

## CORPORATE GOVERNANCE, COST OF CAPITAL AND TOBIN Q: EMPIRICAL EVIDENCE FROM TURKEY LISTED COMPANIES

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### **Abstract**

Corporate governance has become an important issue with the shaking of trust in companies, as a result of international financial crises, corruption and corporate scandals since the 1980s. Corporate governance is a broad concept and defines the methods, structure and processes of a firm. In this context, the concept of corporate governance plays an important role in ensuring the firm's progress in the right direction and in an optimal way. In this study, the effect of corporate governance practices on firm performance and capital cost is investigated empirically in 46 manufacturing companies listed on Borsa Istanbul between 2010-2019. In this context, the difference GMM proposed by Arellano-Bond (1991) and the dynamic GMM estimator developed by Arellano-Bover (1995) were used. As a result of the study, it has been determined that corporate governance mechanisms have an impact on the performance and capital cost indicators of firms resulting in a positive effect.

**JEL Classification:** G34, D24, G11

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## 1. Introduction

A series of unexpected corporate failures in the 1990s has attracted attention to the importance of the corporate governance system. After the financial scandals, a problem of trust concerning companies has arisen and companies were faced with the necessity of proving their credibility. As a result, large firms have had to prepare annual reports that address and explain their corporate governance procedures. In addition, reports have been prepared by international organisations around the world, such as the OECD, stock exchanges and various governments, and some have established corporate governance principles (Tosuni, 2013: 8).

In the early 20th century, firms in the United Kingdom, the United States and many other developed countries became large and complex. The number of stakeholders started to increase and spread geographically all over the world. Most of the firms had shares traded on the stock exchange, and, while the number of intermediaries has increased, investors and managers have become increasingly distant from each other. Over the years, many questions have arisen, such as the requirement of having an audit committee as a permanent institution composed of independent external directors, and the role of state enterprises in society and their legal and moral obligations (Cadbury, 1992: 17).

The collapse of the early 21st century, a new collapse that hit the entire world, was followed by the 2007-2008 crisis. As a result of this financial crisis, significant weaknesses have emerged in relation to corporate governance. This is because those in charge of financial services in the company fail to protect their companies from taking extraordinary risks and management programmes do not serve their purpose. All this has demonstrated the importance of qualified supervision of the board of directors and joint risk management, as well as widely accepted standards and the importance of further development of the Code (Kirkpatrick, 2009: 3). The Code has changed over the years and the last edition of the Corporate Governance Principles was published in 2014 by the Financial Reporting Council.

Recently, the term 'Corporate governance' has become popular, due to increasing concerns about corporate fraud and fraudulent financial reporting, among professional bodies in both developed and developing economies in different environments, such as regulators and academics. After the collapse of many companies around the world, interest in corporate governance has increased in both institutional and academic research (Shah *et al.* 2009: 626). However, it makes it difficult for corporate governance to have a generally accepted definition because of differences in culture, legal systems and historical developments from country to country. Researchers develop their own ideas on how to define 'corporate governance' in the disciplines of law, economics, accounting and management (Armstrong *et al.* 2005: 35). In other words, there is no general definition of corporate governance in the world. Because this concept can be defined in different ways, depending on where, for what purpose and by whom, it may vary from country to country and, even, from institution to institution.

The concept of corporate governance can be viewed from two perspectives, namely a narrow and a broad one, depending on the views of policy makers, practitioners and theorists (Solomon, 2010: 1). From a narrow perspective, corporate governance may be aiming to maximise stakeholders and protect them as much as possible; however, from a broader perspective, it is also responsible for ensuring that stakeholders other than those of the company's can make decisions more easily (Maher and Andersson, 2000: 3). In other words, from a narrow perspective, while corporate governance strengthens relationships between stakeholders, executives, auditors and other stakeholders, from a broad perspective, corporate governance covers investor confidence, efficient capital allocation and welfare development in economies (Fülöp, 2014: 617). In general, while corporate governance refers to private and public institutions in a market economy, including laws, regulations and accepted business practices governing the relationship between firm managers and entrepreneurs, on the other hand, it also emphasises the investment of resources in firms (Oman, 2001: 13). The term corporate governance mainly refers to the relationships between governance, board of directors, shareholders and other stakeholders in a firm. These relationships provide a framework for setting corporate goals and monitoring performance (Mehran, 2003: 1).

The issue of capital cost has become one of the most popular and debated issues in finance, especially since the second half of the 20th century. The two most important points in these discussions are the following: in today's large-scale companies the problem of investing high amounts of capital in accordance with the principle of rationality and cost calculations, in particular equity cost calculations, is a complex process requiring the adoption of a specific stock valuation method and including the concept of opportunity cost (Tecer, 1980:1).

The cost of capital of enterprises varies according to their capital structure. It is important to know the costs of the resources used to maximise the welfare of stakeholders in the enterprises and to strive to reduce costs by creating an optimal combination between debt and equity. In this context, it is of great importance for the economy, as well as for the firm, that the cost of capital be calculated accurately or, at least, as accurately as possible. While a high capital cost calculated leads to the rejection of a project and decreases growth rate, a low capital cost calculated, on the other hand, has an adverse effect on the economy by disrupting optimal distribution of resources. In this sense, the cost of capital constitutes a criterion for the company in making investment decisions. Accurate calculation of capital cost is of great importance in the following matters (Uzkaralar, 2017: 96).

- Making financial decisions;
- Determining and maximising company value;
- Making accurate investment decisions and capital budgeting decisions;
- Determining an optimal capital structure;
- Making decisions about issues such as bond issuance, leasing and asset management.

Firms can achieve results, such as better access to external financing, higher firm performance, and lower costs, by implementing the corporate governance system. Turkey's benefit from these advantages depends on the ability to resolve socio-economic problems, to determine how to strengthen the capital market capacity and to establish ethical and general corporate governance standards. However, the global crisis in 2008 increased awareness of the need to develop a corporate management system to improve financial transparency in Turkey. Therefore, Turkey has given priority to corporate governance rules in order to enhance its economy. In this context, corporate governance principles and internal control mechanisms need to be improved first of all.

The purpose of this study is to investigate the role of corporate governance in regard to firm performance and cost of capital. In this context, the relationship between corporate governance practices, firm performance and capital cost for BIST Manufacturing Industry firms between 2010-2019 have been empirically examined. What was used, in order to measure the variables of corporate governance mechanisms, firm performance and capital cost, was data from the annual activity and financial reports released on the Public Disclosure Platform of Borsa Istanbul website ([investing.com](http://investing.com)) and the official website of the companies. Unlike other studies, this one also examines the relationship between corporate governance mechanisms and cost of capital.

## **2. Corporate Governance in Turkey**

Firm scandals and financial crises have led to seeking new ways for countries to protect themselves. Therefore, countries have had to make legal arrangements in the field of corporate governance within the framework of their specific circumstances.

In Turkey, practices related to corporate governance started later than in other countries. When the world started to keep up with international commercial and economic developments, corporate governance practices became inevitable. With time, corporate governance has been established in Turkey with the help of civic society organisations and state-supported institutions.

The first studies in the field of corporate governance in Turkey were undertaken by TÜSİAD in 2002. TÜSİAD and other non-governmental organisations established the basis for corporate governance in Turkey. However, while these studies were being carried out, there was no "corporate governance" concept in legislation. It was in 2012 that the concept of corporate governance was included in the New TCC for the first time.

Institutions and legislators who regulate and supervise corporate governance have established rules by adhering to these principles. The first task completed, taking advantage of the best practices of regulatory institutions in Turkey, was realized by TÜSİAD, which is a non-governmental organisation. This study was called "Corporate Governance Code of Best Practice: Composition and Functioning of the Board of Directors". This study, carried out by TÜSİAD, was followed by legal

regulations and, thus, corporate governance acquired a legal dimension. Subsequently, the Capital Markets Board of Turkey (CMB) implemented a number of activities to encourage compliance with the regulations on corporate governance. A second study in this direction in Turkey concerned the establishment of the Corporate Governance Association in 2003 for adopting corporate governance in Turkey, developing and using best corporate governance practices. Another study, conducted in the same year, was carried out by the Capital Markets Board and, in 2003, corporate governance principles were put into practice in publicly traded companies. The study, which was prepared by the CMB in 2003, concerned the first legal regulation. Then, in 2006, the Banking Regulation and Supervision Agency (BRSA) established corporate governance principles for banks. However, important regulations have been made in the field of corporate governance system with the New Turkish Commercial Code No. 6102 (Alp and Kılıç, 2014: 106). The new Capital Market Law, No 6362 published on 30.12.2012, marked the beginning of a new era in terms of corporate governance legislation. These regulations, which were updated in time and finalised in 2014 and titled Corporate Governance Communiqué, ensured any public company in Turkey and this is very important in terms of compliance with corporate governance principles. These regulations are based on the principles set by the OECD. In addition, the Turkish Commercial Code, which entered into force in 2012, introduced important provisions concerning Boards of Directors and General Assemblies. Legislative provisions to make the audit mechanism more effective, albeit softened with subsequent amendments, were a serious step taken in this regard. The concept of corporate governance in the “Duties and Powers” section of the previous law has been examined in detail under the heading “Corporate Governance Principles” in the third section of the New Capital Market Law. One of the important points discussed in this section is the application of equal rules for all firms under equal conditions in order to prevent unfair competition. Another important point is that publicly held companies must launch the transactions to be determined by the Board after the decision of the Board of Directors. The CMB also established the BIST Corporate Governance Index (XKURY) in 2007. Companies graded on compliance with corporate governance principles were included in the index and discounts were made on the charges imposed on these firms. Thus, companies were encouraged to rate their levels of compliance with corporate governance principles in order to enjoy cost advantages. At the beginning of the calculation (31.08.2007), four companies were included in the index and this number increased to seven at the end of 2007. In 2019, the total number of publicly traded companies in the index increased to 47.

