



The Interaction between Free Float Rate and Financial Information Manipulation: A Case Study of BIST 30

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Abstract: This study investigates the relationship between firms' free float rate (FFR) and financial information manipulation (FIM) using annual data from 2010 to 2023 for companies listed in the BIST 30 index, excluding those in the banking sector. Panel causality analysis reveals a bidirectional causality between free float ratios and financial manipulation. The findings suggest that transparency, auditing, and corporate governance practices are critical in curbing manipulation. However, under market pressures and heightened investor expectations, firms may resort to manipulative practices. This dual effect highlights the complex interaction between governance mechanisms and financial reporting behavior. Future research should focus on specific sectors or cases to better understand this dynamic and offer a more detailed analysis of how varying market conditions and governance practices influence this relationship

Keywords: Free Float Rate; Financial Information Manipulation; Panel Causality Test; BIST 30

1. Introduction

Transparency and reliability are the cornerstones of a healthy and sustainable economy in financial markets. Financial statements are critically important for regulatory authorities, credit agencies, investors, and other stakeholders. These statements are used to assess companies' financial positions, performance, and future potential. However, the necessity of accurately and honestly preparing these statements may sometimes be overshadowed when business managers manipulate this information for their interests. In this context, studies on financial information manipulation and its potential effects are of great importance for ensuring reliability in financial markets and achieving efficient markets.

In the finance literature, market efficiency is closely linked to integrity; in other words, a market with high integrity is also efficient (Shah, Ismail, & Shahrin, 2019, p. 183). Financial information manipulation involves deliberately altering a company's or publicly traded institution's financial performance compromising financial statement accuracy. The misinformation embedded in financial statements misleads decision-makers. Today, stock performance indicators, which play a critical role in decision-making and are considered a key investment choice, serve as a guiding tool for financial information users. Publicly traded companies may be motivated to manipulate financial information for reasons such as concealing deteriorating financial conditions, meeting income expectations, increasing executive compensation, boosting stock prices, and reducing borrowing costs. Additionally, mitigating restrictions arising from loan agreements, avoiding the scrutiny of regulatory authorities, and reducing tax burdens are other key drivers of manipulation (Mulford & Comiskey, 2002; Beasley, Hermanson, Carcello, & Neal, 2010; Stolowy & Breton, 2004; Aslanoğlu & Yanya, 2023).

There are numerous methods through which financial information can be manipulated, some of which are well-established in the literature: earnings management, income smoothing, creative accounting practices, and oversized bath accounting. Essentially, financial information manipulation is an activity conducted by managers. However, various stakeholders exert pressure on managers during this process. These pressure factors can be categorized as follows:

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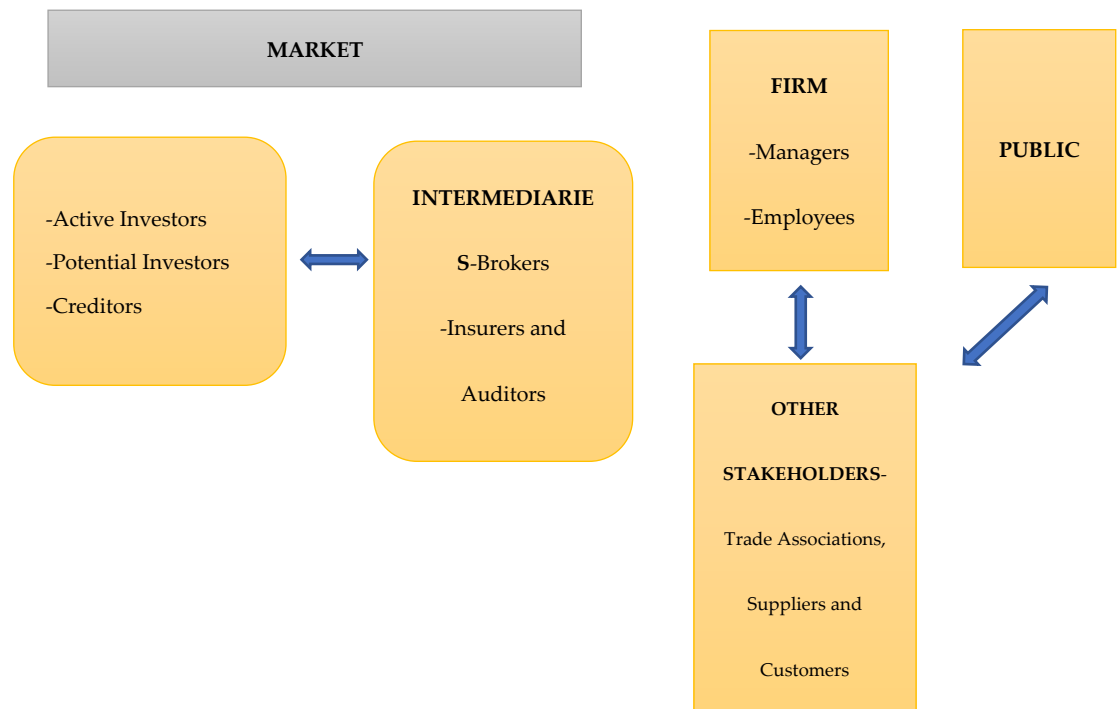


