THE IMPACT OF CORPORATE GOVERNANCE QUALITY ON FIRM VALUE: A CASE STUDY ON CORPORATE GOVERNANCE INDEX OF BORSA ISTANBUL

Biçer, M., Şit, A.

Mehmet Biçer / Kilis 7 Aralık University, Department of Business Administration, Mehmet Sanlı Mah. Doğan Güreş Paşa Bul. No. 84, Kilis, Turkey. Email: mehmetbicer@kilis.edu.tr.

Ahmet Şit / Turgut Özal University, Department of Business Administration, Alacakapı Mahallesi Kırkgöz Caddesi No. 54 P.K. 44210, Battalgazi / Malatya, Turkey. Email: ahmet.sit@ozal.edu.tr.

Abstract

The main purpose of this study is to investigate the effect of corporate governance quality on the firm value of companies operating in the Borsa Istanbul (BIST) Corporate Governance Index. Analyzes were made with the data of the 51 companies operating in the BIST Corporate Governance Index for the 2015-2019 period. The GMM techniques were used as a method. AMG method was also used to consolidate the results obtained from the GMM method and to create robustness. The results indicated that the corporate governance quality of companies has positive effects on firm value. The most important finding that reflects the purpose of the research is that companies should also increase the quality of corporate governance to maximize the value of the firm.

Implications for Central European audience: Depending on the results of the study, it is predicted that companies whose profitability has a positive effect on the value of the firm will encourage their managers to increase their corporate governance quality. By complying more with the criteria in corporate governance principles, companies will both increase their institutionalism and maximize the value of the company, which is one of the main financial goals of the company.

Keywords: corporate governance quality; firm value; BIST corporate governance index; GMM; AMG.

JEL Classification: C23, G34, M14

Introduction

Corporate Governance is one of the concepts that has been on the agenda of the business world, especially in the last quarter century. Adam Smith, regarded as the founder of economics, mentioned the concept of corporate governance for the first time in his famous work "The Wealth of Nations" published in 1776 as a subject that emerged before the newly formed stock exchange companies. Adam Smith emphasized the necessity of establishing effective mechanisms to resolve conflicts of interest between company owners and management in this study, in which he dealt with the separation of company owners and

management in joint stock companies. Adam Smith mentioned that managers cannot be expected to show the care they show while spending their own money while spending others' money. The negligence and waste of executives are inevitable in company management (Smith, 1776, p. 261). The first work on corporate governance started with the committee constituted in 1992 in the UK and chaired by Sir Adrian Cadbury. The publication of the report "Financial Aspects of Corporate Governance" by the Cadbury Committee is considered to be the emergence of management principles. The principles set out in this advisory report also formed the basis for the practices and studies to be carried out regarding corporate governance (Cadbury Committee, 1992, p. 53).

Institutionalization is generally explained as a system of rules that shapes, balances and directs the social behaviours of individuals, groups and communities within a certain similarity and sameness (Zucker, 1987, p. 443). Institutionalization refers to a structure that is established in the business and can change when necessary but does not change according to the personnel, where the employee is shaped according to the business policies and principles. Focusing on the causes and consequences of organizational existence and continuity (Yazıcıoğlu & Koç, 2009), institutionalization constitutes one of the most important factors in establishing corporate governance. So that the basic features of institutionalization processes such as the follow-up of changes, the establishment of adaptation to current changes, and the development of standards for new conditions have an important role in replacing the classical management understanding of corporate governance (Türedi et al., 2015). It is possible to say that global financial crises (Asian financial crisis) and major business scandals (such as WorldCom, Enron, Lehman Brothers, Tyco) have an impact on the increasing importance of corporate governance (Cadbury Report, 1992, p. 15), which refers to a system in which the organization is managed and controlled (Hassaan, 2013, p. 46). Corporate governance is a management approach in which businesses protect the interests of all stakeholders inside and outside the enterprise in a balanced way with a social responsibility mentality, where roles and responsibilities are shared between stakeholders in a balanced way, and they are encouraged to strive to establish a transparent, accountable, fair and responsible management system. Corporate governance includes the relations between the management of the business, the board of directors, shareholders and other stakeholders and also compensate a structure in which the goals of the enterprise, the tools that achieve these goals and how the performance will be monitored (The Organisation for Economic Co-operation and Development-OECD, 2016). According to OECD (2016, p. 9) corporate governance "includes the relations between the management of the company, the board of directors, shareholders and other stakeholders". In the Cadbury Report, corporate governance is defined as "a system through which the organization is managed and controlled" (Cadbury Report, 1992, p. 15). Similarly, corporate governance was defined in another definition as "the set of mechanisms that encourage the managers responsible for the control of the enterprise to make decisions that will maximize the value of the shareholders who own the business" (Denis, 2016, p. 468). In a widely accepted expression developed by Millstein (2000), corporate governance was explained in the context of regulations for determining company goals. Millstein (2000) explained corporate governance as the combination of laws, regulations and appropriate voluntary implementations that allow a firm to attract financial and human resources, operate efficiently and thus achieve stability by generating long-term

Volume **12** | Issue **3** | 2023
https://doi.org/10.18267/j.cebr.324

economic gain for its shareholders, in a manner that does not harm the interests of beneficiaries and the public.

Based on the definitions made in this sense, it is possible to say that the basic features of effective corporate governance are transparency, strengthening and protection of the rights and privileges of all shareholders, independently approving and independently hiring business strategy, important business plans and decisions, monitoring the performance and integrity of the management, the managers who have talent taking the place of management when necessary (Hassaan, 2013, p. 49).

There are two main objectives of corporate governance. The first is to prevent business managers and large partners from deceiving small shareholders and business investors by providing accurate and true information on the market value of the business. The second purpose is to motivate business managers to focus on the goals of the business rather than their individual goals (Bushman & Smith, 2003, p. 65). According to the OECD, the object of corporate governance is to help create an environment of trust, transparency and accountability necessary to improve long-term investments, financial stability and business integrity, thereby supporting stronger growth and more inclusive societies (OECD, 2016, p. 7).

