

## The Effect of Companies' Internal Control Structures on Their Financial Performance: An Application on BIST-30

### Firmaların İç Kontrol Yapılarının Finansal Performansları Üzerine Etkisi: BIST-30 Üzerine Bir Uygulama

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#### Abstract

**Purpose:** The aim of this study was to investigate the effect of internal control structures on the financial performance of firms included in the BIST-30 Index.

**Design/Methodology:** The data of the firms for the period 2018-2022 were used annually. Return On Equity and Market value to book value were used in the study to represent profitability as dependent variables. The independent variables were the number of audit committee members, the number of internal control reports, the number of audit committee meetings, the number of audit committee reports, and the rate of graduates in the audit board. GMM which is a dynamic panel data analysis technique and Driscoll Kray Regression were used as the method.

**Findings:** As a result of the findings, it is seen that the ratio of postgraduates on the audit committee, the number of audit committee members and the number of audit committee reports may have an effect on both ROA and PBRD, while the audit firm being a large firm may have an effect only on PBRD.

**Limitations:** The reason is that the study was applied only to Türkiye and no country comparison was made.

**Originality/Value:** There are a limited number of studies examining the impact of companies' internal control structures on their financial performance. This study is original in terms of both variables and method.

**Keywords:** Internal Control, Financial Performance, BIST-30, GMM, Driscoll Kray Regression Analysis

#### Öz

**Amaç:** Bu çalışmanın amacı, BIST-30 Endeksi'nde yer alan firmaların iç kontrol yapılarının finansal performansı üzerindeki etkisini araştırmaktır.

**Tasarım/Yöntem:** Firmaların 2018-2022 dönemine ait verileri yıllık olarak kullanılmıştır. Çalışmada karlılığı bağımlı değişken olarak temsil etmek için Özsermaye Getirisi ve Piyasa değerinin defter değerine oranı kullanılmıştır. Bağımsız değişkenler ise denetim komitesi üye sayısı, iç kontrol rapor sayısı, denetim komitesi toplantı sayısı, denetim komitesi rapor sayısı ve denetim kurulu mezunlarının oranıdır. Yöntem olarak dinamik panel veri analiz tekniği olan GMM ve Driscoll Kray Regresyon kullanılmıştır.

**Bulgular:** Bulgular sonucunda denetim firmasının büyük bir şirket olması yanında, denetim komitesindeki lisansüstü öğrencilerin oranının, denetim komitesi üye sayısının ve denetim komitesi rapor sayısının hem ROA hem de PBRD üzerinde etkili olabileceği görülmektedir. Firmanın yalnızca PBRD üzerinde etkisi olabilir.

**Sınırlılıklar:** Çalışmanın sadece Türkiye üzerine uygulanmış olması ve ülke karşılaştırması yapılmamasıdır.

**Özgünlük/Değer:** Firmaların iç kontrol yapılarının finansal performansları üzerine etkisi inceleyen sınırlı sayıda çalışma bulunmaktadır. Bu çalışma hem değişkenler açısından hem de yöntem açısından özgünlük taşımaktadır.

**Anahtar Kelimeler:** İç Kontrol, Finansal Performans, BIST-30, GMM, Driscoll Kray Regresyon Analizi

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## 1. INTRODUCTION

Nowadays, because of the increase in competition and globalization, markets are becoming more difficult to manage for businesses. Since the ability of businesses to maintain their efficiency and effectiveness in the markets and to make them sustainable depends on factors such as having a solid financial structure, producing quality products, focusing on R&D studies and complying with corporate governance principles, undoubtedly one of these important factors is having an active and effective control structure.

Control is necessary in all activities of businesses and is also important in accounting and finance units. Control is carried out in two ways, both internal and external to the business. While internal control is the control carried out by the enterprises themselves, external control is the control carried out by independent persons outside the enterprise. Internal control is a process carried out by business employees and partners to ensure the effectiveness and efficiency of activities in businesses, the reliability of financial reporting, and compliance with current legislation and regulations (Kaval, 2008). Having an effective internal control structure of businesses is a guarantee of their continuity.

The purposes of the internal control system can be summarized as follows (Alagöz, 2008: 101);

- Protection of short and long-term assets owned by the business,
- Ensuring the accuracy and reliability of financial transactions,
- Ensuring rational and efficient use of resources,
- Determining whether progress is made in line with the goals set by the business management, whether the business operates efficiently and whether it complies with the mission, laws and legislation of the business,
- Increasing the production volume of the enterprise by minimizing the wastage and residues that will arise for production enterprises,
- Ensuring that business employees work more efficiently.
- Ensuring that financial statements are clearer and more reliable.

