

The impact of IFRS 16 on earnings management: Evidence from Borsa Istanbul*

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Abstract

This study explores the relationship between earnings management (EM) and the implementation of IFRS 16 - Leases in Borsa Istanbul. Using panel and panel quantile regression analyses, the study examines how IFRS 16, and closely related items (Size, ROA, Leverage, and CFO) effect EM. The analysis includes the annual data of 218 companies traded continuously on Borsa Istanbul in 2014–2021 and uses the Kasznik (1999) model to calculate discretionary accruals. According to the panel regression result, no significant link is observed between IFRS 16 and EM, while quantile regression reveals that IFRS 16 reduces EM in firms implementing small-scale EM applications but increases it in large-scale ones. These findings provide insights for investors, policymakers, regulators, and other market participants, highlighting the complex interplay between accounting standards and managerial discretion in financial reporting at Borsa Istanbul.

Keywords: Earnings Management, Discretionary Accruals, Panel Quantile Regression, IFRS 16 Leases, Borsa Istanbul, Kasznik Model

Jel Codes: M41, C58

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1. INTRODUCTION

Agency theory suggests that accounting plays a key role in mitigating the conflicts of interest inherent in the principal-agent relationship between managers and shareholders (DeAngelo, 1986: 400). Financial reporting and disclosure serve as tools to mitigate information asymmetries between managers and counterparties (Ball, 2001: 127). Thereby necessitating the provision of fair and accurate information. However, financial statements may deviate from this purpose through various means, with EM featuring prominently in the literature as one such method.

According to Needles Jr. et al. (2018), EM is the term used to describe an artificial increase or decrease in revenue, profit, or earnings per share, and representing a strategic tool that managers can utilize for their benefit. It can be used as a means for opportunistic aims, such as increasing managers' performance-based compensation, instead of conveying information to which only the firm has access (Barth, 2018: 10).

Various methods are employed to manage earnings, encompassing adjustments to the company's activity level, timing of activities and disclosures, and selection of accounting methodologies for reporting performance (Makar et al., 1996: 34). Fischer and Rosenzweig (1995) generalize EM into two types: those involving changes in accounting methods and those related to operating decisions. Furthermore, Kothari et al. (2016) categorize EM into accruals management and real activity management.

One of the most current developments in the field of accounting is related to leasing transactions. Keeping operating leases off the balance sheet has been a matter of debate, and the issue of accounting for all leasing transactions has been the subject of many studies in the literature since the 1980s (Öztürk, 2016: 6). That's why Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) carried out a joint project to improve the accounting for leases (IFRS Foundation, 2016: 3). The IASB released IFRS 16 as a result of this project, and operating leases are rearranged with IFRS 16, and it is decided to report them on the balance sheet. The intention to provide the most accurate representation of the leased property is the driving force behind IFRS 16 (Liviu-Alexandru, 2018: 510).

On the other hand, De George et al. (2016), state that enhancing reporting quality is one of the primary goals of adopting International Financial Reporting Standards (IFRS). The IFRS Foundation (2024) also asserts that IFRS increases transparency and empowers market participants to make well-informed financial decisions by improving international comparability and financial information quality. In this context, this paper aims to investigate the impact of IFRS 16 on EM. To evaluate the impact of IFRS 16 on improving financial information quality, this study utilizes Kasznik's (1999) accrual-based earnings management (EM) model to scrutinize the relationship between EM and IFRS 16. The impact of IFRS 16 on EM at Borsa Istanbul is analyzed with the balance sheet and income statement data covering 2014-2021 to reveal whether it reduces the management's discretion.

In the following section, a review of the literature on the relationship between IFRS and EM is presented. In the third section there is a theoretical background and hypotheses development. The fourth section is devoted to the data and to the methodology. The fifth section provides findings. Lastly, there is a discussion and conclusion in the sixth section.

2. LITERATURE REVIEW

In order to shed light on EM, many studies have been carried out since the early 1970s. It has been discussed by researchers from different perspectives. One of these perspectives is the interpretation of EM by considering the accounting system used by enterprises. Researchers focus on whether principle-based accounting system and rule-based accounting system have different effects on EM. From this perspective, one of the most frequently used variables in the studies is the use of principle-based IFRS. In particular, the effect of the transition from rule-based local generally accepted accounting principles (GAAP) to IFRS is investigated. In addition, the impact of the changes made in IFRS on EM is among the topics covered. However, since the update in IFRS 16 is relatively new, the studies addressing its effect on EM are scarce. Therefore, it is thought that this study will contribute to filling the gap in the literature.