The key to good corporate governance is to maintain downside risk to shareholders (i.e. managers' accountability). Also, encouraging managers to take risks (i.e. encourage managers to act in an entrepreneurial way) to increase shareholder value is another important action of corporate governance. In a macro sense, corporate governance has been developed to more effectively encourage the allocation of country savings to the most efficient use (Keasy et al., 2005, p. 2).

Firm valuation first came to the agenda with the work of Berle and Means in 1932. Later in 1976, Jensen and Meckling continued the discussions on this subject with their studies. Most of the studies carried out in the following periods focused on the relationships between firm value and business performance. The increase in business performance is indirectly effective in increasing the value of the firm. Firm value, based on the concept of capital structure, is the market value of debt and equity based on market value (Modigliani & Miller, 1958, p. 261). According to the study conducted by Asquith (1983), the comparative valuation method, also known as valuation with market multipliers or relative valuation, is the most used method in the analysis of firm valuation.

The effect of corporate governance quality on the firm value of companies operating in the BIST Corporate Governance Index was investigated in this study. In this context, this paper intends to seek an answer to the question of “how the changes in the corporate governance quality of companies affect their firm values. 5-years data of 51 companies included in the BIST Corporate Governance Index between 2015 and 2019 were considered annually in the research. Since not all companies have announced their 2020 annual reports, 2019 has been taken into account as the last year. 8 different independent variables that affect the corporate governance quality of companies have been converted into an index with the Basic Component Analysis. The generalized Method of Moments (GMM), one of the Dynamic Panel methods, was used to investigate the effect of this index on the market value of firms. This method is preferred because the firm cross section (n) is larger than the time section (t). Additionally, the Augmented Mean Group Estimator (AMG) results have

been reinforced to consolidate the results from GMM. In this study, examining the effect of corporate governance quality on firm value, it is expected that the results of the analysis will reveal that improvements in firms' corporate governance quality have a positive effect on firm value. This will contribute to the policy development of enterprises in this direction. In particular, it is expected to be more directive for publicly traded businesses whose main purpose is to maximize the value of the firm besides profit maximization.

We consider that the sample preferred in the research and the data period used make this study original and different from other studies. There are many different studies conducted in Turkey on the quality of corporate governance. However, this paper differs from other studies in terms of using the BIST Corporate Governance Index specifically. It is expected that this study will contribute to the literature with these aspects.

1 Literature review

It is noticed that a significant number of studies in the literature test the relationship between corporate governance and firm value. It is noticed that most of the studies have an approach to examine a corporate governance index prepared and a firm value measured according to this index.

El-Deeb et al. (2022) researched the effect of corporate management of companies and positive/negative news about companies on firm value. The Egyptian Stock Exchange EGX-70 index companies consisted of the sample of the study. Annual data for the period 2014-2018 were used. The structural Equation Model was used as a method. The results of the analysis revealed that positive/negative news about corporate governance and firms have an impact on firm value, and gender diversity, ROA, leverage, revenue growth and abnormal accruals are the most important variables in explaining the effects of corporate governance on firm value.

Bawai and Kusumadewi (2021) tried to determine the impact of corporate governance, firm characteristics, and disclosure of corporate social responsibility (CSR) on firm value. They conducted a study in Indonesia on companies participating in the 2014 Sustainability Report Award. They used the Corporate Social Responsibility Index (CSRI) to represent corporate governance and Tobins'Q to represent firm valueThe period of the study was 2014-2018As a result of the analysis made with the panel regression method, it has been understood that corporate governance and firm characteristics have a positive effect on firm value.

Safitri and Nani (2021) tested the effect of corporate governance and eco-efficiency on firm value of firmsThe 2015-2019 period of 18 State Economic Enterprises traded on the Indonesian Stock Exchange was examined. Tobin's Q value is used for firm value and Return on Asset (ROA) is used to represent financial performance. As a result of the Spearman correlation test, it was observed that eco-efficiency had a positive and significant effect on the financial performance of the firms, but had no effect on the firm value. It has been concluded that corporate governance is not effective on both the financial performance of the companies and the value of the company.

Stender and Rojahn (2020) argued that a more holistic perspective on corporate governance can be obtained by making biased estimates instead of using a single governance metric. Therefore, they performed a principal component analysis to test the

Volume **12** | Issue **3** | 2023
https://doi.org/10.18267/j.cebr.324

similarities between scores by reconstructing the scores of governance, which are most frequently cited in the literature, in a common database. They used the Panel Data Regression method to apply the analyzes. The authors aimed to examine the impact of different dimensions of corporate governance quality on the valuation of non-financial enterprises in the STOXX® Europe 600 index between 2012 and 2017. The results showed that the corporate governance scores were concentrated in two general factors that they determined to represent the quality of internal and external governance. Also, it was found that external (internal) governance was positively (negatively) associated with firm valuation when fixed effects and IV regressions were applied to account for endogeneity.

Nugroho (2020) examined the use of corporate governance on the cost of capital and corporate value. Non-financial examples listed on the Indonesian Stock Exchange (IDX) for the period 2008-2018 were used in the study. Panel data regression was used as a research method. Analysis outputs showed that corporate governance mechanism variables such as board size, corporate ownership and non-corporate ownership significantly affect the firm's value (Tobin's Q).

Aluchna and Kuszewski (2020) the hypotheses on the link between corporate governance compliance (with board) practice and company value by using a sample of 155 companies listed on the Warsaw Stock Exchange during the period 2006-2015. The results of the Panel Data Regression model of the research, measured by Tobin's Q, disclosed a negative and statistically significant relationship between corporate governance compliance and company value. The study contributed to the existing literature providing new evidence on compliance practice in the context of concentrated ownership, and the limited effect of code provisions in addressing structural challenges of corporate governance in emerging post-transition economies and hierarchy-based control systems.

Karakılıç and Bengü (2019) examined 78 companies traded in Borsa Istanbul in 2013-2016 to analyze the relationship between corporate governance variables and the firm value of publicly traded companies. Panel Data Regression analysis results revealed that there was not a very strong relationship between corporate governance practices and dependent variables (Tobin's Q, ROA and ROE return on capital), only that there was a relationship of 10% significance between asset profitability and corporate governance practices.

