

# THE IMPACT OF CORPORATE GOVERNANCE ON CORPORATE FINANCIAL PERFORMANCE: CASES FROM LISTED FIRMS IN TURKEY

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## Abstract

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This paper examines the effect of corporate governance on corporate financial performance in Turkish firms from 2008 to 2018. Therefore, the objective of the paper is still highly contentious (Ahmed, Alabdullah, Thottoli, & Maryanti, 2020). The generalised method of moments (GMM) technique is employed. The findings show that the board independence ratio is significantly positively related to all performance measures in both the short-run and long-run periods. Ownership structure depicts a significant positive link between return on assets (ROA) and Tobin's Q (significantly negative to return on equity — ROE) in the short run. In the long run, ownership structure and Chief Executive Officer (CEO) duality significantly foster ROE and ROA, but significantly lower Tobin's Q. CEO duality is significantly negatively related with ROA and Tobin's Q, although insignificant, but significantly positively linked with ROE in the short run. Audit quality develops a significant negative connection with ROA in the short run although significantly positive with both ROE and Tobin's Q. In the long run, audit quality significantly fosters all the financial performance proxies. Corporate governance rating is significantly positively linked with ROA, although just positive with ROE in the short run only, but is significantly negatively related with Tobin's Q in both periods.

**Keywords:** Audit Quality, CEO Duality, Board Independence Ratio, Corporate Governance Rating, Ownership Structure, Return on Assets (ROA), Return on Equity (ROE), Tobin's Q

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## 1. INTRODUCTION

Globalization has brought about economic, political, and social changes at all levels of society. In this context, this change occurring in society also causes changes in the structure of businesses (Ganda, 2022). On the other hand, rising channels of communication, emerging transport technology developing financial markets and so on situations brought a new phase to the businesses. Thus, corporate governance has become an important concept that businesses emphasize (Mahrani & Soewarno, 2018).

Therefore, within corporate settings, the need for corporate governance is apparent. However, the notion that corporate governance results in better performance of the company is still a highly debated issue. For instance, agency challenges and potential opportunistic conduct of firm management teams negatively affect the effectual implementation of corporate governance. The principal contention matter is that owners have significantly minimised control of the company which gives managers a favourable advantage in decision-making and some of the decisions are not in line with owners' interests (Ganda, 2021). On that note, there is a great need to

adopt corporate governance to lessen shareholder and manager conflicts. Saidat Silva, and Seaman (2019) highlight that a manager should be monitored to avoid losses within the company. Al-ahdal, Alsamhi, Tabash, and Farhan (2020) also echo that when another party is handling other people's finances there is a tendency for the former to be quite negligent.

Past experiences through the financial crisis of 2008, Adelpia, Parmalat, World COM, and Lehman Brothers amongst others, have raised the interest of decision-makers, researchers, investor groups, and regulatory organisations to investigate the extent of corporate governance initiatives and company financial performance. From a generalised perspective, corporate governance is examined on reporting principles along with transparency, board of director attributes, compliance, shareholder, and stakeholder associations, plus ownership and control configurations (Sattar, Javeed, & Latief, 2020; Khanh & Khuong, 2018). There is supporting evidence that sound corporate governance initiatives empower firm financial performance (Chou, Hamill, & Yeh, 2018; Fan, Jiang, Kao, & Liu, 2020). Moreover, the system of parts of corporate governance reduces agency costs, that is, minimising firm market value losses that inevitably leads to possible conflicts between firm managers and investors, and/or shareholders (Pham & Pham, 2020).

In both Turkey as well as in the world, major crises and bankruptcies occurred have caused companies to put more emphasis on corporate governance. In this vein, organisations' scandals and recessions associated with these scandals stimulated courses of action which attempt to exterminate shortcomings in firm management (Mubeen, Han, Abbas, & Hussain, 2020; Chen, Hsu, Huang, & Yang, 2013). Hence, in Turkey, the Istanbul Stock Exchange (ISE) launched the Corporate Governance Index in 2005 to enhance widened integration of corporate governance features and standards (Tuzcu & Fikirkoca, 2005). Furthermore, by ascertaining the decision-making regimens and procedures in the firm, corporate governance establishes a strong foundation upon which the company's goals and policies are developed (Ajili & Bouri 2018; Danoshana & Ravivathani, 2019). In this sound foundation, corporate governance specifies information regarding how the firm draws capital (both monetary and human), the way the organisation carries out a potent operational strategy, and how the long-term economic value of the company can be sustained for the benefit of stockholders. This is the case when researching the impact of corporate governance on financial performance in the academic environment (Brown & Caylor, 2004). However, studies have not achieved a typical outcome in general. Likewise, although different theories about corporate governance firm performance have been developed, a common conclusion cannot be reached in these theories.

Therefore, the main objective of the paper is to investigate how corporate governance affects firm financial performance in Turkish listed entities. The first sub-objective is to investigate how corporate governance affects return on equity (ROE) in Turkish listed companies. The second sub-objective is to examine how corporate governance influences return on assets (ROA) in Turkish listed companies. The third sub-objective is to assess how corporate governance influences Tobin's Q in Turkish listed companies. These objectives are helpful since

existing literature has demonstrated that the influence of corporate governance on corporate financial performance in Turkey has remained inadequate and scant.

Moreover, there is generally no consensus on the impacts of corporate governance that can be ascertained from empirical global studies. In the same vein, this paper aims to bridge the gap in empirical research by exploring the link between corporate governance and firm financial performance, especially in the Turkish setting. In addition, this paper disintegrates financial performance into two distinct classifications (accounting-based indicators — ROA and ROE as well as market-based based proxy — Tobin's Q) to investigate how corporate governance influences firm financial performance which, to the best knowledge of the author, is the first study of this kind conducted in Turkish corporate context. In that context, this research permits comparisons to be implemented by evaluating how both accounting-based and market-based financial performance proxies are affected by corporate governance. Therefore, this form of information is necessary for policymakers along with corporate leaders to determine effective decisions in planning, organising, leading, and controlling.

In addition, this research comprises other important attributes. The methodological procedure permits the analysis of findings from both short-run and long-run perspectives vital for management decision-making. Hence, the paper suggests imperative hints for the management team of organisations about the controversial association involving corporate governance and corporate financial performance. It is evident that there has been numerous research on the linkage between corporate governance and financial performance (Eshitemi & Omwenga, 2017; Jamal & Mahmood, 2018; Wijaya, Welson, & Murhadi, 2020; Al-ahdal et al., 2020), however, these surveys have not generated conclusive outcomes. This paper adopts audit quality, CEO duality, board independence ratio, corporate governance rating, and ownership structure to demonstrate new perspectives on earlier research by also employing diverse forms of financial performance measures.

The remainder of this research is arranged as follows. Section 2 of this study presents the literature review of the topic. In Section 3, the research methodology of the paper is discussed. The major findings are discussed in Section 4. Section 5 presents the discussion and implications of the study. Lastly, Section 6 concludes the paper.