It is of great importance that businesses operating in the real and financial sectors act in line with the concept of business continuity and their profit-making functions. For the continuity of the business, it is expected that the business will be away from the risk of bankruptcy and make the profitability sustainable. Businesses can manage their risks by keeping them under control and hedging. There are also systematic risks that do not originate from the businesses themselves, such as political risk, exchange rate risk, market risk, and it may not be easy to direct them. However, in this case, they may be minimized with hedging techniques. Derivative products, continuous control and insurance are among the hedging methods. One of the most important internal hedging methods for businesses is having an effective internal control system. Because an effective internal control system is a signal of sustainable financial performance. The existence of a strong correlation between the financial performance of businesses and their internal control structures also supports this opinion (Hutchinson & Zain, 2009; Sayyar, Basiruddin, Rasid & Elhabib, 2015).

It is supported by the findings of recent studies that the absence or incompleteness of an effective internal control system in businesses leads to some corruption, errors and frauds, losses and even bankruptcy. Internal control is a strategic mechanism in detecting and preventing these risks (Soltani, 2014). Enterprises with an effective internal control structure will provide reasonable assurance to both their partners and third parties such as suppliers, investors and creditors. This is a valuable control and management tool for all segments (Kaya, 2009).

In the study, the effect of the internal control structures of the companies in the BIST-30 Index on their financial performance was investigated. Borsa Istanbul has a remarkable position in terms of the development of financial markets. Market value of Borsa Istanbul increased by 418% in the last 2 years, reaching 11,306 billion TL, and it ranks 26th among the market values of the world's countries. The fact that 24th in the number of companies listed in Borsa Istanbul with 494 companies in the

world and there is a significant increase in demand in the share transaction volume, reaching 24,009 billion TL, with an increase of 221% in the last 2 years, shows that Borsa Istanbul has strategic importance. (TSPB, 2023).

The BIST-30 Index constitutes the sample mass of the study because it is the index that includes the 30 most traded companies in Borsa Istanbul. However, some companies' data were not included in the analysis because they were not within the scope of the study period, 2018-2022. The independent variables of the study are the number of audit committee members, the number of internal control reports, the number of audit committee meetings, the number of audit committee reports and graduate rate of members in the audit committee, while the dependent variables are Return on Assets (ROA), Return on Equity (ROE), TobinQ ratio and Market Value/Book Value. GMM was used in the series because the company cross-section (n) is larger than the time cross-section (t) and has different advantages. The results obtained from the analysis are expected to contribute to industry and academia.

## 2. LITERATURE REVIEW

Previous studies examining the relationship between audit and the financial performance of firms listed on Borsa Istanbul have generally taken into account the size of audit firms. However, the number of studies investigating the impact of internal control structures affecting audit on financial performance is insufficient in the existing literature. This article investigates how internal control structures affect financial performance in BIST30 companies and expands its literature. The study examines the relationship between the number of audit committee members, the number of internal control reports, the number of audit committee meetings, the number of audit committee reports, the percentage of postgraduate members in the audit committee, and firm performance.

### 2.1. Audit Committee and Internal Control

The audit committee is a board-affiliated and independent committee. It oversees important issues for companies such as financial reporting, risk management, and internal control systems. The audit committee plays a critical role in building confidence for investors and other stakeholders regarding the accuracy and transparency of companies' financial statements. This committee helps reduce the risk of financial misconduct, increase transparency, and enhance investor confidence. Therefore, it is important for companies to have audit committees composed of reliable and independent members they have chosen.

Internal control is a process in which business employees and managers are involved, aiming to ensure that the activities carried out in the business are carried out effectively and efficiently, reliable financial reporting, execution of activities in accordance with the applicable legislation and thus providing reasonable assurance (Kaval, 2008). The internal control mechanism is an important aid to audit committees in fulfilling their duties (Bishop et al., 2000). Among the responsibilities of the internal control mechanism are safeguarding the company's assets, ensuring the reliability of financial reporting, ensuring compliance with laws, and managing operations effectively and efficiently.

Studies on the structure of the internal control system of businesses are limited because the data are not publicly available. Studies on the effectiveness of audit indicate that an effective audit committee influences the outputs of companies and that internal audit is influenced by factors such as independence, impartiality, and the support given by management to internal audit (Dellai ve Omri, 2016).