As a result, those who work within the scope of corporate governance in Turkey and as heads of organisations that address this issue are: TUSIAD, BRSA, CMB and TKYD. Additionally, BIST, Public Oversight Authority (KGK) and the Corporate Governance Forum of Turkey (CGFT) also participate as organisations providing important contributions in this area.

### ***Cost of Capital and Corporate Governance Relationship***

Since Jensen and Meckling (1976) introduced the concept of proxy contest to finance theory, it has been accepted that weak corporate governance processes cause proxy problems and increase uncertainty about firms' future cash flows. Based on this premise, in theoretical and applied studies, the relationship between corporate governance and capital cost has begun to be examined, and research aspiring to reveal the direction of this relationship has gained importance (Uzkaralar, 2017: 135).

Corporate governance offers a number of mechanisms that aim to reduce the costs of proxy arising from asymmetric information. These mechanisms ensure independent supervision of firm management and enable effective decisions to be taken to increase firm value. These mechanisms prevent company management from adopting opportunistic behaviours in their favour and promote practices that prevent firm value decrease. In addition, corporate governance practices enable access to more transparent financial information and public disclosure of more private information, while reducing risks faced by investors, and make it easier for firms to find more cost-effective financing (Ashbaugh *et al.* 2004: 6).

Good corporate governance practices prevent cash flow seizing and violating the rights of minority shareholders and managers who control power. With increased corporate governance quality, investors have more confidence in a company. Increasing the confidence of investors provides a firm more capital flows at a lower cost (La Porta *et al.*, 2002: 1164). Good corporate governance practices offer to both shareholders and other stakeholders important assurance that their rights are protected, help companies reduce their cost of capital and facilitate company access to capital markets. Successful corporate governance practices, while reducing the capital cost of firms, increase financing facilities and liquidity to provide more funds from capital markets (Öztürk and Demirgüneş, 2008: 395).

### ***Company Performance and Corporate Governance Relationship***

A company's performance is significantly affected by corporate governance. If functions are appropriately created for the corporate governance system, it attracts investments and maximises the funds of the firm, enhancing its strength and resulting in the firm performance increase desired. In other words, effective corporate governance protects the firm against potential financial difficulties and increases growth. Therefore, corporate governance plays a key role in the growth of firm performance (Ehikioya, 2009: 232).

Scientific research shows that international investors find corporate governance practices in companies at least as important as their financial performance, that they think this issue is more important for countries that need to reform investment decision making and that are ready to pay more for companies with good corporate governance practices (CMB, 2003: 2).

### 3. Data and Methodology

#### 3.1 Sample

Data were obtained from two sources: firstly, information regarding companies' corporate governance practices was manually collected from the annual reports of companies on the Public Disclosure Platform (PDP) website. Secondly, financial data were collected from the Finnet database. The manufacturing industry sector is discussed since it includes companies with the highest market liquidity and assets in the Istanbul Stock Exchange (ISE). The research was carried out on 46 manufacturing industry companies continuously traded in Borsa Istanbul between 2010 and 2019. Although the total number of BIST manufacturing industry companies was 178, as of 2018, 46 companies, which published their annual reports between 2010 and 2019 without interruption and the variables of which were determined in the analysis, were included in the study. Sample firms are distributed among many sectors of the economy (Table 1).

**Table 1.** Firms by Industry

Paper and Paper Products, Printing and Publishing	3	6.52
Textile, Apparel and Leather	5	10.87
Non-Metallic Mineral Products	6	13.04
Food, Beverage and Tobacco	9	19.57
Fabricated Metal Products, Machinery, Electrical Equipment, and Transportation Vehicles	11	23.91
Other	1	2.17
Chemicals, Petroleum, Rubber and Plastic Products	8	17.39
Basic Metal	3	6.52
Total	46	100.00

#### 3.2. Variables

##### *Measurement of Corporate Governance Quality*

Although various approaches have been proposed in relevant literature to evaluate corporate governance, there is no consensus (Regalli and Soana 2012; Zhu 2014; Bozec *et al.* 2014; Abobakr, 2017). Studies suggest indicators that include a variety of corporate governance practices, which provide a comprehensive view of the quality of a company's corporate governance (Aguilera and Desender, 2012). These indicators are based on various factors, such as board structure and property structure characteristics (Correia *et al.* 2011; Ntim, 2013; Titova, 2016; Vintilă and Paunescu 2016; Detthamrong *et al.* 2017; Bebchuk *et al.* 2017; Suryanto *et al.* 2017; Gafoor *et al.* 2018; Assenga *et al.* 2018; Hakimi *et al.* 2018; Sarkar and Sarkar, 2018; Lewellen and Katharina 2018).

In this study, seven independent variables were used as corporate governance variables, including board size (BOARD), ratio of women managers on the board of directors (WOMEN), range of institutional investor ownership (OWN), ratio of foreign managers in the board of directors (FOR), ratio of independent members of the board of directors (IND), Chairperson's Busy (BUSY) and CEO duality (CEO). These variables are explained below.

*Board Size:* This variable, which represents the size of the board, was added to the model by taking the logarithm of the number of board members. Board size (BOARD), within the framework of the authority granted by shareholders at the general assembly, uses its powers and responsibilities in line with internal regulations, legislation, policies and the main contract and represents the company (CMB, 2014: 24). When making decisions, BOARD aims to maximise the firm's market value. For this purpose, BOARD performs the company's business in a way that ensures shareholders make a long-term and stable profit. While doing this, BOARD also takes care not to disturb the delicate balance between stakeholders and growth requirements of the firm (CMB, 2003: 37).

*Women Managers on the Board of Directors:* This variable was added to the model by proportioning the number of women board members to the total number of board members. The representation of women in the board of directors has recently been examined as an important matter because women's boards of directors highlight the benefits of gender diversity on financial performance (Julizaerma and Sori, 2012: 1083). Most of the regulations on gender diversity concerning the participation of women in boards of directors are based on the view that women board members have a positive effect on the corporate governance of the firm. According to this view, boards of directors can increase their activities by incorporating women board members and creating a wider pool of talent (Adams and Ferreira, 2009: 292). At the same time, it is stated that women board members can contribute positively to the value of the company with the different perspective they will contribute to the decision-making process (Karayel and Doğan, 2014: 76).

*Foreign Managers in the Board of Directors:* This variable was added to the model by proportioning the number of foreign board members to the total number of board members. Foreign managers can bring new technology and modern management techniques to the firm, improve corporate governance, apply better supervision, and then improve firm performance. Particularly, in developing countries, such as Turkey, foreign investors are needed to cover current account deficits. The implementation of corporate governance practices, in accordance with international standards, is one of the most important guarantees for foreign investors (Özsöz *et al.* 2014). Oxelheim and Randoy (2003) have identified a significantly higher value for companies with foreign board members by establishing a sample from companies based in Norway or Sweden.

*Independent Members of the Board of Directors:* Fama and Jensen (1983b) show that managers of higher independence boards are more effective than less independent committees. External directors can decide more independently and are better decision-makers over long periods of time. Cadbury (1992) argues that independence of managers increases the attention of the board. Independent managers' financial 'freedom' enables them to monitor the company more efficiently and this is a strong point that helps managers control opportunistic behaviour. A number of reforms have been made to improve corporate governance practices related to board independence.

*Chairperson's Busy:* The chairperson of the board is defined as 1 if it has 3 or more posts and 0 if not. Busy executives are generally expected to be less active observers than those participating in fewer committees. Managers may need to spend more time and attention in order to effectively carry out their complex tasks, and the supervisory and consulting roles that need their attention. Therefore, it can be said that a busy manager has a negative effect on firm performance and cost. Core *et al.* (1999) found that the number of busy managers was associated with less effective corporate governance and higher CEO salaries. Fich and Shivdasani (2005) document that when managers serve on three or more boards, firms have lower market value book value ratios and exhibit lower operating profitability.

*Institutional Investor Ownership:* This is obtained through dividing the number of shares institutional investors hold by the number of firm shares in circulation. This ratio shows the proportion of the shares in circulation purchased by institutional investors. As corporate investors avoid risky investments, increasing institutional investor ownership may mean reducing the risk level of the firm or following a more risk-free policy than other companies. The performance of companies undertaking less risk may increase, but decrease may be seen in the performance of these firms because they cannot take advantage of opportunities.

