.

In Table (6), Panel B, Model 2, the coefficient of FRQ*MOWN (0.804) is positive and statistically significant at 0.01 level. This means that the positive association between FRQ and IE is more pronounced for firms with a greater degree of MOWN, therefore, H2 is supported. The result is consistent with Anelia and Prasetyo (2020) and Chen et al. (2017). The control variables show a positive association between ROE, Size, and IE.

The results also indicate an insignificant relationship between LEV, CFO, and IE.

**Table (6): FRQ, MOWN, and IE**

| **Panel A: Model** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **R** | **$R^2$** | **Adjusted $R^2$** | **Std. Error** | **F-test** | **Sig.** |
| 2 | 0.633 | 0.401 | 0.384 | 0.37562 | 22.887 | 0.000 |
| **Panel B: Coefficients** | | | | | | |
| **Independent Variables** | **Unstandardized** | | **Standardized** | **t** | **Sig.** | |
| | **B** | **Std. Error** | **Beta** | | | |
| (Constant) | 1.204 | 0.242 | | 4.966 | 0.000** | |
| FRQ | 0.145 | 0.047 | 0.238 | 3.062 | **0.003**** | |
| MOWN | 0.009 | 0.001 | 0.524 | 6.510 | **0.000**** | |
| FRQ*MOWN | 0.016 | 0.002 | 0.804 | 9.761 | **0.000**** | |
| ROE | 0.291 | 0.120 | 0.170 | 2.429 | **0.016**** | |
| LEV | -0.002 | 0.017 | -0.008 | -0.126 | 0.899 | |
| CFO | -4.59 | 0.000 | -0.094 | -1.340 | 0.182 | |
| SIZE | 0.071 | 0.027 | 0.158 | 2.681 | **0.008**** | |
| Dependent Variable: IE | | | | | | |

### 4.3.3 Testing the moderating impact of COWN on the association between FRQ and IE.

The third hypothesis H3 is testing the impact of FRQ on the IE, considering the level of concentrated ownership. The third model focuses on the interaction consequence of FRQ and

COWN (FRQ*COWN) on the IE. The regression results of H3 are presented in Table (7). As shown in Table (7), Panel A, the F-test (6.192) shows that the model is significant. The $R^2$ demonstrates that all independent variables together account for 17.8% of the variation in the IE. Model 3 includes all the variables that were entered in Model 1, in addition to the interaction term (FRQ*COWN). The change of R Square in Model 3 is minimal compared to Model 2. In Table (7), Panel B, Model 3, the results show an insignificant association between FRQ*COWN and IE. This means that the positive association between FRQ and IE is not affected by the degree of COWN, therefore H3 is rejected. The result is consistent with Anelia and Prasetyo (2020) and inconsistent with Chen et al. (2017), who report a negative association between COWN and IE. The outcomes also display a positive association between ROE, firm size, and IE. The results indicate an insignificant relationship between LEV, CFO, and IE.

**Table (7): FRQ, COWN, and IE**

| **Panel A: Model** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **R** | **$R^2$** | **Adjusted $R^2$** | **Std. Error** | **F-test** | **Sig.** |
| 3 | 0.422 | 0.178 | 0.149 | 0.4078 | 6.192 | 0.000 |
| **Panel B: Coefficients** | | | | | | |
| **Independent Variables** | **Unstandardized** | | **Standardized** | **t** | **Sig.** | |
| | **B** | **Std. Error** | **Beta** | | | |
| (Constant) | -1.825 | 0.277 | | -6.586 | 0.000 | |
| FRQ | 0.085 | 0.045 | 0.140 | 1.909 | **0.058*** | |
| COWN | 0.031 | 0.148 | 0.014 | 0.209 | 0.835 | |
| FRQ*COWN | 0.036 | 0.027 | 0.104 | 1.332 | 0.184 | |
| ROE | 0.248 | 0.127 | 0.144 | 1.955 | **0.052*** | |
| LEV | 0.012 | 0.024 | 0.038 | 0.497 | 0.619 | |
| CFO | -4.188 | 0.000 | -0.086 | -1.212 | 0.227 | |
| SIZE | 0.142 | 0.029 | 0.341 | 4.844 | **0.000**** | |
| Dependent Variable: IE | | | | | | |

## 5. Conclusion

The key objective of the current study is to investigate the influence of FRQ on IE in Egypt. In addition, this research studies the moderating consequence of various ownership structures (MOWN and COWN) on the association between FRQ and IE. This research used a sample of 53 companies in the EGX

during 2015–2018. The results indicate that: first, there is a significant positive association between FRQ and IE. Second, the association between FRQ and IE is more pronounced for firms with high MOWN. Finally, COWN is not moderating the association between FRQ and IE. The research findings support that MOWN could lessen agency problems and information asymmetry. Therefore, giving managers stock ownership as remuneration will be very advantageous and may be used to lower agency costs.

This study provides two policy recommendations. Firstly, a firm can employ MOWN to enhance FRQ and minimize the problems of over and under-investment. Secondly, firms should increase equity ownership to managers as compensation to mitigate agency conflicts. These results can be relevant for academic research, policymakers, and managers. This study is relevant for academics, regulators, and policymakers by indicating the importance of the role of managerial ownership and FRQ in reducing agency costs and thereby enhancing companies' investment efficiency.

Future studies have the potential to consider several variables that may impact investment choices in the Egyptian setting, such as dividend policy, life-cycle stage, and working capital management. In addition, future studies should also consider how FRQ and IE relate to financial institutions.

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