Taufik et al. (2018) conducted a study of 19 state-owned companies in Indonesia from 2012-2016. The study aimed to examine whether the return on assets (ROA) and economic added value mediated the relationship between corporate governance and firm value of Indonesian state-owned enterprises on the Indonesian stock exchange from 2012 to 2016. Path Analysis and Panel Data Regression were performed to show the direct and indirect effects of each path. The results indicated that ROA and economic value added did not mediate the correlation between corporate governance and firm value of Indonesian state-owned enterprises on the Indonesian stock exchange during 2012-2016. So, corporate governance did not indirectly affect firm value through both traditional accounting, ie ROA, and economic added value.

Sitorus and Sitorus (2017) aimed to expand the relationship by putting corporate social responsibility as an intermediary variable in the relationship between corporate governance and firm value in state banks listed on the Indonesian Stock Exchange in 2012. Structural

Equation Modeling was used for the analysis. The findings indicated that good quality corporate governance did not have a significant effect on increasing firm value, but had a significant effect on the implementation of corporate social responsibility. Thus, when corporate social responsibility was applied, the value of the company would increase significantly. The findings proved that corporate social responsibility acts perfectly as an intermediary variable for good corporate governance and firm value.

Kavcar and Gümrah (2017) conducted an event study to observe the occurrence of stock prices by accepting the first date on which 55 companies with a score of 7 and above in the Borsa Istanbul Corporate Governance index were accepted as the first date of the event. Parametric T-test and Wilcoxon Sign Test were used in the analyzes. No significant situation was detected in average abnormal returns, but significant abnormal returns were found in some firms. Authors suggested that compliance with corporate governance principles does not increase firm value in general in Turkey, contrary to expectations.

In another study, Özçelik (2017) aimed to determine whether the market values of companies included in the Borsa Istanbul Holding and Investment Index (XHOLD) were affected by the corporate governance rating. Analyzes were performed using the Independent Samples T-test and the non-parametric equivalent of this test, Mann Whitney U tests. A statistically significant difference was not found between the average logarithmic returns of the stocks of companies with and without a corporate governance rating.

In a study conducted by Leung et al. (2014) on Hong Kong-based businesses, the relationship between the board structure of businesses and business performance was examined. The 3SLS Regression method was used to test the relationships between variables in this paper. As a result of the findings obtained from the research, a positive relationship was found between corporate governance practices and business performances in family businesses. In addition, it was determined that there was a positive relationship between the independent members of the board of directors and the firm performance in non-family businesses.

Ararat et al. (2017) studied the corporate governance practices of Turkish public firms from 2006 to 2012, relying on hand-collected data covering the vast majority of listed firms. The author built a Turkey Corporate Governance Index (TCGI), composed of subindices for board structure, board procedure, disclosure, ownership, and shareholder rights, for the research model. The relations of the variables in the index created were examined with the Panel Data Regression method. TCGI predicts higher market value (with firm fixed effects) and higher firm-level profitability with firm random effects. It was found that a one-standard-deviation increase in governance predicts an 8-10% increase in Tobin's q. Also, it was concluded in the study, examining the determinants of firms' governance, that most firm-specific factors have little effect on firms' governance choices and mild evidence that higher TCGI also predicts higher profitability.

Çelik et al. (2017) investigated the effect of board features on company values by using the 6-month financial statement data of 87 financial institutions traded in Borsa Istanbul for 2017. Cross-section regression analysis was used in the study. The measure of Tobin Q representing the value of the firm and the number of members of the board of directors, the number of independent members in the board of directors, and the gender structure of the board members are determined as independent variables. However, firm size and firm age

Volume **12** | Issue **3** | 2023
https://doi.org/10.18267/j.cebr.324

were used as control variables. As a result of the cross-sectional regression analysis, it was tested that the number of board members and the number of independent members had a positive and significant effect on the value of the firm. In addition, it was analyzed that gender structure does not have a significant effect on firm value. On the other hand, firm size, which is the control variable, had a negative and significant effect on performance, while firm age did not have a statistically significant effect on performance.

Klimczak and Szafranski (2013) conducted a study on companies trading in France and Germany in the period of 1989-2008 to examine the relationship between value relevance (coincident relevance and forecast relevance) and the month of market value sampling. The paper measured value relevance by estimating based on the Ohson Model Separate Panel-Data Regressions for each of the 12 months around fiscal year-end. It was found that overall value relevance is higher when the market value is sampled before or close to fiscal year-end, but incremental value relevance varies between domestic and International Financial Reporting (IFRS) accounting standards. Significant variations in coefficients over the following months of market value in the French panel and only its IFRS sub-sample were obtained by regression analysis. The paper contributes the first systematic analysis of the variation in value relevance parameters in response to the selection of the month in which market value is a sample.

Yenice and Dölen (2013) aimed to measure whether the stock market values of companies included in the BIST Corporate Governance Index in Turkey are affected by the corporate governance rating. In line with this purpose, the corporate governance ratings of the companies included in the Corporate Governance Index between 2007-2011 were determined. The authors have determined that there is a significant relationship between corporate governance rating and stock market values with the Wilcoxon Signed Ordinal Numbers Test and the dependent sample T-test.

Chen et al. (2010), suggesting that improvements in corporate governance of firms in need of external financing can help reduce external capital financing costs, examined the overall impact of external financing needs on corporate governance and firm value. The results obtained as a result of the applied 3SLS Regression and GMM analyses indicated that it is the firm valuation that has an adverse effect on management practices. Also, research findings indicated that external financing needs to strengthen the impact of the quality of corporate governance practices on firm value.

As can be comprehended from the literature studies, the quality of corporate governance is of great importance for businesses and governments. In this research, it is desired to seek an answer to the question of whether the corporate governance qualities of companies in the Borsa Istanbul (BIST) Corporate Governance Index have positive effects on company performance or not. In this context, the research hypothesis was created within the scope of the research model to test the relationships between concepts. The research hypothesis is "The corporate governance quality of companies operating in the BIST Corporate Governance Index has a positive impact on firm value."

It noticed that many studies were conducted focusing on the concept of corporate governance quality and its effects on different variables. However, this study differs from the studies in the literature in terms of the period examined, the method and the variables

used. The results of the study are expected to guide the decisions of policymakers and the strategy determination of enterprises.