## 2. LITERATURE REVIEW

This section outlines the theoretical background and empirical research on the effect of corporate governance on corporate financial performance.

### 2.1. Theoretical background: Agency theory

The agency theory describes the challenges that arise owing to the separation of ownership and managers within the company set-up and concentrates on introducing measures to mitigate this challenge (Jensen & Meckling, 1976). Thus, the theory enhances the adoption of different governance approaches to manage agents' decisions in jointly held organisations. In contemporary

companies (attributed with scattered ownership), ownership rests with stockholders and this party designates authority to managers (agents) to manage and operate the organisation on these shareholders' behalf (Singh, Tabassum, Darwish, & Batsakis, 2018; Rahman & Islam, 2019). The principal issue dwells on whether the agents are running the business for the owners' interests or self-interests. As such, managers are reluctant to report information that may spotlight their self-interests resulting in asymmetry in the disclosure of information. Thus, the agency theory expresses that in modern companies, managers' behaviour and decisions are not in line with initiatives to optimise shareholder returns (Yameen, Farhan, & Tabash, 2019). In that way, managerial actions will lead to agency losses that are determined as the degree to which financial benefits to the stockholders are significantly low when compared to instances where the owners would have assumed direct control of the company (Paniagua, Rivelles, & Sapena, 2018; Doğan & Topal, 2015). Therefore, the techniques integrated to decrease agency losses include offering incentive mechanisms to managers by rewarding them financially for optimising stockholders' demands (Chen et al., 2013). For instance, senior managers can acquire shares at lowered prices, thereby associating and/or cooperating financial interests with those of the owners. In some cases, top managers are also supported with compensation linked with long-run wealth maximisation of the company and hence, discourage short-term managers' actions that damage company market value.

## 2.2. Empirical research about the topic

Corporate governance is an approach that evaluates and controls the performance of the company and takes it as a whole relationship between the company and its stakeholders (Singh et al., 2018; Saidat et al., 2019). Good corporate governance is a contributing mechanism to the firm, which is also closely related to better operational management, better financial performance, and more recycling. Different variables have been used in different studies as an indicator of corporate governance quality. In this study, audit quality, CEO duality, board independence ratio, corporate governance rating, and ownership structure are employed.

Audit quality is examined considering the size of the audit firm (Chen et al., 2013; Khanh & Khuong, 2018). Thus, it is apparent that the reason for this is that large audit firms have more resources in terms of human resources and equipment. The first study on the relationship between firm performance and audit quality was the theoretical research (DeAngelo, 1981). According to DeAngelo (1981), the size of the audit firm has a positive relationship with the independent audit quality. Other surveys have since been produced. For example, when the relationship between firm performance and audit quality is examined, a negative relationship is found (Eshitemi & Omwenga, 2017; Sattar et al., 2020). On the other hand, other schools of thought discovered a positive relationship between firm performance and audit quality (Chen et al., 2013). Some researchers could not find a relationship between these variables (Elewa & El-Haddad, 2019).

The term CEO duality is used for situations where the chairman of the executive board is also a member of the board. Recently, interest in the subject has increased. Therefore, when the relationship between CEO duality and firm performance is analysed, it is seen that different results are found. A positive relationship was found in some studies (Pham & Pham, 2020). In some studies, a negative relationship is ascertained (Mubeen et al., 2020). A separate number of explorations generates a zero (no) relationship between CEO climate and firm performance (Onwuka, Orji, & Anyanso, 2019).

The board of directors represents the company's decision-making body (Jamal & Mahmood, 2018). Otluglu, Sari, and Otluglu (2016) posit that the board of directors has duties and responsibilities such as guiding the company's strategies, approving important operational and financial decisions, and representing its stakeholders. On that note, it is expected that the independence of the board of directors will affect the performance of the company. In this context, available literature illustrates a statistically insignificant link involving the independence of the board of directors and the firm performance (Alshetwi, 2017). Other research proves a negative relationship (Fauzi & Locke, 2012), and a positive relationship (Chou et al., 2018; Fan et al., 2020).

Since 2007, companies that apply corporate governance principles have been included in the Borsa Istanbul (BIST) Corporate Governance Index. The companies covered by the index are evaluated with a corporate governance rating between 7 and 10 by independent rating institutions authorized by the Capital Market Board (CMB). The rating score which is inspired by the principles of the Organisation for Economic Co-operation and Development (OECD) Corporate Governance Index consists of the average of the grades obtained from 4 main headings — shareholders, public disclosure and transparency, stakeholders, and board of directors (Esendemirli & Erdener Acar, 2016). Recent literature demonstrates that corporate governance rating and firm performance show a negative relationship (Turnacıgil, Güler, & Doğanlı, 2019) whereas others produce a positive relationship (Brown & Caylor, 2004).

Among the corporate governance mechanisms, the ownership structure of the companies refers to the determination of the people who provide the capital of the company and the size of their capital shares. The concept of concentration in the ownership structure indicates the number of people who own most of the shares. In this framework, it is possible and expected that the ownership structure affects the performance of the firm. When the association involving ownership structure and firm performance is scrutinized, different results are determined. Hence some previous surveys depict a positive relationship (Doğan & Topal, 2015; Wijaya et al., 2020). However, other studies prove a negative connection (Fauzi & Locke, 2012). In this vein, some surveys found no relationship between ownership structure and firm performance (Yadav, Chakraborty, & Awasthi, 2020).

Furthermore, this research will provide an analysis of more recent literature (shown in Table 1) below which has been produced on the debate between corporate governance and firm financial performance.

