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THE IMPACT OF IFRS 16 ON EARNINGS MANAGEMENT

Doktora Tezi

GÖKSAL SELAHATDİN KELTEN

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İSTANBUL, 2024

ÖZET

THE IMPACT OF IFRS 16 ON EARNINGS MANAGEMENT

Önemli bir finansal ölçüt olarak kazançlar, yalnızca optimum kaynak tahsisine rehberlik etmekle kalmaz, aynı zamanda bir şirketin tüm paydaşları için de önem taşır. Genel kabul görmüş muhasebe ilkeleri tarafından yönlendirilen muhasebe, çeşitli karar alma süreçlerinde yönetimsel takdir yetkisine izin verir. Bu takdir yetkisi muhasebe yöntemlerinin, operasyonel stratejilerin, yatırım kararlarının ve tahmin uygulamalarının seçimini kapsar. Bu tür bir serbestlik genellikle, yöneticilerin arzu edilen sonuçlara ulaşmak için yasal sınırlar dahilinde muhasebe tercihlerinden yararlandığı kazanç yönetimine yol açar. Öte yandan, Uluslararası Finansal Raporlama Standartlarının benimsenmesi, raporlama kalitesini artırmayı ve mali tabloların karşılaştırılabilirliğini geliştirmeyi amaçlamaktadır. Bu amaç doğrultusunda düzenli olarak yeni standartlar yayınlanmakta veya mevcut standartlar güncellenmektedir.

En son güncellenen standartlardan biri kiralamalarla ilgilidir. 2016 yılında yayınlanan IFRS 16 kiralamalar standardı ile kiracıların faaliyet kiralamalarını dipnotlarda, finansal kiralamalarını ise bilançoda raporlamaları ortadan kalkmıştır. Böylece, tüm kiralama sözleşmelerinin bilançoya dahil edilmesi zorunlu hale gelmiştir. Bu durum, şirketlerin kazançlarını kiralama yoluyla yönetmesini engellemiştir. Ancak IFRS 16'nın yürürlüğe girmesiyle birlikte yüksek faaliyet kiralaması yapan şirketlerin karlılık oranlarında ciddi düşüşler yaşanmıştır. Her ne kadar UFRS 16 kiralamaların muhasebeleştirilmesindeki seçenekleri ortadan kaldırsa da yöneticilerin diğer standartların izin verdiği çerçevede hala bazı takdir yetkileri vardır. Bu da yasal çerçevede hala bazı kazanç yönetimi fırsatları yaratmaktadır.

Bu tez, IFRS 16'nın yürürlüğe girmesinin ihtiyari tahakkukları etkileyip etkilemediğini ortaya koymaya çalışmaktadır. IFRS 16'nın Borsa İstanbul'daki kazanç yönetimi üzerindeki etkisi gerçek verilerle analiz edilmektedir. Yöntem olarak panel regresyonu ve kantil panel regresyonu kullanılmıştır. Sonuçlar, IFRS 16'nın uygulanmasının Borsa İstanbul'daki kazanç yönetimi üzerinde pozitif bir etkiye sahip olduğunu göstermektedir.

Anahtar Kelimeler: Kazanç Yönetimi, UFRS 16, Borsa İstanbul

ABSTRACT

THE IMPACT OF IFRS 16 ON EARNINGS MANAGEMENT

Earnings, as a key financial metric, not only guide optimal resource allocation but also hold significance for all stakeholders involved in a business. Accounting guided by generally accepted accounting principles allows managerial discretion in various decision-making processes. This discretion covers the selection of accounting methods, operational strategies, investment decisions, and forecasting practices. Such freedom often leads to earnings management, where managers make accounting choices within legal limits to achieve desired results. On the other hand, the adoption of International Financial Reporting Standards aims to enhance the quality of reporting and improve the comparability of financial statements. New standards are published, or existing standards are updated regularly for this purpose.

One of the most recently updated standards is related to leases. With IFRS 16 leases published in 2016, the requirement for lessees to report operating leases in footnotes and financial leases in the balance sheet has ended. Thus, it became mandatory to include all lease contracts in the balance sheet. This prevented companies from managing their earnings through leases. However, with the entry into force of IFRS 16, companies with high operating leases have experienced serious declines in their profitability ratios. Although IFRS 16 eliminates the options in accounting for leases, managers still have some discretionary powers within the framework allowed by other standards. This still creates some earnings management opportunities within the legal framework.

This thesis tries to reveal whether the entry into force of IFRS 16 affects discretionary accruals. The impact of IFRS 16 on earnings management at Borsa Istanbul is analyzed with real data. Panel regression and quantile panel regression are used as methods. The results show that the implementation of IFRS16 has a positive impact on earnings management in Borsa Istanbul.

Keywords: Earnings Management, IFRS 16, Borsa Istanbul

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İstanbul, 2024

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LIST OF ABBREVIATIONS

CFO	Cash Flow from Operations
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
ECL	Expected Credit Loss
EM	Earnings Management
Eq.	Equation
EU	European Union
Fig.	Figure
GAAP	Generally Accepted Accounting Principles
IAS	International Accounting Standards
IASB	International Accounting Standards Board
IASC	International Accounting Standards Committee
ICL	Incurred Credit Loss
IFRS	International Financial Reporting Standards
LSDV	Least-Squares Dummy Variable
Par.	Paragraph
ROA	Return on Asset
SEC	U.S. Securities and Exchange Commission
WG	Within-Group

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INTRODUCTION

According to agency theory, accounting has a pivotal function in reducing conflicts of interest inherent in the principal-agent relationship between managers and shareholders (DeAngelo, 1986: 400). Ronen and Yaari (2008: 6) claim that the final goal of managing accounting numbers is earnings. Afterward, they immediately state that earnings are important because it is accounting information that has informativeness and stewardship roles.

Earnings are considered important financial information that has a critical role in optimal resource allocation. Expected earnings are used as an explanatory variable in many valuation models, financial analysts express stock price predictions in earnings and use earnings in risk assessment processes (Perek, 2018: 2). Graham et al. (2005) conduct a comprehensive investigation comprising surveys and interviews involving a cohort of over 400 executives. Their findings indicate that, among external users, earnings emerge as the paramount financial metric. Furthermore, the research underscores the significance attributed to two key benchmarks: namely, quarterly earnings for the corresponding period of the previous year, and analyst consensus.

Not only to the shareholders but also earnings are important for all stakeholders such as suppliers, employees, customers, etc. of the business. Payments such as salaries and promotions of managers and employees at other levels can be determined based on earnings. Earnings might be an important determinant of whether these people continue to work or not. Earnings are an important factor to the suppliers in the decision of whether to work with the relevant company. In addition, no customer will want to buy from a company that they think will go bankrupt and cannot get after-sales service. Finally, the government is also interested in the earnings because of the tax and other issues. Francis et al. (2003) investigate the Standard and Poor's Industry Surveys written by Eccles et al. (2002) and indicate that earnings before interest, taxes, depreciation, and amortization (EBITDA) is one of the four most preferred performance measures.

Although generally accepted accounting standards (GAAP) must be followed, financial accounting requires several judgments and critical thinking. This gives managers discretion in the selection of accounting methods, operating, investment, financing policies, and the selection of estimates for a particular accounting method (McNichols & Wilson, 1988: 2). There is where earnings management (EM) comes in and it is usually obtained in the form of applying accounting preferences within the legal framework of accounting process (Healy, 1985: 89; Goel, 2012: 576-577).

The artificially increasing or decreasing revenues, profits, or earnings per share is expressed as EM (Needles Jr. et al., 2018: 24). EM represents a strategic tool that managers can use for their benefit. It can be used as a means of opportunistic aims, such as increasing managers' performance-based compensation, instead of conveying information to which only the firm has access (Barth, 2018: 10).

Subject and Aim of the Thesis

It has been revealed by researchers that there would be manipulations in the reported numbers via EM. As the scandals of the early 2000s severely impacted belief in financial reports, EM, and fraud issues have become more important than before. Furthermore, Cohen et al. (2008) state that one of the main goals of the Sarbanes-Oxley Act is to reduce occurrences of fraud and EM to restore the integrity of financial statements. Financial information manipulation directly or indirectly affects many market participants such as investors, shareholders, and creditors (Çağlak & Meder-Çakır: 2024: 132), and reduces the effectiveness of resource allocation within the economy and compromises the credibility of financial reporting (Küçüksözen & Küçükkocaoğlu, 2004: 1). Consequently, there is a critical need to scrutinize whether reported financial information is subject to manipulation.

Assessing the impact of IFRS 16 on EM is primary objective of this thesis. To this end, the balance sheet and income statement data covering 2014–2021 were employed. The findings derived from panel data analysis are expounded in the fourth section.

Evaluation of the Literature

To shed light on EM, starting from the beginning of the 1970s a lot of EM studies have been conducted. It has been discussed from different perspectives by researchers. Although there are plenty of papers written about the topic, it is still one of the controversial issues in literature.

The Methodology of the Thesis

The subsequent sections are structured as follows: The following section provides the basics of financial information quality. In section two there is a comprehensive discussion of the framework and mechanisms of EM. The third section is dedicated to an exploration of the necessity of IFRS, its advantages, historical evolution, and an examination of the recently revised standard, IFRS 16. Lastly, in the fourth and final section, the study analyzes the impact of IFRS 16 on EM by employing panel data analysis.

1. BASICS OF FINANCIAL INFORMATION

Data about a company's financial position, operations, and results that are generated within its accounting and financial reporting system, quantified in monetary terms, and then distributed to relevant parties in the form of audited financial statements is known as financial information. (Küçüksözen & Küçükkocaoğlu, 2004). This chapter aims to explain the needs for financial information, the characteristics of useful financial information, objectives of manipulation, and types of accounting manipulation methods.

1.1. Financial Information Sources and Needs for Financial Information

Accounting functions as an information system tasked with the identification and measurement of business activities, processing data into comprehensive reports, and disseminating results to both internal and external users. Financial accounting and managerial accounting are two main categories of accounting. Financial accounting endeavors to cater to the informational requirements of external decision-makers, including shareholders and creditors, whereas managerial accounting is predominantly concerned with meeting the internal informational needs of a company's managerial teams (Horngren et al., 2012: 26; Kimmel et al., 2011: 5).

The role of managerial accounting is perceived as providing information for decision making by managers at different levels within the organization (Hayes, 1977: 22). It is not important whether the calculations, assumptions and reports in managerial accounting comply with accounting principles, rules, accounting standards and legal regulations, but primarily whether they are useful for managers (Büyükmirza, 2019: 26). However, the classification and recording of business transactions, calculations and measurements, and reports in financial accounting are based on GAAP (Horngren et al., 2009: 30).

Financial accounting procedures and outputs must comply with IFRS to supply useful information to users. In the Conceptual Framework of IFRS (IASB, 2018), financial reports which are the outputs of financial accounting, are referred to as 'general purpose financial reports'[1]. Goel (2012)

[1] Hereafter, throughout in this thesis the term 'financial statements' refer to 'general purpose financial reports' unless specifically indicated otherwise, and the terms of 'financial statements' and 'financial reports' are used interchangeably.

states that as a part of legal compliance financial reporting is the only way to communicate the financial information of the business to all stakeholders and highlights quality reporting as a key requirement for the future of global financial reporting.

According to IFRS, the following statements and information comprise a complete set of financial statements for a business (IAS 1, Par. 10, 38, 38A):

- Statement of financial position,
- Statement of profit or loss,
- Statement of changes in equity,
- Cash flow statement,
- Footnotes and other explanatory notes of the current and preceding period, and
- Statement of financial position for the earliest comparable period when the firm implement retrospective accounting policy or when it reclassifies components of its financial statements.

The goal of general-purpose financial reporting is to give lenders, other creditors, and current and potential investors access to financial data about the company that they may use to help them make decisions relating to providing resources to the company. These decisions are expressed as (a) buying, selling, or holding equity and debt instruments, (b) making or closing loans and other forms of credit, or (c) voting or influencing how the entity's economic resources are used (Conceptual Framework-IASB, 2018: Par. 1.2). It is assumed that agents (who manage the corporation) would be self-interest in agency theory (Makar et al., 1996: 33). Therefore, if they are not checked, agents who prepare the financial statements can put their interests (e.g., compensation) on the principal's benefits.

To make the abovementioned decisions, investors, lenders, and other creditors require information on (i) the entity's economic resources, claims against the entity, and changes in those resources and claims; (ii) how efficiently and effectively the organization's management and board of directors fulfill their responsibilities for the use of the organization's economic resources (Conceptual Framework-IASB, 2018: Par. 1.4). Such information is helpful in evaluating potential future cash flows.

In summary, decision-makers equipped with accurate useful financial information can make the best decisions. As illustrated in the Pathways Vision Model (Fig. 1), this is one step closer to creating a prosperous society (The Pathways Commission, 2012: 22).

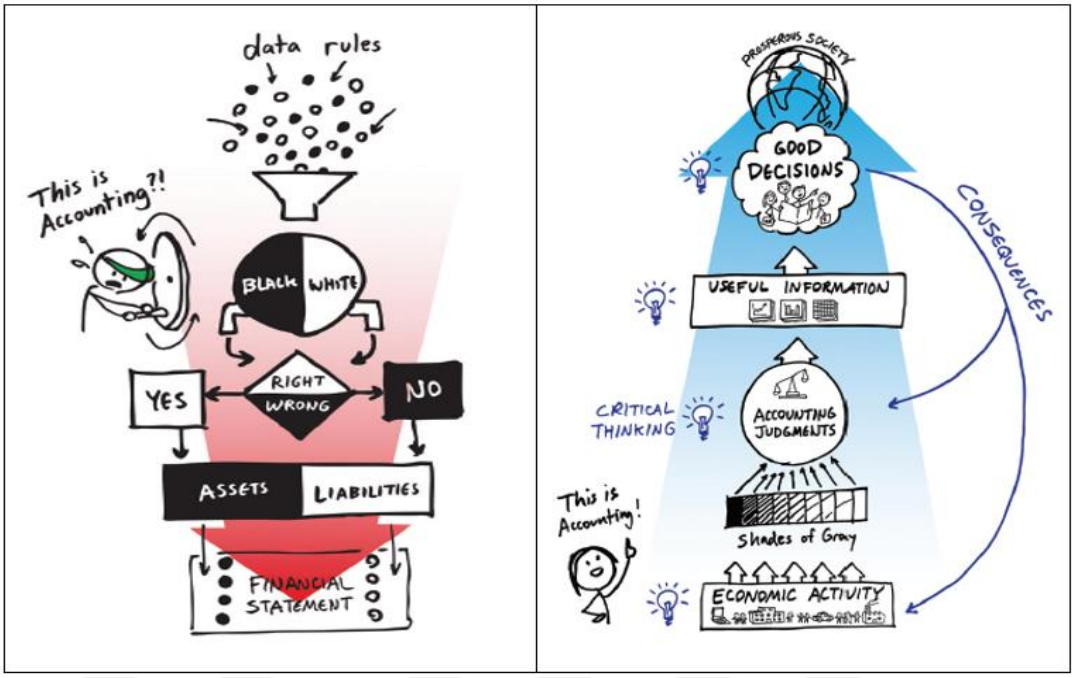


Figure 1. Pathways Vision Model[2]

Source: The Pathways Commission, 2014: 15

1.2. Characteristics of Useful Financial Information

Information users who want to make economic decisions about the company are provided with the necessary information about the performance, cash flows, and financial position of the company through financial reports (Tuan & Borak, 2020: 382). To be useful to internal and external users, the prepared financial information must be relevant and faithfully represented. Relevant and faithful representation of the financial data is necessary for both internal and external users to find it valuable. Furthermore, if it is presented on time and is comparable, verifiable, and understandable, usefulness will be enhanced (Örten et al., 2020: 4). As shown in Fig. 2, while relevance and faithful representation create the fundamental qualitative characteristics; comparability, verifiability, timeliness, and understandability are enhancing qualitative characteristics of useful financial information (Conceptual Framework-IASB, 2018: Par. 2.5, 2.23).

[2] Accounting requires critical thinking (right side of the figure) rather than a set of stereotypical rules (left side of the figure) and should produce useful information for decision makers.

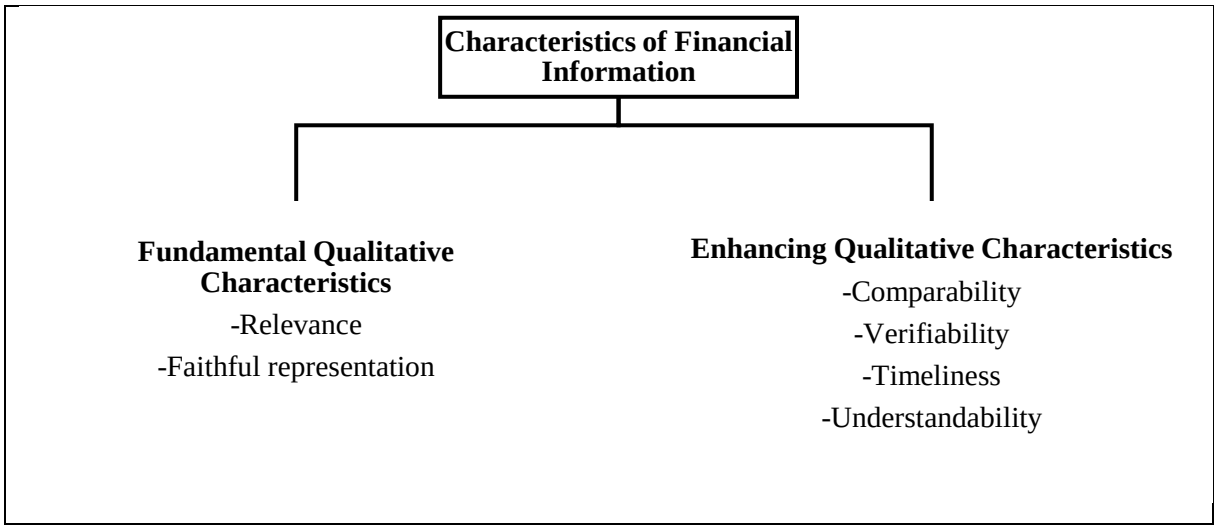


Figure 2. Characteristics of Financial Information

Source: Conceptual Framework-IASB, 2018: Par. 2.5, 2.23

1.2.1. Fundamental Qualitative Characteristics

Relevance and faithful representation are the two main characteristics of useful financial information. Relevant information should be presented faithfully, while information presented faithfully should be relevant (Örten et al., 2020: 4). Therefore, these features can be considered to be complementary to each other.

1.2.1.1. Relevance

To help predict future income, dividends, and share prices, investors should be given reasonably accurate measures of the company's historical activity (Simpson, 1969: 806). If any financial information has a confirmatory or a predictive value, this information is relevant. Relevant financial information is capable of making a difference in the decisions. Another issue that should not be overlooked within the scope of relevance is materiality. Information is material if its omission, misstatement, or obscurance could reasonably influence the decisions of the primary users of the financial statements about an entity (Conceptual Framework-IASB, 2018: Par. 2.11). There is no numerical threshold for materiality; it depends on the nature and size of the information (Örten et al., 2020: 5).

1.2.1.2. Faithful representation

Financial information must not only be relevant, but it must also be faithfully represented. A perfectly faithful presentation should be complete, neutral, and free from error. For a complete depiction,

the representation must contain all necessary information including all the descriptions and explanations for the user to understand the phenomenon. A neutral depiction is the absence of bias in the selection or presentation of financial information. Free from error means that there are no errors or omissions in the description of the reported information and the production process of this information (Conceptual Framework-IASB, 2018: Par. 2.13, 2.15, 2.16, 2.18).

1.2.2. Enhancing Qualitative Characteristics

1.2.2.1. Comparability

Decisions made by users of financial statements entail selecting between options, (e.g., buying or selling a specific share, or buying a share and selling another one). Therefore, it is important that financial information is comparable. This comparability can be seen in two ways: comparability with the previous reports of the entity and comparability with the reports of other entities (Conceptual Framework-IASB, 2018: Par. 2.24).

1.2.2.2. Verifiability

The ability of independent observers to obtain similar results using the same methods is called verifiability (Weygandt et al., 2015). Verifiability is the consensus of several independent and knowledgeable observers agreeing that a particular depiction is a faithful representation. Verifiability can be direct (e.g., counting cash) or indirect (e.g., recalculating inventories utilizing the same assumptions) (Conceptual Framework-IASB, 2018: Par. 2.30, 2.31).