2 Data and methodology

The sample of the study consists of companies included in the BIST corporate governance index. There are 52 companies in this index. However, Enerjisa company went public in 2017 so there is no detailed annual report and data including corporate management quality data of Enerjisa company. Since the analysis with the 3-year data of Enerjisa for the period of 2017-2019 would not yield healthy results, they were not included in the analysis. For this reason, 51 companies other than Enerjisa were accepted as the research sample and only the data of these companies were used in the analysis. The BIST Corporate Governance Index was created to measure the price and return performance of companies listed on the stock exchange with a corporate governance compliance score of at least 7 out of 10 and at least 6.5 out of 10 for each main heading (BIST, 2021). For this reason, companies included in this index are expected to be above a certain standard in terms of corporate governance quality. This is the reason why BIST Corporate Governance Index data was chosen as the sample in this study.

The variables for the corporate governance quality of the companies were obtained from the activity reports of the companies in the PDP (Public Disclosure Platform). Additionally, the stock exchange value expressing the value of the firm, which is the dependent variable of the research, was obtained from TR Investing. The data of the companies for the period covering the years 2015-2019 were used in the study. Using only 5-year data can be considered one of the limitations of the study. However, the policies and results to be proposed within the scope of the research outputs will create a common perception and consideration for all index companies. For this reason, all companies in the BIST Corporate Governance Index were included in the study. A large number of samples and variables made the data mining process longer and more difficult. For this reason, only 5 years of data were examined and used in the analysis. In the period when the analysis of the study started (20 January 2021), the current year was considered as 2019, since some companies did not submit their 2020 activity reports to the PDP. The variables included in the study are presented in Table 1.

Volume **12** | Issue **3** | 2023
https://doi.org/10.18267/j.cebr.324

Table 1 | Variables Used in the Study

	Short name	Variable	Description	Source
Dependent variable	***firmv***	firm value	The arithmetic mean of the daily stock market value of companies in the BIST	TR Investing
Independent variables	***board***	number of board members	Number of board members on the board of directors of companies	**Activity Reports of Firms**
	female	female member on the board of directors	The ratio of the number of female members on the board of directors to the total number of members	
	master	master's degree /PhD ratio on the board of directors	The ratio of members with master's degree/PhD in the board of directors to the number of board members	
	free	free members	The ratio of the number of independent members of the board of directors to the number of board members	
	asset	asset size	Total assets in firms' balance sheets	
	freef	free float ratio	Percentage of companies' free float	
	sh	largest shareholder	Ownership share of the largest shareholder partner in the company	

Source: Authors

First of all, the variables of the *board, female, master, free, asset, freef,* and *sh* were converted into indexes with Principal Component Analysis (PCA). These variables were also named "corporate". Within the scope of the research model, "corporate" is an internal variable and "firmv" is an external variable. Financial and managerial ratios were used for accurate comparisons between variables. Since the total assets of the companies are in high amounts, the logarithm of the total assets of the companies was taken and included in the study.

Variable *firmv*, shown in Table 1, was calculated by taking the annual arithmetic average of the daily closing value of the firms in the stock market (Karaca & Savsar, 2012). Data for corporate governance were obtained from the annual reports of companies. Variable *board* refers to the number of members on the board of directors of companies, *female* refers to the ratio of the number of women in the board of directors to the total number of members, *master* refers to the ratio of the members of the board of directors who received master's and graduate education to the total number of board members, *free* refers to the number of independent members on the board of directors to the total number of board members, *asset* refers to the amount of which the logarithm of the asset totals is taken in the balance sheets of the companies, *freef* refers to the percentage of the companies that are publicly traded, and *sh* refers to the common share of the partner with the largest share in the company. The variables used in this study were selected from the variables commonly used in some other studies in the literature (Ağca & Önder, 2016; Sawicki, 2009; Prommin et al., 2014).

The variables included in corporate governance quality, which are the independent variables of the firms, were indexed by PCA and the corporate governance variable was

created. With the PCA analysis in which the basic components take place independently from each other, a small number of new variables or basic components can be created with more than one variable. Thereby, the dependency structure problem that may arise between variables could be prevented. Also, PCA is a method preferred in the literature because it prevents the linear connection problem that may occur between variables. In the analyzes where the number of variables is high, *p* variables related to *n* objects are considered. The relationship between the variables and the high number of variables, namely the p-value, is one of the major obstacles to the analysis results and their evaluation. This case increases the usability of the method (Joliffe, 2002, p. 167; Ersungur, Kızıltan & Polat, 2007, p. 57).

In fact, there is more than one method that can be used in panel data analysis. However, the Generalized Method of Moments (GMM) method was used in this study because the firm section (n) is larger than the time section (t). Since GMM is one of the most commonly used methods in the literature in case the size of the firm is larger than the time dimension, the GMM method was also used in this study. The correlation of the lagged value of the dependent variable with the error term in dynamic panel models causes Least Squares estimators to produce inconsistent results. The system GMM method is widely used in the literature in response to this problem. Another advantage of this method is that it assumes that the variables are constant (Baltagi, 2005, p. 135; Dökmen, 2012, p. 46-47).

In addition, this method developed by Arellano & Bover (1995) and Blundell & Bond (1998) was preferred because it deals with the problem of endogeneity and refers to the existence of heterogeneity whose primary purpose is not observed (Arellano & Bover, 1995; Bouheni, 2014; Doğan & Ekşi, 2020, p. 96). This method states that the Difference GMM has predictive power in a finite sample and deviations may occur in the coefficient estimates. In addition, System GMM has been developed since its prediction power is higher than the difference GMM (Dökmen, 2012, p. 46).

The basic regression equation in the study is as follows:

$$Firmv_{i,t} = \beta_0 + \beta_1 \text{ corporate}_{i,t} + \varepsilon_{i,t} \quad (1)$$

The term *firmv*, the dependent variable of the research model, expresses the annual arithmetic average of the daily market value of the company's stocks. In the literature, firm value is generally measured by Market Value/Book Value for publicly traded enterprises or daily/weekly/monthly/annual values of stocks. Therefore, the firm values of firms are measured by the annual values of their stocks in this study. The daily values of the companies' stocks were determined by tr.investing.com (Investing.com, 2021). These values were divided by the number of days in Excel and thus the arithmetic averages were determined. The daily closing values of the companies were found and divided by the number of days and averaged. Since the stock markets are closed on weekends and public holidays, the stock market value is not taken into account. The term “corporate”, the independent variable of the research model, refers to the Corporate Governance Quality Index consisting of different corporate governance quality indicators (*board, female, master, free, asset, freef, sh*) of the companies. The term ε also denotes the term of error.