Table 1. The empirical research and findings

Authors	Firms	Period	Variables	Methodology	Results
Ahmed et al. (2020)	50 non-financial firms in Oman	2018	Board size, ownership, gender, audit committee, firm profitability	Partial least squares (PLS)	A negative relationship involving board size and audit committee with ROA. Managerial ownership develops a positive link with ROE.
Wijaya et al. (2020)	All non-financial firms of Indonesia Stock Exchange – IDX (1650 observations)	2013–2017	Foreign ownership, institutional ownership, size of the board, size of the firm, government ownership	Multiple linear regression analysis	Foreign ownership, size of the board, size of the firm, and government ownership are significantly positively related to corporate performance. Institutional ownership and size of the firm significantly negatively influence company performance.
Doğan and Topal (2015)	136 manufacturing firms under Borsa, Turkey	2002–2015	Ownership structure, Firm profitability	Regression estimator developed by Beck-Katz	Ownership structure significantly affects company profits, market value as well as financial failure risks.
Chou et al. (2018)	416 firms on the Taiwan Stock Exchange (TWSE) and 169 firms on the GreTai Securities Market (GTSM)	2002–2004	Ownership variables (ownership, excess), board variables (duality, affiliate director, affiliate supervisor, board size), Tobin's Q, ROA, leverage, research and development, size	Regressions	Unaffiliated independent appointment leads to increased performance. Independence criteria affect the performance of the company.
Fauzi and Locke (2012)	79 New Zealand listed firms	2007–2011	Corporate governance mechanisms, ownership structure, firm performance	Generalised linear model (GLM)	The director's board, committee board, and managerial ownership positively influence performance whereas non-executive directorship, female board membership, and blockholder control reduce performance.
Danoshana and Ravivathani (2019)	25 listed financial entities	2008–2012	ROE, ROA, meeting frequency, board size, audit committee	Regression models	Board size and audit committee create a positive association with firm financial performance, whereas the reverse is confirmed for meeting frequency.
Saidat et al. (2019)	228 firms listed on the Amman Stock Exchange (ASE)	2009–2015	ROE, Tobin's Q, board size, independent directors, ownership concentration, local investors' ownership, firm size, leverage	Pooled regression with panel data	Board size develops a negative association with performance (ROE, Tobin's Q) in family companies, but no link is found in non-family companies. Ownership concentration insignificantly affects performance and in family companies, that link is significantly negative (with Tobin's Q). Significant associations involving domestic investor ownership and Tobin's Q are ascertained in family and non-family firms.
Paniagua et al. (2018)	1207 companies	2013–2015	ROE, ownership dispersion, board members, dividend, employees, assets, capital	Multiple regression	Ownership dispersion shows a significantly positive link with ROE. Board members and dividends demonstrate an insignificant connection with performance.
Al-ahdal et al. (2020)	53 non-financial Indian listed firms and 53 non-financial Cooperation Council (GCC) listed companies	2009–2016	Board accountability, audit committee, transparency and disclosure, ROE, Tobin's Q	GMM equations	Board accountability and audit committee create an insignificant influence on ROE and Tobin's Q. Transparency and disclosure are insignificantly negatively associated with Tobin's Q.
Suhadak Kurniaty, Handayani, and Rahayu (2018)	84 firms on the IDX	2010–2016	Good corporate governance, independent commissioners' proportion, corporate value, public ownership, institutional ownership, managerial ownership, corporate value	WarpPLS (involves structural model and moderating variable)	Increased good corporate governance, public ownership, managerial ownership, and institutional ownership lead to heightened corporate value. Financial performance moderates the link between corporate governance and firm value.
Jamal and Mahmood (2018)	10 listed Pakistan cement firms	2007–2016	Board size, audit committee, ROA, ROE, net profit ratio	Pooled regression model	Board size and audit committee have an insignificant relationship with corporate financial performance.
Mahrani and Soewarno (2018)	102 Indonesian listed firms	2014	Good corporate governance, corporate social responsibility, financial performance, earnings management	PLS	Good corporate governance has a positive influence on corporate financial performance.
Ajili and Bouri (2018)	44 Islamic banks	2010–2014	Board of directors index, the audit committees index, the Shariah supervisory board index, financial performance	Multiple regression models	Corporate governance quality as measured by the indices does not have a statistically significant association with firm financial performance.

### 3. RESEARCH METHODOLOGY

#### 3.1. Data

This section of the study shows the data and econometric model sections of this article.

Table 2 demonstrates the features of the variables employed in this study. The data was extracted from Turkish companies over the period from 2008 to 2018.

**Table 2.** Details of the variables adopted in this study

Variable	Definition	Source	Reference
ROA	Return on assets	KAP database, Turkey	Gupta and Sharma (2014), Wanyama and Olweny (2013), Saidat et al. (2019)
ROE	Return on equity	KAP database, Turkey	Gupta and Sharma (2014), Wanyama and Olweny (2013)
TOB	Tobin's Q	KAP database, Turkey	Singh et al. (2018), Saidat et al. (2019)
AUDIQ	Audit quality	KAP database, Turkey	Bansal and Sharma (2016)
CEOD	CEO duality	KAP database, Turkey	Singh et al. (2018)
INDEPB	Board independence ratio	KAP database, Turkey	Singh et al. (2018)
CGRS	Corporate governance rating	Corporate Governance Association of Turkey (TKYD)	Shahwan (2015)
OWLS	Ownership structure	KAP database, Turkey	Al-ahdal et al. (2020), Singh et al. (2018)
AGE	Age of the company	KAP database, Turkey	Gürbüz, Aybars, and Kutlu (2010)
LEV	Company leverage	KAP database, Turkey	Detthamrong, Chancharat, and Vithessonthi (2017)

#### 3.2. Econometric model

A dynamic panel data technique is applied in this paper because the dependent variable which is financial performance is reliant on itself from the previous period. This is evident since

the companies progressively change their operating systems from time to time.

On that note, we deploy the following model, equation (1), in which financial performance is dependent on diverse explanatory factors:

$$FP_{it}(\beta|X_{it}) = \beta(\tau)'X_{it} + \varepsilon_{it} \quad (1)$$

$$i = 1, 2, \dots, N$$

$$t = 1, 2, \dots, N$$

where,  $FP_{it}$  is the dependent variable,  $X_{it}$  denotes the independent variables,  $\beta(\tau)$  represents the unknown coefficients,  $\varepsilon_{it}$  is the error term,  $i$  denotes the studied companies in Turkey, and  $t$  indicates

the year. To be specific, the framework to investigate the influence of corporate governance on firm financial performance is further elaborated by equation (2), equation (3), and equation (4).

$$\text{LogROA}_{it} = \alpha_1 + \alpha_2 \text{LogROA}_{it-1} + \alpha_3 \text{LogAUDIQ}_{it} + \alpha_4 \text{LogCEOD}_{it} + \alpha_5 \text{LogINDEPB}_{it} + \alpha_6 \text{LogCGRS}_{it} + \alpha_7 \text{LogOWLS}_{it} + \alpha_8 \text{LogAGE}_{it} + \alpha_9 \text{LogSIZE}_{it} + \alpha_{10} \text{LogLEV}_{it} + \alpha_{11} + \varepsilon_{it} \quad (2)$$

$$\text{LogROE}_{it} = \alpha_1 + \alpha_2 \text{LogROE}_{it-1} + \alpha_3 \text{LogAUDIQ}_{it} + \alpha_4 \text{LogCEOD}_{it} + \alpha_5 \text{LogINDEPB}_{it} + \alpha_6 \text{LogCGRS}_{it} + \alpha_7 \text{LogOWLS}_{it} + \alpha_8 \text{LogAGE}_{it} + \alpha_9 \text{LogSIZE}_{it} + \alpha_{10} \text{LogLEV}_{it} + \alpha_{11} + \varepsilon_{it} \quad (3)$$

$$\text{LogTOB}_{it} = \alpha_1 + \alpha_2 \text{LogTOB}_{it-1} + \alpha_3 \text{LogAUDIQ}_{it} + \alpha_4 \text{LogCEOD}_{it} + \alpha_5 \text{LogINDEPB}_{it} + \alpha_6 \text{LogCGRS}_{it} + \alpha_7 \text{LogOWLS}_{it} + \alpha_8 \text{LogAGE}_{it} + \alpha_9 \text{LogSIZE}_{it} + \alpha_{10} \text{LogLEV}_{it} + \alpha_{11} + \varepsilon_{it} \quad (4)$$

where for an identified company  $i$  and year  $t$ ,  $ROA$  is the return on assets,  $ROE$  is the return on equity, and  $TOB$  is Tobin's Q, which are the dependent variables. The remaining independent variables shown in empirical models, equation (2), equation (3), and equation (4), are audit quality ( $AUDIQ$ ), CEO duality ( $CEOD$ ), board independence ratio ( $INDEPB$ ), corporate governance rating ( $CGRS$ ), ownership structure ( $OWLS$ ), age of the company ( $AGE$ ), size of the company ( $SIZE$ ) and firm leverage ( $LEV$ ).

which inevitably generate inconsistent outcomes (Nickell, 1981). On that account, this paper adopted an instrumental variable estimation process such as the two-step GMM proposed by Arellano and Bond (1991).