1.2.2.3. Timeliness

Timeliness is about making information available to decision-makers in a timely manner so that it can influence the decisions they make (Conceptual Framework-IASB, 2018: Par. 2.33).

1.2.2.4. Understandability

Information has the quality of being understandable if it is presented in a clear and concise manner so that reasonably informed users of that information can interpret it and understand its meaning (Weygandt et al., 2015).

1.3. Financial Information Manipulation

Intentional distortion of information in financial statements is called financial information manipulation. The primary objective of manipulation is to deceive investors by publishing financial

statements that do not fairly present a company's financial position and performance (Öğüt et al., 2009). There can be many different goals to be achieved by deceiving investors by manipulating financial information. Additionally, financial information manipulation can be done using legal or illegal methods. The objectives and methods of financial information manipulation will be discussed in this heading.

1.3.1. Objectives of Manipulation

In the literature, financial information manipulation is defined as changing financial information to be disclosed to the public by intervening in the financial reporting process. The objectives of these manipulations are made for some personal or corporate purposes. These purposes can be listed as follows (Küçüksözen & Küçükkocaoğlu, 2004):

- Influencing share price and risk level,
- Meeting the financial conditions of the debt contract
- Maintaining good relations with creditors, investors, and employees,
- Manipulating executive compensations,
- Avoiding costs arising from political or legal regulations,
- Primary or secondary public offering,
- Minimizing the perceived company risks by investors and giving a positive signal about the future performance,
- Providing tax advantage.

According to Sümbül-Koçak (2015) reducing the cost of business acquisition is also among the objectives of financial information manipulation.

1.3.2. Types of Accounting Manipulations

Accounting manipulation is defined by Stolowy and Breton (2004) as the use of managerial discretion to create transactions or make accounting decisions in a way that impacts the opportunities for wealth transfer between the company and managers, funders, or society. Accounting manipulations may be within the framework of law and standards, or they may go beyond these limits. As shown in Fig. 3 if there is a manipulation within the limits permitted by law and standards is called "creative accounting" and "EM". If it is outside these limits, it is called "fraud".

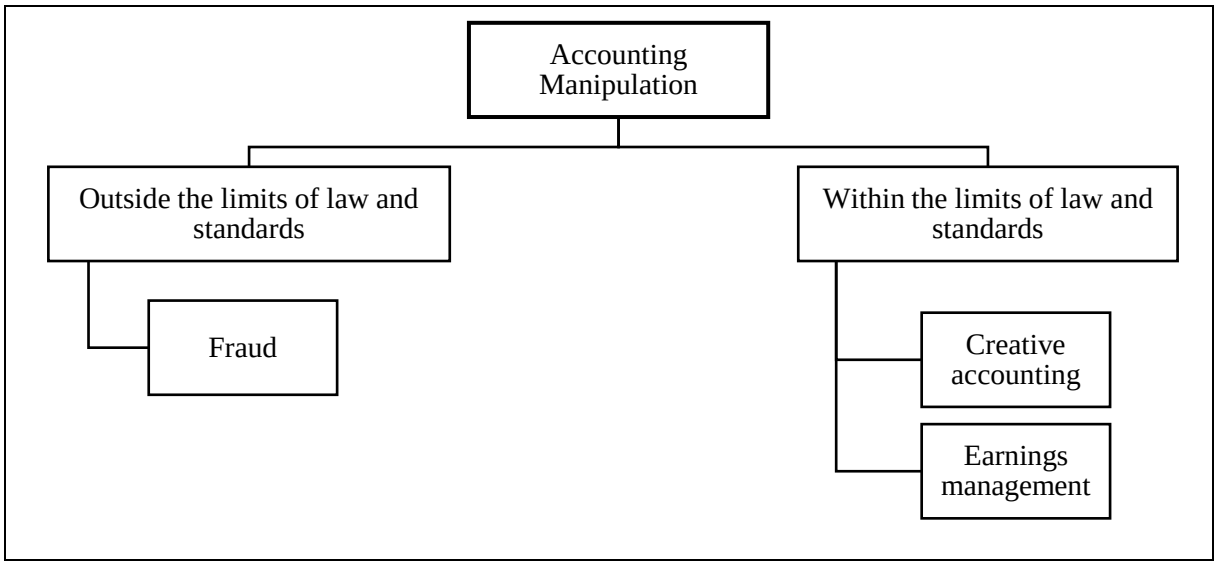


Figure 3. Types of Accounting Manipulations

Source: Stolowy and Breton, 2004: 8

1.3.2.1. Fraud

Accounting manipulations may be within the framework of law and standards, or they may go beyond these limits. Manipulations made outside of laws and standards constitute fraud. Fraudulent reporting is defined as intentionally misstating or omitting amounts or disclosures in the financial statements that are intended to mislead (Mulford & Comiskey, 2002: 16). Error and fraud should not be confused. There must be an illegal act such an issuing false invoices to increase sales figures for fraud (Stolowy & Breton, 2004). The act of fraud, which is against the law, is also against the standards. Therefore, fraudulent accounting always remains outside GAAP (Erickson et al., 2006: 117). Dechow and Skinner (2000: 25) list some examples of fraudulent accounting as follows:

- Recording sales before they are "realizable",
- Recording fictitious sales,
- Backdating sales invoices,
- Overstating inventory by recording fictitious inventory.

1.3.2.2. Creative Accounting

Stolowy and Breton (2004) state that the expression "creative accounting" has been developed mainly by practitioners, media commentators and journalists. However, there is no definitive definition of creative accounting in the literature. According to some scholars (Amat & Gowthorpe, 2004), it is used synonymously with EM, while others (Mulford & Comiskey, 2002) use definitions that include

fraud. In this study, since the classification of accounting manipulations is based on Stolowy and Breton's framework, creative accounting and EM are classified under separate headings.

1.3.2.3. Earnings Management

Healy and Wahlen (1999: 368) claim that EM occurs in the employment of managerial judgment in financial reporting and structuring transactions to alter reports, mislead stakeholders about the company's performance, or influence contractual outcomes based on reported numbers. Mulford and Comiskey (2002: 87) define EM as a "… active manipulation of earnings toward a predetermined target". Schipper (1989: 92) states that "EM is a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain". As mentioned in Schipper's definition, it is obvious that if there is an earning management activity there might be a beneficial part of this action. Mulford and Comiskey (2002) provide some conditions and incentives associated with EM activities as shown in Table 1.

Table 1. Earnings Management: Conditions and Incentives

Conditions	Incentives
Failure to meet consensus earnings forecast	Preventing a sharp decline in share prices
An initial public offering	To maximize the share price
Earnings are somewhat higher than the minimum level required for incentives or are approaching the highest point at which no further incentive is received	To maximize incentive compensation.
Due to size and/or industry membership, being a target for unfavorable political activities	To minimize the political cost
Being close to violating a financial agreement related to earnings	Avoiding the possible negative effects of a contract violation
Earnings being outside a long-term trend	Prevention of inappropriate market reaction
Volatility in earnings resulting from nonrecurring items	To reduce earnings volatility
Top management change	To get rid of the blame and shift the blame to the outgoing management
Large losses associated with the restructuring	Reversing the overstatement of accruals to achieve earnings targets

Source: Mulford and Comiskey, 2002: 61

As noted above, some factors such as weak internal controls, inexperienced management, complex operations and a weak board of directors provide favorable conditions for EM (Mulford & Comiskey, 2002: 60); there are also several preventing and deterring factors on EM. Independent audit, corporate governance, and legal systems are important for preventing EM activities (Ronen & Yaari, 2008).

In light of the incentives and constraints described above, Babalyan (2004) visualizes the elements of the generalized EM process as in Fig. 4. As shown in the figure, at one side of the EM process (at the top of the figure) some initiators want to maximize their benefits; at the other side (at the bottom of the figure) there are the users of the manipulated numbers.

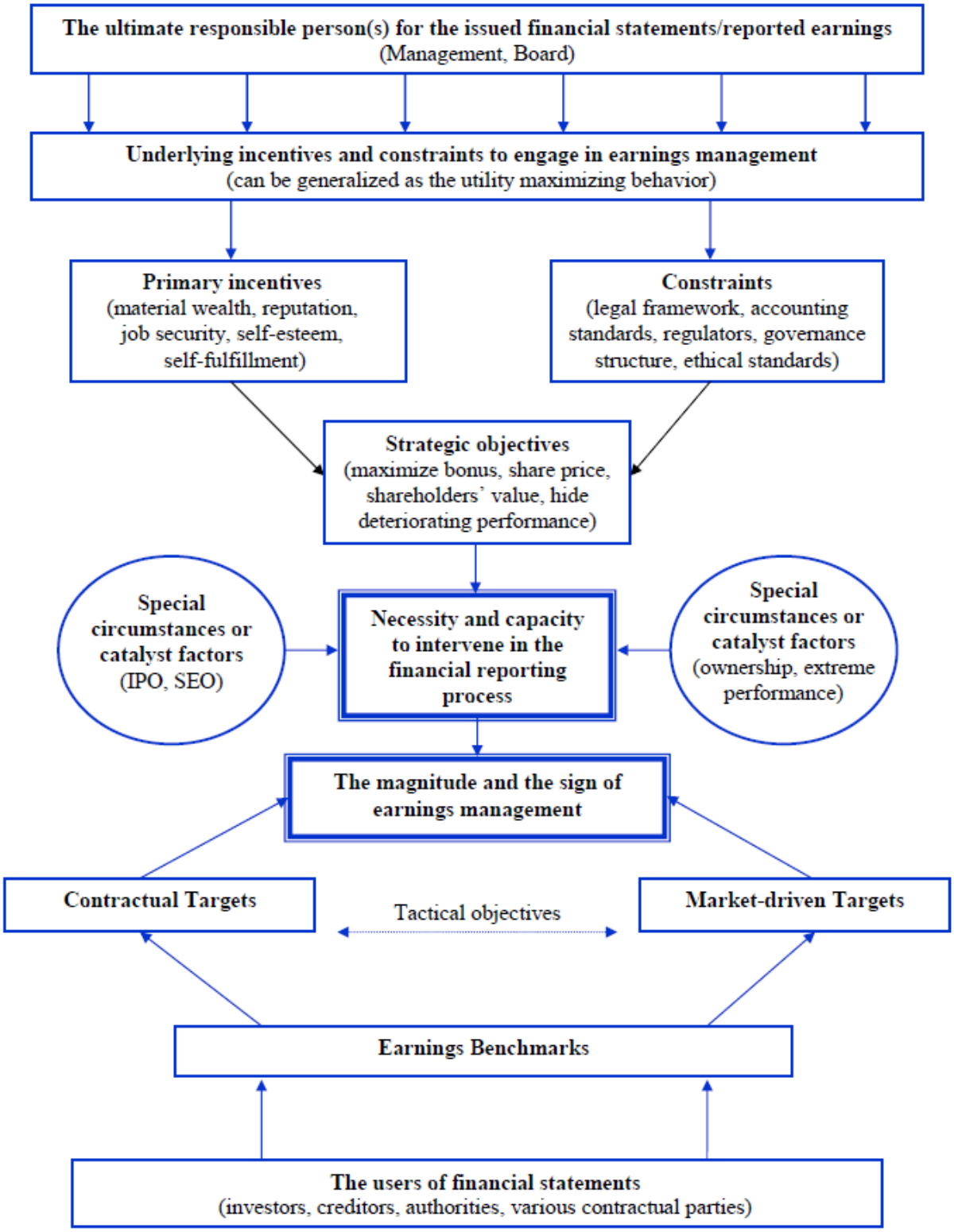


Figure 4. The Generalized Earnings Management Process

Source: Babalyan, 2004: 38

2. EARNINGS MANAGEMENT

The definition of EM is clarified in this part of the study. After clarification, the motivations behind EM, EM methods, determinants of EM, and methods that try to measure EM are explained.

2.1. The Definitions of Earnings Management

To comprehend EM inclusively, it is useful to begin with the definitions in the literature. It is possible to encounter numerous definitions in the literature. Some of these definitions are provided in this part. Scott (2015: 445) defines EM as "… the choice by a manager of accounting policies, or real actions, affecting earnings to achieve some specific reported earnings objective".

Fischer and Rosenzweig (1995: 434) define EM as managerial decisions that have the effect of increasing (decreasing) reported current earnings without having an impact on long-term economic performance.

Phillips et al., (2003) assert that EM "is accomplished through managerial discretion over accounting choices and operating cash flows".

There are other definitions in the literature. Table 2 presents three distinct definitions for EM: "white," "grey," and "black" that Ronen and Yaari (2008) derived from the literature.

Table 2. Alternative Definitions of Earnings Management

White	Grey	Black
"EM is taking advantage of the flexibility in the choice of accounting treatment to signal the manager's private information on future cash flows."	"EM is choosing an accounting treatment that is either opportunistic (maximizing the utility of management only) or economically efficient."	"EM is the practice of using tricks to misrepresent or reduce the transparency of financial reports."

Source: Ronen and Yaari, 2008: 26

2.2. Types of Earnings Management

There are nondiscretionary and discretionary components to each revenue and expense item in reported income. Management can use discretion for many of these items by selecting the accounting method, estimations, and operating, investing, and financing policies. (McNichols & Wilson, 1988: 2). According to Fischer and Rosenzweig (1995) there are two types of EM: "those which involve changing

accounting methods and those which involve operating decisions". Kothari et al. (2016: 559) state that there are two channels to manage earnings which are accruals management and real activities management.

Financial reporting and disclosures, which are tools to reduce information asymmetry between managers and contracting parties (Ball, 2001: 127) should reflect fair information. However, financial statements may deviate from this purpose by various methods. EM, which has a large place in the literature, is one of these methods.

Earnings can be managed in several ways, including arranging the activity level of the company, the timing of that activity, the timing of disclosures, and the choice of accounting methods to report the performance of the company (Makar et al., 1996: 34). Managers have a chance to choose accounting policies that help to achieve their objectives from a set of alternatives.

Ronen and Yaari (2008) summarize the EM methods as follows:

- Choice of alternative accounting methods allowed by GAAP,
- The timing of implementation of the newly released or updated accounting standard, and the retroactive adjustments of financial statements,
- The timing of revenue and expense recognition
- Accounting judgments while making estimations such as depreciations, allowances, valuations, and write-offs,
- Budget decisions and timing of expenditures for production, management, marketing, research and development, and other departments,
- Classification of items and structuring of the transactions,
- Managing the transparency of presentation and informativeness of financial reports.

All the above-mentioned items are generally grouped under two main headings accrual-based and real-based EM.

2.2.1. Accrual Based Earnings Management

Accrual-based earnings are considered a more useful indicator (than cash-based earnings) of business performance. Thus, the expense or revenue is reported in the period of benefited or served rather than the period of actual cash flow. GAAP guides estimating accruals, but there is ample room in this guide for discretion and management of reported earnings (Makar et al., 1996: 34).

Accrual-based EM is the intervention of managers in the financial reporting process by applying discretion and judgment regarding accounting choices. It is important to note that accrual management

hides the true operating performance of the company (Kothari et al., 2016: 560). Due to its ability to change the time of reported earnings accrual-based EM is one of the widely used methods in practice (Healy, 1985: 89). A change in reported net income by adjusting the reserve levels is an example of EM through of changing accounting methods (Fischer & Rosenzweig, 1995: 434).

2.2.2. Real (Activity) Based Earnings Management

Roychowdhury (2006) defines real-based EM as departures from normal operational practices, motivated by an intention to deceive at least some stakeholders into thinking that certain financial reporting objectives have been achieved through routine operations. Giving customers preferential terms at year's end to boost revenues from the following year to this year is an example of EM through operating decisions (Fischer & Rosenzweig, 1995: 434). While making real-based earning management activities managers might have personal gains or they might be serving as intermediaries for value transfers among stakeholders (Roychowdhury, 2006: 337).

DeAngelo (1986) claims that managers are tempted to apply income-reducing strategies via accrual-based EM because they are less likely to be discovered by outsiders. On the contrary Kothari et al. (2016) argue that real-based EM is reasonably more difficult to detect than accrual management. Rather than being difficult to discover, it is pertinent to point out that EM is undesirable for users of financial statements and impairs fair presentation.

Bartov (1993) empirically investigates whether managers manipulate reported earnings through the sale of long-lived assets and the timing of investments. The findings from the analyses provide evidence that managers manipulate reported earnings through the sale of long-lived assets and the timing of investments.

2.3. Incentives of Earnings Management

Watts and Zimmerman (1978) assume that individuals act to maximize their benefits, and in doing so they are resourceful and innovative. Thus, they postulate that managers' choice of accounting procedures leans on their own benefits. According to statistical evidence presented by Burgstahler and Dichev (1997), companies manipulate their reported earnings in order to avoid losses or declines in earnings. Much of the evidence of EM stimulus is correlated with performance (Dechow et al. (1995). According to Beneish (2001) EM is more likely to exist when a performance is either abnormally good or curiously bad. The author ties the following four sources (i) debt contracts, (ii) compensation agreements, (iii) equity offerings, and (iv) insider trading with EM.

Goel (2012) specifies the main stimulus for EM as the effort to position a firm's performance against a benchmark. This benchmark could be the previous period's performance or improving trend or any specified targeted bonus threshold for a manager's compensation agreement. Mulford and Comiskey (2002) state that any failure to reach a consensus earnings expectation frequently causes a sharp decline in market value. Thus, it is possible to note that a significant incentive for EM is the desire to beat or meet consensus expectations. Scott (2015) also supports this argument, noting that managers can use EM to meet analysts' estimates and investor expectations.

Healy (1985) claims that bonus schemes create incentives for managers to choose accounting procedures and accruals to maximize their rewards. Ronen and Yaari (2008: 53) state that compensation, CEO turnover, insider trading, and management acquisition are the reasons for EM that directly stem from management.

On the other hand, DeAngelo (1986) asserts that managers may have incentives to understate earnings in "going private" transactions due to the valuation approaches used in buyouts are accounting-based (i.e., earnings-based) rather than market price.

2.4. Earnings Quality and Earnings Management

Earnings quality can be defined differently by each financial statement user's aspect. But in general, "a high-quality earnings number will do three things: It will reflect current operating performance; it will be a good indicator of future operating performance; and it will accurately annuitize the intrinsic value of the company" (Dechow & Schrand, 2004). High-quality financial accounting data should be of interest to investors and other users since it is thought to improve capital market efficiency (Ewert & Wagenhofer, 2011: 2). However, although the term "earnings quality" is frequently used, there is no consensus on its definition and measurement method (Schipper & Vincent, 2003: 2).

According to Lo (2008), highly managed earnings are of low quality. However, since other factors (some of which are listed above) affect the quality of earnings, the absence of EM does not ensure high-quality accounting numbers or earnings.

According to Francis et al. (2006) the determinants of earnings quality are influenced by the innate features of business models and the financial reporting process as shown in Fig. 5. While business models and operating environments are innate components; i) judgments and estimates in financial reporting, ii) quality of the information systems, iii) monitoring activities, iv) governance activities, v) regulatory scrutiny, vi) reporting standards are discretionary or reporting components of earnings quality (Francis et al., 2006: 276).