Augmented Mean Group Estimator (AMG) was also used in the study to perform the robustness of the GMM method. This method was developed by Eberhardt and Bond in 2009. Disregarding the cross-sectional dependency makes this method, one of the second-

generation estimator models, advantageous (Eberhardt & Bond, 2009; Baysal Kar, 2019). On the other hand, it is not a correct approach to expect the direction and value of the effect of corporate governance quality on firm value to be the same for every company in this study. For this reason, it would be more appropriate to prefer heterogeneous panel estimators in the study. The AMG test takes into account the time series characteristics of the panel variables as well as the differences of both observable and unobservable factors. In addition, since this test estimates by weighting the arithmetic mean of the cointegration coefficients, it is more powerful than other estimator methods with this advantage (Özcan & Özmen, 2018, p. 45).

The hypothesis to be tested in the study is as follows: *The corporate governance quality of companies operating in the BIST Corporate Governance Index has a positive impact on firm value*.

3 Results

First of all, statistical analyzes were made to determine the values for the frequency values of the variables. The frequency table is presented to create the variables in an ordered manner and to infer the general/diffuse trend of the data (Akademik Veri Yayınlama Sistemi, 2021). In this context, the frequency values of the variables that make up the corporate governance quality index of the companies are presented in Table 2.

Table 2 | Summary Statistics

Variables	Obs	Mean	Std. Dev.	Min.	Max.
firmv	255	0.6569154	0.5943498	0.25	127.6141667
board	255	9.305882	2.251	5	15
female	255	0.1353512	0.1279919	0	0.5555556
master	255	0.4910392	0.1708507	0	0.85
free	255	0.2995548	0.0802979	0.0769231	0.5714286
asset	255	3.718353	0.8395324	1.39794	5.659.959
freef	255	0.3518125	0.177347	0.1082	0.8637
sh	255	0.4828914	0.1722786	0.097	0.8918
corporate	255	0.027304	0.8199494	-2.250485	2.39001

Source: Authors

Since the firm values differ from firm to firm and are high in some firms, the analysis was continued by taking the logarithm of the firm values. It has been found that the frequency values of some variables are negative. For example, the corporate variable of the study was created by converting different corporate management quality variables of companies into the index with PCA as mentioned before. The significant thing for index values is that they are close to “0”. Index values can be positive as well as negative.

The cross-sectional dependence, autocorrelation and varying variance test results of the variables are shown in Table 3. Cross-section dependency is based on the assumption that the cross-sections that make up the panel are independent of each other, and that all companies will be equally affected by a shock that may occur in one of the companies that make up the panel (Altıntaş & Mercan, 2015, p. 361). In this case, the results of the

analysis will not be accurate enough. To prevent this case, secondary generation tests will be used in the case of cross-section dependency. Autocorrelation indicates the relationship between error terms. That is, the error term of any variable should not affect the error term of another variable. If it does, it is detected that there is an autocorrelation problem (İuzef, 2021a). In the regression equation, one of the basic assumptions is that the random error terms in the regression function of the population have constant variance, that is, the error term variances are equal. If they are not equal, the results for the predicted parameters will not be reliable. This situation will also be called the variable variance problem (Iuzef, 2021b).

Table 3 | Heterocestasticity Autocorrelation Cross Sectional Dependence Problem

	Breusch-Pagan/Cook-Weisberg Test For Heteroskedasticity		Wooldridge Test For Autocorrelation		Pesaran's Test Of Cross- Sectional Independence	
	Chi2	**Prob.**	**F Stat.**	**Prob.**	**P Value**	**Prob.**
Model	11.782	0.2289	2.080	0.1555	17.431	0.0000

Source: Authors

As can be seen from Table 3. it is noticed that there is no Heteroskedasticity and no autocorrelation problem between variables, but cross-sectional dependency is a problem. For this reason, secondary generation unit root tests, which take into account the cross-sectional dependency, were used in the analysis. However, GMM and AMG Augmented Mean Group Estimators, which also take into account the cross-sectional dependency, were used in the study.

It will cause variability in the analysis results in case of deviation in a series over time. In this case, it is concluded that the variables have a unit root, that is, they are not stable. Therefore, it is very important to measure the stable levels of the variables. The unit root test can also be expressed as a shift random walk (Ekolar, 2021). Primary generation unit root tests will not be used because there was a cross-sectional dependency problem between the variables in previous diagnostic tests. For this reason, CADF and CIPS unit root tests, the second-generation unit root tests, were used.

Table 4 | CADF/CIPS Unit Root Tests

	CADF Test Statistics							
	Constant	**%1**	**%5**	**%10**	**Constant and Trend**	**%1**	**%5**	**%10**
Firmv	-2.610	-5.71	-3.94	-3.25	-1.710	-7.69	-4.91	-4.02
Corporate	-2.130	-5.71	-3.94	-3.25	-1.166	-7.69	-4.91	-4.02

Source: Authors

According to the Cadf Unit root test results, the fact that the values are greater than the critical values in both fixed and trended models indicates that the variables have a unit root. In addition, test results show that these variables are not constant in the series.