DeAngelo (1986) posits that managers are incentivized to employ income-reducing tactics through accrual-based EM due to its relatively lower possibility of being discovered by external parties. In contrast, Kothari et al. (2016) argue that real-based EM is comparatively more difficult to detect than accrual management. However, it is pertinent to note that regardless of the method used, EM is detrimental to the interests of financial statement users and undermines the principles of fair presentation.

When the literature is examined, EM is linked to many factors such as the company's performance (Burgstahler & Dichev 1997), auditor (Ronen & Yaari, 2008), corporate governance and ownership (Aybars, 2013), and size (Watts and Zimmerman, 1990). The accounting standards followed by the reporting company (Lo, 2008) are one of the most researched variables whether it affects EM or not. More precisely, whether the set of standards used by the company is rule-based or principle-based is used as a determinant of EM. The effect of principle-based IFRS on EM has been the subject of many studies, both as a set and individually. However, contradictory results are obtained as follows.

The study by Van Tendeloo and Vanstraelen (2005) sought to determine whether German enterprises that have voluntarily adopted IFRS have significantly fewer EM practices than those that followed German local GAAP. The study's findings indicate no significant difference in EM practices between voluntary IFRS adopters and other companies.

Goncharov and Zimmermann (2006) examine whether the level of EM differs between German GAAP, International Accounting Standard (IAS), and US GAAP. Their findings reveal that while EM levels are approximately the same under GAAP and IAS, there is a considerable decrease under US GAAP.

In their study, Paananen and Lin (2008) investigate the accounting characteristics of German companies across three periods: the 2000-2002 IAS period, the 2003-2004 IFRS voluntary period, and the 2005-2006 IFRS mandatory period. The objective is to examine whether there is a change in accounting quality between these periods. The study examines accounting quality with regard to timely loss recognition, earnings smoothing, and value relevance metrics. The results indicate a decline in accounting quality over time.

In their study, Aussenegg et al. (2008) analyze the impact of the transition of listed companies from local GAAP to IFRS on EM in 17 European countries with 18,896 firm-year observations. They find that, in general, the EM level of IFRS adopters is lower than that of domestic GAAP appliers. To understand 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 adopters and non-adopters countries. They find that strong enforcement can reduce EM. Chen et al. (2010) examine the impact of IFRS adoption on accounting quality by examining companies in 15 EU countries. One of the five different indicators they use to measure accounting quality is EM. According to the results of the analysis, it is reported that improvements in most of the quality indicators found after IFRS. One of these improvements is the reduction in EM practices.

Jeanjean and Stolowy (2008) examine whether the adoption of IFRS standards affects financial reporting quality through EM. The study encompasses Australia, France, and the United Kingdom. The results show that EM increased in France and remained stable in the other two countries following the transition to IFRS. In light of these findings, the authors conclude that the transition to IFRS has not been successful in improving earnings quality.

Before and after the implementation of IFRS in the EU, Callao and Jarne (2010) conduct an investigation into the behavior of discretionary accruals. The results of the study indicate that, following the implementation of IFRS as a mandatory, there is an increase in discretionary accruals. Furthermore, they propose that there may be greater potential for EM under a principles-based accounting model. Capkun et al. (2011) also provide evidence that flexibility during the mandatory transition to IFRS in the EU has the effect of increasing EM.

In their study, Zéghal et al. (2011) examine the discretionary accruals of 353 listed companies between 2003 and 2006 to find out whether the mandatory apply of IFRS in France is related to EM. 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 an impact on the quality of the information provided in the financial statements. To this end, the author attempts to measure EM, value relevance, and timely loss recognition. He uses data from 117 companies listed on the stock exchange in 2010 (pre-IFRS) and 2011 (post-IFRS).-The results of the analyses show that there is a decrease in EM following the implementation of IFRS.

Doukakis (2014) employs 15,206 firm-year observations from 22 European countries to examine the impact of the mandatory implementation of IFRS on accruals 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 to ascertain whether the adoption of IFRS led to an enhancement in the accounting quality of 200 companies listed on the ASX. Their analysis, encompassing the period from 2003 to 2008, concludes that there is no substantial improvement in accounting quality following the transition to IFRS.