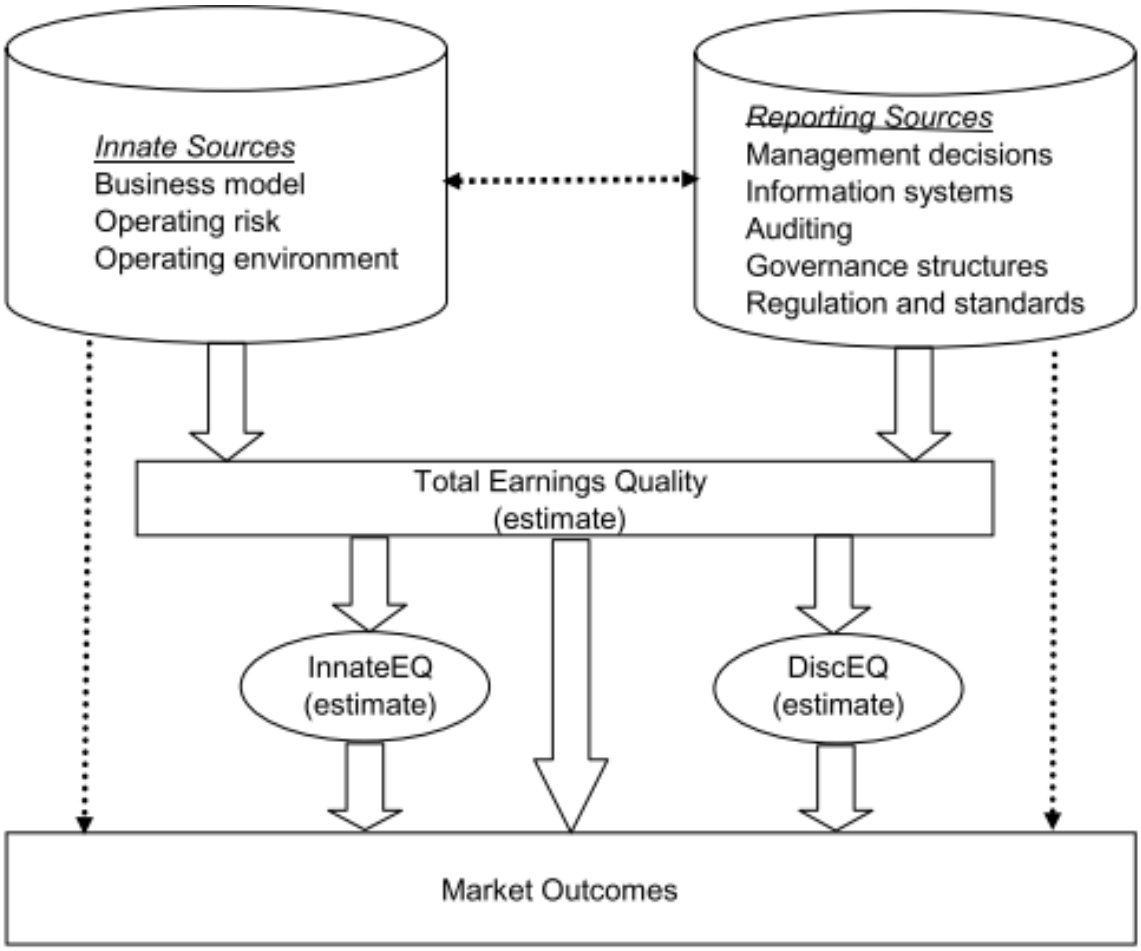


Figure 5. Innate and Discretionary Components of Earnings Quality

Source: Francis et al., 2006: 276

Francis et al., (2004) identify seven characteristics of earnings quality that are widely used in research as follows:

- accruals quality,
- predictability,
- persistence,
- smoothness,
- timeliness,
- value relevance,
- conservatism.

There are many studies in the literature on each of the seven characteristics listed above to measure the quality of the earnings.

On the other hand, Dechow et al. (2010) review more than 300 studies and divide six categories of the variables used as determinants of earnings quality as follows:

- financial reporting practices,
- firm characteristics,
- governance and controls,
- equity market incentives,
- auditors,
- external factors.

It is possible to find studies in the literature that make similar classifications to these studies. However, when their contents are examined, the same or very similar items will often be encountered. The next heading (2.5.), which discusses the determinants of EM that are frequently encountered in the literature, also sheds light on understanding the determinants of earnings quality at the same time.

2.5. Determinants of the Earnings Management

The preceding heading explains the connection between EM and earnings quality. The factors that determine EM are described in this section. When the literature is examined, it is understood that many variables are used as a proxy of EM. Frequently used variables are discussed in further subheadings.

2.5.1. Accounting and Reporting Standards

It is accepted that EM activities are closely related to accounting and reporting standards. Lo (2008) states that accountants following a poor set of standards will produce low-quality financial reports.

In EM studies, it is examined whether the set of standards used by the company is rule-based or principle-based as a determinant of EM. One of the most important differences between IFRS and local GAAP is the principles-based approach of IFRS (Fuad et al., 2022: 1). Therefore, the IFRS gives more degrees of freedom to managers than rule-based standards. However, IFRS requires much more disclosure. Thus, it appears that the greater disclosure necessity seems to be more important than the freedom to manage earnings (Aussenegg et al., 2008: 6).

Goncharov and Zimmermann (2006) investigate whether the level of EM differs between German GAAP, IAS, and US GAAP. They report that while EM levels are approximately the same under GAAP and IAS, there is a considerable decrease under US GAAP.

In their study, Aussenegg et al. (2008) analyze the effects of the transition of publicly traded companies from local GAAP to IFRS on EM in 17 European countries with 18896 firm-year observations. To measure EM, they apply 15 different proxies, and they state that in general, the EM level of the companies applying IFRS is less than domestic standards appliers.

Presenting high-quality information in financial statements is one of the objectives of IFRS. It is stated that the objective of IFRS1 is to ensure that the financial statements of an entity adopting IFRS for the first time contain high quality information (IFRS 1, Par. 1). From this perspective, whether IFRS has an impact on earnings quality and EM is the subject of many studies. In this point of view, the aim of this thesis is to analyze IFRS 16 in terms of EM.

2.5.2. Independent Audit

In the literature, one of the factors determining EM is independent auditing. Ronen and Yaari (2008) claim that the probability that firms successfully manage earnings is influenced by the quality of their auditors. However, auditors who do not do their job properly cannot be expected to prevent EM. For instance, Coffee (2002: 28) states that Enron is more concerned about gatekeepers' (including auditors) failure than board failure. Dechow et al., (2010) review more than 300 studies and explore that auditor size, fees, and tenure are used as determinants of earnings quality.

2.5.3. Governance and Control

An effective corporate governance and partnership structure is accepted as another factor of EM practices. Corporate governance controls the opportunistic choices of managers by preventing information asymmetry (Yurdakul, 2014: 58). Institutional ownership significantly impacts EM activities, according to Aybars (2013).

Altamuro et al. (2005) investigate the effects of SEC Staff Accounting Bulletin No. 101 on EM. The authors compare the companies that are affected by the bulletin with those not affected. According to the analysis results, they state that the affected group has weaker corporate governance and is more likely to engage in EM.

Al-Haddad and Whittington (2019) examine how ownership structure and governance affect both real and accrual-based EM with a sample of 108 Jordanian public firms. They use board independence, board size, and CEO duality for corporate governance mechanisms. Managerial ownership, institutional ownership, foreign ownership, and large shareholder ownership are the variables used for ownership structure. According to the empirical results, authors state that institutional ownership and managerial ownership are found to constrain EM.

Leuz et al. (2003) offer comparative findings regarding EM across 31 countries during the period from 1990 to 1999. They assert that companies in countries with well-established equity markets, widely distributed ownership patterns, strong investor protections, and effective legal enforcement tend to exhibit lower levels of EM.

2.5.4. Regulators and Legal System

Regulators play two different roles in the accounting industry. On the one hand, they are users of financial statements. On the other hand, regulators set the rules, and the legal system is a crucial part of the accounting system. According to Ball (2001) one of the most crucial components of effective financial reporting and disclosure systems is the establishment of an independent, effective legal system for identifying and punishing fraud, manipulation, and standard violation practices. (Brown et al., 2014) state that there is a linkage between the quality of financial reporting and legal setting and enforcement. Burgstahler et al. (2006) evidence that EM is more prevalent in countries with weaker legal systems.

Sari et al. (2010) state that in economies with high investor protection accrual-based EM is lower than in low investor protection. According to their statistical results, although there is a negative association between the quality of outside investor rights, legal enforcement, and quality of disclosure and accrual-based EM; a positive association between these issues and real-based EM. Wysocki (2004) proposes that higher-quality accounting standards and improved investor protection laws have the potential to mitigate EM.

Another factor affecting EM is the tax rate. Tax is included as an independent variable in many EM studies such as Cai et al. (2008). Cai et al. report that there is a negative relationship between tax rate and EM, and state that institutional factors in the countries such as financial market development and tax systems also affect earnings quality.

2.5.5. Firm Size

Another determinant of EM is recognized as firm size and used as an independent variable in many studies. Some studies in the literature suggest that large companies tend to use income-reducing accounting methods (Watts & Zimmerman, 1990: 140). However, the evidence is mixed, with studies showing both positive and negative associations between size and earnings quality (Dechow et al., 2010: 230).

2.5.6. Market Value

Market value is another element that influences EM. Management may be pushed toward EM because of the relationship between reported earnings and stock prices (Stephan, 2019:253). A positive relationship between the market value of companies and reported earnings is a strong assumption accepted in the literature (Suadiye, 2021:230). Managers consider three thresholds when reporting earnings: reporting earnings above zero, achieving at least previous year's earnings, and meeting analysts' consensus estimates (Degeorge et al., 1999: 8). When a company consistently meets analysts' consensus estimates, it's a potential red flag for its earnings quality (Dechow & Schrand, 2004: 53).

2.5.7. Capital Structure

Another factor that manipulates earnings is the obligation to meet obligations arising from debt agreements. The debt/equity hypotheses employed in the research indicate that managers are more inclined to employ techniques that increase income if a company has a larger debt/equity ratio (Watts & Zimmerman, 1990: 139).

2.5.8. Growth

According to Matsumoto (2002), managers of companies experiencing high growth might be more motivated to avoid failing to meet earnings expectations. McNichols (2000) uses growth in earnings in his study as an independent variable and reports that growing companies are more likely to exhibit positive discretionary accrual estimates and more likely to manipulate their earnings. In addition to asset growth, some studies consider sales growth an independent variable (e.g., Doukakis, 2014).

2.5.9. Firm Financial Performance

Mohanram (2003) states that at the fundamental level, the reasons of EM is related to firm performance. The performance of the firm encourages managers to manipulate financial reports to ensure that economic decision-makers decide in the desired direction (Sünbül-Koçak, 2015: 70). McNichols (2000) detects that discretionary accrual estimates are positively associated with return on assets (ROA). Kothari et al. (2005) also rearrange original Jones earning management model and includes the ROA in the model.

2.5.10. Cash Flow From Operation

Higher fluctuations in cash flow and sales revenue give managers an incentive to manipulate financial reports (Sünbül-Koçak, 2015: 71). In this respect, Kasznik (1999) includes the change in cash

flow from operations (CFO) in his EM model as an independent variable. There are also other studies (Van Tendeloo & Vanstraelen, 2005; Sellami & Fakhfakh, 2014; Fuad et al., 2022; Souza et al., 2022) that include in their research models the change in CFO in literature.

2.6. Earnings Management Assessment Methods

There are many studies that have attempted to measure EM. In terms of methodology, these studies can be divided into three categories: those based on discretionary accruals (e.g., Dechow et al., 1995; Jones, 1991; DeAngelo, 1986), those based on specific accruals (e.g., McNichols et al., 1988), and those based on a threshold (e.g., Glaum et al., 2004; Degeorge et al., 1999; Burgstahler and Dichev, 1997) (McNichols, 2000; Beneish, 2001; Stolowy & Breton, 2004; Jeanjean & Stolowy 2008). The first one focuses on total accruals and tries to calculate its components, expected and unexpected accruals. The second group concentrates on specific accruals such as the provision for bad debt, or accruals in particular industries such as loss reserve in the insurance sector. The third group investigates the discontinuities in the earnings distribution (Beneish, 2001: 5). The most used methods in the literature are described below.

2.6.1. Healy Model (1985)

Healy (1985) claims that bonus schemes create incentives for managers to choose accounting procedures and accruals to maximize their compensations. The author develops an EM measurement technique, which is widely used in literature, to test the link between managers' accrual and accounting decisions and their income reporting incentive as follows (Eq. 1):

$$ACC_t = -DEP_t - XI_t D_1 + \Delta AR_t + \Delta INV_t - \Delta AP_t - \{\Delta TP_t + D_t\}D_2 \quad (1)$$

where;

ACC_t : total accounting accruals which estimated by the difference between reported earnings (NI_t) and cash flows from operations (CF_t). It consists of both non-discretionary NA_t and discretionary DA_t components ($ACC_t = NA_t + DA_t$).

DEP_t : depreciation in year *t.*

XI_t : extraordinary items in year *t.*

ΔAR_t : accounts receivable in year *t* less accounts receivable in year *t-1*.

ΔINV_t : inventory in year t less inventory in year *t-1*.

ΔAP_t : accounts payable in year t less accounts payable in year *t-1*.

ΔTP_t : income taxes payable in year *t* less income taxes payable in year *t-1*.

D_t : deferred income tax expense (credit) for year *t.*

D_1 : 1 if bonus plan earnings are defined after extraordinary items.

: 0 if bonus plan earnings are defined before extraordinary items.

D_2 : 1 if bonus plan earnings are defined after income taxes.

: 0 if bonus plan earnings are defined before income taxes.

Healy datasets consist of 94 companies listed in the 1980 Fortune Directory of the 250 largest U.S. industrial corporations. According to the statistical findings, he concludes that there is a strong relationship between accruals and bonus contracts. Furthermore, managers are more likely to prefer income-decreasing accruals when the upper or lower bounds of their bonus plan are binding, and income-increasing accruals when these boundaries are not binding.

2.6.2. DeAngelo Model (1986)

According to DeAngelo (1986), managers have a motivation to understate reported income to reduce the payment because the courts and investment bankers utilize earnings-based valuation methods to determine fair value in management buyout transactions. The author investigates the behaviors of managers who proposed to buy 64 firms' publicly held common stocks listed between 1973 and 1982 on the (26 firms) New York and (38 firms) American Stock Exchanges. Because 92.2 percent (59 firms) of the sample have an unaudited final accounting disclosure, the author claims that managers of sample companies attempt to understate pre-acquisition reported earnings to reduce the buyout compensation. In the study, the empirical analyses focus on accrual-based EM and total accruals are expressed by Eq. 2:

$$TA_t = NA_t + DA_t \quad (2)$$

where;

TA_t : total accruals in the period t (calculated as NI-CFO)

DA_t : discretionary accruals in the period *t*

NA_t : non-discretionary accruals in the period *t*

DeAngelo uses the total accruals of a prior period *(t-p)* as a measure of the *'normal'* total accrual. The author defines the change in total accruals in *t* (ΔTA_t) as *'abnormal'* total accrual which is

calculated by the difference between current total accruals in *t* and *'normal'* total accruals in *t* via Eq. 3 (Jones, 1988: 24):

$$\Delta TA_t = (TA_t - TA_{t-P}) = (DA_t - DA_{t-P}) - (NA_t - NA_{t-P}) \quad (3)$$

2.6.3. McNichols and Wilson Model (1988)

McNichols and Wilson (1988) analyze 2,038 firm-year observations between 1967 and 1985. The authors claim that if the accrual accounting reflects underlying economic events, they focus on a more specific discretionary accrual model rather than total discretionary accruals. They propose a proxy to provision for bad debt to calculate earning management. They begin by partitioning total accruals (A), which refers to provision for bad debts, into a discretionary (DA) and a nondiscretionary (NA) component:

$$TA = NA + DA \quad (4)$$

They state that because DA is unobservable they use a proxy (DAP) which measure DA with error (η):

$$DAP = DA + \eta \quad (5)$$

They express another representation of DAP as follows:

$$DAP = A - NAEST \quad (6)$$

Where NAEST refers to estimate of NA, thereby specifying η:

$$\eta = NA - NAEST \quad (7)$$

They also express DA as follows:

$$\mathrm{DA} = \alpha + \beta PART + \varepsilon \quad (8)$$

Where PART is a dummy variable that partitions the data into two groups for which EM predictions are specified. The average value of DA in the first group is denoted by α, while the value for the second group is denoted by α + β.

Following to McNichols and Wilson model Kang and Sivaramakrishnan (1995) express discretionary accruals (DA) and non-discretionary accruals (NA) and total accruals are expressed as follows:

$$\mathrm{DA} = \alpha + \beta PART + \varepsilon \tag{9}$$

$$NA = NAEST + \eta \tag{10}$$

$$\mathrm{A} = DA + NA = \beta PART + NAEST + \varepsilon + \eta \tag{11}$$

2.6.4. Jones Model (1991)

The Jones model is a frequently used model that focuses on aggregate accruals. The Jones model relates total accruals to the change in revenue and the level of gross property, plant, and equipment (Beneish, 2001: 6). Dechow et al. (1995) state that the Jones model relaxes the assumption that nondiscretionary accruals are constant.[3]

Jones (1988; 1991) examines whether companies get benefit from EM during import relief investigations in the USA. The author calculates the Total Accruals (TA) as the change in non-cash working capital before income taxes less total Depreciation and Amortization Expense (DAE). TA consists of two components, the discretionary DA_t and non-discretionary NA_t accruals ($TA_t = DA_t + NA_t$). The change in non-cash working capital is defined as the change in Current Assets (CA) other than cash and short-term investment less Current Liabilities (CL) other than Current Maturities of Long-Term Debt (CM of LTD) and income tax payables (ITP) as shown in Eq. 12.

$$TA_t = [(\Delta CA_t - \Delta Cash_t) - (\Delta CL_t - \Delta CM\ of\ LTD_t - \Delta ITP_t)] - DAE_t \tag{12}$$

On the other hand, the author uses an expectation model for total accruals, as shown in Eq. 13, to control changes in the economic circumstances of the firm.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \tag{13}$$

[3] For more information see Dechow et al. (1995) and Jones (1988, 1991).

where;

TA_{it} : total accruals for firm i in year t;

ΔREV_{it}: revenues for firm i in year t less revenues for firm i in year $t-1$;

PPE_{it} : property, plant, and equipment for firm i in year t;

A_{it-1} : total assets for firm i in year t;

ε_{it} : error term for firm i in year t;

i : 1…. N firm index;

t : 1…. T_i year index.

2.6.5. The Industry Model (1991)

The industrial model that was developed to measure EM was used for the first time by Dechow and Sloan in 1991. This model relaxes the assumption that non-discretionary accruals are constant over time and instead of trying to model the determinants of non-discretionary accruals directly, it assumes that variations in the determinants of non-discretionary accruals are common across companies in the same industry. But, if firm-specific factors cause changes in the non-discretionary accruals, the industry model doesn't work properly, and the correct result cannot be obtained (Dechow et al., 1995: 199). The Industry Model for non-discretionary accruals is as shown in Eq.14.

$$NDA_t = \alpha_i + \beta_1 \, median_I[TA_t] \tag{14}$$

where;

NDA_t : non-discretionary accruals in year t

TA_t : the median value of total accruals scaled by lagged total assets for all non-sample firms.

2.6.6. Modified Jones Model (1995)

Dechow et al. developed the modified Jones model in 1995. By taking the change in receivables into account when estimating total accruals, it varies from the original Jones model. As shown in Eq. 15, the modified Jones subtracts the change in receivables from the change in sales revenue to estimate the total accruals.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (15)$$

where;

TA_{it} : total accruals for firm i in year t;

ΔREV_{it}: revenues for firm i in year t less revenues in year $t-1$;

ΔREC_{it}: revenues for firm i in year t less revenues in year $t-1$;

PPE_{it} : property, plant, and equipment for firm i in year t;

A_{it-1} : total assets for firm i in year t;

ε_{it} : error term for firm i in year t;

i : 1…. N firm index;

t : 1…. T_i year index.

Dechow et al. (1995) test the relative performance of the Healy model (1985), the DeAngelo model (1986), the Jones model (1991), the industry model (1991), and the modified Jones model in identifying EM. The authors focus on Type I and Type II errors[4] in these models. The empirical analysis consists of a randomly selected data set of 1000 firm years for the period 1950-1991. According to the empirical results, the DeAngelo model has the highest standard error, while the errors of the Jones and modified Jones models tend to be smaller. The most powerful test for detecting EM, the authors conclude, is the modified Jones model.

2.6.7. Kasznik Model (1999)

Kasznik (1999) investigates whether managers who publish annual earnings forecasts manage reported earnings in line with their forecasts. He includes the change in operating cash flows as an explanatory variable to the modified Jones model.

[4] Type I errors arise when the null hypothesis that identified by the researcher is *rejected* when the null is *true*. Type II errors arise when the null hypothesis that identified by the researcher is *not rejected* when it is *false* (Dechow et al., 1995: 194).

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \beta_{3i} \left[\frac{\Delta \mathrm{CFO}_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (16)$$

where;

TA_{it} : total accruals for firm i in year t;

ΔREV_{it}: revenues for firm i in year t less revenues in year $t-1$;

ΔREC_{it}: revenues for firm i in year t less revenues in year $t-1$;

PPE_{it} : property, plant, and equipment for firm i in year t;

ΔCFO_{it}: CFO for firm i in year t less in year $t-1$;

A_{it-1} : total assets for firm i in year t;

ε_{it} : error term for firm i in year t;

i : 1…. N firm index;

t : 1…. T_i year index.