GMM test results indicating the relationship between variables are given in Table 5.

https://doi.org/10.18267/j.cebr.324

Table 5 | Dynamic Panel GMM Estimation Results

	Difference GMM		System GMM	
Dependent Variables	**Firmv**		**Firmv**	
	Coef .	**Prob.**	**Coef .**	**Prob.**
Firmv (-1)	-0.0742276	0.366	-0,091361	0,195
Corporate	0.115757	0.010**	0,1079415	0,017**
cons	0.0364048	0.015	0,0372526	0,000
Number of Groups	51		51	
Obs. number	153		204	
Wald chi2	12.73		6.77	
Prob	0.0017		0.0338	
Sargan Test	6.101507		11.18883	
p-value	0.2965		0.1912	
AR(1)	0.0002		0.6465	
AR(2)	0.7655		0.4044	

Source: Authors

Depending on the Wald values, the probability values below 5% show that the models are significant. In addition, the Sargan probability value below 5% indicates that the instrumental variables are valid, and the AR(2) value above 5% indicates that there is no autocorrelation problem in the variables. Both Difference GMM and System GMM indicated that the corporate governance qualities of the companies affect the company values. According to the results of Difference GMM, a 1-unit change in the quality of corporate governance of companies causes a change of 0.11 in the firm value. Additionally, according to System GMM results, it is seen that a 1-unit change in the quality of corporate governance of companies causes a change of 0.107 on the value of the firm.

The AMG obtained for the verification of GMM results and also for the relationship between variables are shown in Table 6.

Table 6 | AMG Group Estimator Results

	Panel AMG	
Dep. Var.: Firmv	**Coefficient**	**Prob.**
Corporate	0.0276881	0.029**
Wald chi2: 4.78		
Prob: 0.0288		
Root Mean Squared Error (sigma): 0.0673		

** Refers to 5% significance level.

Source: Authors

The results obtained with the AMG estimator, which takes into account the cross-sectional dependency, revealed that the corporate governance quality of firms has a strong positive effect on firm value. In other words, was concluded that a 1-unit change in the corporate

governance quality of the companies causes a change of 0.027 in the value of the firm. From this point on, it can be stated that improving the quality of corporate governance by companies will be a good step towards maximizing the firm value. Furthermore, the AMG results are also in line with and support the GMM results. And at the same time, these results confirm the GMM results. Finally, both GMM and Panel AMG results reveal that the corporate governance quality of companies operating in the BIST Corporate Governance Index has a positive effect on firm values. According to these results, the hypothesis is accepted.

3 Discussion and Conclusion

The paper aimed to examine the effect of corporate governance qualities of companies on firm values in this study. For this purpose, 5-year Corporate Quality management variables of the companies for the 2015-2019 period were used. 51 companies in the BIST Corporate Governance index were specified as the sample of the study. The annual average of the stock market values of companies expressing the firm value was used as the dependent variable of the study. The number of members on the board of directors of companies, the ratio of the number of female members in the board of directors to the total number of members, the ratio of the members with a license to the number of board members, the ratio of the number of independent members in the board to the number of board members, total assets of companies, the share of the public shares of the companies in the total and the share of the largest shareholder in the company's partnership share were used as the independent variables of the study. Independent variables were turned into a single variable with the Principal Component Analysis. Thus, the Corporate Governance Quality index is derived from these independent variables. The Corporate Governance Quality index also constitutes the independent variable of the research model. GMM method was preferred to test the relationships between variables. However, the AMG Augmented Mean Group Estimator was used to crosscheck the GMM analysis results.

According to the results of both Difference GMM and System GMM, it is concluded that corporate governance quality has a positive effect on the firm value of the companies. According to the results of Difference GMM, it was understood that a 1-unit change in the corporate governance qualities of companies causes a change of 0.11 on the firm value. Likewise, System GMM results indicated that a 1-unit change in the corporate governance qualities of companies causes a change of 0.107 in the value of the firm. According to the results of the AMG, which has a robustness quality, it was confirmed that the quality of corporate governance affects the firm value of the companies. AMG results also indicated that a 1-unit change in the corporate governance quality of the companies in the research sample caused a change of 0.027 in the firm value.

The fact that economies become more integrated with each other with globalization helps the innovations that occur in the economies of developed countries to be brought to the agenda of other countries in a short time. Parallel to the development of the capital markets of the countries, the change in the ownership structure of the enterprises and the necessity of business management to become fairer, more transparent, more accountable and more responsible is one of the issues that have been discussed in detail in the national and international media in the field of business in recent years. The main reason for these new discussions is that business managers act by ignoring the interests of their stakeholders (shareholders, managers, employees, suppliers, customers, competitors, potential

Volume 12 | Issue 3 | 2023
https://doi.org/10.18267/j.cebr.324

investors, credit institutions, unions, government and society) in the internal and external environment of the business. The corporate governance approach is a modern management approach that aims to increase the value of the firm in the long run by protecting the rights of partners and all other stakeholders, regulating the relations of all stakeholders with each other, by resolving conflicts of interest that may occur between stakeholders through consensus and also aims to increase the productivity of employees by setting strategic goals, and by minimizing operational risks by establishing internal and external audit mechanisms. From this point of view, the results of both methods we applied in this study revealed that the firm values of the companies were affected positively by the corporate governance quality. According to these results, companies that want to attract more capital and have more demand for their shares should increase the value of the firm.

One of the ways for companies to maximize firm value is to increase the quality of corporate governance. Companies can increase the quality of corporate governance the number by increasing the number of board members with a more objective and homogeneous method for more different ideas. In addition, companies can improve the quality of corporate governance by establishing an independent audit committee, different from their current functions, and by increasing the education quality of board members or by including members with a high level of education. Furthermore, companies can provide a more contemporary and critical understanding to the board of directors by increasing the number of women and independent members on the board of directors. This initiative can raise the quality of corporate governance. The quality of corporate governance can also be raised by attracting more capital to the firm with a capital increase that does not exceed the 50% free float ratio. According to the results of the study, it is predicted that a clearer relationship can be observed between corporate governance quality and firm value in a company where corporate governance principles required for institutionalism, transparency, and more strategic and advanced decision mechanisms are better implemented. One of the main goals of businesses is to maximize the value of the firm. One of the ways to achieve these goals is to have a better corporational structure and to improve the quality of corporate governance. Therefore, it is expected that the results of this study will guide the companies in BIST Corporate Governance Index, for publicly traded companies and even for all businesses.