If the paper had made use of the fixed effects model in pursuit to mitigate company fixed effects, then endogeneity problems would have been experienced owing to the presence of the lagged dependent variables (see equation (2), equation (3), and equation (4)). Thus, while the static model results of this study approve the fixed effects model findings (see Tables A.1, A.2, and A.3 in Appendix) this estimator is not able to mitigate all endogeneity challenges widely referred to as the Nickell-Bias

The two-step GMM approach is more efficient than the conventional difference GMM as it manages challenges linked with weak instrumental variables and solves possible errors and inconsistencies produced by difference GMM, hence generating reliable estimates (Bond, Hoeffler, & Temple, 2001). In addition, the two-step GMM procedure solves unobserved endogeneity matters, estimation error, and omitted variable bias which is embedded in static systems such as the ordinary least square (OLS), and the fixed effects estimator (Erickson & Whited, 2002). In that case, the two-step GMM estimator findings are quite robust. The Sargan test will be employed to locate endogeneity problems and will be utilised to investigate if instrumental

variables used in this paper are exogenous and employ residual to regress these factors – instrumental variables. The Sargan test p-value is normally large and if it is greater than 0.1 then the null hypothesis ( $H_0$ ) which states that instrumental variables are valid will be approved and/or accepted (Arellano, 2002).

**4. RESULTS**

Table 3 indicates the minimum values, maximum values, mean, standard deviation, skewness, and kurtosis of the variables employed in this paper. It is noted that the mean is least in ROE, and the highest mean value is found in OWLS.

**Table 3.** Statistical summary of variables

Variable	Min.	Std. Dev.	Max.	Mean	Skewness	Kurtosis
ROA	-1.744942	0.1331551	3.029044	0.0315638	5.441608	176.9964
ROE	-67.54154	1.711821	9.137691	-0.0162968	-35.86523	1413.664
TOB	-0.6345329	1.117775	12.2866	0.8373642	4.364128	30.62297
INDEPB	0	0.1576652	0.5	0.1960161	-0.229198	1.4044
CGRS	4.3	1.700981	55	6.379138	14.10791	390.4921
OWLS	0.5	22.73563	99.46	51.2212	0.0558697	2.368189
CEOD	0	0.4631148	1	0.6888112	-0.8156346	1.66526
AUDIQ	0	0.4885096	1	0.6072261	-0.4391208	1.192827
LEV	-0.0167136	0.4343567	8.674316	0.5206631	8.11891	114.8906
SIZE	7.963112	1.680268	18.51277	12.87936	0.2678823	2.978576
AGE	2	22.03697	132	44.12027	1.342788	5.586154

The outcomes of the unit root test, including the Fisher ADF statistic, Harris-Tzavalis statistic, and the Im-Pesaran-Shin statistic are presented in Table 4 below. The findings illustrate that in at least

any two of the tests the variables used in this study are stationary at the first difference with 1%, 5%, and 10% significance levels.

**Table 4.** Panel unit test results

Variable	At level			At 1 <sup>st</sup> difference		
	Fisher ADF statistic	Harris-Tzavalis statistic	Im-Pesaran-Shin statistic	Fisher ADF statistic	Harris-Tzavalis statistic	Im-Pesaran-Shin statistic
ROA	34.6090*** (0.0000)	-0.0429*** (0.0000)	-11.9806*** (0.0000)	122.3837*** (0.0000)	-0.3390*** (0.0000)	-19.2653*** (0.0000)
ROE	39.0916*** (0.0000)	-0.1309*** (0.0000)	-11.3696*** (0.0000)	122.9622*** (0.0000)	-0.5204*** (0.0000)	-19.0046*** (0.0000)
TOB	24.1116*** (0.0000)	0.3529*** (0.0000)	-8.4040*** (0.0000)	109.6541*** (0.0000)	-0.2770*** (0.0000)	-18.1841*** (0.0000)
INDEPB	-5.9145 (1.0000)	0.7413 (0.3337)	-	29.8813*** (0.0000)	-0.1339*** (0.0000)	-
CGRS	-6.6411 (1.0000)	-0.0616*** (0.0000)	10.9740 (1.0000)	49.4044*** (0.0000)	-0.5017*** (0.0000)	-13.4474*** (0.0000)
OWLS	10.6482*** (0.0000)	0.6898*** (0.0015)	-	33.4700*** (0.0000)	-0.1431*** (0.0000)	-
CEOD	-8.0203 (1.0000)	0.6135*** (0.0000)	-	6.8391*** (0.0000)	-0.2279*** (0.0000)	-
AUDIQ	-9.2152 (1.0000)	0.6115*** (0.0000)	-	-1.5419** (0.0385)	-0.0833*** (0.0000)	-
LEV	10.5270*** (0.0000)	0.5079*** (0.0000)	1.8010 (0.9641)	57.0859*** (0.0000)	0.0327*** (0.0000)	-13.6569*** (0.0000)
SIZE	-6.5928 (1.0000)	0.9297 (1.0000)	21.4706 (1.0000)	47.9338*** (0.0000)	0.1515*** (0.0000)	-13.2608*** (0.0000)
AGE	-12.2922 (1.0000)	1.0000 (1.0000)	-	-12.3153* (0.076)	0.0776*** (0.0000)	-

Notes: \*\*\*, \*\*, and \* indicate that the coefficients are significant at the 1%, 5%, and 10% levels of significance, respectively. The numbers in brackets are p-values.

Table 5 gives the results of the one-to-one relationship of variables used in this study. The variables with the lowest correlation to

dependent variables were deployed as instruments in the model.