*CEO Duality:* The duality of the CEO is that the general manager is also the chairperson of the board of directors. The general manager is also defined as 1 if the chairperson of the board of directors, and 0 if not. According to the representation theory, the duality practice creates a unity of command that enables the firm to focus on its objectives and make decisions faster (Boyd, 1995: 302). According to the resource dependence theory, the fact that the chairperson or member of the board is also the CEO may reduce the number and diversity of resource links outside the company. Therefore, strong leadership structure resulting from such duality will adversely affect firm performance.

In the study, leverage ratio and standard deviation of stock returns were used as control variables.

*Leverage Ratio:* It is calculated by proportioning the total liabilities of firms to their total assets. What this ratio reveals is what percentage of the assets are financed by debt. The ability of firms with a high total debt ratio to continue their operations

depends on debt. If this ratio is too high, the risk of the firm may increase and it may fall into financial distress or even face bankruptcy. Therefore, mobility at this rate may have an impact on the performance of a firm's financial structure and on WACC. While highly leveraged firms are risky, they will not always be able to repay their debts and obtain new loans. While high leverage is often a negative situation, the debt investment relationship may positively affect firms' return on equity (Doğan, 2013: 127).

*Standard Deviation of Stock Returns:* In an effective capital market, investors use the best conditional estimates of variables, such as standard deviation of stock returns, affecting the expected return on the market. Information on stock returns is important both for general investors and stakeholders of publicly traded companies. Market anomalies help investors gain from market movements. Standard deviation is a measure used to estimate how much a random variable in statistics varies from its average. In investment, the standard deviation of return is used as a risk measure. The higher the value, the higher the return volatility of a given asset. The standard deviation of monthly stock returns, calculated over a rolling 10-year window, is used to control for total risk in the regressions involving Q and cost.

*Models and Methods:* Within the scope and aim of the study, the following models have been developed and the effects of corporate governance mechanisms (management and ownership structure) on firm performance and cost of capital have been investigated. Relationship testing models are shown below:

$$WACC_{it} = \beta_0 + \beta_1 WACC_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 FOR_{it} + \beta_7 IND_{it} + \beta_8 BUSY_{it} + \beta_9 LEV_{it} + \beta_{10} SD_{it} + \varepsilon_{it}$$

$$TOBINQ_{it} = \beta_0 + \beta_1 TOBINQ_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 FOR_{it} + \beta_7 IND_{it} + \beta_8 BUSY_{it} + \beta_9 LEV_{it} + \beta_{10} SD_{it} + \varepsilon_{it}$$

Where, t denotes the time period; i refers to the firm;  $\varepsilon_{it}$  is the error term. The model also includes the weighted average cost of capital (WACC), the Tobin Q ratio (TOBINQ), the size of the board (BOARD), the proportion of women managers on the board (WOMEN), the proportion of foreign managers on the board (FOR), the proportion of independent members on the board (IND), CEO duality (CEO), the intensity of the chairperson of the board (BUSY), institutional investor ownership (OWN), standard deviation of stock returns (SD), and leverage ratio (LEV).

### *Calculation of Cost of Capital*

Perhaps one of the most difficult and controversial issues in the discipline of finance is how to calculate the cost of capital and this calculation is of great importance for many segments. In practice, there are large differences in how the cost of capital should be determined. Despite some theoretical and practical challenges, it is imperative and useful for each firm to grasp the significance of the matter and, to the extent possible, make the necessary efforts to determine approximate values of the actual capital cost (Akgüç, 1998: 438).

In general terms, capital cost is the minimum rate of return expected from a firm's investments, which will satisfy both equity and lender investors. In practice, the cost of capital is found by the weighted average of the costs of funds obtained from different sources; in fact, however, the cost of capital is a function of the risk of firm assets and of the debt and equity. The weighted average cost of capital (WACC) method is often used when it is called cost of capital due to its easy implementation (Vernimmen, 2009: 448).

The basis of corporate governance is reducing the freedom to obtain special interests of managers and majority stakeholders and, thus, increase a firm's future cash flows, affecting the firm's value. In this context, Hail and Leuz (2006) argue that the valuation of corporate governance may reflect investors' risk premium demand. According to the authors, better corporate governance can reduce the problem of asymmetric information, so it can reduce the uncertainty of a firm's future cash inflows. Therefore, the higher the uncertainty and borrowing of cash flows, the higher the risk premium that investors and creditors will demand. This leads to increase in a firm's WACC.

There is consensus in the academic world and among finance managers on the search for the optimum capital structure that will minimise average capital cost for firms. In this context, the WACC method reflects the traditional approach to the cost of capital. In other words, the method is based on the assumption that a change in capital structure may affect the cost of capital (Akgüç, 1998: 472).

The WACC method requires that the cost of each of the funds used from various sources when carrying out company activities be known. In order to calculate average cost, it is necessary to know the ratios of various resources that make up a firm's capital structure. The calculation of a firm's capital cost uses the proportional weights of the resources used in funding and the cost calculated. Accordingly, costs and rates of ordinary shares, privileged shares, bonds and other long term resources, respectively, are calculated to arrive at the WACC of the company (Kaya, 2015: 195).

Funds provided by enterprises from various sources have separate costs for firms. WACC, on the other hand, is the sum of post-tax costs of various funding sources multiplied by their share in the firm's capital. This is represented in the following formula (Ceylan, 2000: 178):

$$WACC = \sum_{t=1}^n W_t i_t \quad (1)$$

Where,

WACC: Weighted average cost of capital

$W_t$ : Share of "t" in total resources

$i_t$ : Cost of resource "t"

If a firm's capital structure consists of more than one source, the weighted average cost of capital is calculated using the following equation (2):

$$i_0 = W_d i_d (1 - t) + W_i i_i + W_p i_p + W_r i_r + W_e i_e \quad (2)$$

Where,

$i_0$ : Weighted average cost of capital

$i_d$ : Pre-tax cost of debt

$i_t$ : Cost of spontaneous resources (such as taxes, premiums and fees, expenses to be paid)

$i_p$ : Cost of resources provided by issuing privileged shares

$i_r$ : The cost of undistributed profits

$i_e$ : The cost of resources provided by issuance of ordinary shares

t: Tax rates

W: Share of each resource as a percentage of the total

In this study, WACC was calculated using the following formula:

$$WACC = W_d i_d (1 - t) + W_e i_e ,$$

where  $i_d$  represents the cost of debt,  $i_e$  the cost of equity calculated using the Capital Asset Pricing Model (CAPM),  $W_d$  the debt weight,  $W_e$  the weight of equity and  $t$  corporate tax rates. Debt weight is calculated as the value of the debt / the value of the debt + the value of equity, while the weight of the equity is calculated as the value of equity / value of the debt + the value of equity. In this equation,  $W_d + W_e = 1$ . Corporate tax rates are obtained from the Finnet programme. The cost of equity is calculated with the CAPM, as follows:

$$i_e = r_f + \beta_i \times (r_m - r_f)$$

where;  $r_f$  is the risk-free rate of return,  $\beta_i$  the systematic risk of shares (sensitivity to market risk),  $r_m$  the return of the market portfolio, and  $r_m - r_f$  the market risk premium.

The 10-year bond interest data of Turkey's Treasury were used as a risk-free return in the cost of equity calculation and CAPM calculation. The annual return of the BIST 100 Index was used as the return of the market portfolio, and these data were obtained from the official website of Borsa Istanbul. The risk-free return in the relevant period is subtracted from the market return to calculate market risk premiums. Annual beta coefficients and cost of debt data were obtained from the Finnet programme. Market risk premium and beta coefficient are multiplied to obtain total risk premium data.

Some authors, such as Lambert, *et al.* (2007), Parigi, *et al.* (2015), Ali Shah and Butt (2009), and Qubbaja (2018), used CAPM to calculate the cost of equity.

### *Measuring Performance*

Various performance measurement criteria are used to evaluate the performance of companies. A distinction is drawn between traditional and modern financial performance measurement criteria due to the increasing number of criteria and the differentiation of their calculation and use purposes. While traditional measures are described as accounting-based criteria, modern criteria are expressed as value-based criteria (Şenol and Ulutaş, 2018: 84).

The most prominent feature of traditional financial performance measurement methods is that they focus on company activities instead of stakeholder-based perspectives. Traditional criteria are based on accounting data. Therefore, traditional criteria are also called accounting-based financial performance criteria (Kuğu and Kırılı, 2013: 173). In performance measurement, data concerning profitability, balance sheet size, sales, costs and production, etc. are used. These performance measurement criteria, which can be monitored through financial statements or management accounting systems for most companies, show the firm's past performance (Gökbulut, 2009: 54). These criteria emerge by dividing the profit generated, as a result of accounting activities, by the value to be calculated, and are based on the results of activities occurring within a given period (Şenol and Ulutaş, 2018: 86). Examples of these are return on assets and return on equity.