It is thought that the data and results in this study may guide future studies. The latest financial data that can be obtained at the time of the preparation of the study were used and analyzed to better reflect the current situation. It was that the results obtained are related to the studies' outputs Nugroho (2020), Sitorus and Sitorus (2017), Ararat et al. (2017), Çelik et al. (2017), Yenice and Dölen (2013), Klimczak and Szafranski (2013), Chen et al. (2010) in the same direction. However, the results are inversely related to the studies of Stender and Rojahn (2020), Aluchna and Kuszewski (2020), Taufik et al. (2018), Kavcar and Gümrah (2017). In addition, the results are neutrally related to studies of Özçelik (2017), Leung, et al. (2014), Jia and Lian (2013). This study can be developed by increasing the number of variables, choosing a different sample, or increasing the number of periods examined. Borsa Istanbul companies in Turkey have been determined as the research universe due to the advantages of accessing data and contacting company officials if necessary. In future studies, the study can be improved by comparing Turkey and different country groups. However, since not every company traded on the stock exchange achieved the desired score in terms of corporate governance quality, only the companies operating in

the BIST Corporate Governance Index were examined. Another important limitation of the study is that the 2020 data were not included in the study because some companies did not disclose their 2020 annual reports as of the period when the study was initiated.

References

Ağca, A., & Önder, S. (2016). The relationship between profit management and corporate governance structures in businesses: An application on BIST. *Accounting & Auditing Review*, 15(47), 23-42.

Akademik Veri Yayınlama Sistemi. (2021). *Bölüm: III Spss'de İstatistiksel Verilerin Düzenlenmesi On Dokuz Mayıs Üniversitesi Ders Notları*. https://avys. omu. edu.tr › public › yoner › hafta-2. Date of Access: 02.06.2021.

Altıntaş, H., & Mercan, M. (2015). The relationship between research and development (R&D) expenditures: Panel cointegration analysis under cross sectional dependency on OECD countries. *Ankara Üniversitesi SBF Dergisi*, 70(2), 345-376. https://doi.org/10.1501/SBFder_0000002355.

Aluchna, M., & Kuszewski, T. (2020). Does corporate governance compliance increase company value? Evidence from the best practice of the board. *Journal of Risk and Financial Management*, 13(10), 242. https://doi.org/10.3390/jrfm13100242.

Ararat, M., Black, B. S., & Yuroglu, B. B. (2017). The effect of corporate governance on firm value and profitability: Time-series evidence from Turkey. *Emerging Markets Review*, 30, 113-132. https://doi.org/10.1016/j.ememar.2016.10.001.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-component models. *Journal of Econometrics*, 68(1), 29-52. https://doi.org/10.1016/0304-4076(94)01642-D.

Asquith, P. (1983). Merger bids, uncertainty and stockholder returns. *Journal of Financial Economics*, 11(1-4), 51-83. https://doi.org/10.1016/0304-405X(83)90005-3.

Baltagi, H. B. (2005). *Econometric analysis of panel data*. Third Edition. John Wiley & Sons Ltd.

Bawai, R., & Kusumadewi, H. (2021). Effect of corporate governance, firm characteristic, disclosure of corporate social responsibility (CSR) on firm value. *Jurnal Economia*, 17(1), 20-33.

Baysal Kar, B. (2019). Financialization and income inequality: A comparative analysis for different varieties of capitalism. *Journal of Yasar University*, 14(56), 422-440.

Berle, A. A., & Means, G. C. (1932). *The Modern Corporation & Private Property*. Harcourt, Brace & World Inc.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143. https://doi.org/10.1016/S0304-4076(98)00009-8.

Borsa İstanbul. (2021). *Kurumsal Yönetim Endeksi*. Retrieved from: https://www.borsaistanbul.com/ tr/ sayfa/163/kurumsal-yönetim-endeksi (21.03.2021).

Bouheni, F. B. (2014). Banking regulation and supervision: Can it enhance stability in Europe? *Journal of Financial Economic Policy*, 6(3), 244-269. https://doi.org/10.1108/JFEP-11-2013-0059.

Bushman, R. M., & Smith, A. J. (2003). Transparency, financial accounting information, and corporate governance. *Economic Policy Review*, 9(1), 65-87. https://doi.org/10.2139/ssrn.253302.

Cadbury Committee. (1992). *Report of the Committee on the Financial Aspects of Corporate Governance*. Gee and Co. publishing Ltd., p. 15.

Chen, W. P., Chung, H., Hsu, T. S., & Wu, S. (2010). External financing needs, corporate governance, and firm value. *Corporate Governance: An International Review*, 18(3), 234-249. https://doi.org/10.1111/j.1467-8683.2010.00801.x

Çelik, S., Acar, B., & Dönmez, E. (2017). The impact of board structure on risk-taking by financial firms. *Uşak University Journal of Social Sciences*, 10(IASOS Special Issue), 15-26.

Denis, D. (2016). Corporate Governance and the Goal of the Firm: In Defense of Shareholder Wealth Maximization. *Financial Review*, 51(4), 467–480. Portico. https://doi.org/10.1111/fire.12115.

Doğan, B., & Ekşi, İ. H. (2020). The effect of board of directors characteristics on risk and bank performance: Evidence from Turkey. *Economics and Business Review*, 6(3), 88-104. https://doi.org/10.18559/ebr.2020.3.5.

Dökmen, G. (2012). The effects of corruption on tax revenue: A dynamic panel data analysis. *Journal of Doğuş University*, 13(1), 41-51. https://doi.org/10.31671/dogus.2018.114.

Eberhardt, M., & Bond, S. (2009). Cross-section dependence in non-stationary panel models: a novel estimator. In: *Munich Personal RePEc Archive (MPRA)*, paper no. 17692. Retrieved from https://mpra.ub.uni-muenchen.de/id/eprint/17692.

Ekolar. (2021). *Birim Kök*. http://www.ekolar.com/birim-kok/#:~:text=Birim %20K%C3% B6k%20 Testi%20Nedir %3F,k%C3%B6kler %20dura%C4%9Fan% 20olmaman%C4%B1n% 20bir %20 nedenidir. Date of access: 02.06.2021.

El-Deeb, M. S., Halim, Y. T., & Elbayoumi, A. F. (2022). Disclosure tone, corporate governance and firm value: evidence from Egypt. *Asia-Pacific Journal of Accounting & Economics*, 29(3), 793-814. https://doi.org/10.1080/16081625.2021.1934708.