Cengiz and Tosunoğlu (2017) conduct a study to examine the EM behavior of companies traded on the Borsa Istanbul after and before the implementation of IFRS. The analysis of data from 50 companies over the 2001-2008 period reveal an increase in EM following the implementation of IFRS.

Ipino and Parbonetti (2017) analyze the impact of mandatory IFRS implications on accrual-based and real EM, using 101,331 firm-year observations from 33 countries. The analysis reveals a decline in accrual-based EM and an increase in real EM in countries with strict enforcement regimes. This demonstrates that, in addition to the impact of accounting standards, other institutional factors also influence EM.

The aim of Morawska (2021) is to ascertain whether the implementation of IFRS 15 has an impact on EM in Poland. In order to achieve this objective, an analysis is conducted using data from 80 companies traded on the Warsaw Stock Exchange. The study employs Caylor's (2010) model to analyze data from 2016 to 2019. The findings indicate that companies employed discretion in the recognition of accrued revenue in order to avoid reporting losses. Nevertheless, the adoption of IFRS 15 does not appear to have a statistically significant impact on revenue-based EM.

The aim of the study by Souza et al. (2022) is to determine the impact of IFRS 15 on the quality of accruals and EM in publicly held Brazilian companies. A sample of 305 Brazilian companies with annual data spanning from 2011 to 2021 is selected. The researchers apply Dechow and Dichev's (2002) model for accruals quality and Pae's (2005) model for EM. The results indicate a decline in accrual quality and an increase in EM following the implementation of IFRS 15.

Hedqvist and Lennerskog's (2022) aim is to examine the potential impact of IFRS 16 on the utilization of EM by publicly traded firms in the Scandinavian (Sweden, Norway, and Denmark) stock exchange markets. The research involved the analysis of data from 304 companies over the period 2015-2020. Discretionary accruals are computed using the modified Jones model. The statistical results of the multiple linear regression indicate a negative relationship between discretionary accruals (the dependent variable) and the implementation of IFRS 16 (the independent variable). In other words, the implementation of IFRS 16 has reduced the incentive for managers to utilize discretionary accruals in order to increase reported earnings.

3. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Financial accounting necessitates a degree of judgment and critical thinking. This affords managers discretionary power in selecting accounting methods, operations, investments, financing policies, and estimations (McNichols & Wilson, 1988: 2). Although IFRS provide uniformity in accounting, there is always the possibility that managers may manipulate reported numbers. EM, which is considered a manipulation technique as stated by Stolowy and Breton (2004), is usually obtained in the form of applying accounting preferences within the legal framework of the accounting process (Healy, 1985: 89; Goel, 2012: 576-577). However, investors require access to accurate and fair information to make the right decisions.

Upon examination of the extant literature on the relationship between IFRS and EM, it becomes evident that a definitive conclusion is not readily attainable. Although numerous studies reveal the relationship between IFRS and EM, there is conflicting evidence regarding the direction of this relationship. While some studies indicate that the implementation of IFRS may result in a reduction in EM (Aussenegg et al., 2008; Cai et al., 2008), other studies provide findings suggesting an increase in EM (Souza et al., 2022). Accordingly, in this study, which examines the impact of the updates to leasing standards set out in IFRS 16 on EM, it would be more appropriate to focus on the existence of a relationship rather than its direction when developing research hypotheses. In this context, the null 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. DATA AND METHODOLOGY

4.1. Data and Sample Selection

The data set analyzed in this study comprises annual data of companies continuously traded in Borsa Istanbul for the 2014-2021 period. Table 1 outlines the sample selection process and details the distribution of observations across industries. As illustrated in Table 1 Panel A, the initial sample, extracted from the financial data provider Finnet, comprises 321 firms, with a total of 2,568 firm-year observations. Subsequently, 97 firms operating in the financial sector are excluded (Aussenegg et al., 2008; Chen et al., 2010) because the legal framework these companies are subject to and the financial statements they prepare structurally differentiate from the others.

Furthermore, six firms with one or more missing data points that could not be accessed are excluded from the sample, resulting in a final sample of 218 firms and 1,744 firm-year observations designed as a balanced panel data set. In this context, the sample of 218 firms with 8 years of data represents a typical micro-panel¹. Consequently, the analyses should be conducted following the micro-panel methodology. Panel B of Table 1 presents data on the sectoral distribution of firm-year observations, from largest to smallest. There are a total of 13 sectors included in the study. The manufacturing sector is the most represented, comprising approximately 65% of the sample. The lowest number of observations is found in the Administrative and Support Service Activities sector, with only one company represented.