2.6.8. Dechow and Dichev Model (2002)

Dechow and Dichev (2002) propose a new EM model that uses only cash flow from operating activities as the accrual explanatory variable. Their measurement is based on the observation that accruals shift or adjust the recognition of cash flows over time. Their model focuses on working capital accruals. As shown in Eq. 17 the model calculates accrual quality as the standard deviation of the residuals from firm-specific regressions of working capital accruals on CFO in the last year, current year and one year ahead.

$$\Delta WC_t = b_0 + b_1 CFO_{t-1} + b_2 CFO_t + b_3 CFO_{t+1} + \varepsilon_t \quad (17)$$

2.6.9. Kothari Leone and Wasley Model (2005)

Dechow et al. (1995: 224) states that if EM is related to firm performance, models that do not take this into account may not produce accurate results, and this problem can be solved by including performance in the models. Kothari et al. (2005) tries to provide a solution to this problem with the performance-based EM model they developed.

Kothari et al. (2005) focus on Jones and modified Jones models, referring to the statement of Dechow et al. (1995) that Jones and modified Jones are the models that give the best results. Although

there is no constant term in the original versions of Jones and modified Jones, the authors add a constant term to these models. Then, they conduct their analyses by including current period ROA (ROA_{it}) and prior period ROA (ROA_{it-1}) in each model. After all these additions, the model they developed for the Jones model is shown in Eq. 18 and the model they developed for the modified Jones model is shown in Eq. 19.

$$\frac{TA_{it}}{A_{it-1}} = \delta_0 + \delta_1\left[\frac{1}{A_{it-1}}\right] + \delta_2\left[\frac{\Delta \mathrm{REV}_{it}}{A_{it-1}}\right] + \delta_3\left[\frac{PPE_{it}}{A_{it-1}}\right] + \delta_4[ROA_{it\ or\ it-1}] + \varepsilon_{it} \quad (18)$$

where;

TA_{it} : total accruals for firm i in year t;

ΔREV_{it} : revenues for firm i in year t less revenues in year $t-1$;

PPE_{it} : property, plant, and equipment for firm i in year t;

$ROA_{it\ or\ it-1}$: ROA for firm i in year t or ROA for firm in year -1 i;

A_{it-1} : total assets for firm i in year t;

ε_{it} : error term for firm i in year t;

i : 1…. N firm index;

t : 1…. T_i year index.

$$\frac{TA_{it}}{A_{it-1}} = \delta_0 + \delta_1\left[\frac{1}{A_{it-1}}\right] + \delta_2\left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \delta_3\left[\frac{PPE_{it}}{A_{it-1}}\right] + \delta_4[ROA_{it\ or\ it-1}] + \varepsilon_{it} \quad (19)$$

where;

TA_{it} : total accruals for firm i in year t;

ΔREV_{it} : revenues for firm i in year t less revenues in year $t-1$;

ΔREC_{it} : revenues for firm i in year t less revenues in year $t-1$;

PPE_{it} : property, plant, and equipment for firm i in year t;

$ROA_{it\ or\ it-1}$: ROA for firm i in year t or ROA for firm i in year $t-1$;

A_{it-1} : total assets for firm i in year t;

ε_{it} : error term for firm i in year t;

i : 1…. N firm index;

t : 1…. T_i year index.

According to the findings of the analyses, the authors state that the Jones model gives the best results with ROA_{it}, while the modified jones model gives the best results with ROA_{it-1}.

3. INTERNATIONAL FINANCIAL REPORTING STANDARDS

3.1. International Financial Reporting Standards

In 1973, as the need for unity in the accounting field intensified, professional accounting bodies of United States, United Kingdom/Ireland, Netherlands, Mexico, Japan, Germany, France, Canada, and Australia formed the International Accounting Standards Committee (IASC). While the IASC was active until 2001, the International Accounting Standards Board (IASB) took the place of the IASC after 2001. IASC and IASB have been supported by many institutions and authorities. Moreover, as of 2022, 166 different jurisdictions partially or fully implement IFRS published by the IASB within the IFRS Foundation (IFRS Foundation, 2023a).

The IASB sets IFRS, but it also endorses and amends the International Accounting Standards (IAS) that were previously published by the IASB's predecessor body, the IASC. But when the "IFRS" term is used it covers the entire series of both standards (Harrison et al., 2018: 6). According to the emerging needs, new standards have been developed and some existing standards have been updated over time. IFRS 16 is among the most recently updated standards.

3.2. The Need for International Financial Reporting Standards

In today's global world, economic transactions go beyond borders and capital flows occur between countries. The number of companies involved in international operations is increasing day by day. In addition to the search for new markets by businesses, the search for new opportunities by investors also plays a significant role in the increase in cross-border transactions. Because different countries maintain their national accounting standards, financial statements produced from these accounting systems pose risks for investors and economic decision-makers (IFRS Foundation, 2023b). Ensuring unity in the field of accounting is important for the reliability, fairness, and comprehensibility of the financial information reported by the enterprises.

The growing number of international corporations, cross-border competition for capital, technological advancements, and the development of integrated accounting standards have made transparent and comparable financial information an increasingly essential issue (Yoon, 2007: 1). It is also an important issue that comparability increases the overall quality and quantity of financial information and reduces the cost of obtaining information (De Franco et al., 2011: 897).

Investors must restate and convert data from one nation to another when there is no unity in the accounting to compare the companies' financial results. This can be time-consuming and costly, especially in a globalized world where companies operate in multiple countries. IFRS is seen as a solution to this problem (Harrison et al., 2018: 6). Moreover, integrating financial reporting standards and practices is almost inevitable because of communications and information processing costs between the markets (Ball, 2006: 5).

3.3. International Financial Reporting Standard 16: Leases

Companies utilize alternative financing options because it isn't always feasible for them to use their capital to fund their investments. One of these alternative options is leasing, and the importance of leasing is growing from day to day. Thus, accounting for lease transactions is important (Karataş, 2019: 19). The principles for the disclosure, presentation, measurement, and recognition of leases have been set out in IFRS 16 since 2019. IFRS 16 aims to ensure that the lessee and lessor provide relevant information that faithfully reflects leasing transactions (IFRS 16: Par. 1).

3.3.1. Scope of IFRS 16

"IFRS 16 defines a lease as a contract that conveys to the customer ('lessee') the right to use an asset for a period of time in exchange for consideration" (IFRS Foundation, 2016a: 4). In this context, companies should apply IFRS 16 for all types of leases, except for (IFRS 16: Par. 3):

- leases of biological assets within the scope of IAS 41,
- leases to explore for or use of non-regenerative resources,
- service concession arrangements within the scope of IFRIC 12,
- rights held by a lessee under licensing agreements within the scope of IAS 38, and
- licenses of intellectual property granted by a lessor within the scope of IFRS 15.

In addition, IFRS 16 is applicable but not mandatory for leases of intangible assets other than those described above (IFRS 16: Par. 4).

3.3.2. Before IFRS 16

Leasing transactions were regulated by IAS 17 before IFRS 16. IAS 17 was originally issued by IASC in 1997. It was adopted in 2001 and revised in 2003 by IASB (Sari et al. 2016: 139). According to IAS 17, leasing transactions were divided into two groups: financial leasing and operational leasing.

A leasing transaction was categorized as financial leasing and reported on a balance sheet if it was found to be economically similar to buying the underlying asset. Every other lease was classified as operational leasing and not reported on the balance sheet (IFRS Foundation, 2016a: 3).

3.3.3. The Need for Change

The issue of reporting all leasing transactions on the balance sheet has been the subject of many studies since the 1980s in literature (Öztürk, 2016: 6). Under IFRS 17, operating lease transactions were reported in the notes, while financial leases were reported on the balance sheet. The biggest concern in the implementation of IAS 17 was that, on the investor side, investors could not see the companies' debts that they could not avoid paying, and on the company side, many assets with high-income generation potential were not reflected in the company's financial statements, even though they were in use (Karataş, 2019: 19). The lack of information regarding leases on the balance sheet resulted in incomplete financial information for investors and analysts. This made it difficult to make comparisons between companies that borrowed money to purchase assets and companies that lease assets. SEC expressed concern about the lack of transparency of information regarding lease obligations in 2005 (IFRS Foundation 2016a: 3). The IASB and the FASB started a project to improve the accounting for leases in response to concerns about the lack of transparency in information on lease commitments. (IFRS Foundation 2016b: 3). In January 2016, the IASB released the IFRS 16 standard as a result of this project. It replaced the IAS 17 standard in 2019 with the early application option (Öztürk, 2016: 3).

The most important potential benefits of IFRS 16 can be listed as follows (IFRS Foundation, 2016b: 5):

- Investors and analysts do not need to make any adjustments to the lessee's balance sheet and income statement during the decision-making stages,
- Increasing comparability between the companies that are leasing and purchasing the underlying asset,
- Increasing transparency and accurate presentation.

3.3.4. Important Changes

The regulation about reporting operational leasing transactions in the balance sheet, which was disclosed in the footnotes, is the most important change brought about by this standard (Aslan, 2018: 56). IFRS 16 eliminates the dual accounting model of reporting financial leasing transactions on the balance sheet and operating lease obligations off the balance sheet for lessees. On the other hand, accounting for lessors continues similar to previous practices (Karataş, 2019: 27).

Stancheva-Todorova and Velinova-Sokolova (2019) summarize the key changes according to the IFRS 16 as follows:

- IFRS 16 provides guidance on identifying whether a contract contains a lease,
- IFRS 16 removes the distinction between finance and operating leases for lessees,
- IFRS 16 requires lessees to recognize all leases on balance sheet, except for short term leases and leases of low value assets,
- Lessor accounting will not change significantly.

Companies with operating leases are likely to have increases in assets and liabilities, as shown in Fig. 6, and a decrease in equity after the implementation of IFRS 16, which may significantly affect their financial indicators (Sari et al. 2016: 139) such as an increase in leverage a decrease in ROA and an increase in EBITDA (Morales-Díaz & Zamora-Ramírez, 2018: 62).

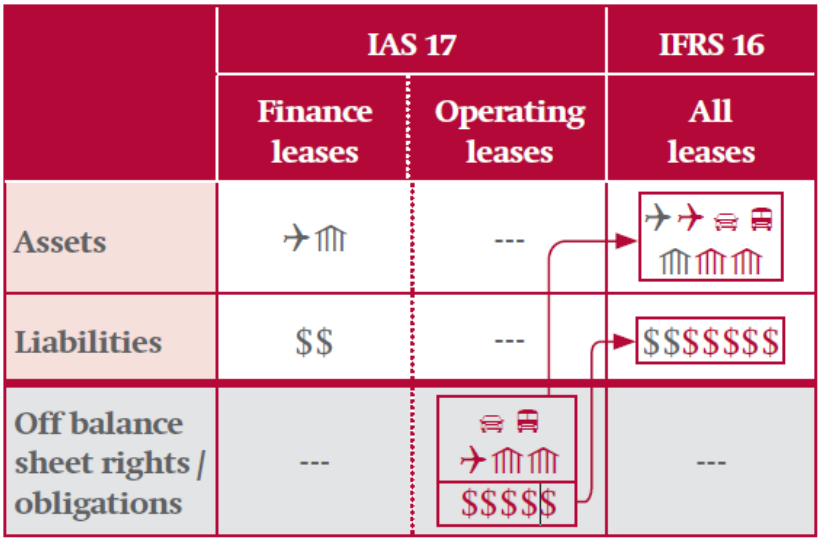


Figure 6. The Impact of IFRS 16 on Balance Sheet

Source: IFRS Foundation, 2016a: 4

IFRS 16 affects the income statement in terms of recognition and presentation of leasing transactions. As shown in Fig. 7, off-balance sheet leases are accounted for similarly to service contracts under IAS 17 and are reported in each period of the lease as a single expense in the operating expense part of the income statement (IFRS Foundation, 2016b: 11). However, according to the IFRS 16, lease payments consist of two components: interest and principal payment (Öztürk, 2016: 30). Under IFRS 16 interest payments are reported in the income statement as financing cost as shown in Fig. 7.

On the other hand, the right-of-use assets arising from leases are subject to depreciation. When depreciation is allocated, it is taken into account whether the ownership of the underlying asset is transferred to the lessee. If the ownership of the underlying asset is transferred to the lessee at the end

of the lease term or if the lessee exercises the purchase option, depreciation is allocated until the end of the useful life. Otherwise, depreciation is applied until the end of its useful life or the lease term, whichever is earlier (IFRS 16, Par. 32). As shown in Fig. 7 the depreciation expense is reported in income statement.

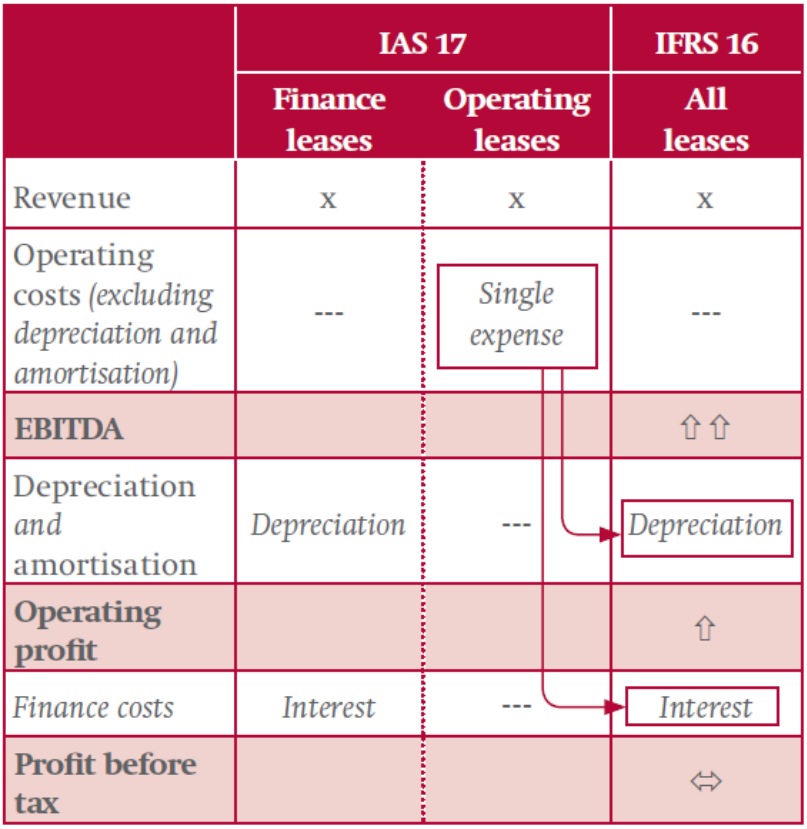


Figure 7. The Impact of IFRS 16 on Income Statement

Source: IFRS Foundation, 2016a: 5

3.3.5. Possible Impacts of Changes in IFRS 16 on Earnings Management

As mentioned above, implementing IFRS 16 affects the financial ratios. The decrease in profitability ratios may increase the earnings management to improve profit (Hedqvist and Lennerskog, 2022: 10). On the other hand, before IFRS 16, there were earnings management opportunities that arose by choosing between buying and leasing (Healy and Wahlen, 1999: 369). IFRS 16 can be expected to eliminate these opportunities by recording all leases on the balance sheet.

3.4. Literature Review on the Relationship between IFRS and Earnings Management

There are a lot of studies on EM. Nonetheless, the methodology, sample, factors, and conclusions of these studies vary from one another. When the literature dealing with the relationship

between IFRS and EM is examined, it is not possible to reach a clear conclusion. While some studies suggest that IFRS applications reduce EM (Aussenegg et al., 2008; Cai et al., 2008), on the contrary, some studies have achieved results in increasing EM such as Souza et al. (2022).

The study by Van Tendeloo and Vanstraelen (2005) aims to determine if German enterprises that have voluntarily adopted IFRS have significantly fewer EM practices than those that follow German local GAAP. They analyze 636 observations of companies traded on the German stock exchange for 1999-2001 and conclude that voluntary IFRS adopters and other companies do not differ in their EM practices.

Whether the level of EM varies across US GAAP, IAS, and German GAAP is examined by Goncharov and Zimmermann (2006). They report that while EM levels are approximately the same under GAAP and IAS, there is a considerable decrease under US GAAP.

After analyzing 27 companies from 11 different countries, Lin and Paananen (2006) conclude that IFRS has no reducing impact on the total level of EM activity.

To comprehend the impact of IFRS enforcement on EM, Cai et al. (2008) examine more than 100,000 observations for the period 2000–2006 from 32 IFRS-adopted and non-adopted countries. According to their findings, EM can be decreased by strong enforcement.

Paananen and Lin (2008) investigate accounting characteristics of German companies under three periods: the 2000-2002 IAS period, the 2003-2004 IFRS voluntary period, and the 2005-2006 IFRS mandatory period to examine whether there is a change in accounting quality between these periods. They examine accounting quality with timely loss recognitions, earnings smoothing, and value relevance metrics. They report that there is a decrease in accounting quality over time.

Jeanjean and Stolowy (2008) analyze whether the adoption of IFRS standards has any impact on financial reporting quality through EM. Their study covers Australia, France, and the UK. Their findings show that EM increased in France and remained stable in the other two countries after the transition to IFRS. From this point of view, they conclude that the transition to IFRS has not been successful in improving earnings quality.

Aussenegg et al. (2008) examine the effects of the transition of publicly traded firms from local GAAP to IFRS on EM in 17 European countries with 18000 firm-year observations. To measure EM, they apply 15 different proxies, and they state that in general, the EM level of the firms applying IFRS is less than domestic standards appliers.

Before and after the introduction of IFRS in the EU, Callao and Jarne (2010) investigate the behavior of discretionary accruals. Based on their results, they conclude that after IFRS became

mandatory, discretionary accruals—in other words, EM—increased. They also suggest that there may be more opportunities for EM under a principles-based accounting model.

Chen et al. (2010) examine the impact of IFRS adoption on accounting quality in their study by examining companies in 15 EU countries. One of the five different indicators by which they measure accounting quality is EM. According to the analysis results, it is reported that improvements were detected in most of the quality indicators after IFRS. One of these improvements is the decrease in EM practices.

Capkun et al. (2011) investigate the impact of IFRS 1's accounting flexibility during the implementation of IFRS in 2005 on a sample of 1,635 European businesses. As a result of the study, there is evidence that the flexibility provided during the mandatory transition to IFRS in the EU increases EM.

Capkun et al. (2016) hypothesize that the IFRS set, which came into force in 2005, caused an increase in EM because it does not contain clear application guidance and provides companies with greater flexibility in accounting choices. To test their hypothesis, they analyze a sample of 3853 firms applying IFRS from 29 countries. They divide the sample into three groups: early adopters, late adopters, and mandatory adopters, and it is reported that EM has increased in all groups post-2005. They conclude that the 2005 amendments to IFRS provide companies with more flexibility and discretion in their accounting practices, leading to increased EM.

Zéghal et al. (2011) in their study examine the discretionary accruals of 353 listed firms between 2003 and 2006 in order to find out whether the mandatory adoption of IFRS in France is related to EM. The study period is divided into two parts: 2003-2004 and 2005-2006. According to their findings, the authors report that there is a decrease in the level of EM in the 2005-2006 period, when IFRS is mandatory, compared to the 2003-2004 period.

Arum (2013) analyses whether the mandatory application of IFRS in Indonesia has any impact on the quality of the information provided in the financial statements. The author attempts to measure quality through EM, value relevance and timely loss recognition. For this purpose, data from 117 listed companies in 2010 (pre-IFRS) and 2011 (post-IFRS) is used. According to the findings of the analyses, it is reported that there is a decrease in EM after IFRS implementation.

Doukakis (2014) uses from 22 European countries 15,206 firm-year observations to analyze how the mandated implementation of IFRS affects accruals-based and real-based EM. As a result of comprehensive analysis, it is reported that the mandatory adoption of IFRS in 2005 does not significantly impact real or accrual-based EM practices.

Bryce et al. (2015) investigate whether the accounting quality of 200 ASX-listed companies improved after adopting IFRS. According to the analysis results covering 2003–2008, accounting quality did not improve significantly after adopting IFRS.