Ersungur, Ş. M., Kızıltan, A., & Polat, Ö. (2007). Türkiye'de bölgelerin sosyo-ekonomik gelişmişlik sıralaması: Temel bileşenler analizi. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 21(2), 55-66.

Hassaan, M. (2013). Corporate Governance and Compliance with IFRSs: MENA Evidence. Unabridged edition (February 1, 2013), Newcastle: Cambridge Scholars Publishing.

Investing.com. (2021).https://tr.investing.com/?__cf_chl_jschl_tk__=pmd_qcZKqidtJwvD0.eI9.upKUZGJGhuyGzyrPTXmst4MN8-1632902506-0-gqNtZGzNAhCjcnBszQil. Date of access: 11.03.2021.

İuzef. (2021a). *Otokorelasyon*. https:// cdn-acikogretim.istanbul.edu.tr/auzefcontent/20_21_Guz/ekonometri/14/index.html. Date of access: 02.06.2021.

İuzef. (2021b). *Değişen Varyans* -I. https://cdn-acikogretim.istanbul.edu.tr/auzefcontent/19_20_Guz/ekonometri/12/index.html. Date of access: 02.06.2021.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *The Journal of Financial Economics*, 3(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X.

Jolliffe, I. T. (2002). Principal Component Analysis. Springer-Verlag.

Karaca, S. S., & Savsar, A. (2012). The effect of financial ratıos on the fırm value: Evidence from Turkey. *Journal of Applied Economics Sciences*, 7(1), 56-63.

Karakılıç, A. B., & Bengü, V. (2019). The effect of corporate governance practices on firm value: Evidence from Turkey. *Journal of Accounting Institute*, 60, 9-19. https://doi.org/10.26650/MED.2019476390.

Kavcar, B., & Gümrah, Ü. (2017). Corporate governance principles compliance and firm value in Istanbul Stock Exchange: Case study. *The International Journal of Economic and Social Research*, 13(1), 103-114.

Keasy, K., Thompson, S., & Wrigth, M. (2005). *Corporate Governance, Accountability, Enterprise and International Comparisons*. 1st ed. John Wiley & Sons Inc.

Klimczak, K. M., & Szafranski, G. (2013). Coincident and forecast relevance of accounting numbers. *Accounting Research Journal*, 26(3), 239-255. https://doi.org/10.1108/ARJ-09-2012-0076.

Leung, S., Richardson, G., & Jaggi, B. (2014). Corporate board and board committee independence, firm performance and family ownership concentration: An analysis based on Hong Kong firms. *Journal of Contemporary Accounting and Economics*, 10(1), 16-31. https://doi.org/10.1016/j.jcae.2013.11.002.

Millstein, I. (2000). *Corporate Governance: The Role of The Market Forces*. OECD Working Paper.

Modigliani, F., & Miller M. (1958). The cost of capital, corporation finance, and the theory of investment. *American Economic Review*, 48(3), 261-297. https://doi.org/10.1080/17446540802345448.

Nugroho, B. Y. (2020). Corporate governance mechanism and cost of capital to firm value. *International Journal of Innovation, Creativity and Change*, 13(6), 794-807.

OECD. The Organization for Economic Co-Operation and Development, (2016). OECD Principles of Corporate Governance (Turkish version). Paris: OECD Publishing, Retrieved from http://dx.doi.org/10.1787/9789264257443-tr (16.11.2016).

Özcan, G., & Özmen, İ. (2018). Does globalization affect the inequality in emerging countries? *Kahramanmaraş Sütçü İmam Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 8(2), 35-52.

Özçelik, K. (2017). The impacts of corporate governance on firm value: An empirical application with Borsa Istanbul Holding & Investment Index (XHOLD) companies. *Ufuk University Institute of Social Sciences*, 6(11), 123-141.

Prommin, P., Jumreornvong, S., & Jiraporn, P. (2014). The effect of corporate governance on stock liquidity: The case of Thailand. *International Review of Economics & Finance*, 32, 132-142. https://doi.org/10.1016/j.iref.2014.01.011.

Safitri, V. A. D., & Nani, D. A. (2021). Does good corporate governance and eco–efficiency really contribute to firm value? An empirical study in Indonesian State-Owned Enterprises (Soes). *Akuntabilitas*, 15(1), 73-88.

Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Methuen & Co., Ltd.

Sitorus, T., & Sitorus, T. V. T. (2017). Good corporate governance and firm value: The role of corporate social responsibility. *Corporate Ownership & Control*, 14(4-1), 328-336. https://doi.org/10.22495/cocv14i4c1art14.

Stender, P., & Rojahn, J. (2020). The influence of internal and external corporate governance on firm value: Evidence from STOXX® Europe 600 index members. *Corporate Ownership & Control*, 18(1), 152-162. https://doi.org/10.22495/cocv18i1art12.

Taufik, T., Wahyudi, T., Raneo, A. P., Muizzuddin, M., & Mohamad, A. (2018). Do traditional accounting and economic value added mediate the relationship between corporate governance and firm value of Indonesian state-owned enterprises? *International Journal of Economics and*

Financial Issues, 8(3), 118-126. Retrieved from https://EconPapers.repec.org/RePEc:eco:journ1:2018-03-15.

Türedi, H., Karakaya, G., & İldem, M. (2015). Relationship between corporate governance and internal audit. *Journal of Turkish Court of Accounts*, 96(January-March), 55-74.

Yazıcıoğlu, İ., & Koç, H. (2009). A comparative study into the level of institutionalisation of family-run enterprises. *Selçuk University Journal of Social Sciences Institute*, 21, 497-507.

Yenice, S., & Dölen, T. (2013). The effect of harmonization to the principles of corporate governance on the firm value of publicly-traded firm in ISE. *International Journal of Management Economics and Business*, 9(19), 199-214. https://doi.org/10.11122/ijmeb.2013.9.19.332.

Zucker, L. G. (1987). Institutional theories of organization. *Annual Review of Sociology*, 13, 443-464. https://doi.org/10.1146/annurev.so.13.080187.002303.

The research article passed the review process. | Received: 28 June, 2022**; Revised:** 16 September, 2022**; Accepted:** 3 October, 2022**; Pre-published online:** 28 January, 2023**; Published in the regular issue:** 19 July, 2023.