Table 1. 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%

4.2. Research Methodology, Models and Variables

This study has three stages of analysis. First, in the first stage, discretionary accruals are calculated. The second stage covers how IFRS 16 and other factors affect discretionary accruals analyzed with panel regression. The third and last stage is a further examination of IFRS 16 and other factors with quantile regression.

To see if IFRS 16 affects EM, we first calculate discretionary accruals. This study uses the Kasznik (1999) model to calculate discretionary accruals. Kasznik's (1999) model is based on Jones's 1991 model. The Jones model relates total accruals to changes in revenues and plant, property, and equipment (Beneish, 2001: 6). The Jones model is criticized for accepting all income as normal accrual. Dechow et al. (1995) solve this problem by subtracting receivables from revenues. This is the modified Jones model. Kasznik (1999) adds cash flows from operations as an additional explanatory variable to the modified Jones model as given in Eq. 1.

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

Notes: TA refers to total accruals. Total accrual is calculated in accordance with the literature (Kothari et al., 2005) as [(change in non cash current assets) – (change in current liabilities excluding the current portion of longterm debt)] – [depreciation and amortization]. (α) is a constant term; (REV-REC) is adjusted revenue; PPE refers to plant, property, and equipment; and CFO is cash flow from operations; (ε) is error term. All variables are divided by total assets (A) to prevent heteroscedasticity (Jones, 1991).

The Kasznik (1999) model says that total accruals (TA) are equal to non-discretionary accruals (NDA) plus discretionary accruals (DA). The DA, which is used as an indicator of EM in the literature such as (Jones, 1991; Dechow et al., 1995; Zéghal et al., 2011; Hedqvist and Lennerskog, 2022), is represented by residuals (on the right-hand side of Eq. 1 as in Kothari et al. (2005). The remainder of Eq. 1 refers to NDA.

The second stage of the analysis reveals the impact of IFRS 16 and other factors on discretionary accruals. The error term from the first stage represents discretionary accruals. In the second stage, this error term is used as the dependent variable, and IFRS 16 and related items (Leverage, ROA, Size, and CFO)² are used as independent variables. The model in the second stage is shown in Eq. 2.

$$DA_{it}^{Kasznik} = \alpha_i + \beta_1 IFRS16_{it} + \beta_2 Leverage_{it} + \beta_3 ROA_{it} + \beta_4 Size_{it} + \beta_5 CFO_{it} + \varepsilon_{it} \quad (2)$$

Notes: DA refers to discretionary accruals obtained from first stage, 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; (ε) is error term.

In the second stage, the panel regression results show that IFRS 16 is statistically insignificant. Therefore, in the third stage panel quantile regression analysis is performed to determine the impact of IFRS 16 and other factors on discretionary accruals through panel quantile regression. In other words, the third stage involves a more comprehensive examination of the analysis conducted in the second stage across different quantiles. The model employed at this stage is presented in Eq. 3.

$$Q_{\tau}(DA_{it}|X_{it}) = \beta_1(\tau)IFRS16_{it} + \beta_2(\tau)Leverage_{it} + \beta_3(\tau)ROA_{it} + \beta_4(\tau)Size_{it} + \beta_5(\tau)CFO_{it} + \alpha_{it} + \varepsilon_{it} \quad (3)$$

Notes: τ refers to the quantiles, where τ takes values between 0 and 1; DA refers to discretionary accruals obtained from first stage; X is the vector of independent variables; $Q_{\tau}(DA_{it}|X_{it})$ is the τ th 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

5. FINDINGS

Table 2 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 2, there are 1744 firm-year observations in the analyses. As stated before, all variables in Table 2, are divided by lagged total assets to avoid heteroscedasticity.

Table 2. Descriptive Statistics of the Variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
Total Accruals	1,744	-0.0213681	0.1638271	-1.025995	0.932664
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 $[(change\ in\ non\ cash\ current\ assets)-(change\ in\ current\ liabilities\ excluding\ the\ current\ portion\ of\ longterm\ debt)]-[depreciation\ and\ amortization]$, 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 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. Total accruals have the lowest standard deviation, while adjusted 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 adjusted revenue, and the smallest difference belongs to total accruals.