Financial markets are the most intense realms of globalisation in the world. Today, it has become possible to reach almost all markets and stock exchanges around the world through opportunities provided by technology. As a result, as financial markets deepened, market participants became heterogeneous by losing their national and regional characteristics. In parallel with these developments, measurement and valuation methods based on market performance have become widely used by all investors and analysts (Şenol and Ulutaş, 2018: 88). The most important feature of value-based financial performance criteria is that they are approaches that take account of stakeholder value. Tobin Q ratio can be used to make investment decisions about a company. The Tobin Q ratio is mainly based on the ratio of the market value of the firm's financial rights to the replacement value of firm assets (Lee and Tomkins,

1999: 20). The replacement value of assets in the denominator of the ratio is quite difficult to calculate because of the lack of a market for certain obsolete capital goods (Lindenberg and Ross, 1981: 12). In order to overcome this difficulty and make the calculation easier, some researchers have calculated Tobin Q-like rates. These studies are based on the Tobin Q ratio but differ in share and denominator for some items. Some relevant studies in relevant literature are those by Lindenberg and Ross (1981), Chung and Pruitt (1994), Lewellen and Badrinath (1997), Lee and Tomkins (1999). The ratio is calculated by dividing the total market value of equity and the carrying amount of liabilities by the carrying amount of total assets. As a result of this ratio, findings are obtained on how investors evaluate a company. Companies that are admired by investors undertake low risk and show high growth rate (Brigham and Houston, 2011: 112). The market value included in the numerator of this ratio is value in terms of supply and demand under the market conditions of a share. The ratio is proportionate to the equity of a firm's market value.

Data related to the variables used in the analysis were obtained from the financial statements and footnotes of companies (investing.com website) and their annual activity reports. Data from the 2010-2019 period were obtained from the annual reports, web pages, and footnotes of companies and from the Public Disclosure Platform. In this study, annual data of 46 manufacturing companies traded on Borsa Istanbul were used and a total of 10 periods (2010-2019) were analysed. Variables and calculation methods used in the research are presented in Appendix.

#### 4. Results

GMM is an effective estimation method classified as semi-parametric. There are significant advantages to using the GMM estimator instead of other estimators based on panel data. First, it is possible to control constant effects not changing over time using this method and horizontal-section fixed effects. Another advantage is that, in order to solve the internality problem that may occur with independent variables, it is possible to use the appropriate lag values of independent variables as tool variables (Albarran and Arellano, 2019: 18).

In dynamic panel analysis, there are two main GMM estimators, namely, the difference GMM and the system GMM. The consistency of the GMM estimator is tested by the Sargan test, which shows asymptotically  $\chi^2$  distribution for the GMM estimator. Because the data consider the time series property and do not include biased results to test the effects of corporate governance on weighted average cost of capital and firm value, this study used one of the dynamic panel estimation methods, i.e., the difference put forward by Arellano-Bond (1991), as well as the system GMM estimator developed by Arellano-Bover (1995).

The aim of this study is to investigate the relationship between corporate governance practices and capital cost and firm value. What will be revealed for this

purpose is the existence or absence of a relationship between corporate governance practices and capital cost and firm value; if there is a relationship, its direction will also be revealed.

Table 2 presents descriptive statistics on capital cost and firm performance and indicators on corporate governance quality. The table shows that firms have an average cost of capital (WACC) of 1.12. In parallel with the studies by Singhal 2014, Bangmek et al. 2018, Qubbaja 2018, Ilyas and Jan 2017, Khan 2016, the presence of firms with negative capital costs can also be mentioned with the effect of the cost of equity calculated with CAPM. The great decrease in returns of the market portfolio used in the calculation of equity cost with CAPM during crisis periods results in the equity cost being negative when compared to developed countries. A value of more than 1 in the ratio of TobinQ is a positive indicator for a company. Based on descriptive statistics, Tobin's average Q rate of 1.27 indicates that the average market value of businesses is higher than their book value and that businesses create value for shareholders. The logarithm of the average size of firms' boards of directors is about 1.94 and is smaller than that of developed countries. On average, 44% of firms have a dual position for the general manager and chairperson of the board of directors. In addition, on average, company boards hold 10% women board members, 14% foreign board members and 18% independent board members. Moreover, in 5% of companies, demanding duties are assigned on the chairmen of the board of directors. Firms also have about 58% institutional investor ownership.

**Table 2.** Descriptive Statistic

	Mean	Maximum	Minimum	Std. Dev.
WACC	1.120098	7.233000	-4.829000	2.083719
TOBINQ	1.267130	8.370000	0.370000	0.770194
BOARD	1.934957	2.710000	1.100000	0.290994
WOMEN	0.101990	0.500000	0.000000	0.123130
FOR	0.145397	1.000000	0.000000	0.232689
IND	0.182609	0.500000	0.000000	0.153751
CEO	0.441304	1.000000	0.000000	0.497083
BUSY	0.056522	1.000000	0.000000	0.231178
OWN	57.75197	100.0000	0.000000	26.14922
SD	0.874751	1.773168	-0.313279	0.312643
LEV	0.536804	1.130000	0.070000	0.193656

Table 3 presents is a cross correlation table. Change in the weighted average capital cost at the level shows positive correlation with the Tobin Q ratio. It was observed that there was a statistically significant correlation between most variables. According to this analysis, multicollinearity problems were not encountered between variables ( $R < 90\%$ ).

**Table 3.** Correlation Matrix

Correlation Probability	WACC	TOBINQ	BOARD	WOMEN	FOR	IND	CEO	BUSY	OWN	SD	LEV
WACC	1.000000										
	-----										
TOBINQ	0.025653	1.000000									
	0.5832	-----									
BOARD	-0.008590	0.079115	1.000000								
	0.8542	0.0901	-----								
WOMEN	0.009118	-0.101373	0.102669	1.000000							
	0.8454	0.0297	0.0277	-----							
FOR	-0.020803	0.358449	-0.023840	-0.129780	1.000000						
	0.6563	0.0000	0.6101	0.0053	-----						
IND	0.123613	0.085174	0.200885	0.008839	-0.093688	1.000000					
	0.0080	0.0680	0.0000	0.8500	0.0446	-----					
CEO	-0.058291	0.088219	0.026566	-0.081282	-0.013643	0.082395	1.000000				
	0.2121	0.0587	0.5698	0.0816	0.7704	0.0775	-----				
BUSY	-0.065492	-0.027964	0.114683	0.065691	-0.002964	0.000133	0.085809	1.000000			
	0.1608	0.5497	0.0139	0.1595	0.9495	0.9977	0.0659	-----			
OWN	0.039746	0.209008	0.106677	-0.230007	0.237187	-0.006297	-0.252365	-0.095448	1.000000		
	0.3951	0.0000	0.0221	0.0000	0.0000	0.8929	0.0000	0.0407	-----		
SD	-0.409446	-0.004385	-0.312695	-0.127916	0.110371	-0.400682	0.114970	-0.014959	-0.142984	1.000000	
	0.0000	0.9253	0.0000	0.0060	0.0179	0.0000	0.0136	0.7490	0.0021	-----	
LEV	-0.254268	0.083394	0.009881	-0.131026	0.117735	0.180566	0.214071	0.099425	-0.174597	0.084762	1.000000
	0.0000	0.0740	0.8326	0.0049	0.0115	0.0001	0.0000	0.0330	0.0002	0.0693	-----

Table 4 presents the results of difference GMM and system GMM estimators of the model regarding the relationship between capital cost and corporate governance mechanisms as well as the coefficients of the independent variables used to show the change in WACC.

The results were  $WACC_{i(t-1)}$ , lagged value of WACC dependent variable, and  $TOBINQ_{i(t-1)}$ , lagged value of TOBINQ dependent variable; the relationships between them were significantly inversely correlated at 1% level. Therefore, it is worth mentioning the negative effect of WACC from the previous period on the costs of capital for companies and the TOBINQ rates from the previous period on company profitability.

As shown in Table 4, where the results of the analysis conducted to investigate whether corporate management is effective on WACC and TOBINQ, increase in the size of the board has a positive effect on TOBINQ rates and WACC. According to these results, as the number of board members increases, profitability in companies increases

and capital cost decreases. This finding is confirmed by the work of Rad (2014), Anderson *et al.* (2003), Piot and Missonier-Piera (2007), Singhal (2014), Bozec *et al.* (2014), Bradley and Chen (2011), Belkhir (2009), Fauzi and Locke (2012), Veklenko (2016) and Berezinets *et al.* (2017). The result shows that the members of the board of directors are focused individuals with integrity and consistent behaviour and such a board can significantly increase firm value and reduce costs. More board members can also improve communication between all shareholders. This can have a positive effect on the company's performance and costs. In addition, this can be explained by the fact that boards with a high number of members provide more connections outside the firm, thus making it easier to access critical resources. Apart from that, large boards of directors can provide different advantages in obtaining information, which can positively impact company performance in the form of mergers and acquisitions. Although these results seem positive for the company, they may also be limiting. Larger boards of directors are also difficult to be put under pressure, and they are costly. In addition, if we combine this with representation theory there should be a limit on the number of members of the board of directors. It has been argued that there may be conflicts in terms of group dynamics in companies that exceed the limits specified, which may, consequently, have a negative effect on capital costs and the value of the company. The increase in the number of members of the board of directors may create an environment of conflict of interests and incompatibility among members, and may have a fluctuating effect on company costs. In weighted average capital cost calculations, equity cost is higher since the risk incurred is more than the borrowing cost. In this context, conflicts of interests and attitudes contrary to company interests may negatively affect shareholders, and, therefore, capital costs and performance.