Ipino and Parbonetti (2017) using 101,331 firm-year observations from 33 countries, analyze the impact of mandatory IFRS implications on accrual-based and real EM. As a result of the analysis, accrual-based EM has decreased and real EM has increased in countries with strict enforcement regimes. This shows us that, in addition to the accounting standards, other institutional factors also have an impact on EM.

Cengiz and Tosunoğlu (2017) test the EM behavior of companies traded in Borsa Istanbul after and before the IFRS application. The analysis of 50 companies' data from the 2001–2008 timeframe revealed an increase in EM following IFRS.

Using experimental economics methodology, Gomaa et al. (2019) create a controlled laboratory environment to study the effects of mandatory replacement of the Incurred Credit Loss (ICL) model in IAS 39 with the Expected Credit Loss (ECL) model in IFRS 9. The authors focus on credit impairment losses, reserves, and EM. They state that replacing the existing ICL model with the ECL model leads to an increase in the amount and adequacy of reserves (i.e. leads to an increase in the credit-loss provisions). Additionally, they reveal that the increased flexibility with the forward-looking ECL model leads to an increase in EM. Moreover, It is also reported that the ECL model allows making more manager discretion. Thus, it should be accompanied by appropriate incentive arrangements, otherwise, ECL may trigger higher EM according to the alternative compensation schemes.

Tutino et al. (2019) compare the discretionary accruals in the telecommunications and utility industries to reveal the potential impact of IFRS 15 on EM. Using the Jones model, they analyze 13 companies operating in telecommunications and 10 companies operating in utility for the period 2001-2017. According to the results they state that EM practices are more frequent in the telecommunications sector than in the utility sector. Therefore, they expect the introduction of IFRS 15 to have a greater impact on EM practices in the telecommunications sector than on companies in the utility sector.

Dall'Agata (2020) tests whether the IFRS 15 increase the firms' financial information qualities and lowers EM policies in energy and consumer goods sectors of the Italian market. The data of 23 companies for the period 2011-2019 is used as a sample, and the Jones 1991 model is applied to determine the EM and focused on discretionary accruals in the study. According to empirical analysis, it is stated that EM practices are more common in consumer goods than in the energy sector, and since EM in the energy sector was already low before IFRS 15, it will not have a high impact on the decrease in EM practices.

Ortiz de Zevallos (2021) states that the ECL model introduced with TFRS 9 requires banks to make macroeconomic forecasts and investigates whether banks have incentives to use these forecasts to make earnings or capital management. The author gathers information from 184 annual reports of listed European banks from 2018 through 2020. According to the analysis results, it is reported that there is evidence that banks use macroeconomic forecasts to make capital management but not for EM.

Taylor and Aubert (2022) analyze the impact of IFRS 9, and country-level governance quality on income smoothing behavior of 104 commercial banks in Europe and Sub-Saharan Africa. They use a modified version of the models used by Ahmed et al. (1999) and Anandarajan et al. (2003, 2007). The study covers the period 2016-2019 and the analysis have two stages. In the first stage, the entire sample is examined and a decrease in income smoothing is reported after the implementation of IFRS 9. During the second stage, the entire sample is separated into two subsamples: Europe and Africa. In this case, it is stated that after the implementation of IFRS 9, earnings smoothing behaviors increased in Europe and decreased in Africa. It is also reported that there is evidence that the country-level governance quality restraints income smoothing.

Morawska (2021) aims to investigate whether implementing IFRS 15 affects EM in Poland. For this purpose, analysis is carried out using 80 companies' data traded on the Warsaw Stock Exchange. Caylor's (2010) model is used in the study covering 2016-2019. According to the results, companies managed earnings using discretion in accrued revenue recognition to avoid reporting losses. However, the IFRS 15 adoption doesn't have a statistical impact on revenue-based EM.

Piosik (2021) intends to examine the impact of IFRS 15 on EM through revenue recognition to meet analyst consensus estimates. The author concentrates on discretionary revenue and assesses whether the implementation of IFRS 15 reduces discretionary revenue. A sample of companies listed between 2016 and 2019 on the Warsaw Stock Exchange (WSE) in Poland are the subject of the study. According to reported findings, IFRS 15 implementations considerably reduce the discretionary rise in revenue when companies fail to meet analysts' consensus forecasts for operating profit. But there is no evidence that IFRS 15 has effects on reducing the increase in discretionary revenue when the companies did not achieve the consensus level of net earnings.

Souza et al. (2022) aim to verify the effects of IFRS 15 on the quality of accruals and EM in publicly held Brazilian companies. They use a sample of 305 Brazilian companies with annual data from 2011 to 2021. They apply Dechow and Dichev's (2002) model for accruals quality and Pae's (2005) model for EM. According to the results, it is stated that there is a decrease in accrual quality and an increase in EM after the IFRS 15 adoption.

The purpose of Hedqvist and Lennerskog (2022) is to investigate how IFRS 16 would affect publicly traded firms' usage of EM in Scandinavian (Sweden, Norway, and Denmark) stock exchange markets. In the research conducted, the data of 304 companies for the period of 2015-2020 are analyzed and discretionary accruals are computed using modified Jones model. According to the statistical results of multiple linear regression, the author reports that there is a negative relationship between the discretionary accruals (dependent variable) and the implementation of IFRS 16 (independent variable). In other words, the implementation of IFRS 16 has decreased the managers' incentive to use discretionary accruals to increase reported earnings.

Fuad et al. (2022) investigate the effect of voluntary compliance with IFRS 16 on EM. The authors also analyze the effect of a country's institutional background on the relationship between the early adoption of IFRS 16 and EM activities. The study was conducted on 1071 companies from Southeast Asian countries (Indonesia, Malaysia, Singapore, Thailand, and Vietnam). Authors calculate the EM with the modified Jones model developed by (Dechow et al., 1995) and test their hypothesis using regression analyses. According to the findings, one of the most important results stated in the study is that early implementation of IFRS 16 doesn't affect EM practices. Another important result is that the implementation of IFRS may restrict management from maximizing their short-term gain by manipulating earnings in companies with low governance mechanisms and institutional backgrounds.

4. EMPIRICAL RESEARCH ON THE IMPACT OF IFRS 16 ON EARNINGS MANAGEMENT: EVIDENCE FROM BORSA ISTANBUL

4.1. Aim of the Study

Financial statements offer important insights into the effectiveness and efficiency with which the management of the reporting entity has carried out its duties to make use of the business's financial resources.

Such information is useful for predicting how successfully and efficiently management will use the organization's resources in the future. Thus, financial statement users can assess the management's stewardship role and the organization's prospects for future net cash inflows (Conceptual Framework-IASB, 2018: Par. 1.22).

To ensure the rational behavior for sustainable economic development all kinds of information used by individual and institutional investors in the decision-making process must be accurate, honest, and reflect the truth in financial markets. Financial reports contain some estimates and valuations due to the nature of accounting. Some financial items may change according to the applied accounting policy. In this sense, those who prepare financial reports have certain discretionary powers. This makes it possible for managers to increase or decrease earnings in the name of business interests or their interests. These practices prevent the real financial situation of the business. Thus, it is possible to state that when EM increases, financial reports move away from fair presentation.

One of the purposes of IFRS is to present fair financial statements. For this purpose, they are reviewed and updated continuously. As it is known, IFRS 16 are among the most recently updated standards. IFRS 16 came into force as of 1 January 2019. Within the scope of the analysis, it is aimed to reveal whether the entry into force of the relevant standard has any impact on EM.

4.2. Hypotheses Development

In this section, the hypotheses to be tested in the light of the studies in the literature are developed. When the relevant literature is examined, although many studies are revealing the relationship between IFRS and EM, there is different evidence about the direction of the relationship. Therefore, in this study, which investigates the effects of the updates in leasing standard IFRS 16 on EM, it would be appropriate to consider whether the relationship exists rather than its direction when

developing research hypotheses. In this context, the zero and alternative hypotheses of the research are as follows:

H_0: Mandatory implementation of the updated leasing standard IFRS 16 has not a statistically significant impact on EM.

H_1: Mandatory implementation of the updated leasing standard IFRS 16 has a statistically significant impact on EM.

4.3. Data and Sample Selection

Although IFRS 16's history dates back to the early 2000s, the standard was published in 2016 and will be implemented in 2019. Two important drafts were shared with the public during the preparation phase; the second was in May 2013. Therefore, the analysis covers annual data of continuously traded companies in Borsa Istanbul for 2014-2021.

Table 4 outlines the sample selection process and details the distribution of observations across industries. As shown in Table 4 Panel A, the initial sample, extracted from the database of financial data provider Finnet, consists of 321 firms, for a total of 2,568 firm-year observations. Next, 97 firms operating in the financial sector are removed (Aussenegg et al., 2008; Chen et al., 2010). Furthermore, 6 firms with one or more missing data that could not be accessed are also excluded from the sample, and the final sample contains 218 firms and 1744 firm-year observations. In this context, the sample of 218 firms with 8 years of data is a typical micro-panel.[5] Therefore, analyses should be conducted according to the micro panel.

Panel B of Table 3 provides information on the sectoral distribution of firm-year observations from largest to smallest. When the firm-year distribution is analyzed, a total of 13 sectors are included in the analysis and the manufacturing sector has the highest representation with approximately 65 percent of the sample. The manufacturing sector is followed by technology and wholesale-retail sectors with approximately 6%. The lowest number of observations belongs to Administrative and Support Service Activities with 8 (only one company).

[5] If the data is collected for a large number of N individuals over a short time period T (N>T), it is called a micro-panel (Baltagi, 2021: 1).

Table 3. Sample Selection Process and Industrial Distribution

Panel A: Sample selection process			
	Number of firms between 2014-2021		Number of firm-years observations
Initial Sample	321		2,568
(-) Financial sector	97		(776)
(-) One or more missing data	6		(48)
Final Sample	218		1,744
Panel B: Industrial distribution of final sample			
Industry	Number of firms between 2014-2021	Total firm-years observations	% of firm-years observations
Manufacturing	143	1144	65.60%
Technology	14	112	6.42%
Wholesale And Retail Trade	13	104	5.96%
Construction And Public Works	8	64	3.67%
Hotels And Restaurants	8	64	3.67%
Electricity Gas and Water	7	56	3.21%
Transportation And Storage	6	48	2.75%
Information And Communication	5	40	2.29%
Education, Health, Sports, and Other Social Services	5	40	2.29%
Mining And Quarrying	4	32	1.83%
Real Estate Activities	2	16	0.92%
Agriculture, Forestry and Fishing	2	16	0.92%
Administrative And Support Service Activities	1	8	0.46%
Total	218	1744	100.00%

4.4. Research Methodology

4.4.1. Panel Data Analysis

The success of econometric analyses depends on the availability of appropriate data. For empirical analysis, there are three different kinds of data: time series, cross-sectional data, and pooled (panel) data. In time series data, there are observations that the values of one or more variables over a period of time. Cross-sectional data comprises values for one or more variables that collected at the same point in time, for several sample units or subjects. If the data contains these two dimensions (time and cross-section) at the same time then it is called panel data (Gujarati & Porter, 2009). In other words, panel data pools observations on a cross-section of households, countries, firms, etc., over several time

periods (Baltagi, 2021: 1). The primary method used in this study's empirical section is panel data analysis.

4.4.1.1. Advantages and Disadvantages of Panel Data

Panel data have several advantages over cross-sectional or time series data. Hsiao (2003) states that using panel data is beneficial for the following issues: (Baltagi, 2021: 6):

- Panel data is useful for controlling for individual heterogeneity,
- Panel data are better able for the dynamics of adjustment,
- Panel data give more informative data, less collinearity among the variables, and more degrees of freedom,
- Panel data are better able to identify and measure effects that are simply not detectable in pure cross-section or time-series data,
- Compared to pure cross-section or time-series data, panel data models enable the construction and testing of more complex behavioral models.

In addition to its advantages, it should be noted that using panel data has some limitations and disadvantages. These limitations can be listed as follows (Baltagi, 2005: 7):

- Short time-series dimension,
- Distortions of measurement errors,
- Design and data collection problems,
- Cross-section dependence.

4.4.1.2. Types of Panel Data

Panel data are classified as micro-macro panel and balanced-unbalanced panel according to their characteristics. If the data is collected for a large number of cross-sectional subjects N, over a short time period T (N>T), it is called a micro (short) panel. But, if T is greater than N, it is called as macro (long) panel. (Baltagi, 2021: 1). If each subject has the same (different) number of observations it is called as balanced (unbalanced) panel (Gujarati & Porter, 2009: 593). Moreover, the models for analyzing panel data are divided into two categories: static and dynamic models. The static model is an analysis method that does not use any dependent variable values as explanatory variables (Ünal & Polat, 2019: 97). However, in dynamic models, both lags of the dependent variable and other exogenous variables are used as explanatory variables (Arellano, 2003: 143; Gujarati, 2004: 656). To obtain reliable results, models, and estimators appropriate to the data should be used. The data set used in this study has micro

panel and balanced panel characteristics, and the models are static models. Therefore, the main static models will be briefly discussed in the following sections.

4.4.1.3. Models in Panel Data

In general, the panel data model of observations y depends on the characteristic vector x can be written as follows (Tatoğlu, 2021: 37):

$$y_{it} = \beta_{0it} + \sum_{k=1}^{K} \beta_{kit}\, x_{kit} + u_{it} \qquad i=1,\ldots,N \qquad t=1,\ldots,T \tag{20}$$

In Eq. 20, *y* refers to the dependent variable, β_{0it} refers to the intercept, β_{kit} refers to Kx1-dimensional parameters vector (slope coefficients), x_{kit} refers to the value of the kth explanatory variable for unit *i* at time *t*, and *u* refers to the error term. *i* denotes the individual (unit) and *t* represents the time.

As mentioned before, panel data contain more than one unit and time period. While each unit may have its own characteristics, each period may also have its own characteristics (Tatoğlu, 2021: 5). Thus, the models used in panel data analysis differ according to unit and time effects.

Panel data models are classified depending on whether the parameters vary by unit and time. A model in which observations y depend on the characteristic vector x can be written in the following forms (Hsiao, 2003: 11; Tatoğlu, 2021: 38):

i. Models that both intercept and slope coefficients are constant over individuals and time:

$$y_{it} = \beta_0 + \sum_{k=1}^{K} \beta_k\, x_{kit} + u_{it} \qquad i=1,\ldots,N \qquad t=1,\ldots,T \tag{21}$$

This kind of model called as “classical model” or “pooled model”. In this model, all observations are assumed to be homogeneous.

ii. The intercept changes between individuals, while the slope coefficients are constant:

$$y_{it} = \beta_{0i} + \sum_{k=1}^{K} \beta_k\, x_{kit} + u_{it} \qquad i=1,\ldots,N \qquad t=1,\ldots,T \tag{22}$$

This kind of model called as “unit effects model”.

iii. The intercept changes with time and individuals, but the slope coefficients remain constant:

$$y_{it} = \beta_{0it} + \sum_{k=1}^{K} \beta_k\, x_{kit} + u_{it} \qquad i=1,\ldots,N \qquad t=1,\ldots,T \tag{23}$$

This kind of model called as “unit and time effects model”.

iv. Every coefficient varies among individuals:

$$y_{it} = \beta_{0i} + \sum_{k=1}^{K} \beta_{ki}\, x_{kit} + u_{it} \qquad i=1,\ldots,N \qquad t=1,\ldots,T \tag{24}$$

v. Every coefficient varies with time and individuals:

$$y_{it} = \beta_{0it} + \sum_{k=1}^{K} \beta_{kit}\, x_{kit} + u_{it} \qquad i=1,\ldots,N \qquad t=1,\ldots,T \tag{25}$$

In order to test the accuracy of the established model, firstly, homogeneity of regression slope coefficients and secondly, homogeneity of regression intercept coefficients are tested (Hsiao, 2003: 15). One of the first issues to be tested is whether the data should be pooled or not. Another issue to be tested in panel models is whether there are individual and time effects (Baltagi, 2021). If there is an individual or time effect in panel data models but it is not included in the model, specification errors may occur because of excluding an important variable (Uyar, 2015: 76).

4.4.1.4. Estimators in Panel Data

4.4.1.4.1. Pooled Ordinary Least Squares Estimator

The pooled least squares estimator estimates the parameters assuming the absence of unit and time-specific effects. Therefore, it is a suitable estimator for the pooled model, where the intercept and slope coefficients do not change over units and times (Kangallı-Uyar & Uyar, 2023: 30). To apply the pooled OLS estimator, the assumptions of homoscedasticity and serial correlation must be satisfied across cross-section and time (Aybars, 2013:104).

4.4.1.4.2. Fixed Effect Estimator

There are two types of fixed effects estimators: Least-Squares Dummy Variable (LSDV) estimator and Within-Group (WG) estimator.

The LSDV allows for heterogeneity among subjects by allowing each unit to have its own intercept value. The term “fixed effect” comes from the fact that although the intercept may vary between units, it does not change over time (Gujarati & Porter, 2009). If there is a unit effect, a model with different constants for different units should be constructed. For this purpose, dummy variables expressing different constants are included. The model is then estimated by the least squares method (Uyar, 2015: 70).

In the WG estimation method, transformation is made by subtracting unit averages from each unit observation, and then the model is estimated by the least squares method (Tatoğlu, 2021: 86). By

eliminating unit-specific effects from the panel data model, the source of the relationship between explanatory variables and the error term is eliminated in the WG estimation (Kangallı-Uyar & Uyar, 2023: 34).

4.4.1.4.3. Random Effect Estimator

When the units in the sample are chosen randomly, the differences between the units are also random. In such cases, random effects models are used. Many methods are recommended for estimating the random effects model. The most used methods are the maximum likelihood method and generalized least squares method (Tatoğlu, 2021: 103).

4.4.1.5. Assumption Tests in Panel Data Analysis

In panel data models, the error term is assumed to have equal variance (homoscedastic) within and across units and to be periodically and spatially uncorrelated. Since there is more than one unit in panel data, there may be varying variances between units. The fact that units are affected by the same shocks also creates the possibility of simultaneous correlation between units. Ignoring these issues will cause standard errors to be biased (Tatoğlu, 2021: 227-229). Therefore, the heteroscedasticity test, autocorrelation test, and cross-section dependence test should be applied to the developed model. In addition, the unit roots of the variables used in the models should be tested. Whether the fixed or random effect estimator will be used in the established model should be checked with the Hausman (1978) test. These tests should be applied in order for the analysis results to be reliable (Uyar, 2015: 79).

4.4.2. Quantile Regression Analysis

The concept of quantile regression was first developed by Koenker and Bassett in 1978 (Davino et al., 2014: 2). Quantile regression is a method based on the median that can be used when the assumptions of linear regression analysis are not met (Yılmaz, 2022: 13). On the other hand, it may be restrictive to expect the explanatory variables in the regression model to have the same effect on all percentiles of the dependent variable (Güloğlu et al., 2016: 118). Compared to mean regression models, quantile regression is more robust and flexible for outliers (Tekin, 2022: 77). It is an alternative to the OLS method in simple and multiple linear regression analyses. To provide a more comprehensive regression structure, quantile regression examines the relationship between the distribution of the dependent variable in different quantiles and the explanatory variables (Gürsoy, 2019: 74). In the current study, the effect of independent variables on the dependent variable is analyzed by panel regression. Then the effect on different quantiles is analyzed by panel quantile regression.

4.5. Models and Variables

In this study, the analysis consists of three stages.

- First Stage: Determining Discretionary Accruals. This stage involves calculating discretionary accruals using various models.
- Second Stage: Analyzing the Impact of IFRS and Other Factors on Discretionary Accruals. Panel regression analysis is conducted to examine how IFRS and other factors effect discretionary accruals.
- Third Stage: Further Examination of IFRS and Other Factors Using Quantile Regression. Quantile regression analysis is employed to delve deeper into the effects of IFRS and other factors on discretionary accruals across different quantiles of the data.

The first stage of analyzing whether IFRS 16 has an impact on EM is the calculation of discretionary accruals. In this study, Jones (Eq. 26) Modified Jones (Eq. 27) and Kasznik (Eq. 28) models are used to calculate discretionary accruals.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (26)$$

According to the Jones model, total accruals (TA) are equal to the sum of non-discretionary accruals (NDA) and discretionary accruals (DA). The residuals (ε_{it}), on the right-hand side of Eq. 26, refer to DA while the remainder refers to NDA (Kothari et al., 2005: 173; Hussain & Akbar, 2022: 845).