**Table 5.** Correlation matrix

Variable	ROA	ROE	TOB	INDEPB	CGRS	OWLS	CEOD	AUDIQ	LEV	SIZE	AGE
ROA	1										
ROE	0.0935	1									
TOB	0.0625	0.0120	1								
INDEPB	0.0204	-0.0123	0.0364	1							
CGRS	0.0326	0.0142	-0.0038	0.1127	1						
OWLS	0.0164	-0.0061	0.1633	0.0897	0.1116	1					
CEOD	0.0316	-0.0224	0.0930	0.0759	-0.0122	0.1300	1				
AUDIQ	0.0668	0.0402	0.1265	0.0465	0.1574	0.2771	0.0136	1			
LEV	-0.2672	-0.0546	0.2109	0.0163	0.0217	-0.0101	0.0060	-0.0308	1		
SIZE	0.1548	0.0486	-0.0542	0.1392	0.2973	0.1375	-0.0497	0.3546	0.0086	1	
AGE	0.0879	0.0130	0.2738	0.0820	0.0404	0.2636	0.0646	0.2182	-0.0451	0.2230	1

Table 6 outlines the two-step system GMM results in the short-run period regarding the influence of corporate governance on corporate financial performance. To begin, the lagged values of *ROA* and *ROE* demonstrate a negative and significant link with current *ROA* and *ROE*, respectively. In detail, a 1% increase in past *ROA* and *ROE* diminishes existing *ROA* and *ROE* by 0.065% and 0.767%, respectively. This implies that past book accounting-based measures for the studied Turkish companies lower current book accounting-oriented indicators. On the other hand, lagged Tobin's Q (*TOB*) outlines a positive and significant association with existing *TOB*. In this case, a percentage rise of the previous *TOB* can increase the current *TOB* by 0.11%. This result illustrates past market-based corporate financial proxies give intel on how investors view the current market values of companies, as evidenced in these Turkish companies.

The outcomes further demonstrate that board independence ratio (*INDEPB*) is positive and significantly related to the accounting-based indicators, *ROA* and *ROE*, along with the market-based indicator, *TOB*, in the short run. On that note, a 1% rise in *INDEPB* surges *ROA*, *ROE*, and *TOB* by 0.04%, 0.12%, and 0.29%, respectively. Nevertheless, Singh et al.'s (2018) research on 324 listed companies in Pakistan reports that board independence is negatively associated with Tobin's Q. Corporate governance rating (*CGRS*) is positively and significantly connected with *ROA*, but in the case of *ROE*, it is just positive. Conversely, *CGRS* indicates a negative and significant relationship with *TOB* since its 1% leap results in a 0.0053% de-escalation of *TOB*. Shahwan's (2015) study on 86 Egyptian companies also confirm that corporate governance rating does not support a positive link with firm Tobin's Q.

Other findings can also be ascertained from Table 6. The ownership structure of the company (*OWLS*) illustrates a significantly positive connection with *ROA* and *TOB* in the short term. In this vein, a 1% upswing in *OWLS* generates a 0.00165% and 0.0041% hike in the studied Turkish company's *ROA* and *TOB*, respectively which is in line with Gürbüz et al.'s (2010) exploration of 164 Turkish firms from 2005 to 2008. On the other hand, *OWLS* shows a significantly negative association with *ROE*. As such, when *OWLS* increases by 1% then *ROE* is reduced by 0.0167%.

CEO duality (*CEOD*) is negative and significantly associated with *ROA* and although that link is just negative with *TOB* in the short run.

As such, a percentage upsurge of *CEOD* produces a reduction amounting to 0.061% and 0.0054% of *ROA* and *TOB*, respectively. Thus, the paper disagrees with Bansal and Sharma (2016) on 235 listed NSE 500 companies from 2004 to 2013 who found a positive link. The outcomes further highlight that *CEOD* specifies a significantly positive relationship with *ROE*. In that case, a 1% rise in *CEOD* generates a 0.26% increase in *ROE*. On that account, this study indicates mixed findings on the CEO-Chairman role with company financial performance.

Audit quality (*AUDIQ*) illustrates a significantly negative relationship with *ROA* in the short term. As such, a percentage increase in *AUDIQ* lowers *ROA* by 0.0367%. On the other hand, the percentage rise in *AUDIQ* significantly spirals *ROE* and *TOB* by 0.65% and 0.19%, respectively. However, these study findings conflict with GMM analysis outcomes Al-ahdal et al. (2020) surveyed Indian companies and ascertain that the audit attributes of the company have a negative impact on accounting-based proxies such as *ROE*, but they improve market-oriented indicators such as Tobin's Q.

Generally, similar results are also apparent concerning the relationship between the leverage of the company (*LEV*) and firm financial performance. In this case, a 1% ascent of *LEV* triggers a *ROA* reduction of 0.16%. Other study outcomes show that a 1% increase in *LEV* produces a 0.11% and 0.84% rise in *ROE* and *TOB*, respectively. The *ROE* and *TOB* outcomes concur with the research by Detthamrong et al. (2017) on 493 non-financial companies of Thailand and spotlight that leverage produces a positive impact on firm performance over the period from 2001 to 2014.

Company size (*SIZE*) demonstrates significantly positive associations with both *ROA* and *ROE* in the short term. However, *SIZE* is significantly negative with *TOB*, the market-based financial performance indicator. More elaborately, a percentage upswing of *SIZE* generates a 0.105% and 0.457% increase in *ROA* and *ROE*. Nonetheless, a 1% rise in *SIZE* decreases *TOB* by 0.054%.

Age of the company (*AGE*) is ascertained to be negative and significantly associated with all corporate financial performance proxies. More specifically, a 1% increase in *AGE* reduces *ROA*, *ROE*, and *TOB* by 0.013%, 0.092%, and 0.0035%, respectively which contradicts Gürbüz et al. (2010) who found a positive although insignificant connection involving age and company financial performance.

**Table 6.** Two-step system GMM short-run findings with *ROA* (eq. (2)), *ROE* (eq. (3)), Tobin's Q (eq. (4)) (Part 1)

	Regression <i>ROA</i> (equation (2))		Regression <i>ROE</i> (equation (3))		Regression <i>TOB</i> (equation (4))	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
<i>ROA</i> <sub>it-1</sub>	-0.0656085*** (0.000)	0.0024267				
<i>ROE</i> <sub>it-1</sub>			-0.766523*** (0.000)	0.0143995		
<i>TOB</i> <sub>it-1</sub>					0.111559*** (0.000)	0.0006932
<i>INDEPB</i>	0.0399228** (0.015)	0.0163849	0.1177637* (0.092)	0.069964	0.2935196*** (0.000)	0.0169716
<i>CGRS</i>	0.0223069* (0.055)	0.0116253	0.0006787 (0.860)	0.0038511	-0.005341*** (0.000)	0.0007852
<i>OWLS</i>	0.0016518*** (0.002)	0.0005425	-0.016709*** (0.000)	0.0026508	0.004135*** (0.000)	0.0001512
<i>CEOD</i>	-0.0608483*** (0.000)	0.0158937	0.26336*** (0.000)	0.0732997	-0.0054131 (0.464)	0.0073997
<i>AUDIQ</i>	-0.036741*** (0.003)	0.0124144	0.6549932*** (0.000)	0.1276198	0.1933979*** (0.000)	0.0124999