The same is true when examining the ratio of women in the board of directors, which is another of the corporate governance mechanisms. The number of women on the board of directors shows a negative and statistically significant relationship with WACC and a positive and statistically significant relationship with TOBINQ. Considering these results, the increase in the number of women in companies' boards of directors decreases capital costs and increases company performance. This finding is confirmed by the work of Shrader *et al.* (1997), Carter *et al.* (2003), Campbell and Minguez-Vera (2008), Städtler (2016), Peni and Vähämaa (2010), and Usman, *et al.* (2019). If there are women members on the board, the independence of the board will increase. This will positively affect the value-based performance indicator TOBINQ and the cost indicator WACC. However, gender diversity can be seen as the process of presenting the different characters and abilities of women and men board members to the company. In addition, firms can increase their effectiveness by creating a wider pool of talent when women join as board members. Concerning women members in Turkey Serial: IV, No: 57 on "Corporate Governance Principles Communiqué

on Amending the Communiqué on the Determination and Implementation”, dated 11/02/2012, appeared in Official Gazette No 28201 and came into force. According to this communiqué, although there is no compulsory practice, the principle of “having at least one women member in the board of directors” has been introduced. The principle in question is advisory in accordance with the principle of “apply or explain if you do not apply” (Karayel and Doğan, 2014:76). This result supports the communiqué and can be recommended to increase the number of female members in the boards of directors since such action increases profitability and reduces costs for BIST companies. However, the situation in the number of members of the board of directors should not be ignored here. Although there are positive results achieved due to increasing the number of women in the board of directors, the board composition should be decided based on the maximum value and minimum cost point, after which there should be a limitation.

It is observed that the presence of independent board members also increases the company performance and the cost of capital. This finding is confirmed by the work of Hermalin and Weisbach (1991), Klein (2002), Agrawal and Chadha (2005), Dunn and Mayhew (2004), Weisbach (1988), Brickley *et al.* (1994), and Singhal (2014). The role of the board of directors is to provide independent supervision of the management and to hold management accountable for their activities to shareholders. If executives ally with each other, instead of protecting the interests of shareholders, the effectiveness of the board of directors may weaken. In this sense, the fact that the board of directors is not independent of the management is a management risk that may lead to decrease the shareholders’ wealth. The increased number of independent board members in the companies discussed in this study indicates that companies increase their performance but also their capital costs with a negative impact. When there are more independent managers, they will support useful monitoring and advisory functions, thereby strengthening monitoring shareholder funding. This will increase the performance and value of companies. Increase of independent members’ number in the board of directors will provide funds to companies and will help them provide cheaper funds and enhance confidence in terms of their investments; however, contrary to expectations, it has been concluded that the existence of independent board members lead to increased costs for firms.

According to the results of the analysis, the presence of foreign members on the board of directors positively affects the performance of firms while adversely affecting their costs. This finding is confirmed by the work of Ghazali (2010), Oxelheim and Randoy (2003), Sulong and Nor (2010), Marashdeh (2014), Ghazali (2010), Taufil-Mohd *et al.*, (2013), and Collin *et al.*, (2017). This is because foreign investors transfer their management skills and better technology and allow firms to easily access financial resources. This can help reduce conflict between managers and shareholders and affect firm performance. In addition, foreign investors can contribute to increased performance, increasing costs and operational efficiency by providing access to new

applications and technology. The results of the analysis in this study can be interpreted as indicating that new and expensive technology increases a company's needs and expenses, causing an increase in company capital costs.

When the effect of being the chairperson of the board of directors on the performance of the company was analysed for the same time period, it was determined that the CEO had a negative and significant effect on TOBINQ, the market-based performance indicator of duality. This finding is confirmed by the work of Brickley *vd.* (1994), Singh *et al.*, (2018), Kholief (2008), Amba (2014) ve Hafez (2015). According to the resource dependency theory, when the chairperson of the board is also the CEO, this can lead to decreased resource connections outside the firm, thereby reducing firm performance. In this context, results concerning TOBINQ support the resource dependency theory. Assessing the CEO duality practice for Turkey indicates that this makes it more difficult to supervise the general manager. One of the duties of the board of directors is to supervise the general manager. If the supervisor and the auditee are the same person, particularly within such a strong leadership structure, high performance of the company will be prevented. In other words, as a result of the separation of the two roles and their duties, while the general manager effectively manages the company, the chairperson of the board of directors will be able to supervise the work of the management. In addition, separating the duties of general manager and chairperson of the board of directors enables the board of directors to act more effectively and transparently. On the contrary, the CEO duality may cause the authority to be concentrated in the hands of one person and the general manager may act improperly. This situation can create problems for the company, preventing the independent decision making ability of the board of directors with the excessive increase of authority and making it difficult for strategic decisions to be reached.

A positive and significant relationship was determined between institutional investor ownership (OWN) and financial performance indicators and cost indicator. When these results are evaluated, in cases where institutional investor ownership (OWN) increases, the profitability of firms increases and so do their costs because they are negatively affected. This finding is confirmed by the work of Sias (1996), Aytakin and Sönmez (2016), Alipour and Amjadi (2011), Bhattacharya and Graham (2007), Potter (1992), Bushee and Noe (2000), Charfeddine and Elmarzougui (2010), and Ashbaugh *et al.*, (2004). It also shows that the presence of institutional investor potential has a positive effect on a firm's market value. As a result, increase in the number of corporate stakeholders will increase the reliability of the company for investors, which will positively affect company performance. Institutional investor presence has a positive effect because such investors have internal audit power and try to maximise their interests. More institutional investors in the board of directors should help companies provide funding and investment, and help them obtain cheaper funds. However, in this study, contrary to the expectations, it was indicated that firms increase their costs.

**Table 4.** Panel Data Analysis Results

Regressor	WACC	TOBINQ	WACC	TOBINQ
	Dynamic. diff. GMM		Dynamic Sys. GMM	
L-WACC	-0.289490**		-0.341646**	
L-TOBINQ		-0.124144**		-0.084585**
BOARD	-0.292569	0.533563**	-0.864507**	0.338095**
WOMEN	-3.403018 **	0.645599**	-2.223558**	0.275203**
IND	0.953941**	0.169428**	-0.049867	0.187265**
FOR	1.276314**	1.086245**	0.995234**	0.275021**
CEO	0.338083	-0.071671**	0.159337	-0.073504**
OWN	0.005006	0.003593**	0.013743**	0.001165
BUSY	-0.472315**	0.029234	-0.345420*	-0.042311**
LEV	-4.917122**	-0.145751*	-4.457720**	0.184107**
SD	-2.303288**	0.206858**	-1.637621**	0.251967**
Observations	460	460	460	460
J-Statistics	42.76503	42.55612	42.23772	43.83372
Arellano–Bond AR(1)	0.0000	0.0998	N/A	N/A
Arellano–Bond AR(2)	0.4438	0.1370	N/A	N/A

(\*) and (\*\*) show significance at the 5% and 1% levels, respectively. Dependent variables are weighted average capital cost (WACC) and Tobin Q ratio. In order to measure the effectiveness of variables, the J test, also known as the Sargan test, is insignificant and the acceptance of the null hypothesis shows that the variables are not only sufficient and valid, but also add more confidence to the model. Since the J-statistic probability value is insignificant in all established models, the independent variables used are considered to be significant. The reported p values for AR (1) and AR (2) are autocorrelation disorders in the first and second order first difference equations, and AR (1) should be meaningful and AR (2) should be meaningless. AR (1) and AR (2) results for System GMM are ignored due to data analysis using the Eviews programme.

A negative and statistically significant result was obtained between the BUSY variable, which measures the workload of chairmen, and capital costs and firm performances. This finding is confirmed by the work of Mohd *et al.*, (2016), and Fich and Shivdasani (2005). In this case, when the chairperson of the board holds 3 or more positions at the same time, there is a decrease in company performance and costs. We can express the decrease in costs by better following the progress in boards where the chairperson of the board is active, establishing a connection between boards and enabling each board to make less costly decisions. Inter-board information is more easily disseminated and costs are managed accordingly.

When the results of leverage ratio (LEV), which is the control variable, were analysed, a negative and statistically significant relationship was detected between WACC and LEV, while a positive and statistically significant relationship was observed between LEV and TOBINQ, at 1%, according to the system GMM result. This finding is confirmed by the work of Khatab *et al.*, (2011), Sagala (2003), Singhal (2014), Zhu (2014), Bozec *et al.*, (2014). Accordingly, it can be said that increase in total debts or decrease in total assets, while total debts are fixed, decreases the cost of capital and increases financial performance. The reducing effect of the leverage ratio on capital cost can be attributed to the fact that the debt provides a tax advantage and, thus, the debt is cheaper than equity. It can be seen that the leverage factor positively affects capital cost and firm value. It has been determined that the standard deviation of stock returns, which is another control variable, while enhancing a firms' performance, it has a negative impact on capital costs. This finding is confirmed by the work of Sharfman and Fernando (2008), El Ghouli *et al.* (2011). Based on this, stock returns can be said to have a positive effect on firms' performance and costs.