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (27)$$

Dechow et al. developed the modified Jones model in 1995. They subtract the change in receivables from the change in sales revenues in estimating total accruals. This is the only point that differs from the Jones model. Everything else is the same as the Jones model. The residuals (ε_{it}), on the right-hand side of Eq. 27, refer to DA while the remainder refers to NDA.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i \left[\frac{1}{A_{it-1}}\right] + \beta_{1i} \left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_{2i} \left[\frac{PPE_{it}}{A_{it-1}}\right] + \beta_{3i} \left[\frac{\Delta \mathrm{CFO}_{it}}{A_{it-1}}\right] + \varepsilon_{it} \quad (28)$$

Kasznik (1999) includes the change in operating cash flows as an additional explanatory variable to the modified Jones model. The residuals (ε_{it}), on the right-hand side of Eq. 28, refer to DA while the remainder refers to NDA.

Table 4. Variables of Earnings Management Models

Variables of Jones Model (1991)			
Dependent variable	**Abbreviation**	**Independent variables**	**Abbreviation**
Total Accrual*	TA	Constant Term	c (α)
		Change in Revenue	REV
		Plant Property and Equipment	PPE
Variables of Modified Jones Model (1995)			
Dependent variable	**Abbreviation**	**Independent variables**	**Abbreviation**
Total Accrual*	TA	Constant Term	c (α)
		Change in Adjusted Revenue with Receivable	ADJREV
		Plant Property and Equipment	PPE
Variables of Kasznik Model (1999)			
Dependent variable	**Abbreviation**	**Independent variables**	**Abbreviation**
Total Accrual*	TA	Constant Term	c (α)
		Change in Adjusted Revenue with Receivable	ADJREV
		Plant Property and Equipment	PPE
		Cash Flow From Operating Activities	CFO
* Total accruals is calculated in accordance with the literature (Kothari et al. 2005) as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization.			

As mentioned above, the second stage of the analysis is to reveal the impact of IFRS 16 and other factors on discretionary accruals. The errors obtained from different EM models in the first stage represent discretionary accruals. In the second stage, these errors are used as the dependent variable, and the IFRS 16 and other variables created in accordance with the literature are used as independent variables in the following three models. In this stage, in order to determine the correct model, independent variables are included in the model stepwise method, and in this way, a statistically significant model with the highest explanatory power is determined. The first model in the second stage is shown in Eq. 29.

$$DA_{it}^{Jones} = \alpha_i + \beta_1 IFRS16_{it} + \beta_2 leverage_{it} + \beta_3 growth_{it} + \beta_4 roa_{it} + \beta_4 cfo_{it} + u_{it} \quad (29)$$

Notes: DA refers to discretionary accruals obtained from Jones model, IFRS 16 is a dummy variable, 1 if financial reports are prepared using IFRS 16, 0 otherwise, leverage refers to the total debt within total resources, growth refers to the annual change in sales, roa refers to return on asset, cfo refers to cash flow from operating activities, u refers to error term.

The first model is based on the Jones model. Discretionary accrual obtained from the Jones model is the dependent variable representing EM. The IFRS 16, leverage, growth, ROA, and CFO are independent variables.

Table 5. Variables of Discretionary Accruals for Jones Model (1991)

Panel Regression Analysis Variables for Jones Model (1991)		
Dependent variable	**Independent variables**	
Discretionary Accruals	IFRS16	Dummy variable for year: If t=>2019:1 otherwise 0
	Leverage	$total\ debt_{it}$ / $total\ asset_{it}$
	Sales Growth	$(revenue_{it}$ - $revenue_{it-1})$/ $revenue_{it-1}$
	Return on Asset	$net\ income_{it}$ / $total\ asset_{it}$
	Cash Flow from Operating Activities	$cash\ flow\ from\ operation_{it}$/$total\ asset_{it}$

The second model in the second stage is shown in Eq. 30.

$$DA_{it}^{M_Jones} = \alpha_i + \beta_1 IFRS16_{it} + \beta_2 leverage_{it} + \beta_3 growth_{it} + \beta_4 roa_{it} + \beta_5 size_{it} + u_{it} \quad (30)$$

Notes: DA refers to discretionary accruals obtained from modified Jones model, IFRS 16 is a dummy variable, 1 if financial reports are prepared using IFRS 16, 0 otherwise, leverage refers to the total debt within total resources, growth refers to the annual change in sales, roa refers to return on asset, size refers to the logarithm (ln) of total assets, u refers to error term.

The second model is based on the modified Jones model. The dependent variable that reflects EM is the discretionary accrual that is derived from the modified Jones model. The IFRS 16, leverage, growth, ROA, and size are independent variables.

Table 6. Variables of Discretionary Accruals for Modified Jones Model (1995)

Panel Regression Analysis Variables for Modified Jones Model (1995)		
Dependent variable	**Independent variables**	
Discretionary Accruals	IFRS16	Dummy variable for year: If t=>2019:1 otherwise 0
	Leverage	$total\ debt_{it}$ / $total\ asset_{it}$
	Sales Growth	$(revenue_{it}$ - $revenue_{it-1})$/ $revenue_{it-1}$
	Return on Asset	$net\ income_{it}$ / $total\ asset_{it}$
	Asset Size	ln $(total\ asset)_{it}$

The third model in the second stage is shown in Eq. 31.

$$DA_{it}^{Kasznik} = \alpha_i + \beta_1 IFRS16_{it} + \beta_2 leverage_{it} + \beta_3 roa_{it} + \beta_4 size_{it} + \beta_5 cfo_{it} + u_{it} \quad (31)$$

Notes: DA refers to discretionary accruals obtained from Kasznik model, IFRS 16 is a dummy variable, 1 if financial reports are prepared using IFRS 16, 0 otherwise, leverage refers to the total debt within total resources, roa refers to return on asset, size refers to the logarithm (ln) of total assets, cfo refers to cash flow from operating activities, u refers to error term.

The third model is based on the Kasznik model. Discretionary accrual obtained from the Kasznik model is the dependent variable representing EM. The IFRS 16, leverage, ROA, size, and CFO are independent variables.

Table 7. Variables of Discretionary Accruals for Kasznik Model (1999)

Panel Regression Analysis Variables for Kasznik Model (1999)		
Dependent variable	**Independent variables**	
Discretionary Accruals	IFRS16	Dummy variable for year: If t=>2019:1 otherwise 0
	Leverage	$total\ debt_{it}$ / $total\ asset_{it}$
	Return on Asset	$net\ income_{it}$ / $total\ asset_{it}$
	Asset Size	ln $(total\ asset)_{it}$
	Cash Flow from Operating Activities	$cash\ flow\ from\ operation_{it}/total\ asset_{it}$

The third stage is to determine the extent to which IFRS 16 and other factors affect discretionary accruals by panel quantile regression. This stage involves a more in-depth examination of the analysis carried out in the second stage in different quantiles (0.25, 0.50, and 0.75). The errors obtained in the first stage represent discretionary accruals. In this stage, these errors are used as the dependent variable, and the IFRS 16 and other variables created in accordance with the literature are used as independent variables in the following three models. The quantile regression model based on the Jones (1991) is shown in Eq. 32.

$$Q_\tau(DA_{it}|X_{it}) = \beta_1(\tau)IFRS16_{it} + \beta_2(\tau)leverage_{it} + \beta_3(\tau)growth_{it} + \beta_4(\tau)roa_{it} + \beta_5(\tau)cfo_{it} + \alpha_{it} + k_{it} \quad (32)$$

Notes: τ refers to the quantiles, where τ takes values between 0 and 1; DA refers to discretionary accruals obtained from Jones model in the first stage; X is the vector of independent variables; $Q_\tau(DA_{it}|X_{it})$ is the τth quantile of DA given X; IFRS 16 is a dummy variable, 1 if financial reports are prepared using IFRS 16, 0 otherwise; leverage refers to the total debt within total resources ($total\ debt_{it}$ / $total\ asset_{it}$); growth refers to the annual change in sales ($revenue_{it}$ - $revenue_{it-1}$)/ $revenue_{it-1}$; roa refers to return on asset ($net\ income_{it}$ / $total\ asset_{it}$); cfo refers to cash flow from operating activities ($cash\ flow\ from\ operation_{it}/total\ asset_{it}$); α is a constant term; (k) is error term.

The quantile regression model based on the modified Jones (1995) is shown in Eq. 33.

$$Q_\tau(DA_{it}|X_{it}) = \beta_1(\tau)IFRS16_{it} + \beta_2(\tau)leverage_{it} + \beta_3(\tau)growth_{it} + \beta_4(\tau)roa_{it} + \beta_5(\tau)size_{it} + \alpha_{it} + k_{it} \quad (33)$$

Notes: τ refers to the quantiles, where τ takes values between 0 and 1; DA refers to discretionary accruals obtained from modified Jones model in the first stage; X is the vector of independent variables; $Q_\tau(DA_{it}|X_{it})$ is the τth quantile of DA given X; IFRS 16 is a dummy variable, 1 if financial reports are prepared using IFRS 16, 0 otherwise; leverage refers to the total debt within total resources ($total\ debt_{it}$ / $total\ asset_{it}$); growth refers to the annual change in sales ($revenue_{it}$ -

$revenue_{it-1}$)/ $revenue_{it-1}$; roa refers to return on asset ($net\ income_{it}$ / $total\ asset_{it}$); size refers to the logarithm of total assets (ln $(total\ asset)_{it}$); α is a constant term; (k) is error term.

The quantile regression model based on the Kasznik (1999) is shown in Eq. 34.

$$Q_\tau(DA_{it}|X_{it}) = \beta_1(\tau)IFRS16_{it} + \beta_2(\tau)leverage_{it} + \beta_3(\tau)roa_{it} + \beta_4(\tau)size_{it} + \beta_5(\tau)cfo_{it} + \alpha_{it} + k_{it} \quad (34)$$

Notes: τ refers to the quantiles, where τ takes values between 0 and 1; DA refers to discretionary accruals obtained from Kasznik model in the first stage; X is the vector of independent variables; $Q_\tau(DA_{it}|X_{it})$ is the τth quantile of DA given X; IFRS 16 is a dummy variable, 1 if financial reports are prepared using IFRS 16, 0 otherwise; leverage refers to the total debt within total resources ($total\ debt_{it}$ / $total\ asset_{it}$); roa refers to return on asset ($net\ income_{it}$ / $total\ asset_{it}$); size refers to the logarithm of total assets (ln $(total\ asset)_{it}$); cfo refers to cash flow from operating activities ($cash\ flow\ from\ operation_{it}$/$total\ asset_{it}$); α is a constant term; (k) is error term.

4.6. Findings

This section of the study is dedicated to the findings of the analyses.

4.6.1. Descriptive Statistics and Correlation Matrix of Variables

Descriptive statistics and correlation matrix of the variables are given in Table 8 and Table 9 respectively.

Table 8 provides the descriptive statistics of variables. It contains the total number of observations, means, standard deviations, minimum, and maximum values of the variables. As shown in Table 8, there are 1744 firm-year observations in the analyses. As stated before, all variables in Table 8, are divided by lagged total assets to avoid heteroscedasticity.

Table 8. Descriptive Statistics of the Variables

	Obs.	Mean	Std. Dev.	Min	Max
Total Accruals	1,744	-0.0213681	0.1638271	-1.025995	0.932664
Revenue	1,744	0.1954154	0.4003537	-2.385542	4.309150
Adjusted Revenue	1,744	0.1467514	0.3516657	-2.365702	4.113435
PPE	1,744	0.3757401	0.3007247	0.00012	2.700680
CFO	1,744	0.0157234	0.1876101	-2.123084	1.264122

The total accruals are calculated as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, and they are divided by lagged total assets. The mean of this variable is nearly (-0.02). It means that the absolute value of the average total accruals corresponds to nearly two percent of the average lagged total assets. According to the same logic, we can say that the absolute value of the average revenue corresponds to nearly twenty percent of the average lagged total assets; the absolute value of the average

adjusted revenue corresponds to nearly fourteen percent of the average lagged total assets; the absolute value of the average PPE corresponds to nearly thirty-seven percent of the average lagged total assets; the absolute value of the average CFO corresponds to nearly one point fifty percent of the average lagged total assets. Adjusted revenue is nearly five percent less than revenue. This difference stems from receivables. Total accruals have the lowest standard deviation, while revenue has the highest. When we look at the minimum and maximum values, the biggest difference, which is consistent with the standard deviation, is seen in revenue, and the smallest difference belongs to total accruals.

Table 9. Correlation Matrix of Variables

	Total Accruals	**Revenue**	**Adj. Revenue**	**PPE**	**CFO**
Total Accruals	1				
Revenue	0.0912	1			
Adjusted Revenue	0.0018	0.9506	1		
PPE	-0.0808	-0.0184	-0.0058	1	
CFO	-0.3494	0.0043	0.0748	0.0413	1

When the correlations between the variables shown in Table 9 are examined,

The correlations between the variables shown in Table 9. If the correlation coefficient of two variables is between 0 and 0.10, it is a negligible level. If it is between 0.10 and 0.39, it is interpreted as a weak correlation; if it is between 0.40 and 0.69, it is interpreted as a moderate correlation; if it is between 0.70 and 0.89, it is interpreted as a strong correlation; and if it is between 0.90 and 1, it is interpreted as very strong correlation (Schober et al., 2018: 1765). Including variables with high correlation in the same model creates a multicollinearity problem (Uyar and Sarak, 2020: 548). When the correlations between the variables shown in Table 9 are examined, it is seen that the highest correlation is between revenue and adjusted revenue. Since these variables are used as independent variables in different EM models, the high correlation between them does not cause any problems. It is observed that all coefficients are less than 0.40, indicating a weak correlation.

4.6.2. Unit Root, Hausman, and Heteroscedasticity Tests Results

The data of this study have micro-balanced-panel data characteristics. As explained earlier, panel data analysis involves some assumptions and requires testing these assumptions. These tests are the cross-section dependence test, panel unit root test, Hausman (1978) test, autocorrelation, and heteroscedasticity test. However, Uyar and Sarak (2020) state that Baltagi (2008) showed that it is unnecessary to use cross-section dependence and autocorrelation tests in micro panel data sets. Therefore, Levin, Lin, and Chu (2002) unit-root test, Hausman (1978) test, and Modified Wald

heteroscedasticity test are applied to the current data set and the results are given in Tables 10, 11, and 12 respectively.

Table 10. Levin-Lin-Chu Unit Root Test Statistics

	t statistic	**P Value**
Total Accruals	-28.4104	0.0000***
Revenue	-27.8394	0.0000***
Adjusted Revenue	-32.9947	0.0000***
PPE	-4.3e+02	0.0000***
CFO	-32.4687	0.0000***

***, **, * are refers to statistically significant values at 1%, 5% and 10% levels, respectively.

In Levin, Lin, and Chu test zero and alternative hypotheses are as follows:

H_0: Panels contain unit roots

H_a: Panels are stationary

When Table 10 is analyzed, it is concluded that the H_0 hypothesis is rejected at a 1% significance level for all series. At the 1% level of statistical significance, this means that all series are stationary.

In the panel data analysis, the Hausman (1978) test is used to choose between estimators in panel data models. The Hausman (1978) test is applied to choose which of the fixed effects and random effects models is more appropriate. One of the biggest differences between fixed effects and random effects is whether individual effects are correlated with independent variables. Hausman (1978) test compares random and fixed effects under the null hypothesis that individual effects have no correlation with the independent variables. If this hypothesis is not rejected, although both fixed and random effect estimators are consistent but random effect is efficient. But if it is rejected, fixed effect is consistent while random effect is inconsistent and requires utilization of fixed effect (Aybars, 2013: 105; Tatoğlu, 2021: 195-196).

Table 11. Hausman Test Statistics of Models

	χ^2	**P Value**
Jones Model (1991)	7.37	0.0251**
Modified Jones Model (1995)	-144.87	Nan
Kasznik Model (1999)	19.34	0.0002***

***, **, * are refers to statistically significant values at 1%, 5% and 10% levels, respectively.
Nan: Not available number

When Table 11 is examined the null hypothesis of Jones model is rejected at 0.05 significance level. For Modified Jones model the program does not give prob. value, but the χ^2 is -144.87. This rejects null hypothesis. The null hypothesis of Kasznik model is also rejected at 0.01 significance level.

Rejection of null hypothesis means that fixed effect estimator is efficient. Thus, in all three models fixed effects are used to estimate the coefficients.

Table 12. Modified Wald Heteroscedasticity Test Statistics

	χ^2	P Value
Jones Model (1991)	1.3e+05	0.0000***
Modified Jones Model (1995)	1.0e+05	0.0000***
Kasznik Model (1999)	1.3e+05	0.0000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

When the modified Wald test statistics in Table 12 are examined, the presence of heteroscedasticity in the error term at the 1% statistical significance level is detected in all models. This means that the null hypothesis "variances between error terms are constant" is rejected. Since the null hypothesis is rejected, the problem of heteroscedasticity arises, and therefore a robust estimator must be used in regressions. To solve the heteroscedasticity problem, a Generalized Least Squares (GLS) estimator (in Stata: xtgls dependent variable independent variables, panels(heteroskedastic)) is employed in this study.

4.6.3. Earnings Management Regression Results

As mentioned before, the analyses consist of three stages. The first stage is the calculation of discretionary accruals according to the Jones, Modified Jones, and Kasznik models. Total accruals are equal to the non-discretionary plus discretionary accruals. Eq. 35 provides a mathematical representation of this expression.

$$Total\ Accruals = Nondiscretionary\ Accruals + Discretionary\ Accruals \quad (35)$$

We have previously stated that the residuals (ε_{it}) on the right-hand side of Eq. 26, 27, and 28 represent discretionary accruals, while the remaining parts of the equations represent non-discretionary accruals. Therefore, when we apply these three equations to our data, we can naturally calculate discretionary accruals as ε_{it}.

The estimation results gathered when we applied the Jones model to our data are given in Table 13.

Table 13. Estimation Results of Jones Model

Dependent variable: Total accruals Number of observations: 1744 Number of groups: 218 Time periods: 8			
Variables	**Coefficient**	**Std. Error**	**P Value**
Revenue	0.0456036	0.0069448	0.000***
PPE	-0.027666	0.0064027	0.000***
Constant	-0.0216818	0.0035777	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

On closer inspection, Table 13 shows that the independent variables of revenue and PPE are both statistically significant at the 1% level. When we look at the coefficients, it is seen that revenue has an increasing effect on total accruals, while PPE has a decreasing effect, consistent with the previous literature.

In Table 14, there are estimation results of total accruals with the modified Jones model. The only difference between the Jones and modified Jones models is the receivable adjustment on revenue in the modified version. The model estimates total accruals using an adjusted revenue variable rather than revenue.

Table 14. Estimation Results of Modified Jones Model

Dependent variable: Total accruals Number of observations: 1744 Number of groups: 218 Time periods: 8			
Variables	**Coefficient**	**Std. Error**	**P Value**
Adjusted Revenue	0.0150269	0.0081635	0.066*
PPE	-0.029397	0.0063816	0.000***
Constant	-0.0153955	0.0035438	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

When Table 14 is examined, it is seen that adjusted revenue is statistically significant at the 10% level, while PPE is at the 1% level. The coefficients are positive for adjusted revenue and negative for PPE, just like in the Jones model.

Table 15. Estimation Results of Kasznik Model

Dependent variable: Total accruals			
Number of observations: 1744			
Number of groups: 218			
Time periods: 8			
Variables	**Coefficient**	**Std. Error**	**P Value**
Adjusted Revenue	0.0261809	0.0074858	0.000***
PPE	-0.0243906	0.0062371	0.000***
CFO	-0.2886894	0.0161432	0.000***
Constant	-0.0151914	0.0032662	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

The estimation results of total accruals using the Kasznik model are shown in Table 15. As explanatory variables for total accruals, Kasznik (1999) uses adjusted revenue, PPE, and CFO. All independent variables are statistically significant at the 1% level, as can be seen in Table 15. When the coefficients are examined, adjusted revenue has a positive coefficient, just like in the modified Jones model, where PPE and CFO have negative effects on total accruals.