Figure 1. Addressees of Financial Information Manipulation (Breton & Stolowy, 2004)

In countries where competition is intensifying and access to financial resources is becoming more challenging, one of the methods companies employ to obtain resources is going public (Kesbiç & Taşdemir, 2019) or increasing the free float ratios of already publicly traded companies. This enables businesses to access the most suitable form of direct financing (Brealey et al., 2007, p. 375). Free float ratios provide financial statement users, or investors in other terms, with insights into a company's ownership structure. It is particularly important whether, specific individuals or groups hold a substantial portion of a company's shares and whether the float ratio is high or low (Çam, 2016, p. 520).

The fundamental principles of financial theory highlight the importance of structures that support market efficiency and transparency. Modern portfolio theory asserts that investors aim to optimize the balance between risk and return. In this context, financial information manipulation undermines market efficiency and distorts risk assessments. Fama's Efficient Market Hypothesis assumes that all available information is reflected in prices and that investors make rational decisions. However, manipulated financial information invalidates this assumption, as misleading information hinders market efficiency and limits investors' ability to make informed decisions (Fama, 1970).

Furthermore, concepts such as present value theory and market correction examine how manipulations in companies' financial statements can impact long-term market performance. Free float ratios support market efficiency by enhancing transparency and investor confidence (Black, 2001). Therefore, analyzing financial information manipulation and free float ratios emerges as a critical issue affecting market dynamics and investor trust. Accordingly, this study analyzes the impact of free float ratios on manipulation.

Financial information manipulation has been the subject of numerous studies, but there is no study in the literature that examines its relationship with free float ratios. In this respect, our study contributes to the literature as the first to analyze the relationship between these variables and addresses the following questions:

(1) Do companies' free float ratios influence their tendency for financial information manipulation?

The answer to this question is critically important in terms of companies' transparency levels, corporate governance mechanisms, and market dynamics. Free float ratios indicate the extent to which a company is open to investors and directly affect factors such as transparency and accountability. A high float ratio can strengthen monitoring mechanisms and reduce the likelihood of manipulation; however, it can also increase the tendency for manipulation due to investor pressure and market expectations. Thus, answering this question provides a vital guide for understanding the causes of financial manipulation, enhancing investor confidence, and developing effective corporate governance policies.

(2) Does financial information manipulation affect companies' free float ratios?

The answer to this question is critical for the efficiency of capital markets and investor confidence. Financial manipulation can mislead investors by presenting a company's financial situation differently than it actually is, leading to either a decrease or an increase in free float ratios. The distrust created by manipulation may decrease investors' interest in the company, reducing free float ratios. Conversely, manipulative earnings reporting can attract more investors in the short term. Understanding this relationship is vital for increasing market transparency, protecting investors' rights, and ensuring the effectiveness of regulatory policies.

This study consists of four main sections. The first section comprehensively addresses the theoretical framework related to the topic. The second section presents a literature review, detailing studies conducted at national and international levels. The third section focuses on the dataset, methodology, and findings. The final section includes the study's conclusions, evaluations, and recommendations for future research.

2. Literature Review

The relationship between financial information manipulation and free float ratios is a significant topic in terms of the transparency and efficiency of financial markets. Understanding this relationship can influence investors' decision-making processes and the effectiveness of market regulations. The literature review is divided into two main sections relevant to the content of this study: Financial Information Manipulation and Free float ratios.

2.1 Studies on Financial Information Manipulation

The literature shows that the Beneish (1999) model is frequently used to detect financial information manipulation (Küçüksözen, 2005; Aren, 2006; Bekçi & Aşşargil, 2011; Er & Varıcı, 2013; Svabova et al., 2020; Holda, 2020).