**Table 6.** Two-step system GMM short-run findings with ROA (eq. (2)), ROE (eq. (3)), Tobin's Q (eq. (4)) (Part 2)

	Regression ROA (equation (2))		Regression ROE (equation (3))		Regression TOB (equation (4))	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
LEV	-0.1599231*** (0.000)	0.006046	0.106245*** (0.000)	0.0200302	0.84003*** (0.000)	0.0065146
SIZE	0.1050772*** (0.000)	0.0165974	0.4574986*** (0.000)	0.0730959	-0.054372*** (0.000)	0.0041062
AGE	-0.0125946*** (0.000)	0.0028797	-0.092055*** (0.000)	0.0120861	-0.003505*** (0.003)	0.0011963
Constant	-0.8844165*** (0.000)	0.1365592	-1.707608 (0.000)***	0.5070366	0.7957855*** (0.000)	0.0253637
Wald ( $\chi^2$ )	1217.57 (0.000)		3399.37 (0.000)		472373.81 (0.000)	
Arellano-Bond test for AR (1) in first differences	z = -1.80 Prob > z = (0.072)*		z = -1.70 Prob > z = (0.089)*		z = -2.23 Prob > z = (0.026)**	
Arellano-Bond test for AR (2) in first differences	z = -1.04 Prob > z = (0.298)		z = -1.00 Prob > z = (0.318)		z = -0.17 Prob > z = 0.862	
Hansen test of over-identifying restrictions	Chi <sup>2</sup> = 87.98 Prob > Chi <sup>2</sup> = (0.128)		Chi <sup>2</sup> = 81.20 Prob > Chi <sup>2</sup> = (0.265)		Chi <sup>2</sup> = 154.23 Prob > Chi <sup>2</sup> = 1.000	
Observations	1560		1560		1560	

Notes: \*\*\*, \*\*, and \* indicate that the coefficients are significant at the 1%, 5%, and 10% levels of significance, respectively. The numbers in brackets are p-values. The null hypothesis ( $H_0$ ) of diagnostic statistical analysis shown in the table above is (a) the Arellano-Bond test for autocorrelation:  $H_0$  = no autocorrelation; (b) the Hansen test:  $H_0$  = the set of instruments is valid.

Table 7 depicts system GMM results in long-run findings on how corporate governance affects company financial performance. Initially, *INDEPB* is determined to be significantly positive with all financial performance measures. In brief, a 1% increase of *INDEPB* produces a 0.11%, 0.88%, and 0.18% rise in *ROA*, *ROE*, and *TOB*, respectively in the long term. Secondly, *CGRS* is positive and significantly related to *ROA* and *ROE* although that connection is significantly negative with *TOB* in the long term. More particularly, a percentage hike of *CGRS* results in a 0.088% and 0.767% escalation of *ROA* and *ROE*, respectively. On the other hand, a 1% increase in *CGRS* mitigates *TOB* by 0.117% thereby agreeing with Fiandrino, Devalle, and Cantino's (2019) study on 361 listed companies from five European countries.

Other study results also illustrate interesting outcomes. For instance, *OWLS* is also positive and significantly associated with both *ROA* and *ROE*, but that link is significantly negative with *TOB* in the long run. Specifically, a 1% surge in *OWLS* increases *ROA* and *ROE* by 0.067% and 0.75%, respectively. Also, *CEOD* is positive and significantly associated with *ROA* and *ROE*, although the relationship is negative and significantly linked with *TOB*. In this situation, a 1% increase in *CEOD* leads to a 0.0047% and 1.03% rise in *ROA* and *ROE*, respectively. Conversely, a 1% rise in *CEOD* declines *TOB* by 0.12%. This study's *ROA* and *ROE* outcomes support Adekunle and Aghedo's (2014) research results on 143 Nigerian listed companies but this research's *TOB* outcome disagrees.

*AUDIQ* stipulates a significantly positive relationship with *ROA*, *ROE*, and *TOB*. In this instance, a 1% increase of *AUDIQ* produces a 0.02289%, 1.422%,

and 0.0818% rise in *ROA*, *ROE*, and *TOB*, respectively. However, Yameen et al.'s (2019) study results on 39 Indian hotels demonstrate that audit quality characteristics such as committee composition along with diligence show a negative effect on financial performance.

*LEV* is negative and significantly associated with *ROA* but positive and significantly linked with both *ROE* and *TOB*. In this context, a percentage rise in *LEV* motivates a 0.094% decline in *ROA*, which is not in line with Wanyama and Olweny's (2013) research on Kenyan insurance companies as their findings contradict this paper's outcome. Contradictorily, a 1% surge in *LEV* generates a 0.873% and 0.728% rise in *ROE* and *TOB*, respectively.

*SIZE* is positive and significantly connected with both accounting-based measures, *ROA* and *ROE*, although that link is significantly negative with *TOB*, the market-based financial performance proxy. In this regard, a 1% escalation of *SIZE* effect a 0.171% and 1.224% climb of *ROA* and *ROE*, respectively. Alternatively, a 1% leap of *SIZE* generates a 0.166% decrease in *TOB*, which conflicts with Rahman and Islam's (2019) study on 17 listed banks in Bangladesh for the period from 2013 to 2017 and concludes that the size of the bank shows a positive and insignificant link with market performance measures using a pooled regression model.

*AGE* is positive and significantly associated with *ROA* and *ROE*, but that link is significantly negative with *TOB*. In particular, a 1% increase in *AGE* spurs *ROA* and *ROE* by 0.053% and 0.67%, respectively thereby supporting Gürbüz et al.'s (2010) findings. Nonetheless, a 1% rise in *AGE* lessens *TOB* by 0.115%.



**Table 7.** Two-step system GMM long-run findings with ROA (eq. (2)), ROE (eq. (3)), Tobin's Q (eq. (4))

Variable	Regression ROA (equation (2))		Regression ROE (equation (3))		Regression TOB (equation (4))	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
INDEPB	0.1055313*** (0.000)	0.0171053	0.8842867*** (0.000)	0.0713647	0.1819606*** (0.000)	0.0171318
CGRS	0.0879155*** (0.000)	0.0115981	0.7672017*** (0.000)	0.0148291	-0.1168998*** (0.000)	0.0010169
OWLS	0.0672603*** (0.000)	0.0026025	0.7498131*** (0.000)	0.0142743	-0.1074238*** (0.000)	0.0007125
CEOD	0.0047602 (0.767)	0.0160621	1.029883*** (0.000)	0.0795047	-0.1169722*** (0.000)	0.0074629
AUDIQ	0.0288676** (0.023)	0.012681	1.421516*** (0.000)	0.1270714	0.0818389*** (0.000)	0.0122559
LEV	-0.094315*** (0.000)	0.005761	0.872768*** (0.000)	0.0283022	0.728471*** (0.000)	0.0069299
SIZE	0.1706857*** (0.000)	0.0172297	1.224022*** (0.000)	0.0767216	-0.165931*** (0.000)	0.0038092
AGE	0.0530139*** (0.000)	0.0034648	0.6744683*** (0.000)	0.0168972	-0.115064*** (0.000)	0.0015938

Notes: \*\*\*, \*\*, \* indicate that the coefficients are significant at 1%, 5%, and 10% levels of significance, respectively. The numbers in brackets are p-values.