Table 3. Pearson Correlation Matrix of Variables

	Total Accruals	Adj. Revenue	PPE	CFO
Total Accruals	1			
Adjusted Revenue	0.0018	1		
PPE	-0.0808	-0.0058	1	
CFO	-0.3494	0.0748	0.0413	1

The correlations between the variables shown in Table 3. 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 3 are examined, it is seen that all coefficients are less than 0.40, indicating a weak correlation. Therefore, there is no risk in including these variables in the same model.

As stated above (data and methodology), the data used in the analysis is designed as panel data, and panel and panel quantile regression methods are used to analyze the data. In econometric analysis, models and estimators appropriate to the data should be used to obtain reliable results. The data set used in this study has micro panel and balanced panel characteristics, and the models are static.

5.1. Unit Root, Hausman, and Heteroscedasticity Tests Results

The data of this study have micro-balanced-panel data characteristics. 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 4, 5, and 6 respectively.

Table 4. Levin-Lin-Chu Unit Root Test Statistics

	t statistic	p value
Total Accruals	-28.4104	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 4 is analyzed, it is concluded that the 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 5. Hausman Test Statistics of Models

	χ^2	Prob. Value
Kaszniak Model (1999)	19.34	0.0002***

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

When Table 5 is examined the null hypothesis of Kasznik (1999) model is rejected at 0.01 significance level. Rejection of null hypothesis means that fixed effect estimators is efficient.

Table 6. Modified Wald Heteroscedasticity Test Statistics

	χ^2	Prob. Value
Kaszniak 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 6 are examined, the presence of heteroscedasticity in the error term at the 1% statistical significance level is detected. 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: xtglm dependent variable independent variables, panels(heteroskedastic)) is employed in this study.

5.2. Total Accruals Estimation Results

As mentioned before, the analyses consist of three stages. The first stage is the calculation of discretionary accruals according to the Kasznik (1999) model. Total accruals are equal to the non-discretionary plus discretionary accruals. Eq. 4 provides a mathematical representation of this expression.

$$\text{Total Accruals} = \text{Nondiscretionary Accruals} + \text{Discretionary Accruals} \quad (4)$$

We have previously stated that the residual (ϵ) on the right-hand side of Eq. 1 represents discretionary accruals, while the remaining parts of the equation represent non-discretionary accruals. Therefore, when we apply Eq. 1 to our data, we can naturally calculate discretionary accruals as ϵ .

The results of the estimation of total accruals, obtained when the Kasznik (1999) model is applied to the data, are presented in Table 7. Kasznik (1999) employs adjusted revenue, PPE, and CFO as explanatory variables for total accruals. All independent variables are statistically significant at the 1% level, as shown in the table. Upon examination of the coefficients, it can be observed that adjusted revenue has a positive coefficient, whereas PPE and CFO have a negative effect on total accruals.

Table 7. Total Accruals 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.

5.3. Panel Regression Results of the Earnings Management

In the second stage of the analyses, the residual (ϵ) gathered from the implementation of Eq. 1 is used as the dependent variable, which is an indicator of EM, and the variables in the right-hand sides of Eq. 2 are used as independent variables. The estimation results of the panel regression analysis are presented in Table 8. The discretionary accrual obtained in the first stage is used as the dependent variable, IFRS 16, leverage, ROA, size, and CFO are used as independent variables.

Table 8. Panel Regression Estimation Results of the Earnings Management

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.

With the exception of IFRS 16, all variables in Table 8 are statistically significant at the 1% level. Upon examination of the coefficients, it can be observed that leverage, ROA, and size have a positive influence on EM, whereas CFO has a negative influence. The coefficient of IFRS 16 is negative, although the statistical significance is not observed. The potential significance of IFRS 16 at various quantiles (0.25, 0.50, and 0.75) will be examined in the third stage of the analysis with quantile regression.

5.4. Quantile Regression Results of the Earnings Management

This section, the third stage of the analyses, can be considered a more in-depth analysis of the second stage. Table 9 provides the estimation results of the earnings management with quantile regression. The dependent variable in this regression is the discretionary accrual (ϵ), which is derived from the first stage. The independent variables are IFRS 16, leverage, ROA, size, and CFO. The quantiles are 0.25, 0.50, and 0.75.

Table 9. Quantile Regression Estimation Results of the Earnings Management

Dependent variable: Discretionary accruals				
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.