**Table 5.** Panel Data Analysis Results

Regressor	WACC	TOBINQ	WACC	TOBINQ
	Pooled		Fixed-Effects Panel	
BOARD	-0.924403**	0.222496**	-0.114409	0.222214
WOMEN	-0.685683	0.205655*	-0.797167	-0.015374
IND	0.129063	0.152536	1.471810*	-0.541497*
FOR	0.446636	0.662466**	0.585120	0.046996
CEO	0.095116	0.098784**	0.113333	-0.071634
OWN	-0.008792**	0.002379**	0.012428	0.003129
BUSY	-0.323771	-0.075792	-0.349064	-0.085111
LEV	-2.590719**	0.303779**	-2.062765**	0.188393
SD	-2.759407**	-0.027529	-1.498172**	0.448475**
Constant	7.194664	0.260609	2.738726	0.293043
Observations	460	460	460	460
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
No. of firms	46	46	46	46
R <sup>2</sup>	0.288022	0.282025	0.764432	0.820345

(\*) and (\*\*) show significance at the 5% and 1% levels, respectively.

Models are also estimated using OLS for additional robustness of results. Table 5 provides estimates for WACC and TOBINQ as the dependent variable. Results from OLS estimates confirm previous findings. The OLS model makes predictions for specific dimensions of corporate governance (board structure and features and senior management).

## Conclusion

This study has investigated whether the quality of shareholders under the control of Turkish firms is closely related to good corporate governance practices, which is a relevant research topic in recent literature. Based on the importance of corporate governance, the purpose of this study is to examine the impact of corporate governance practices of manufacturing industry companies the shares of which are traded on Borsa Istanbul (BIST), on TOBINQ, and on capital cost. The research included 46 companies continuously involved in the BIST manufacturing industry between 2010 and 2019, the annual reports of which could be accessed and obtained. In this context, since the data can be fully observed, balanced panel data analysis was performed in order to reach more accurate results. Two regression models have been developed within the scope of the research. Since the J-statistical probability value is meaningless in all of the established models, the independent variables used are considered valid.

Findings show that a good corporate management system will reduce capital costs of firms and increase their performance, thereby having a positive impact on firms' values. As a result of the study, a negative relationship was determined for the variables of capital cost and the size of the board of directors, the ratio of female members on the board of directors, and the workload of the chairperson. In this context, increasing these variables can reduce the costs of companies. Firms can effectively increase their profits by making efficient arrangements in these areas without losing this advantage. On the other hand, increasing the number of foreign members in the board of directors as well as corporate investor ownership may cause an increase in company costs in terms of turning to modern and advanced technology. This increase is a negative factor in terms of companies, but a positive and value-creating factor in terms of performance. As a result, corporate governance practices of companies can provide the opportunity to minimise costs, while adding value to the companies. In this respect, it is important for the top management of companies and legislators to make arrangements in these areas and to favour them.

The general purpose of companies is to incur minimum cost and and gain maximum benefits. In this context, in terms of companies operating in Turkey, the weighted average cost of capital in the equity market conditions, its ability to decrease the most intense costs is important for recovery. Corporate governance practices are also an important factor at the level of firms in ensuring the protection of investors and reducing the weighted average capital cost, and, consequently, the cost of equity. In this

context, firms can reduce their risk-taking behaviours and lower their own-fund costs. In addition, the risk-free rate of return should decrease and the risk premium should also be reduced. Thus, firms' cost of obtaining funds from equity will decrease. The findings obtained in this research are important for investors, in terms of improving the investment environment, for financial regulators aspiring to encourage economic development, for researchers in view of developing new models and top management of companies seeking to improve company performance.

## References

- Abobakr, M. G. (2017). "Corporate Governance And Banks' performance: Evidence From Egypt", *Asian Economic and Financial Review*, 7(12), 1326-1343.
- Adams, R. B. and Ferreira, D. (2009). "Women in The Boardroom and Their Impact on Governance and Performance", *Journal of Financial Economics*, 94, 291-309.
- Albarran, P., and Arellano, M. (2019). GMM Estimation from Incomplete and Rotating Panels. *Annals of Economics and Statistics*, (134), 5-42.
- Ali Shah, S. Z., and Butt, S. A. (2009). The impact of corporate governance on the cost of equity: empirical evidence from Pakistani listed companies. *The Lahore Journal of Economics*, 14(1), 139-171.
- Amba, S. M. (2014). "Corporate Governance and Firms' Financial Performance", *Journal of Academic and Business Ethics*, 8, 1-10.
- Arellano, M. and Bond, S. (1991). "Some Tests of Specification for Panel Data: Monte Carlo Evidence and An Application to Employment Equations", *The Review of Economic Studies*, 58(2), 277-297.
- Arellano, M. and Bover, O. (1995). "Another Look at The Instrumental Variable Estimation of Error-Components Models", *Journal of Econometrics*, 68, 29-51.
- Armstrong, P., Segal, N. and Davis, B. (2005). *Corporate Governance South Africa, A Pioneer in Africa*. The South African Institute of International Affairs.
- Ashbaugh, H., Collins, D. W., and LaFond, R. (2004). *Corporate governance and the cost of equity capital*. Emory, University of Iowa. Retrieved on January, 26, 2006.
- Assenga, M. P., Aly, D., and Hussainey, K. (2018). The impact of board characteristics on the financial performance of Tanzanian firms. *Corporate Governance: The International Journal of Business in Society*.
- Akgüç, Ö. (1998). *Finansal Yönetim*. İstanbul: Avcıol Basım Yayın.
- Alp, A. and Kılıç, S. (2014). *Kurumsal Yönetim Nasıl Yönetilmeli?* İstanbul: Doğan Kitap.
- Alipour, M. and Amjadi, H. (2011). "The Effect of Ownership Structure on Corporate Performance of Listed Companies in Tehran Stock Exchange: An Empirical Evidence of Iran", *International Journal of Business and Social Science*, 2 (13), 49-55.
- Anderson, R. C., Mansi, S. A. and Reeb, D. M. (2003). "Founding Family Ownership and The Agency Cost of Debt", *Journal of Financial Economics*, 68(2), 263-285.
- Aguilera, R. V., Desender, K. A., and Kabbach de Castro, L. R. (2012). A bundle perspective to comparative corporate. *The SAGE handbook of corporate governance*, 379-405.
- Agrawal, A., and Chadha, S. (2005). Corporate governance and accounting scandals. *The Journal of Law and Economics*, 48(2), 371-406.
- Aytekin, M. and Sönmez, A. R. (2016). "Kurumsal Yönetim Uygulamalarının İşletme Performansına Etkisi", *Türk Sosyal Bilimler Araştırmaları Dergisi*, 1(2), 32-41.
- Bebchuk, L. A., Cohen, A. and Hirst, S. (2017). "The Agency Problems of Institutional Investors", *Journal of Economic Perspectives*, 31, 89-102.