The ultimate purpose of internal control is to create added value for the organization (Dellai and Omri (2016). With an effective internal control system, the creation of added value for the business will be ensured (Gros, Koch and Wallek 2016; Octavia 2013; Cohen and Sayag 2010; Mihret and Woldeyohannis 2008; Carcello, Hermanson and Raghunandan, 2005; Roth 2003). Growing businesses need internal control more with growing information asymmetry (Carcello et al.,2005). What is important here is not only the existence of the internal control system, but also the quality and effectiveness of the system. Although it is likely to vary according to organizational characteristics, internal control quality is one of the main factors affecting company performance (Hutchinson and Zain, 2009).

Studies on the internal control system and financial performance have found that there is a relationship between internal control quality and financial performance (Goh and Li, 2011; Ashbaugh-Skaife 2008). Some studies state that the internal control system increases the capital return rate of businesses and thus improves economic performance, and that the governance process along with high-quality financial reporting also improves and can provide competitive advantage to businesses. (Tamosiuniene and Savcuk, 2007).

Studies on the internal control system and financial performance have found that there is a relationship between internal control quality and financial performance (Goh and Li, 2011; Ashbaugh-Skaife 2008). Some studies state that the internal control system increases the capital return rate of businesses (Mihret et al., 2010; Aikins 2011) and thus improves economic performance, and that the governance process improves with high-quality financial reporting and it can also provide a competitive advantage to businesses (Tamosiuniene and Savcuk, 2007). There is an expected relationship between the number of reports provided by the internal control system and financial performance. A higher number of reports may assist in identifying risks more effectively, but excessive reporting may increase bureaucratic burden and distract managers' attention. In this context:

H<sub>1</sub>: There is a significant relationship between the number of internal control reports and firm performance

Studies have also identified a significant relationship between the audit committee and company performance (Kamolsakulchai, 2015). The Audit Committee is established to contribute to the oversight and control functions of the Board of Directors. This committee consists of at least two members selected from among the Board of Directors members who do not have executive duties ([www.kap.org.tr](http://www.kap.org.tr)). The audit committee is defined as a controllable mechanism to ensure the appropriateness and consistency of accounting policies (Smii, 2016). The existence of an audit committee ensures the provision of relevant and reliable information in the business and increases transparency (Hermawan, 2011; Ilaboya,2012). The number of audit committee members is considered to be another factor affecting company performance. Various studies are showing that the size of the audit committee is an effective feature in strengthening the corporate performance of businesses (Saleem,2019; Dakhlalh et al.,2020). The abundance of members in the audit committee can enable the utilization of a wide range of experiences and provide objective evaluations with different perspectives.

H<sub>2</sub>: There is a significant relationship between the number of audit committee members and firm performance.

The frequency of meetings of audit committee members in businesses, the regular occurrence of these meetings, and the independence of the committee positively affect business performance (Bansal and Sharma,2016; Hazaea et al., 2020; Aryan, 2015). Regular meetings held by the audit committee are among the factors that affect the efficiency and governance of the business (Salloum et al. 2015). The frequency of meetings held by the audit committee is related to the quality of financial statements as well as increased oversight (Chen, Firth, Gao and Rui, 2006). Frequent meetings will make it possible to allocate sufficient time to audit the financial reporting process (Beasley, Carcello, Hermanson, & Lapides, 2000).

H<sub>3</sub>: There is a significant relationship between the number of audit committee meetings and firm performance.

H<sub>4</sub>: There is a significant relationship between the number of audit committee reports and firm performance.

Previous studies indicate that the factor that affects auditors' ability to lead a quality audit is that the auditor has professional competence and experience (Brody, Golen, & Reckers, 1998). Qualified auditors enhance the reliability and accuracy of firms' financial reports, improve risk management practices, and promote the implementation of corporate governance principles. This will help increase the company's reputation and investor confidence. Audit committee members will provide high-quality reports when they have sufficient accounting experience (Kusnadi et al.,2016). Having knowledgeable members in the audit committee in finance and accounting areas will facilitate

better understanding of audit matters and risks, thereby easing the detection of significant errors (DeZoort and Salterio, 2001; Al-Matari, 2022). A positive relationship was determined between the presence of accounting professionals in the audit committee, the quality of the reports presented by the committee and the positive performance of the companies in the market (Ben amar, 2014; Aldamen et al., 2012). It was observed that internal auditors contribute more to financial statement audits in businesses with prior accounting and experience and a larger number of internal audit personnel (Mat Zain, Subramaniam and Goodwin-Stewart, 2006). The presence of internal management with higher education and experience will be beneficial to the business in terms of compliance with corporate strategies, effectiveness and efficiency (Hutchinson and Zaim, 2009).