Upon analysis of the outputs of the quantile regression, it is observed that all independent variables, with the exception of leverage, are significant at the 1% level in the first quantile. The coefficients for IFRS 16 and CFO are negative, while those for ROA and size are positive. In the second quantile, all variables except IFRS 16 are statistically significant. The significance level for leverage is 5%, while that for ROA, size, and CFO is 1%. The coefficients of significant variables show that the CFO has a negative coefficient, while the other variables have positive coefficients. In the third quantile, the coefficient for IFRS 16 is significant and positive at the 10% level. Leverage and ROA exhibit a significant and positive coefficient at the 1% level. The coefficient of CFO is significant and negative at the 1% level.

6. CONCLUSION

It is acknowledged that there is a conflict of interest between agents and principals that pursue self-interest in an opportunistic manner (Makar et al., 1996: 33). In the early 2000s, one of the biggest scandals in the history of accounting is experienced in the USA. Many researchers argue that the causes of these scandals are the incentives and opportunities for personal gain faced by managers (Erickson et al., 2006: 114).

EM is closely related to accounting and reporting standards that reporting companies. Whether these standards are principle-based or rule-based is a subject of research in the literature. In this sense, the relationship between principle-based IFRS and EM has been investigated by researchers.

One of the latest updates in the principle-based IFRS set is IFRS 16 - Leases. As stated before, this study aims to reveal the relationship between IFRS 16 and EM. To evaluate whether IFRS 16, which aims to improve financial quality inherently, enhances the quality of financial information and restricts the management's discretion at Borsa Istanbul, the relationship between EM and IFRS 16 is analyzed. DA, estimated with the help of the Kasznik (1999) model, is used as an indicator of EM. IFRS 16, size, ROA, leverage, and CFO are used as independent variables in panel and quantile panel regression analyses.

Kasznik (1999) states that the expected coefficients of revenue in the literature is positive, and the coefficients of PPE and CFO are negative. In this sense, our EM model estimations are consistent with prior literature. In the panel regression results although no relationship can be detected between IFRS 16 and EM it is seen that leverage, ROA, and size have an increasing effect on EM, and CFO has a decreasing effect. On the other hand, according to quantile regression results, 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. In general, leverage, ROA, and size have increasing effects on EM practices while the CFO is decreasing EM practices.

Tort (2013) claims that IFRS may provide some opportunity for EM. There are studies providing evidence that supports Tort in the current literature. According to Callao and Jarne (2010), Capkun et. al. (2016), and Cengiz and Tosunoğlu (2017), the application of IFRS increases EM. In this sense, the detected positive relationship between IFRS 16 and EM coincides with 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) affirms 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. 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 of study 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.

Final note

¹ 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).

² IFRS 16 adds operating leasing transactions to the balance sheet. Thus, the size of the company increases. This affects the return on assets and leverage ratio. IFRS 16 also changes the classification of cash flows related to leasing transactions. So, cash flow from operating activities changes after the implementation of IFRS 16.

Conflict of Interest

The authors declare no conflict of interest.

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REFERENCES

- ARUM, E. D. P. (2013). Implementation of International Financial Reporting Standards (IFRS) and the Quality of Financial Statement Information In Indonesia. *Research Journal of Finance and Accounting*, 4(19), 200–210.
- AUSSENEGG, W., INWINKL, P., & SCHNEIDER, G. T. (2008). Earnings Management and Local vs. International Accounting Standards of European Public Firms. *SSRN Electronic Journal*.
- AYBARS, A. (2013). *The Role of Institutional Investors on Earnings Management : Empirical Evidence From Turkey*. Ph.D. Thesis. Istanbul: Marmara University Institute of Social Sciences.
- BALL, R. (2001). Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. *Brookings-Wharton papers on financial services*, 2001(1), 127-182.
- BALTAGI, B. (2001). *Econometric analysis of panel data*, Sixth Edition, Springer.
- BALTAGI, B. (2008). *Econometric analysis of panel data*. England: John Wiley and Son.
- BARTH, M. E. (2018). The Future of Financial Reporting: Insights from Research. *Abacus*, 54(1), 66–78.
- BENEISH, M. D. (2001). Earnings management: A perspective. *Managerial Finance*, 27(12), 3–17.
- BRYCE, M., ALI, M. J., & MATHER, P. R. (2015). Accounting quality in the pre-/post-IFRS adoption periods and the impact on audit committee effectiveness — Evidence from Australia. *Pacific-Basin Finance Journal*, 35, 163–181.
- BURGSTHALER, D. C., & DICHEV, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 24, 99–126.
- CAI, L., RAHMAN, A., & COURTENAY, S. (2008). The Effect of IFRS and its Enforcement on Earnings Management: An International Comparison. *SSRN Electronic Journal*.
- CALLAO, S., & JARNE, J. I. (2010). Have IFRS affected earnings management in the European Union? *Accounting in Europe*, 7(2), 159–189.
- CAPKUN, V., CAZAVAN-JENY, A., JEANJEAN, T., & WEISS, L. A. (2011). Setting the Bar: Earnings Management During a Change in Accounting Standards. *SSRN Electronic Journal*.