- Belkhir, M. (2009). "Board of Directors' Size and Performance in The Banking Industry", *International Journal of Managerial Finance*, 5(2), 201-21.
- Berezinets, I., Ilina, Y. and Cherkasskaya, A. (2017). "Board Structure, Board Committees and Corporate Performance in Russia", *Managerial Finance*, 43(10), 1073-1092.
- Bhattacharya, P. S. and Graham, M. (2007). "Institutional Ownership and Firm Performance: Evidence from Finland", Deakin University, Department of Economics, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1000092](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1000092), Erişim Tarihi: 17.12.2018.
- Bangmek, R., Yodbutr, A., and Thanjunpong, S. (2018). Cost of equity and disclosure of management's responsibility for financial reports of firms in Thailand. *Kasetsart Journal of Social Sciences*.
- Boyd, B. (1995). "CEO Duality and Firm Performance: A Contingency Model", *Strategic Management Journal*, 16, 301-312.
- Bozec, Y., Laurin, C. and Meier, I. (2014). "The Relation Between Excess Control and Cost of Capital", *International Journal of Managerial Finance*, 10(1), 93-114.
- Bradley, M. and Chen, D. (2011). "Corporate Governance and The Cost of Debt: Evidence from Director Limited Liability and Indemnification Provisions", *Journal of Corporate Finance*, 17(1), 83-107.
- Brickley, J. A., Coles, J. L. and Terry, R. L. (1994). "Outside Directors and The Adoption of Poison Pills", *Journal of Financial Economics*, 35(3), 371-390.
- Brigham, E. F., and Houston, J. F. (2011). *Study Guide for Brigham/Houston's Fundamentals of Financial Management, Concise Edition, 7th*. Cengage Learning.
- Bushee, B. and C. F. Noe. (2000). "Corporate disclosure practices, institutional investors, and stock return volatility" *Journal of Accounting Research* 38, 171-207.
- Cadbury, A., (1992), *The Financial Aspects of Corporate Governance*. Cadbury Report, The Cadbury Committee, London, UK.
- Carter, D. A., Simkins, B. J., and Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial review*, 38(1), 33-53.
- Campbell, K., and Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of business ethics*, 83(3), 435-451.
- Charfeddine, L. and Elmarzougui, A. (2010). "Institutional Ownership and Firm Performance: Evidence from France", *IUP Journal of Behavioral Finance*, 7(4), 35-46.
- Ceylan, A. (2000). *İşletmelerde Finansal Yönetim*. Bursa: Ekin Kitabevi.
- Core, J. E., Holthausen, R. W., and Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of financial economics*, 51(3), 371-406.
- Correia, LF, Amaral, HF, and Louvet, P. (2011). An index for assessing the quality of corporate governance in Brazil. *Revista Contabilidade & Finanças* , 22 (55), 45-63.
- Collin, S. O. Y., Ponomareva, Y., Ottosson, S., and Sundberg, N. (2017). Governance strategy and costs: board compensation in Sweden. *Journal of Management & Governance*, 21(3), 685-713.
- CMB. (2003). Kurumsal Yönetim İlkeleri. [https://ecgi.global/sites/default/files//codes/documents/kyy\\_tr.pdf](https://ecgi.global/sites/default/files//codes/documents/kyy_tr.pdf), Date of Access: January 22, 2019.
- CMB. (2014). Kurumsal Yönetim Tebliği (II-17.1). <http://www.spk.gov.tr/Duyuru/Goster/20140103/3>, Date of Access: 12.04.2019.
- Chung, K. H. and Pruitt, S. W. (1994). "A Simple Approximation of Tobin's q", *Financial Management*, 23(3), 70.
- Detthamrong, U., Chancharat, N. and Vithessonthi, C. (2017). "Corporate Governance, Capital Structure and Firm Performance: Evidence from Thailand", *Research in International Business and Finance*, 42, 689-709.
- Doğan, M., (2013). "Sigorta Firmalarının Sermaye Yapısı ile Karlılık Arasındaki İlişki: Türk Sermaye Piyasası Üzerine Bir İnceleme", *Muhasebe ve Finansman Dergisi*, 57, 121- 136.

- Dunn, K. A., and Mayhew, B. W. (2004). Audit firm industry specialization and client disclosure quality. *Review of accounting studies*, 9(1), 35-58.
- Ehikioya, B. I. (2009). "Corporate Governance Structure and Firm Performance in Developing Economies: Evidence from Nigeria", *Corporate Governance: The International Journal of Business in Society*, 9(3), 231-243.
- El Ghouli, S., Guedhami, O., Kwok, C. C., and Mishra, D. R. (2011). Does corporate social responsibility affect the cost of capital?. *Journal of Banking & Finance*, 35(9), 2388-2406.
- Fama, E. F., and French, K. R. (1992). The cross-section of expected stock returns. *the Journal of Finance*, 47(2), 427-465.
- Fama, E. F., and Jensen, M. C. (1983). Separation of ownership and control. *The journal of law and Economics*, 26(2), 301-325.
- Fauzi, F. and Locke, S. (2012). "Board Structure, Ownership Structure and Firm Performance: A Study of New Zealand Listed-Firms", *Asian Academy of Management Journal of Accounting and Finance*, 8(2), 43-67.
- Fich, E.M. and Shivdasani, A. (2005) Are Busy Boards Effective Monitors? *The Journal of Finance*, LXI, 689-724.
- Fülöp, M. T. (2014). "Why Do We Need Effective Corporate Governance?"; *International Advances in Economic Research*, 20(2), 227-228.
- Gafoor, C. A., Mariappan, V., and Thyagarajan, S. (2018). Board characteristics and bank performance in India. *IIMB management review*, 30(2), 160-167.
- Gökbulut, R. İ. (2009). *Paydaş Değeri ile Finansal Performans Ölçütleri Arasındaki İlişki ve İMKB Üzerine Bir Araştırma*. İstanbul Ticaret Üniversitesi, Sosyal Bilimler Enstitüsü, Doktora Tezi, İstanbul.
- Ghazali, N. A. M. (2010). Ownership structure, corporate governance and corporate performance in Malaysia. *International Journal of Commerce and Management*.
- Hafez, H. M. (2015). "Corporate Governance and Financial Performance: An Empirical Study on Egyptian Banks", *Corporate Ownership ve Control*, 13(1), 1359-1374.
- Hakimi, A., Rachdi, H., Mokni, R. B. S., and Hssini, H. (2018). Do board characteristics affect bank performance? Evidence from the Bahrain Islamic banks. *Journal of Islamic Accounting and Business Research*.
- Hail, L. and Leuz, C. (2006). "International Differences in The Cost of Equity Capital: Do Legal Institutions and Securities Regulation Matter?"; *Journal of Accounting Research*, 44(3), 485-531.
- Hermalin, B. E., and Weisbach, M. S. (1991). The effects of board composition and direct incentives on firm performance. *Financial management*, 101-112.
- Ilyas, M., and Jan, S. (2017). Corporate governance and cost of capital: Evidence from Pakistan. *Global Management Journal for Academic & Corporate Studies*, 7(2), 10-21.
- Jensen, M. C. and Meckling, W. H. (1976). "Theory of The Firm: Managerial Behavior, Agency Costs and Ownership Structure"; *Journal of Financial Economics*, 3(4), 305-360.
- Julizaerma, M. K. and Sori, Z. M. (2012). "Gender Diversity in The Boardroom and Firm Performance of Malaysian Public Listed Companies"; *Procedia-Social and Behavioral Sciences*, 65, 1077-1085.
- Karayel, M. and Doğan, M. (2014). "Yönetim Kurulunda Cinsiyet Çeşitliliği ve Finansal Performans İlişkisi: BİST 100 Firmalarında Bir Araştırma"; *Süleyman Demirel Üniversitesi, İİBF Dergisi*, 19(2), 75-88.
- Kaya, F. (2015). *Finansal Yönetim*. Beta Yayınları.
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of accounting and economics*, 33(3), 375-400.
- Kirkpatrick, G. (2009). "The Corporate Governance Lessons from The Financial Crisis"; *OECD Journal: Financial Market Trends*, 2009(1), 61-87.

- Khan, M. Y. (2016). Corporate governance and cost of capital: evidence from Pakistani listed firms (Doctoral dissertation, University of Glasgow).
- Khatab, H., Masood, M., Zaman, K., Saleem, S., and Saeed, B. (2011). Corporate governance and firm performance: A case study of Karachi stock market. *International Journal of Trade, Economics and Finance*, 2(1), 39.
- Kholeif, A. (2008). CEO duality and accounting-based performance in Egyptian listed companies: A re-examination of agency theory predictions. *Research in Accounting in Emerging Economies*, 8, 65-98.
- Kuğu, T. D. and Kırılı, M. (2013). "Ekonomik Katma Değer (Eva<sup>®</sup>) Ölçütünün Sermaye Yapısı ile İlişkilendirilmesi: İMKB'de Bir Uygulama", *Kahramanmaraş Sütçü İmam Üniversitesi, İİBF Dergisi*, 3(1): 171-180.
- La Porta, R. L., Lopez-de-Silanes, F., Vishny, R. and Shleifer, A. (2002). "Investor Protection and Corporate Valuation", *The Journal of Finance*, 57(3), 1147-1170.
- Lambert, R., Leuz, C., and Verrecchia, R. E. (2007). Accounting information, disclosure, and the cost of capital. *Journal of accounting research*, 45(2), 385-420.
- Lee, D. E. and Tompkins, J. G. (1999). "A Modified Version of The Lewellen and Badrinath Measure of Tobin's Q", *Financial Management*, 28(1), 20.
- Lewellen, W. G. and Badrinath, S. G. (1997). "On The Measurement of Tobin's Q", *Journal of Financial Economics*, 44(1), 77-122.
- Lewellen, J. and Katharina L. (2018). "Institutional Investors and Corporate Governance: The Incentive to Be Engaged", *Tuck School of Business Working Paper*, Working paper, No: 3265761.
- Lindenberg, E. B. and Ross, S. A. (1981). "Tobin's q Ratio and Industrial Organization", *The Journal of Business*, 54(1), 1-32.
- Maher, M. E. and Andersson, T. (2000). "Corporate Governance: Effects on Firm Performance and Economic Growth", *SSRN Electronic Journal*, <http://doi.org/10.2139/ssrn.218490>, Erişim Tarihi: 11.04.2019.
- Marashdeh, Z. M. S. (2014). The Effect of Corporate Governance on Firm Performance in Jordan. University of Central Lancashire, Phd Thesis, Lancashire, UK.
- Mehran, H. (2003). "Corporate Governance: What Do We Know, and What Is Different About Banks", *Federal Reserve Bank of New York Economic Policy Review*, 9(1), 1-3.
- Mohd, K. N. T., Latif, R. A., Kamardin, H., and Adam, N. C. (2016). The effect of busy directors, CEO duality and ownership on firm performance. *International Information Institute (Tokyo). Information*, 19(8A), 3149.
- Ntim, C. G., and Soobaroyen, T. (2013). Corporate governance and performance in socially responsible corporations: New empirical insights from a Neo-Institutional framework. *Corporate Governance: An International Review*, 21(5), 468-494.
- Oman, C. P. (2001). "Corporate Governance and National Development", *OECD Development Centre, Technical Papers No. 180*, 46.
- Oxelheim, L., and Randøy, T. (2003). The impact of foreign board membership on firm value. *Journal of Banking & Finance*, 27(12), 2369-2392.
- Özsöz, E., Gurarda, S., and Ates, A. (2014). Ownership Structure and Corporate Governance in the Case of Turkey.
- Öztürk, M. B. and Demirgüneş, K. (2008). "Kurumsal Yönetim Bakış Açısıyla Entellektüel Sermaye", *Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü Dergisi*, 19, 395-411.
- Parigi, B. M., Pelizzon, L., and von Thadden, E. L. (2015). A corporate governance asset pricing model: Theory and evidence.
- Peni, E., Vähämaa, S., (2010). Female executives and earnings management. *Managerial Finance* 36, 629-645.