H<sub>5</sub>: There is a significant relationship between the proportion of postgraduate members in the audit committee and firm performance.

## 2.2. Financial Performance

One of the duties of management in business is to realize the strategic goals, plans and policies of the organization in the best way possible. This can be determined by measuring performance (Grady, 1991). The financial dimension of business performance is addressed by financial performance measurement. Financial performance measurements guide seeing the financial success of the business, determining its strengths, developing solutions to its weaknesses, and setting new goals (Ayan, 2016). Performance measurements are examined through financial analysis to determine creditworthiness in future investment decisions. Businesses that bring together the necessary resources, can finance these resources in the most effective way, and have the ability to provide a balanced fund with debt and equity capital are financially successful (Yıldız, 2019).

In measuring financial performance, data obtained from the income statement and balance sheet are compared. The obtained ratios are evaluated by comparing them with the past periods of the business or the ratios in the sector in which it operates (Akdoğan and Tenker, 2010).

There are many studies examining the relationship between the dependent variable of financial performance and various independent variables. Audit fees and firm performance (Moutinho Cerqueira & Brandão, 2012; Martinez & Jesus Moraes, 2014), corporate governance and firm performance (Brown & Caylor, 2004; Bhagat & Bolton, 2008; Agrawal & Knoeber, 2012; Dharmadasa, Gamage & Herath 2014; Nuryanah and Islam, 2011), audit committee independence and firm performance (Bukit and Iskandar, 2009; Abbott, Parker & Peters, 2002; Bouaziz and Triki, 2012; Nuryanah and Islam, 2011), audit committee meetings and firm performance (Al-Mamun, 2014; DeZoort v., 2002; Menon and Williams, 1994; Kyereboah-Coleman, 2008; Buchdadi et al., 2019), internal audit and firm performance (Al-Matari, Al-Swidi, and Fadzil, 2014; Alzeban, 2020; Hutchinson and Zain, 2008) are studies in the literature that measure audit-related firm performance.

In measuring the financial performance of companies, generally return on assets (ROA) (Enekwe, Nwoha, Udeh, 2020; Hutchinson and Zain, 2009), return on equity (ROE) (Bouaziz ve Tiriki, 2012; Önder and Kavak, 2019; Najjar, 2012; Eshitemi and Omwenga, 2017) and return on investment (ROI) (Krishnan and Moyer, 1997; Zeitun and Gang Tian, 2007) are used. Among with these ratios, other measurements used in determining financial performance are: Tobin Q (Fooladi and Shukor, 2012; Mousa et al., 2012; Zeitun and Gang Tian, 2007; Sami, Wang and Zhou, 2011) and Market value / Book value (PDD / DD) (Bansal and Sharma, 2016).

Understanding the relationship between a company's financial performance and internal controls is important in determining the factors to consider when preparing financial reports.

Based on the literature, this study determined firm performance as a dependent variable by using four measures: Return on Assets (ROA), Return on Equity (ROE), Tobin's Q and market value to determine the effect of the internal control structure on financial performance. The number of internal control reports, number of audit committee members, number of audit committee meetings, number of audit committee reports and the rate of postgraduate education in the audit committee were used as dependent variables in the study.



## 2. DATA AND METHODOLOGY

### 2.1 Study Sample, Variability and Methodology

#### 2.1.1. Sample and Variability of the Study

The study covers the 5 years between 2018 and 2022. Since the current values declared for the data in the study belong to 2022, 2022 was accepted as this current period. BIST 30, which is traded in Borsa Istanbul, was taken as a sample and analyzed. BIST-30 was accepted as a sample because it is the index that includes the 30 most traded companies in Borsa Istanbul. Since 9 companies did not offer public offerings in the relevant period, they were not included in the study. The companies included in the study are shown in the table below.