- CAPKUN, V., COLLINS, D., & JEANJEAN, T. (2016). The effect of IAS/IFRS adoption on earnings management (smoothing): A closer look at competing explanations. *Journal of Accounting and Public Policy*, 35(4), 352-394.
- CAYLOR, M. L. (2010). Strategic revenue recognition to achieve earnings benchmarks. *Journal of Accounting and Public Policy*, 29(1), 82-95.
- CENGİZ, S., & TOSUNOĞLU, B. (2017). Uluslararası finansal raporlama standartlarının finansal raporlama kalitesi üzerindeki etkisine yönelik bir araştırma. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 31(5), 1201–1219.
- CHEN, H., TANG, Q., JIANG, Y., & LIN, Z. (2010). The role of international financial reporting standards in accounting quality: Evidence from the European Union. *Journal of International Financial Management and Accounting*, 21(3), 220–278.
- DE GEORGE, E. T., LI, X., & SHIVAKUMAR, L. (2016). A review of the IFRS adoption literature. *Review of Accounting Studies*, 21, 898-1004.
- DEANGELO, L. E. (1986). Accounting Numbers as Market Valuation Substitutes: A Study of Management Buyouts of Public Stockholders. *The Accounting Review*, 61(3), 400–420.
- DECHOW, P. M., & DICHEV, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, 77(S-1), 35–59.
- DECHOW, P. M., SLOAN, R. G., & SWEENEY, A. P. (1995). Detecting Earnings Management. *The Accounting Review*, 70(2), 193–225.
- DOUKAKIS, L. C. (2014). The effect of mandatory IFRS adoption on real and accrual-based earnings management activities. *Journal of Accounting and Public Policy*, 33, 551–572.
- ERICKSON, M., HANLON, M., & MAYDEW, E. L. (2006). Is there a link between executive equity incentives and accounting fraud? *Journal of Accounting Research*, 44(1), 113–143.
- FISCHER, M., & ROSENZWEIG, K. (1995). Attitudes of students and accounting practitioners concerning the ethical acceptability of earnings management. *Journal of Business Ethics*, 14(6), 433-444.
- GOEL, S. (2012). Financial Reporting—the Old Age Tussle between Legality and Quality in Context of Earnings Management. *Procedia Economics and Finance*, 3, 576–581.
- GONCHAROV, I., & ZIMMERMANN, J. (2006). Do Accounting Standards Influence the Level of Earnings Management? Evidence from Germany. *SSRN Electronic Journal*.
- HAUSMAN, J. A., (1978). Specification Tests in Econometrics. *Econometrica*. 46(6, 1251-1271.
- HEALY, P. M. (1985). The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics*, 7, 85–107.
- HEDQVIST, M., & LENNERSKOG, H. (2022). *IFRS 16 Leases: A shift in Earnings Management?* Master Thesis. Jönköping: Jönköping International Business School.
- IFRS FOUNDATION, (2016). *Effects Analysis of IFRS 16 Leases*. Retrieved from: <https://www.ifrs.org/content/dam/ifrs/project/leases/ifrs/published-documents/ifrs16-effects-analysis.pdf>
- IFRS FOUNDATION. (2024). *Why global accounting standards?* Retrieved from: <https://www.ifrs.org/use-around-the-world/why-global-accounting-standards/>.
- IPINO, E., & PARBONETTI, A. (2017). Mandatory IFRS adoption: the trade-off between accrual-based and real earnings management. *Accounting and business research*, 47(1), 91-121.