- Potter, G. (1992). "Accounting earnings announcements, institutional investor concentration, and common stock returns." *Journal of Accounting Research* 30, 146-155.
- Piot, C. and F. Missonier-Piera (2007). "Corporate Governance, Audit Quality and The Cost of Debt Financing of French Listed Companies", [https://www.academia.edu/30151042/Corporate\\_governance\\_audit\\_quality\\_and\\_the\\_cost\\_of\\_debt\\_financing\\_of\\_French\\_listed\\_companies](https://www.academia.edu/30151042/Corporate_governance_audit_quality_and_the_cost_of_debt_financing_of_French_listed_companies), Erişim Tarihi: 25.03.2019.
- Rad, S. A. (2014). *The Relationship Between Corporate Governance Practices and Cost of Capital in Large Listed Companies of New Zealand and Singapore*. The University of Waikato, Phd Thesis, New Zealand.
- Regalli, M. and Soana, M.-G. (2012). "Corporate Governance Quality and Cost of Equity in Financial Companies", *International Journal of Business Administration*, 3(2), 2.
- Sagala, G. (2003). *The Relationship Between Cost of Capital and Leverage for Companies Quoted on The Nairobi Stock Exchange*. The University of Nairobi, Phd Thesis, Kenya.
- Sarkar, J. and Sarkar, S. (2018) Bank Ownership, Board Characteristics and Performance: Evidence from Commercial Banks in India. *International Journal of Financial Studies*, 6, 17.
- Shah, S. Z. A., Butt, S. A. and Hasan, A. (2009). "Corporate Governance and Earnings Management an Empirical Evidence form Pakistani Listed Companies", *European Journal of Scientific Research*, 26(4), 624-638.
- Sharfman, M. P., and Fernando, C. S. (2008). Environmental risk management and the cost of capital. *Strategic management journal*, 29(6), 569-592.
- Shrader, C. B., Blackburn, V. B., and Iles, P. (1997). Women in management and firm financial performance: An exploratory study. *Journal of managerial issues*, 355-372.
- Sias, R. (1996). "Volatility and the institutional investor." *Financial Analysts Journal* 52, 13-20.
- Singh, S., Tabassum, N., Darwish, T. K., and Batsakis, G. (2018). Corporate governance and Tobin's Q as a measure of organizational performance. *British Journal of Management*, 29(1), 171-190.
- Singhal, A. (2014). "Corporate Governance, Cost of Capital and Value Creation: Evidence from Indian Firms", *IOSR Journal of Economics and Finance*, 4(6), 36-54.
- Städler, L. (2016). *The effect of gender diversification in the board on a firm's cost of capital*, Uppsala University, Disciplinary Domain of Humanities and Social Sciences, Faculty of Social Sciences, Department of Business Studies, Degree of Master.
- Solomon, J. (2010). *Corporate Governance and Accountability*. (3th Edition). Hoboken, New Jersey: John Wiley. [http://www.123library.org/book\\_details/?id=5728](http://www.123library.org/book_details/?id=5728), Erişim Tarihi: 25.12.2018.
- Suryanto, T., Thalassinou, E. J., and Thalassinou, I. E. (2017). Board Characteristics, Audit Committee and Audit Quality: The Case of Indonesia. *International Journal of Economics & Business Administration*, 5(3), 47-57.
- Sulong, Z., and Nor, F. M. (2010). Corporate governance mechanisms and firm valuation in Malaysian listed firms: A panel data analysis. *Journal of Modern Accounting and Auditing*, 6(1), 1.
- Şenol, Z. and Ulutaş, A. (2018). "Muhasebe Temelli Performans Ölçümleri ile Piyasa Temelli Performans Ölçümlerinin CRITIC ve ARAS Yöntemleriyle Değerlendirilmesi", *Finans Politik ve Ekonomik Yorumlar*, 641, 82-102.
- Taufil-Mohd, K. N., Md-Rus, R., and Musallam, S. R. (2013). The effect of ownership structure on firm performance in Malaysia. *International Journal of Finance and Accounting*, 2(2), 75-81.
- Tecer, M. (1980). *İşletmelerde Sermaye Maliyeti*. Türkiye ve Orta Doğu Amme İdaresi Enstitüsü Yayınları, No: 188.
- Tosuni, G. (2013). *The Impact of Corporate Governance on The Performance of Financial Institutions*. Staffordshire University, Phd Thesis, UK.
- Titova, Y. (2016). *Are board characteristics relevant for banking efficiency? Evidence from the US*. Corporate Governance.

- Usman, M., Farooq, M. U., Zhang, J., Makki, M. A. M., and Khan, M. K. (2019). Female directors and the cost of debt: does gender diversity in the boardroom matter to lenders?. *Managerial Auditing Journal*.
- Uzkaralar, Ö. (2017). *Kurumsal Yönetim ve Sermaye Maliyeti*. Ankara: Akademisyen Kitabevi.
- Weisbach, M. S. (1988). Outside directors and CEO turnover. *Journal of financial Economics*, 20, 431-460.
- Vernimmen, P., Quiry, P., Dalocchio, M., Le Fur, Y. and Salvi, A. (Ed.). (2009). *Corporate Finance: Theory and Practice*. (2nd Edition). Chichester: John Wiley.
- Veklenko, K. (2016). "The Impact of Board Composition on The Firm's Performance in Continental Europe", 7th IBA Bachelor Thesis Conference, July 1st, Enschede, The Netherlands.
- Vintilă, G. and Păunescu, R. A. (2016). "Empirical Analysis of The Connection Between Financial Performance and Corporate Governance within Technology Companies Listed on NASDAQ Stock Exchange", *Journal of Financial Studies and Research*, 2016 (2016), 1-20.
- Zhu, F. (2014). "Corporate Governance and The Cost of Capital: An International Study", *International Review of Finance*, 14(3), 393-429.
- Qubbaja, A. A. (2018) Impact of Corporate Governance Quality on the Cost of Equity Capital: Evidence from Palestinian Firms. *Research Journal of Finance and Accounting*, 9(8), 151-159.

## Appendix

Codes	Variable Name	Calculation Method	Source
<i>Dependent Variables</i>			
WACC	Weighted Average Cost Of Capital	$(\text{Debt Weight} \times \text{Cost of Debt}) * (1 - \text{Tax Ratio}) + (\text{Weight of Equity} \times \text{Cost of Equity})$	Calculated with data from Finnet.
TOBINQ	Tobin Q	$(\text{Equity Market Value} + \text{Book Value of Liabilities}) / \text{Total Assets Book Value}$	Calculated with data from Finnet.
<i>Independent variables</i>			
BOARD	Board Size	Logarithm of the total number of board members within one year	Annual activity reports of companies
WOMEN	Women Managers on the Board of Directors	The ratio of the total number of women board members to the total number of board members within a year	Annual activity reports of companies
FOR	Foreign Managers in the Board of Directors	The ratio of the total number of foreign board members to the total number of board members within a year	Annual activity reports of companies
IND	Independent Members of the Board of Directors	The ratio of the total number of independent board members to the total number of board members within a year	Annual activity reports of companies
CEO	CEO Duality	The general manager is also defined as 1 if the chairperson of the board of directors, and 0 if not.	Annual activity reports of companies
BUSY	Chairperson's Busy	The chairperson of the board of directors has been defined as 1 if s/he has 3 or more positions and 0 if not.	Annual activity reports of companies
OWN	Institutional Investor Ownership	Number of Shares of Institutional Investors / Total Number of Shares	Annual activity reports of companies
<i>Control Variable</i>			
SD	Standard Deviation of Stock Returns	Standard deviation of weekly stock returns for each calendar year	Calculated with data from Finnet.
LEV	Leverage Ratio	Total Debt / Total Asset	Calculated with data from Finnet.