**Table 1:** Companies Included In The Study

Company Name	Code	Company Name	Code
Alarko Holding A.Ş	ALARK	Tav Havalimanları Holding A. Ş	TAVHL
Arçelik A. Ş	ARCLK	Tofaş Türk Otomobil Fabrikası A. Ş	TOASO
Aselsan Elektronik Sanayi ve Ticaret A.Ş	ASELS	Türkcell İletişim Hizmetleri A. Ş	TCELL
Bim Birleşik Mağazalar A. Ş	BIMAS	Tüpraş Türkiye Petrol Rafineleri A. Ş	TUPRS
Enka Sanayi ve İnşaat A. Ş	ENKAI	Sasa Polyester Sanayi A. Ş	SASA
Ereğli Demir ve Çelik Fabrikaları T. A. Ş	EREGL	Kardemir Karabük Demir Çelik Sanayi ve Ticaret A. Ş	KRDMA
Ford Otomotiv Sanayi A. Ş	FROTO	Koç Holding A. Ş	KCHOL
Petkim Petrokimya Holding A. Ş	PETKM	Türk Hava Yolları A. O	THYAO
Türkiye Garanti Bankası A. Ş	TGB		
Türkiye İş Bankası A. Ş	TIB		
Türkiye Şişe ve Cam Fabrikaları A. Ş	SISE		
Yapı ve Kredi Bankası A. Ş	YKBNK		

Within the scope of the study, TOBIN Q, ROE, ROA and PD/DD dependent variables were used to measure the financial performance of the internal control structures of BIST 30 companies. Independent variables were: number of auditor graduates, number of audit committee reports, number of audit committee meetings, number of internal control reports, number of audit committee members; the audit company is considered as the control variable. Since the fees for the independent audit company were declared only between 2020 and 2022, they were not included in the study. The formulas used to calculate the dependent variables are shown in Table 2.

**Table 2:** Formulas Used in Calculating Dependent and Independent Variables

	Variable Name	Formula	Source
The dependent variable	Return on Equity Ratio (ROE)	Net Profit/ Total Equity	Finnet
	Ratio of Market Value to Book Value (PD/DD)	Market Value/Book Value	
Independent Variable	Postgraduate Report	Ratio of Auditor Postgraduate	Activity reports of firms
	Internal Meetings	Number of Audit Reports	
	Audit	Number of Internal Control Reports	
		Number of Audit Committee Meetings	
Control Variable	Company	Number of Audit Committee Members	
		Audit Company	

#### 2.1.2. Methodology of the Study

In the study, the Generalized Method of Moments (GMM), which is a dynamic panel estimation, was used to investigate the effect of companies' internal control structures on financial performance. The reason for using the GMM technique is that the number of companies (n) is longer than the time dimension (t) (Büyükoğlu, Buyuran ve Ekşi, 2022).

Since structural changes and financial developments in the economy occur in a dynamic process, it is necessary to make an analysis using dynamic methods (Nişancı, Karabıyık and Uçar,

2011:112). Dynamic models are called methods in which the lagged values of the dependent variable are included as independent variables (Dökmen, 2012:46). In dynamic panel data models, the effect of the same variable in the previous period is tested on the variable in the relevant period. Dynamic models are often

$$ROE_{it} = \gamma ROE_{i,t-1} + \beta x_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad i = 1, \dots, N \quad ve \quad t = 1, \dots \quad (1)$$

$$PDDD_{it} = \gamma PDDD_{i,t-1} + \beta x_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad i = 1, \dots, N \quad ve \quad t = 1, \dots \quad (2)$$

In the formula;  $\eta_i$ , unobservable individual effects;  $\lambda_t$  shows unobservable time-specific effects, and  $\varepsilon_{it}$  shows the effect of unobservable variables that vary between cross-sections and over time (Dökmen, 2012:46).

Since the relationship between the lagged value of the dependent variable and the error term will give deviant and inconsistent results, the problem is solved by adding a variable that explains the lagged value of the dependent variable to the model. To resolve these problems, the system GMM estimator method is used (Özevin, 2023:28).

Generalized Method of Moments (GMM) is one of the most widely used dynamic panel data models. The GMM model is developed by Arellano and Bond (1991) and is used when the unit dimension is larger than the time dimension. There are two basic assumptions on which the model is based. The first of these is the validity of the instrumental variables, and the other is the autocorrelation assumptions (Metem, 2021:1016). In this method, the estimation of the first difference of each equation is taken into account and instrumental variables are used to eliminate the specific effects of cross-sections. Although it shows normal results, the continuity of explanatory variables over time may be a weak tool for regression equations (Çetin and Yaver, 2014:136). In order to eliminate these problems, the system GMM technique was developed by Arellano and Bover (1995) and Blundell and Bond (1998). In these methods, which were developed based on the first method, improvements were made in the weaknesses in the difference GMM estimator. For this reason, the difference is expressed as a stronger estimator than the GMM technique (Şit, Güngör et al., 2022:230).