- JEANJEAN, T., & STOLOWY, H. (2008). Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption. *Journal of Accounting and Public Policy*, 27(6), 480–494.
- JONES, J. J. (1991). Earnings Management During Import Relief Investigations. *Journal of Accounting Research*, 29(2), 193–228.
- KASZNIK, R. (1999). On the Association between Voluntary Disclosure and Earnings Management. *Journal of Accounting Research*, 37(1), 57–81.
- KOTHARI, S. P., LEONE, A. J., & WASLEY, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163–197.
- KOTHARI, S. P., MIZIK, N., & ROYCHOWDHURY, S. (2016). Managing for the moment: The role of earnings management via real activities versus accruals in SEO valuation. *The Accounting Review*, 91(2), 559–586.
- LEVIN, A., LIN, C. and CHU, J. (2002). Unit roots tests in panel data: Asymptotic and finite sample properties. *Journal of Econometrics*, 108(1), 1-24.
- LIVIU-ALEXANDRU, T. (2018). The Advantages that IFRS 16 Brings to the economic environment. *Ovidius University Annals, Economic Sciences Series*, 18(1), 510-513.
- LO, K. (2008). Earnings management and earnings quality. *Journal of Accounting and Economics*, 45(2-3), 350–357.
- MAKAR, S. D., ALAM, P., & PEARSON, M. A. (1996). Earnings management: The case of political costs over business cycles. *Business & Professional Ethics Journal*, 15(2), 33–50.
- MCNICHOLS, M., & WILSON, G. P. (1988). Evidence of Earnings Management from the Provision for Bad Debts. *Journal of Accounting Research*, 26, 1–32.
- MORAWSKA, I. (2021). The impact of the IFRS 15 implementation on the revenue-based earnings management in Poland. *Journal of Economics and Management*, 43, 387–403.
- NEEDLES Jr., B. E., POWERS, M., & SENYIGIT, Y. B. (2018). Earnings Management: A Review of Selected Cases. *Muhasebe Enstitüsü Dergisi*, 16(59), 23–36.
- OZTURK, C. (2016). UFRS 16 kiralama işlemleri standardının eski UMS 17 standardı ile karşılaştırılması ve Almanya ve Türkiye’de hisse senetleri halka açık olan hava yolu şirketlerinin finansal durumuna etkisi. *Muhasebe Bilim Dünyası Dergisi*, 18(1), 1-50.
- PAANANEN, M., & LIN, H. (2009). The development of accounting quality of IAS and IFRS over time: The case of Germany. *Journal of International Accounting Research*, 8(1), 31-55.
- PAE, J. (2005). Expected accrual models: The impact of operating cash flows and reversals of accruals. *Review of Quantitative Finance and Accounting*, 24(1), 5-22.
- RONEN, J., & YAARI, V. (2008). *Earnings Management Emerging Insights In Theory, Practice, And Research*. New York: Springer Media.
- SCHOBER, P., BOER, C., & SCHWARTE, L. A. (2018). Correlation coefficients: appropriate use and interpretation. *Anesthesia & analgesia*, 126(5), 1763-1768.
- SOUZA, P. V. S. de, GONÇALVES, R. de S., & SILVA, C. A. T. (2022). Impact of IFRS 15 on the Quality of Accruals and Earnings Management of Brazilian Publicly Held Companies. *Revista Brasileira de Gestao de Negocios*, 24(4), 675–691.
- STOLOWY, H., & BRETON, G. (2004). Accounts Manipulation: A Literature Review and Proposed Con-

ceptual Framework. *Review of Accounting and Finance*, 3(1), 5–92.

- TATOGLU, F. Y. (2021). *Panel Veri Ekonometrisi*. İstanbul: Beta Yayınevi.
- TORT, L. P. (2013). Earnings Management under IFRS and PGC. *Revista de Comptabilitat i Direcció*, 16, 161–185.
- UYAR, U., & SARAK, G. (2020). The relationship of financial ratios and market value in the manufacturing sector: comparison of Borsa Istanbul and London Exchange. *Journal of Research in Economics, Politics & Finance*, 5(3), 537–560.
- VAN TENDELOO, B., & VANSTRAELEN, A. (2005). Earnings management under German GAAP versus IFRS. *European Accounting Review*, 14(1), 155–180.
- WATTS, R. L., & ZIMMERMAN, J. L. (1990). Positive accounting theory: a ten year perspective. *The Accounting Review*, 65(1), 131–156.
- ZÉGHAL, D., CHTOUROU, S., & SELLAMI, Y. M. (2011). An analysis of the effect of mandatory adoption of IAS/IFRS on earnings management. *Journal of International Accounting, Auditing and Taxation*, 20(2), 61–72.