## 5. IMPLICATIONS

Based on the study findings, the following determinations can be derived. Corporate governance, which arises as a solution to the representation problem experienced in companies, can be defined as a set of practices that are shaped around the concepts of transparency, accountability, accuracy, and equality, necessary for the correct management of a company. Companies that fulfil the requirements of corporate governance principles are expected to have a better decision-making and management mechanism, increase their recognition and reliability among investors, and as a result, have a better performance than competitors.

It can be stated that the relationship between corporate governance and financial performance is clear and explicit. Successful corporate governance practices lead to successful company performance and higher company value. However, it is very difficult to determine the relationship between corporate governance and company performance, and especially to express it numerically. The reason for this is that corporate governance is not a concept that can be calculated by limiting it to a few variables. It is the existence of dimensions with different rules and legal frameworks that vary according to the markets.

Corporate governance can be seen as a guarantee of the sustainability of business performance. In this regard, the concept of corporate governance affects the management and control mechanisms of the enterprise which ultimately produce a transparent, fair, responsible, and reliable company structure. As such, by the implementation of these principles, the sustainability of business performance is ensured. For this reason, corporate governance is also a management phenomenon that aims to maximise the value of the company, in other words, to add value to the business.

Turkey is among the countries that acted early on corporate governance. The best practice code prepared by the Turkish Industry and Business Association Corporate Governance Working Group was published in 2002. Then, the CMB Corporate Governance Principles were prepared in 2003 and the advisory principles for public companies were announced. With the CMB's Declaration of Conformity regulation in 2004, public companies were obliged to explain in their annual reports the extent to which they comply with these

principles and the reasons for the issues they do not comply with. This approach, called "comply or explain", is an important development in terms of encouraging public companies to apply corporate governance principles. Another important development that encourages corporate governance in Turkey is the establishment of the ISE Corporate Governance Index. In its meeting dated February 23, 2005, the Exchange Board of Directors decided to start the calculation of the Corporate Governance Index, which will include companies applying the Corporate Governance Principles if 5 companies with a corporate governance rating of at least 6 out of 10 are notified to the Exchange. As such, it is evident that the concept of corporate governance creates different models with different applications and examples in different markets.

To fulfil the main objectives of corporate governance it is necessary to make audits regarding the financial statements and operation of the enterprise and to correct the disruptions in the system. The fact that the audit activity is reliable and complies with international standards proves that the financial management and statements of the enterprise are reliable. Furthermore, when internal audit activities are carried out by the company it is important that the activities are checked out by following the determined standards and rules and that corrective measures can be taken.

The paper generates more interesting findings and further implications of the research can be suggested. Firstly, the board independence ratio is significantly positively related to all performance measures in both the short run and long run. This implies that the existing scenario in the context of board independence in pursuit to improve financial benefits to the company should continue to be supported. This is imperative since such situations are spurring independent decision-making and also reducing conflict of interests which are vital ingredients to foster the effective financial performance of the company.

The ownership structure of the company demonstrates a significant positive relationship with ROA and Tobin's Q in the short run although that link is a significantly negative association with ROE. In the long term, the ownership structure shows a significantly positive connection with the accounting-based measures but significantly negative with the market-based measures. As such, company managers, policy developers, and researchers in

Turkey should extensively analyse and reform the ownership structures of companies to achieve improved financial gains that address investors' interests.

CEO duality is significantly negatively related with ROA and Tobin's Q (although insignificant) but significantly positively linked with ROE. In the long run, CEO duality fosters both accounting-based indicators significantly and the reverse is true with market-based indicators. Hence, it is apparent that for Turkish firms CEO duality is not highly favoured by investor groups of these companies. On that note, the market may have the view that this practice encourages CEO entrenchment thereby lowering board management initiatives. Moreover, investors have the perception that giving particular individuals more power normally develops segregation of duties within the organisation.

Corporate governance rating is significantly positively associated with ROA (although just positive with ROE in the short run only) but is it significantly negatively linked with Tobin's Q in both periods. This evidence illustrates that the rating of corporate governance is well received within the companies whereas in the market the rating is not appreciated for these Turkish listed firms. On that account, it is imperative to create structures that encourage transparency and accountability so that organisational scandals, fraud along with matters involved with company liability are mitigated. Sound corporate governance structures inevitably result in a higher valuation of the company by investors since their investments in company ownership generate minimised business and financial risks.

Audit quality illustrates a significantly negative relationship with ROA in the short term but that relationships are significantly positive for ROE and Tobin's Q. As such, it is apparent that within Turkey there is greater evidence that current audit quality activities are indeed acceptable in addressing financial interests of stakeholders. In this regard, there is possibly better monitoring of risk, good relationships with suppliers, acceptable adherence to safety and sustainability performance standards, and improved coordination with compliance benchmarks that advance better financial gains for the companies. In the long run, audit quality significantly fosters all the accounting and market-based financial performance proxies.

The findings generally indicate that companies that effectively implement corporate governance principles can gain a lot of efficiency in the stock market. It has been revealed that these companies have a high ROE and ROA in general. In addition, if more companies have successfully implemented corporate governance principles than others, companies with a better management structure provide a satisfactory environment of trust to fund providers and thus benefit from funding from foreign sources at a high level.

## 6. CONCLUSION

Corporate governance includes all activities carried out to ensure that companies use their resources effectively, achieve their goals, and fulfil legal obligations and social expectations. Companies that adopt corporate governance principles gain competitive power in both national and international markets. The financial performance of these

companies should be measured and analysed to make their assets sustainable. It can be stated that generally, financial ratios are used in measuring the financial performance of companies and determining their market values. According to the ratio analysis results of the companies, their shares in the market can be estimated.

The relationship between corporate governance and firm performance for companies operating in Turkey was examined in the study for these reasons. In this context, the study consists of 1716 observations of 156 companies traded on Borsa Istanbul (BIST) in the period from 2008 to 2018. In the study, the dependent variable is taken as firm performance. Firm performance measures are represented by the ROA, ROE, and Tobin's Q. On the other hand, independent variables include audit quality, CEO duality, board independence ratio, corporate governance rating, ownership structure, age, and financial leverage. A dynamic panel data technique is applied in this paper because the dependent variable, which is financial performance, is reliant on itself from the previous period within the short-run and long-run periods. Mixed results are determined.

Thus, the outcomes demonstrate that the board independence ratio is positive and significantly linked with ROA, ROE, and Tobin's Q in both periods. Ownership structure illustrates a significantly positive connection with ROA and Tobin's Q (significant and negative to ROE) in the short term. In the long term, ownership structure and CEO duality spur both ROE and ROA significantly but reduces Tobin's Q significantly. CEO duality is significantly negatively associated with ROA and Tobin's Q (although insignificant) but significantly positively connected with ROE in the short term. Audit quality creates a significant negative link with ROA in the short run (although significantly positive with both ROE and Tobin's Q). In the long term, audit quality significantly increases ROA, ROE, and Tobin's Q. Corporate governance rating is significant and positively related with ROA (although just positive with ROE in the short run only) but is it significantly negatively associated with Tobin's Q in the short term and long term.