### 3. FINDINGS

In this part of the study, the analysis results of the variables are included. Statistical values of the variables are as follows:

**Table 3:** Descriptive Statistics

Variable	Observation	Average	Std. deviation	Minimum	Maksimum
PDDD	105	2.455619	2.803036	0.33	17.56
ROE	105	18.62276	18.09102	-21.64	82.91
ROA	105	5.92981	6.617315	-8.84	48.5
Tobin	105	1.421333	0.6759581	0.78	4.07
Postgraduate	105	0.5539695	0.3501118	0	1
Audit	105	7.104762	6.366867	1	54
Internal	105	7.961905	10.26376	1	60
Meetings	105	20.6381	59.89961	0	453
Committee	105	2.2	0.4883252	1	3
Company	105	0.9238095	0.2665751	0	1

When the descriptive statistics are examined, it is seen that there is a lot of difference between the number of internal control reports of companies. This indicates that there is a significant difference between companies' internal control awareness. In addition, the fact that the audit company average is close to 1 indicates that most of the companies operating in the BIST-30 Index have their audits done by 5 large companies. The fact that firms have different capital compositions leads to differences in return on equity. There are also large differences in the number of meetings between firms. In addition, some companies are more sensitive in explaining their internal control reports, which increases the standard deviation.

Among the variables, especially the dependent variables, which show business performance, since they are close to each other, the correlation test results applied to determine the relationships between the variables are shown in Table 4.

**Table 4:** Correlation Matrix

	<b>PDD D</b>	<b>RO E</b>	<b>RO A</b>	<b>Tobi n</b>	<b>Postgraduat e</b>	<b>Repor t</b>	<b>Meeting s</b>	<b>Interna l</b>	<b>Committe e</b>	<b>Compan y</b>
<b>PDDD</b>	1.0000									
<b>ROE</b>	0.5380	1.0000								
<b>ROA</b>	0.3563	0.8454	1.0000							
<b>Tobin</b>	0.9363	0.5490	0.4541	1.0000						
<b>Postgraduate</b>	-0.0675	0.0302	0.1133	-0.0509	1.0000					
<b>Report</b>	-0.0490	0.0503	0.1126	0.0445	0.0039	1.0000				
<b>Meetings</b>	-0.1870	-	-	-0.1896	-0.3178	0.3657	1.0000			
<b>Internal</b>	-0.1532	-	-	-0.1428	-0.1983	0.3712	0.7419	1.0000		
<b>Committee</b>	-0.1857	-	-	-0.1861	0.1705	0.2777	0.1262	0.2014	1.0000	
<b>Company</b>	-0.0679	-	-	-0.1782	-0.1101	-0.3918	0.0235	0.0019	-0.2511	1.0000
		0.0628	0.1468							

When looking at the correlation values between variables, a high correlation between ROA and ROE, and between Tobin and PDDD indicates that only one of the dependent variables should be used. In other words, two different models were used in the study and ROE and PDDD were the independent variables of the study.

In addition, while there is an isotropic relationship between the graduate rate in the audit board and company profitability, there is an inverse relationship with market value. While there is an inverse relationship between the number of audit reports and PDDD, there is an equal relationship with ROA, ROE, Tobin and Graduate variables. There is an inverse relationship between the number of Audit Committee Meetings and PDDD, ROE, ROA, Tobin, Graduate and an equal relationship with the number of Audit Committee reports. There is an inverse relationship between the number of internal control reports and PDDD, ROE, ROA, Tobin, Graduate variables, and a direct relationship with the number of Audit committee reports and the number of Audit committee meetings. There is a negative relationship between the number of audit committee members and PDDD, ROE, ROA, Tobin; There is a co-directional relationship with the variables: Graduate Degree, Number of Audit Committee Reports, Number of Audit Committee Meetings, Number of Internal Control Reports. There is a negative relationship between the audit company and the PDDD, ROE, ROA, Tobin, Graduate, Number of Audit committee reports and Audit committee variables; There is a co-directional relationship with the variables number of audit committee meetings and number of internal control reports.