4.6.4. Panel Regression Results

In the second stage of the analyses, the residuals (ε_{it}) gathered from the implementation of Eq. 26, 27, and 28 are used as the dependent variable, which is an indicator of EM, and the variables in the right-hand sides of Eq. 29, 30, and 31 are used as independent variables. These variables are determined by the step-wise method. But, to reveal the effect of IFRS 16 on EM, it is included as an independent variable in all three equations.

In Table 16, the estimation results of the Jones model are provided. In this regression discretionary accrual obtained from Jones model in the first stage is used as dependent variable, while IFRS 16, leverage, growth, ROA, and CFO are used as independent variables.

Table 16. Panel Regression Estimation Results of the Jones Model

Dependent variable: Discretionary accruals (obtained from Jones Model)			
Number of observations: 1744			
Number of groups: 218			
Time periods: 8			
Variables	**Coefficient**	**Std. Error**	**P Value**
ifrs16	0.0018037	0.0004031	0.000***
leverage	0.0149065	0.0008683	0.000***
growth	0.0024926	0.000235	0.000***
roa	0.0455179	0.0025381	0.000***
cfo	-0.0034818	0.0020284	0.086*
Constant	-0.0357058	0.0005575	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

It seems that all independent variables are statistically significant in Table 16. While the significance level of all variables except CFO is 1%, the significance level of CFO is 10%. When we look at the coefficients one by one, we can say that IFRS 16 has an increasing effect; leverage has an increasing effect; growth has an increasing effect; ROA has an increasing effect; and CFO has a decreasing effect on EM.

Table 17 shows the estimation results of the modified Jones model. The dependent variable in this regression is the discretionary accrual from the first stage of the modified Jones model, which follows the same logic as the Jones model. IFRS 16, leverage, growth, ROA, and size are used as independent variables.

Table 17. Panel Regression Estimation Results of the Modified Jones Model

Dependent variable: Discretionary accruals (obtained from Modified Jones Model)
Number of observations: 1744
Number of groups: 218
Time periods: 8

Variables	Coefficient	Std. Error	P Value
ifrs16	0.0008981	0.0002369	0.000***
leverage	0.0066324	0.0005743	0.000***
growth	0.0005505	0.0001083	0.000***
roa	0.0179148	0.0013879	0.000***
size	-0.000436	0.0000667	0.000***
Constant	-0.0201573	0.0012805	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

Upon closer inspection, Table 17 reveals that every independent variable exhibits statistical significance at the 1% level. The coefficients show that size has a decreasing impact on EM, while IFRS 16 has an increasing effect, leverage has an increasing effect, growth has an increasing effect, and ROA has an increasing effect.

The estimation results of the Kasznik model are presented in Table 18. The discretionary accrual obtained from the Kasznik model in the first stage is used as the dependent variable, which follows the same logic as in the previous two models. IFRS 16, leverage, ROA, size, and CFO are used as independent variables.

Table 18. Panel Regression Estimation Results of the Kasznik Model

Dependent variable: Discretionary accruals (obtained from Kasznik Model) Number of observations: 1744 Number of groups: 218 Time periods: 8			
Variables	**Coefficient**	**Std. Error**	**P Value**
ifrs16	-0.0002226	0.0009622	0.817
leverage	0.008906	0.0021055	0.000***
roa	0.084407	0.0062918	0.000***
size	0.0021645	0.0002338	0.000***
cfo	-0.2867981	0.00639	0.000***
Constant	-0.0609482	0.0048645	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

All variables in Table 18, except IFRS 16, are statistically significant at the 1% level. When the coefficients in Table 18 are examined, leverage, ROA, and size have positive effects, while CFO has a negative effect on EM. The coefficient of IFRS 16 is negative, although statistically insignificant. IFRS 16's potential significance at various quantiles will be examined in the third stage of the analysis with the quantile regression analysis.

4.6.5. Quantile Regression Results

This section, the third stage of the analyses, can be considered a more in-depth analysis of the second stage. As in the second stage, there are also three models (Jones, modified Jones, and Kasznik) in this stage.

Table 19 provides the estimation results of the Jones model with quantile regression. In this regression discretionary accrual (ε_{it}) obtained from Jones model in the first stage is used as dependent variable, while IFRS 16, leverage, growth, ROA, and CFO are used as independent variables.

In the first quantile, leverage and ROA variables are two variables that are significant at the 1% level. The coefficients of both are positive. When the second quantile is examined, the leverage and ROA variables are significant at the 1% level, while the CFO variable is significant at the 10% level. While the leverage and ROA variables have a positive coefficient as in the first quantile, CFO has a negative coefficient. In the third quantile, leverage is statistically significant at the %1 level, growth is statistically significant at the %5 level and ROA is statistically significant at the %1. The coefficients of all three variables are positive.

Table 19. Quantile Regression Estimation Results of the Jones Model

Dependent variable: Discretionary accruals (obtained from Jones Model)
Number of observations: 1744
Number of groups: 218
Time periods: 8

Quantiles	Variables	Coefficient	Std. Error	P Value
Q25	ifrs16	0.0000298	0.0006359	0.963
	leverage	0.0143441	0.0017888	0.000***
	growth	0.0013265	0.0008193	0.106
	roa	0.0656268	0.0055838	0.000***
	cfo	-0.0013232	0.0044472	0.766
	Constant	-0.0427082	0.0009724	0.000***
Q50	ifrs16	0.0007465	0.0006094	0.221
	leverage	0.0169377	0.0025057	0.000***
	growth	0.0020805	0.0039007	0.594
	roa	0.0654539	0.0074636	0.000***
	cfo	-0.0077653	0.0044957	0.084*
	Constant	-0.03757	0.0014336	0.000***
Q75	ifrs16	0.0007501	0.0013685	0.584
	leverage	0.0152155	0.0029805	0.000***
	growth	0.0141073	0.0071777	0.050**
	roa	0.0374402	0.0101343	0.000***
	cfo	-0.0025877	0.0045081	0.566
	Constant	-0.0313229	0.0015807	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

According to the quantile regression results of the Jones model, each of the independent variables used except IFRS 16 is significant in at least one quantile. However, IFRS 16 does not have significant coefficients in any quantile.

Table 20 provides the estimation results of the modified Jones model with quantile regression. In this regression discretionary accrual (ε_{it}) obtained from modified Jones model in the first stage is used as dependent variable, whereas IFRS 16, leverage, growth, ROA, size, and CFO are used as independent variables.

When the first quantile is examined, the leverage and ROA variables are statistically significant at the 1% level, with both having positive coefficients, and the size variable is significant at the 5% level with a negative coefficient. In the second quantile, only the leverage and ROA variables are statistically significant at the 1% level and have positive coefficients. In the third quantile, all variables except growth are statistically significant at the 1% level. Examining the coefficients reveals that the size variable has a negative value while IFRS 16, leverage, and ROA have positive values.

Table 20. Quantile Regression Estimation Results of the M. Jones Model

Dependent variable: Discretionary accruals (obtained from Modified Jones Model)
Number of observations: 1744
Number of groups: 218
Time periods: 8

Quantiles	Variables	Coefficient	Std. Error	P Value
Q25	ifrs16	0.0003665	0.0005406	0.498
	leverage	0.007936	0.0017944	0.000***
	growth	0.0004321	0.0007354	0.557
	roa	0.0394487	0.0025499	0.000***
	size	-0.0004315	0.0001824	0.018**
	Constant	-0.0269016	0.0039935	0.000***
Q50	ifrs16	0.0003709	0.0004526	0.413
	leverage	0.008127	0.0011639	0.000***
	growth	0.0003741	0.0003719	0.315
	roa	0.0255672	0.0027913	0.000***
	size	-0.0002694	0.0001804	0.135
	Constant	-0.0239319	0.0036634	0.000***
Q75	ifrs16	0.0010064	0.0003372	0.003***
	leverage	0.0063916	0.0008899	0.000***
	growth	0.0012999	0.0011341	0.252
	roa	0.0145867	0.0029502	0.000***
	size	-0.0004713	0.0001043	0.000***
	Constant	-0.0137429	0.0022664	0.000***

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

The Kasznik model with quantile regression estimation results are shown in Table 21. The dependent variable in this regression is the discretionary accrual (ε_{it}), which is derived from the Kasznik model. The independent variables are IFRS 16, leverage, ROA, size, and CFO.

When we analyze the outputs of the Kasznik model, we observe that all independent variables except leverage at the 1% level are significant in the first quantile. IFRS 16 and CFO coefficients are negative, while the ROA and size coefficients of are positive. In the second quantile, all variables except IFRS 16 are statistically significant. The significance level is 5% for leverage; ROA, size, and CFO are 1%. When the coefficients of significant variables are examined, CFO has a negative coefficient, while other variables have positive coefficients. In the third quantile, IFRS 16 has a significant and positive coefficient at the 10% level. Leverage and ROA have a significant and positive coefficient at the 1% level. CFO has a significant and negative coefficient at the 1% level.

Table 21. Quantile Regression Estimation Results of the Kasznik Model

Dependent variable: Discretionary accruals (obtained from Kasznik Model)
Number of observations: 1744
Number of groups: 218
Time periods: 8

Quantiles	Variables	Coefficient	Std. Error	P Value
Q25	ifrs16	-0.0050145	0.0016268	0.002***
	leverage	0.0048306	0.0035105	0.169
	roa	0.088124	0.0151026	0.000***
	size	0.0027991	0.0004138	0.000***
	cfo	-0.289214	0.010517	0.000***
	Constant	-0.0839079	0.0081639	0.000***
Q50	ifrs16	-0.0017696	0.0013665	0.196
	leverage	0.0085104	0.0038593	0.028**
	roa	0.0905585	0.0130666	0.000***
	size	0.0022613	0.0004046	0.000***
	cfo	-0.2826339	0.0080169	0.000***
	Constant	-0.063454	0.0077432	0.000***
Q75	ifrs16	0.0056112	0.0028831	0.052*
	leverage	0.0203438	0.0067451	0.003***
	roa	0.0983183	0.0208221	0.000***
	size	0.0003874	0.0005257	0.461
	cfo	-0.2812614	0.0127697	0.000***
	Constant	-0.0180112	0.009867	0.068*

***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.

4.7. Discussions of the Findings

The dependent variable of the three EM models (Jones, modified Jones, and Kasznik model) in the first step is total accruals, and it is tried to be estimated with different independent variables. The coefficients of the three models are combined and presented in Table 22. The table shows that each independent variable has a statistically significant value. Kasznik (1999) states that the expected coefficients of revenue in the literature is positive, and the coefficients of PPE and CFO are negative. Our result as can be seen from the table are consistent with prior literature.

Table 22. Total Accruals Components According to the Models

Dependent Variable	Independent Variables	Jones Model	Modified Jones Model	Kasznik Model
Total Accruals	Revenue	0.0456036***		
	Adj. Revenue		0.0150269*	0.0261809***
	PPE	-0.027666***	-0.029397***	-0.0243906***
	CFO			-0.2886894***
***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.				

As stated in Kothari et al. (2005), discretionary accrual is represented in all three models by residuals (ε_{it}), an indicator of EM. Then, potential factors affecting EM, including IFRS 16, are tested

with panel regression analyses. The independent variables and their coefficients tested in the three models are combined and presented in Table 23.

Table 23. Factors Affecting Earnings Management in Panel Regression Analyses

Dependent Variable	Independent Variables	Jones Model	Modified Jones Model	Kasznik Model
Earnings Managemet (represented by discretionary accrual)	ifrs16	0.0018037***	0.0008981***	-0.0002226
	leverage	0.0149065***	0.0066324***	0.008906***
	growth	0.0024926***	0.0005505***	
	roa	0.0455179***	0.0179148***	0.084407***
	cfo	-0.0034818*		-0.2867981***
	size		-0.000436***	0.0021645***
***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.				

According to Table 23, IFRS 16 has statistically significant positive (increasing) effects on earning management in the first two models. But in the third model, it is insignificant. Leverage is another common independent variable in the three models, and it positively affects EM at Borsa Istanbul. Growth is one of the widely used variables in empirical studies. In this thesis it is included in the first two models, and it has a positive effect on EM. ROA is another common independent variable in the three models; its coefficient is significant and positive in all three models. CFO included in first and third model and it has a negative (decreasing) effect on EM. The last independent variable is size and is included in the second and third models. The size, which is statistically significant in both models, gives contradictory results in terms of its coefficients. While it has a negative value in the modified Jones model, it has a positive value in the Kasznik model.

The main purpose of this thesis, as stated before, is primarily to measure the impact of IFRS 16 on EM. As it is known, IFRS 16 directly affects the size, ROA, leverage, and CFO. Thus, these variables tried to be included in all models. However, as stated in the methodology part, the variables are determined by the stepwise method. Therefore, some of variables are excluded due to the explanatory power of the model.

Although panel regression results shed light on the impact of IFRS 16 on EM, the same models are subjected to quantile regression for a more in-depth analysis. The combined panel quantile regression coefficient results are given in Table 24. When the table is examined, it is possible to say that IFRS 16 is decreasing EM in companies that engage in small-scale EM practices, while increasing EM in companies that engage in large-scale EM practices. Leverage and ROA have an increasing effect on EM practices in all companies engaged in EM. On the contrary, the CFO has a reducing effect in all companies that engage in EM. Size has a decreasing effect according to modified Jones and an increasing effect according to Kasznik.

Table 24. Factors Affecting Earnings Management in Quantile Regression Analyses

Dependent Variable	Independent Variables	Jones Model			Modified Jones Model			Kasznik Model		
		Q25	Q50	Q75	Q25	Q50	Q75	Q25	Q50	Q75
Earnings Management (represented by discretionary accrual)	ifrs16	0.0000298	0.0007465	0.0007501	0.0003665	0.0003709	0.0010064***	-0.0050145***	-0.0017696	0.0056112*
	leverage	0.0143441***	0.0169377***	0.0152155***	0.007936***	0.008127***	0.0063916***	0.0048306	0.0085104**	0.0203438***
	growth	0.0013265	0.0020805	0.0141073***	0.0004321	0.0003741	0.0012999			
	roa	0.0656268***	0.0654539***	0.0374402***	0.0394487***	0.0255672***	0.0145867***	0.088124***	0.0905585***	0.0983183***
	cfo	-0.0013232	-0.0077653*	-0.0025877				-0.289214***	-0.2826339***	-0.2812614***
	size				-0.0004315**	-0.0002694	-0.0004713***	0.0027991***	0.0022613***	0.0003874
***, **, and * refer to 1%, 5%, and 10% significance levels, respectively.										

CONCLUSION

In the early 2000s, one of the biggest scandals in the history of accounting was experienced in the USA. Revealing the underlying causes of these scandals, which caused radical changes and regulations in the field of accounting and auditing, has been accepted as a necessary precursor to effectively prevent future events. Many researchers argue that the causes of scandals are the incentives (e.g., stock-based compensation) and opportunities for personal gain faced by managers (Erickson et al., 2006: 114).

It is accepted that there is a conflict of interest between agents and principals that pursue self-interest in an opportunistic sense. Earnings might be considered a performance measure to enable shareholders to monitor management (Ronen & Yaari, 2008). However, the accounting process and financial reports contain some judgment and critical thinking. This creates opportunities and incentives, such as increasing executives' performance-based compensations when processing and reporting information that is only accessible to the firm (Barth, 2018: 10). On the other hand, Ipino and Parbonetti (2017) state that the IASB and its predecessor intend to restrict discretion and accrual-based EM via issuing principles-based standards.

According to George et al. (2016), adopting IFRS has two primary goals: enhancing reporting quality and improving financial statement comparability. The IFRS Foundation (2024) asserts that by improving international comparability and financial information quality, IFRS increases transparency and empowers market participants to make well-informed financial decisions. For these purposes, new standards are published, or existing standards are updated. One of the most recently updated standards relates to leases. Leases previously within the scope of IAS 17 have been reported within the scope of IFRS 16 as of January 1, 2019. The intention to provide the most accurate representation of the leased property is the driving force behind IFRS 16 (Liviu-Alexandru, 2018: 510).

EM is one of the most commonly used methods to assess the quality of financial information. To evaluate whether IFRS 16, which aims to improve financial quality inherently, improves the quality of financial information in this thesis, the relationship between EM and IFRS 16 is examined. The impact of IFRS 16 on EM at Borsa Istanbul is analyzed with real data to reveal whether it restricts the management's discretion.

Real (activity) based EM and accrual-based EM are two basic EM methods. The accrual-based Jones, modified Jones, and Kasznik techniques are applied in this thesis, and discretionary accruals are

used to represent EM in analyses conducted with panel regression and panel quantile regression. In addition to IFRS 16, growth and directly affected by IFRS 16 CFO, leverage, ROA, size, and on EM are also analyzed.

According to the findings, in general, IFRS 16, leverage, growth, and ROA have an increasing effect on EM, while CFO has a decreasing effect. Size, on the other hand, has contradictory results according to models.

There are many studies in literature such as Callao and Jarne (2010), Capkun et. al. (2016), Cengiz and Tosunoğlu (2017) that the application of IFRS increases EM. In this sense, the positive relationship between IFRS 16 and EM supports these studies. On the other hand, Cai et al. (2008) argue that IFRS may take longer to have a significant effect on financial reporting, because of other factors besides accounting standards that are related to accounting quality. Doukakis (2014) affirm that the quality of financial reporting is shaped more by firm-level reporting incentives than by accounting rules. As a result of institutional and environmental factors as well as country-specific characteristics, Tort (2013) states that IFRS may provide some opportunity for EM. These institutional and environmental factors can be examined in future studies. In addition, sectoral analysis of the impact of IFRS 16 on earnings management also constitutes a potential subject in future studies.

Since earnings are an indicator widely used by market participants, it is important to reveal the relationship between IFRS 16 and EM at Borsa Istanbul. The findings offer valuable insights for policymakers, regulators, and market participants, informing decision-making processes. It would be better for market participants to make decisions by considering the obtained results. In addition, it is recommended that standard setters consider the results obtained in issuing new standards and updates they will make.

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APPENDIX

	COMPANY CODE	COMPANY NAME
1	AVOD	A.V.O.D. KURUTULMUŞ GIDA VE TARIM ÜRÜNLERİ SANAYİ TİCARET A.Ş.
2	ACSEL	ACISELSAN ACIPAYAM SELÜLOZ SANAYİ VE TİCARET A.Ş.
3	ADEL	ADEL KALEMCİLİK TİCARET VE SANAYİ A.Ş.
4	ADESE	ADESE GAYRİMENKUL YATIRIM A.Ş.
5	AFYON	AFYON ÇİMENTO SANAYİ T.A.Ş.
6	AKENR	AKENERJİ ELEKTRİK ÜRETİM A.Ş.
7	AKCNS	AKÇANSA ÇİMENTO SANAYİ VE TİCARET A.Ş.
8	ATEKS	AKIN TEKSTİL A.Ş.
9	AKSA	AKSA AKRİLİK KİMYA SANAYİİ A.Ş.
10	AKSEN	AKSA ENERJİ ÜRETİM A.Ş.
11	AKSUE	AKSU ENERJİ VE TİCARET A.Ş.
12	ALCAR	ALARKO CARRIER SANAYİ VE TİCARET A.Ş.
13	ALCTL	ALCATEL LUCENT TELETAŞ TELEKOMÜNİKASYON A.Ş.
14	ALKA	ALKİM KAĞIT SANAYİ VE TİCARET A.Ş.
15	ALKIM	ALKİM ALKALİ KİMYA A.Ş.
16	AYCES	ALTIN YUNUS ÇEŞME TURİSTİK TESİSLER A.Ş.
17	AEFES	ANADOLU EFES BİRACILIK VE MALT SANAYİİ A.Ş.
18	ASUZU	ANADOLU ISUZU OTOMOTİV SANAYİ VE TİCARET A.Ş.
19	ANELE	ANEL ELEKTRİK PROJE TAAHHÜT VE TİCARET A.Ş.
20	ARCLK	ARÇELİK A.Ş.
21	ARENA	ARENA BİLGİSAYAR SANAYİ VE TİCARET A.Ş.
22	ARMDA	ARMADA BİLGİSAYAR SİSTEMLERİ SANAYİ VE TİCARET A.Ş.
23	ARSAN	ARSAN TEKSTİL TİCARET VE SANAYİ A.Ş.
24	ASELS	ASELSAN ELEKTRONİK SANAYİ VE TİCARET A.Ş.
25	AVTUR	AVRASYA PETROL VE TURİSTİK TESİSLER YATIRIMLAR A.Ş.
26	AYEN	AYEN ENERJİ A.Ş.
27	AYES	AYES ÇELİK HASIR VE ÇİT SANAYİ A.Ş.
28	AYGAZ	AYGAZ A.Ş.
29	BAGFS	BAGFAŞ BANDIRMA GÜBRE FABRİKALARI A.Ş.
30	BAKAB	BAK AMBALAJ SANAYİ VE TİCARET A.Ş.
31	BALAT	BALATACILAR BALATACILIK SANAYİ VE TİCARET A.Ş.
32	BANVT	BANVİT BANDIRMA VİTAMİNLİ YEM SANAYİİ A.Ş.
33	BASCM	BAŞTAŞ BAŞKENT ÇİMENTO SANAYİ VE TİCARET A.Ş.
34	BTCIM	BATIÇİM BATI ANADOLU ÇİMENTO SANAYİİ A.Ş.
35	BSOKE	BATISÖKE SÖKE ÇİMENTO SANAYİİ T.A.Ş.
36	BRKSN	BERKOSAN YALITIM VE TECRİT MADDELERİ ÜRETİM VE TİCARET A.Ş.
37	BJKAS	BEŞİKTAŞ FUTBOL YATIRIMLARI SANAYİ VE TİCARET A.Ş.
38	BEYAZ	BEYAZ FİLO OTO KİRALAMA A.Ş.
39	BLCYT	BİLİCİ YATIRIM SANAYİ VE TİCARET A.Ş.
40	BIMAS	BİM BİRLEŞİK MAĞAZALAR A.Ş.
41	BRKO	BİRKO BİRLEŞİK KOYUNLULULAR MENSUCAT TİCARET VE SANAYİ A.Ş.