Therefore, it can be highlighted that establishing the standard criteria in determining the grading of corporate governance is of great importance within corporate settings. This paper also takes into account the limitations of the research. It is evident that the study considers only listed companies hence it is a small sample which affects the generalisation of the studies to all companies in Turkey. In addition, this paper considers a 10-year period (2008–2018) which is not small although more longitudinal studies over long periods of time such as at 20 or more years would provide extra depth outcomes on this highly debated subject. It is also equally vital to note that other corporate governance measures that did not form part of the study have the potential to affect this paper's findings. There are also open study objectives that are vital for further research. Clearly, more studies are required to test the paper's findings in other growing economies such as Turkey. Furthermore, it is critical to examine how corporate governance initiatives interact with social responsibility activity regulations of the company (more specifically social and environmental) as such issues have become powerful in influencing company stakeholder decision-making.

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## APPENDIX

Table A.1. The findings of static panel data for regression (eq. (2)): ROA

	<i>Pooled OLS model</i>		<i>Random effect model</i>		<i>Fixed effect model</i>	
	<i>Coefficient</i>	<i>Std. Error</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>Coefficient</i>	<i>Std. Error</i>
INDEPB	-0.0005805 (0.977)	0.0197642	0.0231535 (0.235)	0.0194979	0.0306388 (0.281)	0.0283875
CGRS	-0.0004721 (0.804)	0.0018978	0.0001832 (0.931)	0.0021048	0.0006409 (0.776)	0.0022524
OWLS	-0.0001428 (0.325)	0.000145	-0.0004129** (0.041)	0.0002016	-0.001725*** (0.000)	0.0003272
CEOD	0.011796* (0.079)	0.0067007	0.0092822 (0.261)	0.0082665	0.0053883 (0.595)	0.0101313
AUDIQ	0.0003628 (0.958)	0.0069554	-0.004109 (0.640)	0.0087847	-0.0155736 (0.160)	0.0110864
LEV	-0.0817687*** (0.000)	0.007054	-0.1401119*** (0.000)	0.0098305	-0.3364537*** (0.000)	0.0157601
SIZE	0.0121833*** (0.000)	0.0020601	0.0125763 (0.000)***	0.0030289	0.0249684*** (0.004)	0.0087261
AGE	0.0002744 (0.064)*	0.000148	0.0002911 (0.212)	0.000233	0.0011319 (0.518)	0.0017524
R <sup>2</sup>	0.0998		0.2722		0.0884	
Wald ( $\chi^2$ )			228.29***			
F-statistic	23.66				60	
Breusch-Pagan test ( $\chi^2$ )			164.34 (0.000)***			
Hausman test ( $\chi^2$ )					273.53 (0.0000)***	
Observations	1716	1716	1716	1716	1716	1716

Notes: \*\*\*, \*\*, and \* indicate that the coefficients are significant at the 1%, 5%, and 10% levels of significance, respectively. The numbers in brackets are p-values.

Table A.2. The findings of static panel data for regression (eq. (3)): ROE

	<i>Pooled OLS model</i>		<i>Random effect model</i>		<i>Fixed effect model</i>	
	<i>Coefficient</i>	<i>Std. Error</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>Coefficient</i>	<i>Std. Error</i>
INDEPB	-0.174993 (0.512)	0.2668818	-0.1685507 (0.531)	0.2689881	0.4415376	0.4415376
CGRS	0.0019548 (0.939)	0.0256263	0.0010081 (0.970)	0.0270664	0.0026542 (0.940)	0.0350342
OWLS	-0.0013123 (0.503)	0.0019583	-0.0015539 (0.480)	0.0022006	-0.0030568 (0.548)	0.00509
CEOD	-0.0628423 (0.487)	0.090482	-0.0627048 (0.525)	0.0986787	-0.0296768 (0.851)	0.1575812
AUDIQ	0.1012329 (0.281)	0.0939207	0.1417086 (0.169)	0.103092	0.5019811*** (0.004)	0.1724366
LEV	-0.212287** (0.026)	0.0952524	-0.2211944** (0.039)	0.107189	-0.3564239 (0.146)	0.2451314
SIZE	0.0423985 (0.128)	0.0278182	0.0382988 (0.226)	0.0316057	0.0479696 (0.724)	0.1357258
AGE	0.0001497 (0.940)	0.0019986	0.0000117 (0.996)	0.0023073	-0.0266598 (0.328)	0.0272571
R <sup>2</sup>	0.0069		0.0068		0.0006	
Wald ( $\chi^2$ )			10.45***			
F-statistic	1.48				1.56	
Breusch-Pagan test ( $\chi^2$ )			6.97 (0.0041)***			
Hausman test ( $\chi^2$ )					8.74 (0.03)**	
Observations	1716	1716	1716	1716	1716	1716

Notes: \*\*\*, \*\*, and \* indicate that the coefficients are significant at the 1%, 5%, and 10% levels of significance, respectively. The numbers in brackets are p-values.

**Table A.3.** The findings of static panel data for regression (eq. (4)): Tobin's Q

	<i>Pooled OLS model</i>		<i>Random effect model</i>		<i>Fixed effect model</i>	
	<i>Coefficient</i>	<i>Std. Error</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>Coefficient</i>	<i>Std. Error</i>
INDEPB	0.1223557 (0.444)	0.1599123	0.2178884* (0.086)	0.1269539	0.2938357* (0.091)	0.1739381
CGRS	0.0017074 (0.911)	0.015355	0.007006 (0.602)	0.0134239	0.0060572 (0.661)	0.0138013
OWLS	0.0038232*** (0.001)	0.0011734	0.0021157 (0.216)	0.0017118	0.0011625 (0.562)	0.0020051
CEOD	0.1276937** (0.019)	0.0542157	0.0403499 (0.488)	0.0582258	0.0345242 (0.578)	0.0620771
AUDIQ	0.2514621*** (0.000)	0.0562761	0.2319543*** (0.000)	0.0634583	0.2270106*** (0.001)	0.0679292
LEV	0.5871272*** (0.000)	0.0570741	0.693194*** (0.000)	0.0827818	0.7686028*** (0.000)	0.0965664
SIZE	-0.1110758*** (0.000)	0.0166683	-0.2041587*** (0.000)	0.0311499	-0.3485588*** (0.000)	0.0534675
AGE	0.0137896*** (0.000)	0.0011975	0.0153517*** (0.000)	0.0030045	0.0284702*** (0.008)	0.0107376
R <sup>2</sup>	0.1637		0.1474		0.1314	
Wald ( $\chi^2$ )			132.94			
F-statistic	41.78				13.43	
Breusch-Pagan test ( $\chi^2$ )			2819.65 (0.000)***			
Hausman test ( $\chi^2$ )					18.12 (0.0204)**	
Observations	1716	1716	1716	1716	1716	1716

Notes: \*\*\*, \*\*, and \* indicate that the coefficients are significant at the 1%, 5%, and 10% levels of significance, respectively. The numbers in brackets are p-values.