**Table 5:** GMM Test Results

	Difference GMM				System GMM			
	Model-1		Model-2		Model-1		Model-2	
	Coef	Prob	Coef	Prob	Coef	Prob	Coef	Prob
<b>ROE (-1)</b>	0.7853087	0.012			0.671247	0.001		
<b>PDDD (-1)</b>			1.127605	0.000			1.409198	0.000
<b>Postgraduate</b>	18.61144	0.076 *	1.659551	0.056 *	5.865123	0.539	1.861159	0.035 **
<b>Report</b>	1.482315	0.097 *	0.097086	0.158	2.443387	0.005 ***	0.142348	0.053 *
<b>Meetings</b>	-0.2540026	0.848	-0.075983	0.465	-1.968177	0.105	-0.1385953	0.144
<b>Internal</b>	-0.0117477	0.859	-0.0001395	0.979	-0.0431591	0.509	-0.0000731	0.990
<b>Committee</b>	6.241962	0.407	-0.1684198	0.797	8.424206	0.263	-0.7331467	0.253
<b>Company cons</b>	-0.0221055	0.903	-1.508683	0.307	0.1755529	0.184	-0.152459	0.909
	-2.985525	0.870	-0.5752274	0.696	-5.055055	0.776	.1335053	0.929
<b>Wald</b>	14.32 (0.0262)		28.68 (0.0001)		27.72 (0.0001)		248.90 (0.0000)	



<b>Sargan</b>	13.92372 (0.0503)	10.07333 (0.1216)	11.80414 (0.1602)	8.247448 (0.4067)
<b>AR1</b>	0.2180	0.9799	0.4066	0.0557
<b>AR2</b>	0.1901	0.8241	0.2739	0.4606

\*\*\*, \*\*, \* denotes significance levels of 1%, 5% and 10% respectively.

Looking at the difference GMM test results; In Model-1, where return on equity is the dependent variable, the graduate ratio of the number of members on the audit board and the number of audit reports are effective on ROE at a 10% level of significance. In Model-2, where the ratio of market value to book value is the dependent variable, only the graduate ratio has an impact on ROE. It appears to be effective at the 10% significance level.

System GMM technique was also used to consolidate the Difference GMM results. Looking at the System GMM test results, in Model-1 where return on equity is the dependent variable, the number of audit reports has a strong effect on ROE at the 1% significance level; In Model-2, where the ratio of market value to book value is the dependent variable, it is seen that the graduate rate has a 5% significance level and the number of audit reports has a 10% significance level on PDDD.

GMM test does not take into account the problem of cross-sectional dependence and heteroscedasticity. In order to consolidate and consolidate these results, first of all, cross-sectional dependence and heteroskedasticity problems will be investigated in the models. In case of these problems, tests that are resistant to these problems will be used to reinforce the GMM test.

**Table 6:** Diagnosis Of The Estimated Models

	<b>Model-1</b>	<b>Model-2</b>
<b>Breusch-Pagan / Cook-Weisberg test for heteroskedasticity</b>	20.11 (0.0000)	3.61 (0.0576)
<b>Wooldridge test for autocorrelation in panel data</b>	17.066 (0.0005)	9.330 (0.0063)
<b>Pesaran's test of cross sectional independence</b>	10.849 (0.0000)	4.392 (0.0000)

When both the Breusch-Pagan / Cook-Weisberg heteroskedasticity test, Wooldridge autocorrelation test and Pesaran's cross-section dependence test are examined, the hypotheses that these problems do not exist are rejected because the probability value in both models is lower than 5%. In other words, both models have cross-sectional dependence, heteroskedasticity and autocorrelation problems. In case these problems existed, regression coefficients were estimated with the Driscoll-Kraay method, which produces robust standard errors (Şanlı and Konukman, 2021).

**Table 7:** Driscoll-Kraay Regression Coefficients with Robust Standard Errors

	<b>Model-1 (Dependent Variable: ROE)</b>			<b>Model-2 (Independent Variable: PDDD)</b>		
	<b>Coef</b>	<b>Drisc/Kraay Std. Dev.</b>	<b>Prob</b>	<b>Coef</b>	<b>Drisc/Kraay Std. Dev.</b>	<b>Prob</b>
<b>Postgraduate</b>	0.6174249	1.606581	0.720	-0.9377257	0.1913381	0.008 ***
<b>Report</b>	0.2984291	0.1891692	0.190	0.015804	0.0276723	0.598
<b>Meetings</b>	-0.0643492	0.0793675	0.463	-0.0597363	0.0083876	0.002 ***
<b>Internal</b>	-0.0263542	0.0195951	0.250	0.0003845	0.0012171	0.768
<b>Committee</b>	-3.420027	1.289403	0.057 *	-1.012227	0.4667781	0.096 *
<b>Company</b>	-2.881239	2.953401	0.385	-1.113154	0.4536023	0.070 *
<b>cons</b>	27.40248	2.019423	0.000	6.585728	0.8110407	0.001
<b>F Test</b>	91.41 (0.0003)			62.71 (0.0007)		
<b>Obs</b>	105			105		

\*\*\* and \* denotes significance levels of 1% and 10% respectively.