	COMPANY CODE	COMPANY NAME
42	BRMEN	BİRLİK MENSUCAT TİCARET VE SANAYİ İŞLETMESİ A.Ş.
43	BIZIM	BİZİM TOPTAN SATIŞ MAĞAZALARI A.Ş.
44	BRSAN	BORUSAN MANNESMANN BORU SANAYİ VE TİCARET A.Ş.
45	BFREN	BOSCH FREN SİSTEMLERİ SANAYİ VE TİCARET A.Ş.
46	BOSSA	BOSSA TİCARET VE SANAYİ İŞLETMELERİ T.A.Ş.
47	BRISA	BRİSA BRIDGESTONE SABANCI LASTİK SANAYİ VE TİCARET A.Ş.
48	BURCE	BURÇELİK BURSA ÇELİK DÖKÜM SANAYİİ A.Ş.
49	BURVA	BURÇELİK VANA SANAYİ VE TİCARET A.Ş.
50	BUCIM	BURSA ÇİMENTO FABRİKASI A.Ş.
51	CCOLA	COCA-COLA İÇECEK A.Ş.
52	CLEBI	ÇELEBİ HAVA SERVİSİ A.Ş.
53	CELHA	ÇELİK HALAT VE TEL SANAYİİ A.Ş.
54	CEMAS	ÇEMAŞ DÖKÜM SANAYİ A.Ş.
55	CEMTS	ÇEMTAŞ ÇELİK MAKİNA SANAYİ VE TİCARET A.Ş.
56	CMBTN	ÇİMBETON HAZIRBETON VE PREFABRİK YAPI ELEMANLARI SANAYİ VE TİCARET A.Ş.
57	CMENT	ÇİMENTAŞ İZMİR ÇİMENTO FABRİKASI T.A.Ş.
58	CIMSA	ÇİMSA ÇİMENTO SANAYİ VE TİCARET A.Ş.
59	DAGI	DAGİ GİYİM SANAYİ VE TİCARET A.Ş.
60	DARDL	DARDANEL ÖNENTAŞ GIDA SANAYİ A.Ş.
61	DGATE	DATAGATE BİLGİSAYAR MALZEMELERİ TİCARET A.Ş.
62	DMSAS	DEMİSAŞ DÖKÜM EMAYE MAMÜLLERİ SANAYİ A.Ş.
63	DERIM	DERİMOD KONFEKSİYON AYAKKABI DERİ SANAYİ VE TİCARET A.Ş.
64	DESA	DESA DERİ SANAYİ VE TİCARET A.Ş.
65	DESPC	DESPEC BİLGİSAYAR PAZARLAMA VE TİCARET A.Ş.
66	DEVA	DEVA HOLDİNG A.Ş.
67	DIRIT	DİRİTEKS DİRİLİŞ TEKSTİL SANAYİ VE TİCARET A.Ş.
68	DITAS	DİTAŞ DOĞAN YEDEK PARÇA İMALAT VE TEKNİK A.Ş.
69	DOBUR	DOĞAN BURDA DERGİ YAYINCILIK VE PAZARLAMA A.Ş.
70	DGNMO	DOĞANLAR MOBİLYA GRUBU İMALAT SANAYİ VE TİCARET A.Ş.
71	DOGUB	DOĞUSAN BORU SANAYİİ VE TİCARET A.Ş.
72	DOAS	DOĞUŞ OTOMOTİV SERVİS VE TİCARET A.Ş.
73	DURDO	DURAN DOĞAN BASIM VE AMBALAJ SANAYİ A.Ş.
74	DYOBY	DYO BOYA FABRİKALARI SANAYİ VE TİCARET A.Ş.
75	EDIP	EDİP GAYRİMENKUL YATIRIM SANAYİ VE TİCARET A.Ş.
76	EGEEN	EGE ENDÜSTRİ VE TİCARET A.Ş.
77	EGGUB	EGE GÜBRE SANAYİİ A.Ş.
78	EGPRO	EGE PROFİL TİCARET VE SANAYİ A.Ş.
79	EGSER	EGE SERAMİK SANAYİ VE TİCARET A.Ş.
80	EPLAS	EGEPLAST EGE PLASTİK TİCARET VE SANAYİ A.Ş.
81	EKIZ	EKİZ KİMYA SANAYİ VE TİCARET A.Ş.
82	EMKEL	EMEK ELEKTRİK ENDÜSTRİSİ A.Ş.
83	EMNIS	EMİNİŞ AMBALAJ SANAYİ VE TİCARET A.Ş.
84	ENKAI	ENKA İNŞAAT VE SANAYİ A.Ş.

	COMPANY CODE	COMPANY NAME
85	ERBOS	ERBOSAN ERCİYAS BORU SANAYİİ VE TİCARET A.Ş.
86	EREGL	EREĞLİ DEMİR VE ÇELİK FABRİKALARI T.A.Ş.
87	ERSU	ERSU MEYVE VE GIDA SANAYİ A.Ş.
88	ESCOM	ESCORT TEKNOLOJİ YATIRIM A.Ş.
89	ETILR	ETİLER GIDA VE TİCARİ YATIRIMLAR SANAYİ VE TİCARET A.Ş.
90	FENER	FENERBAHÇE FUTBOL A.Ş.
91	FLAP	FLAP KONGRE TOPLANTI HİZMETLERİ OTOMOTİV VE TURİZM A.Ş.
92	FMIZP	FEDERAL-MOGUL İZMİT PİSTON VE PİM ÜRETİM TESİSLERİ A.Ş.
93	FROTO	FORD OTOMOTİV SANAYİ A.Ş.
94	FRIGO	FRİGO-PAK GIDA MADDELERİ SANAYİ VE TİCARET A.Ş.
95	GSRAY	GALATASARAY SPORTİF SINAİ VE TİCARİ YATIRIMLAR A.Ş.
96	GENTS	GENTAŞ DEKORATİF YÜZEYLER SANAYİ VE TİCARET A.Ş.
97	GEREL	GERSAN ELEKTRİK TİCARET VE SANAYİ A.Ş.
98	GOODY	GOODYEAR LASTİKLERİ T.A.Ş.
99	GOLTS	GÖLTAŞ GÖLLER BÖLGESİ ÇİMENTO SANAYİ VE TİCARET A.Ş.
100	GSDDE	GSD DENİZCİLİK GAYRİMENKUL İNŞAAT SANAYİ VE TİCARET A.Ş.
101	GUBRF	GÜBRE FABRİKALARI T.A.Ş.
102	HATEK	HATEKS HATAY TEKSTİL İŞLETMELERİ A.Ş.
103	HEKTS	HEKTAŞ TİCARET T.A.Ş.
104	HURGZ	HÜRRİYET GAZETECİLİK VE MATBAACILIK A.Ş.
105	IHEVA	İHLAS EV ALETLERİ İMALAT SANAYİ VE TİCARET A.Ş.
106	IHGZT	İHLAS GAZETECİLİK A.Ş.
107	INDES	İNDEKS BİLGİSAYAR SİSTEMLERİ MÜHENDİSLİK SANAYİ VE TİCARET A.Ş.
108	INTEM	İNTEMA İNŞAAT VE TESİSAT MALZEMELERİ YATIRIM VE PAZARLAMA A.Ş.
109	IPEKE	İPEK DOĞAL ENERJİ KAYNAKLARI ARAŞTIRMA VE ÜRETİM A.Ş.
110	IZINV	İZ YATIRIM HOLDİNG A.Ş.
111	IZMDC	İZMİR DEMİR ÇELİK SANAYİ A.Ş.
112	JANTS	JANTSA JANT SANAYİ VE TİCARET A.Ş.
113	KAPLM	KAPLAMİN AMBALAJ SANAYİ VE TİCARET A.Ş.
114	KRDMD	KARDEMİR KARABÜK DEMİR ÇELİK SANAYİ VE TİCARET A.Ş.
115	KAREL	KAREL ELEKTRONİK SANAYİ VE TİCARET A.Ş.
116	KARSN	KARSAN OTOMOTİV SANAYİİ VE TİCARET A.Ş.
117	KRTEK	KARSU TEKSTİL SANAYİİ VE TİCARET A.Ş.
118	KARTN	KARTONSAN KARTON SANAYİ VE TİCARET A.Ş.
119	KATMR	KATMERCİLER ARAÇ ÜSTÜ EKİPMAN SANAYİ VE TİCARET A.Ş.
120	KENT	KENT GIDA MADDELERİ SANAYİİ VE TİCARET A.Ş.
121	KERVT	KEREVİTAŞ GIDA SANAYİ VE TİCARET A.Ş.
122	KLMSN	KLİMASAN KLİMA SANAYİ VE TİCARET A.Ş.
123	KNFRT	KONFRUT GIDA SANAYİ VE TİCARET A.Ş.
124	KONYA	KONYA ÇİMENTO SANAYİİ A.Ş.
125	KORDS	KORDSA TEKNİK TEKSTİL A.Ş.
126	KOZAL	KOZA ALTIN İŞLETMELERİ A.Ş.
127	KOZAA	KOZA ANADOLU METAL MADENCİLİK İŞLETMELERİ A.Ş.
128	KRSTL	KRİSTAL KOLA VE MEŞRUBAT SANAYİ TİCARET A.Ş.

	COMPANY CODE	COMPANY NAME
129	KRONT	KRON TEKNOLOJİ A.Ş.
130	KSTUR	KUŞTUR KUŞADASI TURİZM ENDÜSTRİSİ A.Ş.
131	KUVVA	KUVVA GIDA TİCARET VE SANAYİ YATIRIMLARI A.Ş.
132	KUYAS	KUYAŞ YATIRIM A.Ş.
133	KUTPO	KÜTAHYA PORSELEN SANAYİ A.Ş.
134	LINK	LİNK BİLGİSAYAR SİSTEMLERİ YAZILIMI VE DONANIMI SANAYİ VE TİCARET A.Ş.
135	LOGO	LOGO YAZILIM SANAYİ VE TİCARET A.Ş.
136	LKMNH	LOKMAN HEKİM ENGÜRÜSAĞ SAĞLIK TURİZM EĞİTİM HİZMETLERİ VE İNŞAAT TAAHHÜT A.Ş.
137	LUKSK	LÜKS KADİFE TİCARET VE SANAYİİ A.Ş.
138	MAKTK	MAKİNA TAKIM ENDÜSTRİSİ A.Ş.
139	MAALT	MARMARİS ALTINYUNUS TURİSTİK TESİSLER A.Ş.
140	MRSHL	MARSHALL BOYA VE VERNİK SANAYİİ A.Ş.
141	MARTI	MARTI OTEL İŞLETMELERİ A.Ş.
142	MEGAP	MEGA POLİETİLEN KÖPÜK SANAYİ VE TİCARET A.Ş.
143	MNDRS	MENDERES TEKSTİL SANAYİ VE TİCARET A.Ş.
144	MERKO	MERKO GIDA SANAYİ VE TİCARET A.Ş.
145	MEPET	MEPET METRO PETROL VE TESİSLERİ SANAYİ TİCARET A.Ş.
146	MGROS	MİGROS TİCARET A.Ş.
147	MNDTR	MONDİ TURKEY OLUKLU MUKAVVA KAĞIT VE AMBALAJ SANAYİ A.Ş.
148	NETAS	NETAŞ TELEKOMÜNİKASYON A.Ş.
149	NIBAS	NİĞBAŞ NİĞDE BETON SANAYİ VE TİCARET A.Ş.
150	NUHCM	NUH ÇİMENTO SANAYİ A.Ş.
151	ODAS	ODAŞ ELEKTRİK ÜRETİM SANAYİ TİCARET A.Ş.
152	ORGE	ORGE ENERJİ ELEKTRİK TAAHHÜT A.Ş.
153	ORMA	ORMA ORMAN MAHSULLERİ İNTEGRE SANAYİ VE TİCARET A.Ş.
154	OTKAR	OTOKAR OTOMOTİV VE SAVUNMA SANAYİ A.Ş.
155	OYLUM	OYLUM SINAİ YATIRIMLAR A.Ş.
156	PRKME	PARK ELEKTRİK ÜRETİM MADENCİLİK SANAYİ VE TİCARET A.Ş.
157	PARSN	PARSAN MAKİNA PARÇALARI SANAYİİ A.Ş.
158	PGSUS	PEGASUS HAVA TAŞIMACILIĞI A.Ş.
159	PENGD	PENGUEN GIDA SANAYİ A.Ş.
160	PETKM	PETKİM PETROKİMYA HOLDİNG A.Ş.
161	PKENT	PETROKENT TURİZM A.Ş.
162	PETUN	PINAR ENTEGRE ET VE UN SANAYİİ A.Ş.
163	PINSU	PINAR SU VE İÇECEK SANAYİ VE TİCARET A.Ş.
164	PNSUT	PINAR SÜT MAMULLERİ SANAYİİ A.Ş.
165	PKART	PLASTİKKART AKILLI KART İLETİŞİM SİSTEMLERİ SANAYİ VE TİCARET A.Ş.
166	PRZMA	PRİZMA PRES MATBAACILIK YAYINCILIK SANAYİ VE TİCARET A.Ş.
167	RYSAS	REYSAŞ TAŞIMACILIK VE LOJİSTİK TİCARET A.Ş.
168	RODRG	RODRİGO TEKSTİL SANAYİ VE TİCARET A.Ş.
169	ROYAL	ROYAL HALI İPLİK TEKSTİL MOBİLYA SANAYİ VE TİCARET A.Ş.
170	SANEL	SAN-EL MÜHENDİSLİK ELEKTRİK TAAHHÜT SANAYİ VE TİCARET A.Ş.

	COMPANY CODE	COMPANY NAME
171	SANFM	SANİFOAM ENDÜSTRİ VE TÜKETİM ÜRÜNLERİ SANAYİ TİCARET A.Ş.
172	SANKO	SANKO PAZARLAMA İTHALAT İHRACAT A.Ş.
173	SAMAT	SARAY MATBAACILIK KAĞITÇILIK KIRTASİYECİLİK TİCARET VE SANAYİ A.Ş.
174	SARKY	SARKUYSAN ELEKTROLİTİK BAKIR SANAYİ VE TİCARET A.Ş.
175	SASA	SASA POLYESTER SANAYİ A.Ş.
176	SAYAS	SAY YENİLENEBİLİR ENERJİ EKİPMANLARI SANAYİ VE TİCARET A.Ş.
177	SEKUR	SEKURO PLASTİK AMBALAJ SANAYİ A.Ş.
178	SELEC	SELÇUK ECZA DEPOSU TİCARET VE SANAYİ A.Ş.
179	SELGD	SELÇUK GIDA ENDÜSTRİ İHRACAT İTHALAT A.Ş.
180	SILVR	SİLVERLİNE ENDÜSTRİ VE TİCARET A.Ş.
181	SODSN	SODAŞ SODYUM SANAYİİ A.Ş.
182	SKTAS	SÖKTAŞ TEKSTİL SANAYİ VE TİCARET A.Ş.
183	SONME	SÖNMEZ FİLAMENT SENTETİK İPLİK VE ELYAF SANAYİ A.Ş.
184	SNPAM	SÖNMEZ PAMUKLU SANAYİİ A.Ş.
185	TBORG	TÜRK TUBORG BİRA VE MALT SANAYİİ A.Ş.
186	TATGD	TAT GIDA SANAYİ A.Ş.
187	TEKTU	TEK-ART İNŞAAT TİCARET TURİZM SANAYİ VE YATIRIMLAR A.Ş.
188	TKNSA	TEKNOSA İÇ VE DIŞ TİCARET A.Ş.
189	TMPOL	TEMAPOL POLİMER PLASTİK VE İNŞAAT SANAYİ TİCARET A.Ş.
190	TETMT	TETAMAT GIDA YATIRIMLARI A.Ş.
191	TGSAS	TGS DIŞ TİCARET A.Ş.
192	TOASO	TOFAŞ TÜRK OTOMOBİL FABRİKASI A.Ş.
193	TSPOR	TRABZONSPOR SPORTİF YATIRIM VE FUTBOL İŞLETMECİLİĞİ TİCARET A.Ş.
194	TUKAS	TUKAŞ GIDA SANAYİ VE TİCARET A.Ş.
195	TCELL	TURKCELL İLETİŞİM HİZMETLERİ A.Ş.
196	TMSN	TÜMOSAN MOTOR VE TRAKTÖR SANAYİ A.Ş.
197	TUPRS	TÜPRAŞ-TÜRKİYE PETROL RAFİNERİLERİ A.Ş.
198	THYAO	TÜRK HAVA YOLLARI A.O.
199	PRKAB	TÜRK PRYSMİAN KABLO VE SİSTEMLERİ A.Ş.
200	TTKOM	TÜRK TELEKOMÜNİKASYON A.Ş.
201	TTRAK	TÜRK TRAKTÖR VE ZİRAAT MAKİNELERİ A.Ş.
202	USAK	UŞAK SERAMİK SANAYİ A.Ş.
203	UZERB	UZERTAŞ BOYA SANAYİ TİCARET VE YATIRIM A.Ş.
204	ULKER	ÜLKER BİSKÜVİ SANAYİ A.Ş.
205	VAKKO	VAKKO TEKSTİL VE HAZIR GİYİM SANAYİ İŞLETMELERİ A.Ş.
206	VANGD	VANET GIDA SANAYİ İÇ VE DIŞ TİCARET A.Ş.
207	VESTL	VESTEL ELEKTRONİK SANAYİ VE TİCARET A.Ş.
208	VESBE	VESTEL BEYAZ EŞYA SANAYİ VE TİCARET A.Ş.
209	VKING	VİKİNG KAĞIT VE SELÜLOZ A.Ş.
210	YAPRK	YAPRAK SÜT VE BESİ ÇİFTLİKLERİ SANAYİ VE TİCARET A.Ş.
211	YATAS	YATAŞ YATAK VE YORGAN SANAYİ TİCARET A.Ş.
212	YAYLA	YAYLA ENERJİ ÜRETİM TURİZM VE İNŞAAT TİCARET A.Ş.
213	YYAPI	YEŞİL YAPI ENDÜSTRİSİ A.Ş.

	COMPANY CODE	COMPANY NAME
214	YBTAS	YİBİTAŞ YOZGAT İŞÇİ BİRLİĞİ İNŞAAT MALZEMELERİ TİCARET VE SANAYİ A.Ş.
215	YONGA	YONGA MOBİLYA SANAYİ VE TİCARET A.Ş.
216	YUNSA	YÜNSA YÜNLÜ SANAYİ VE TİCARET A.Ş.
217	ZEDUR	ZEDUR ENERJİ ELEKTRİK ÜRETİM A.Ş.
218	ZOREN	ZORLU ENERJİ ELEKTRİK ÜRETİM A.Ş.