When the Driscoll-Kraay Robust estimator results are examined; in fact, it appears that the results are partially similar to the GMM results. In other words, it is seen that the graduate rate is effective on the dependent variable in both models in both methods. In Model-1, where ROE is the dependent variable, it is seen that only the number of audit committee members has an impact on ROE at a 10% significance level. However, this relationship is in the opposite direction. In other words, the increase in the number of audit committee members in companies negatively affects the companies' return on equity capital.

In Model-2, where PDDD is the dependent variable, it is seen that the number of graduate and audit committee meetings has a strong effect on PDDD at a 1% significance level, while the number of audit committee members and the company performing the audit have a 10% significance level effect on PDDD. As the proportion of graduates in the audit board increases, this negatively affects the company value. The increase in the number of audit committee meetings, the number of audit committee members and the fact that the audit company is a large company also negatively affects the company value. The results obtained from the study are partially parallel to the studies of Al-Mamun, 2014; DeZoort et al., 2002; Menon and Williams, 1994; Kyereboah-Coleman, 2008; Al-Matari, Al-Swidi, and Fadzil, 2014; Hutchinson and Zain, 2008. In fact, since many variables were used for internal control in the study, they are partially and excessively related to the studies.

#### 4. CONCLUSION AND RECOMMENDATIONS

In fact, businesses have a good control mechanism ensures that financial markets are more resistant to competition. Control will be important not only in production and quality control units, but also in administrative units, especially in the accounting unit. Preventing any negative situation arising from external control will be achieved by conducting internal control beforehand, and even with an effective internal control mechanism.

In this study, the effect of the internal control structures of the companies included in the BIST-30 Index on their financial performance was investigated. However, 9 companies were excluded as they did not have data for the period of the study, 2018-2022, and they were offered to the public after 2018. As dependent variables, Return On Equity was used for profitability to represent financial performance, and Market Value/Book Value was used for firm value. Independent variables are: the graduate rate of Auditors, Number of Internal Control Reports, Number of Audit Committee meetings, Number of Audit Committee Members and whether the audit company is one of the 5 largest audit companies or not. As a method, GMM, one of the dynamic panel data analysis techniques, was used. The Driscoll-Kraay Robust Regression with Standard Errors method was used to consolidate the obtained results.

According to the difference GMM results; it is stated that in Model-1, the graduate ratio of the number of members on the audit board and the number of audit reports have an effect on ROE at a 10% significance level, and in Model-2, only the graduate ratio has an effect on PDDD at a 10% significance level. According to the system results, in Model-1, the number of audit reports has a strong effect on ROE at the 1% significance level; In Model-2, it was revealed that the graduate rate had a 5% significance level and the number of audit reports had a 10% significance level on PDDD at a 10% significance level.

To consolidate the GMM results, the Driscoll-Kraay Robust estimator test was applied. In Model-1, only the number of audit committee members has an impact on ROE at a 10% significance level, in Model-2, the number of graduate and audit committee meetings has a strong effect on PDDD at a 1% significance level, and the number of audit committee members and the auditing company. It is seen that it has an effect on PDDD at the 10% significance level.

According to these results, it may be important for companies that want to increase return on equity and market capitalization to increase the number of graduates on the audit committee and the number of audit reports. Particularly, postgraduate education in the accounting-finance department will crown the accounting-finance training received during the undergraduate period and will enable them to become more expert and qualified in the field of internal control. In addition, preparing more audit reports in a current period may increase company transparency and help them demonstrate better financial performance. As a result of the Driscoll-Kraay Robust estimator, increasing the number of audit committee members reduces the return on equity of companies. This can be explained by the fact that the increase in the number of members may create different opinions and cause possible disagreements.

The results obtained have been analyzed in the literature by Goh and Li, 2011; Ashbaugh-Skaife 2008, Mihret et al. 2010; and give parallel and similar results to Aikins 2011. A limitation of

the study is that it is only applied to the BIST-30 Index. The study may be improved especially by comparing countries and applying different techniques.

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