In his study, Küçüksözen (2004) examined whether 126 firms listed on the Istanbul Stock Exchange (ISE) engaged in manipulation during the period 1992–2022. The findings revealed that approximately 25% of the firms analyzed resorted to financial information manipulation to increase their profits. Similarly, Fındık and Öztürk (2016) analyzed financial manipulation in 91 manufacturing firms listed on BIST and found that 45 firms engaged in financial information manipulation.

Gemici et al. (2017) examined whether financial information manipulation occurred in Borsa Istanbul during the 2001–2014 period and concluded that manipulation was often related to stock returns and trading volume variables. Gemici and Polat (2019) investigated the relationship between financial information manipulation and stock returns during the 2016–2018 period. They found that manipulations in financial information significantly impacted stock returns. Kara and Sakarya (2021) analyzed the relationship between financial information manipulation and stock volatility in manufacturing firms listed on BIST. Their study revealed that financial information manipulation affected stock returns through certain variables.

Nur and Serter (2022) studied the relationship between financial information manipulation and stock returns in the BIST construction index for the period 2013–2020. They found a positive and significant relationship between the variables.

2.2 Studies on Free Float Ratios

Using financial analysis techniques, Albez (2003) analyzed whether going public positively impacts firms' financial structures for the 1995–2001 period on BIST. His findings revealed no significant relationship between the variables. Wang and Xu (2004) examined the relationship between stock returns and free float ratios in China for the period 1996–2002 using regression analysis and found a positive relationship between the variables.

Yörük (2006) analyzed the relationship between firms' financial performance and free float ratios using ratio analysis on the Istanbul Stock Exchange for the period 1998–2003. His findings indicated that going public positively affects financial performance. Barak (2007) examined the relationship between stock prices and free float ratios on the ISE for the 1997–2004 period using correlation analysis and found that as free float ratios increased, stock price volatility decreased.

Bayrakdaroğlu (2010) used the panel regression method to examine the impact of free float ratios on financial performance for the period 2005–2009 on the Istanbul Stock Exchange. His study found a significant relationship between the variables. Similarly, Kesbiç and Taşdemir (2019) analyzed the relationship between free float ratios and financial performance for the period 2010–2018 on the BIST 100 index. Their study also found a significant relationship between the variables. Çam (2016) examined the role of free float ratios in firms' profitability for the 2010–2014 period in the textile sector of Borsa Istanbul. The findings revealed a significant and negative relationship between the variables.

Dayı (2022) analyzed the relationship between free float ratios and firm value for 30 firms traded on Borsa Istanbul during the 2010–2019 period. The results showed no impact of free float ratios on firm value. Martysz (2022) studied the relationship between free float ratios and market liquidity on the Polish stock exchange and found a positive relationship between the variables.

In general, studies on financial information manipulation and free float ratios provide a detailed examination of their effects on companies' financial structures, performance, and market dynamics. Research on financial information manipulation demonstrates the widespread use of the Beneish (1999) model and highlights that manipulations often affect market dynamics such as stock returns, trading volume, and volatility.

Studies on free float ratios reveal that these ratios can impact firms' financial performance, market value, and liquidity both positively and negatively. For example, some studies suggest that higher free float ratios strengthen transparency and corporate governance mechanisms, thereby improving firms' performance. Other studies highlight that increased free float ratios can negatively affect profitability and volatility.

3. Data Set, Econometric Methodology and Findings

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

3.1. Data Set

This study examines the causality relationships between free float ratios and financial information manipulation for companies listed in the BIST 30 index. The relationships between free float ratios and financial information manipulation were analyzed using separate models. The study covers data for BIST 30 companies during the 2010–2023 period.

The primary reason for selecting the BIST 30 index in this study is its ability to provide high-quality data for an in-depth examination of the relationship between free float ratios and financial information manipulation. BIST 30 comprises Turkey's largest and most liquid companies, which have stronger structures than other indices in terms of corporate governance practices, transparency standards, and monitoring mechanisms. Due to their high liquidity and significant investor interest, these companies are more exposed to market pressures, which allows for clearer observation of the impact of free float ratios on manipulation tendencies.

Additionally, large-scale companies undergo independent audit processes and are subject to strict regulations, resulting in higher levels of financial data reliability and transparency. While a broader

index selection could dilute the focus of the analysis due to varying scales and sector dynamics, BIST 30 ensures a concentrated scope and robust results.

The study has certain limitations. The analysis period is restricted to 2010–2023 as it represents the widest timeframe for which all variables are available for all companies. Moreover, firms in the banking sector were excluded from the analysis due to their unique regulatory frameworks. Additionally, the study did not include companies with missing data on financial information manipulation.

The variables used in the econometric analysis, their definitions, and the data sources are listed in Table 1.

Table 1. Information on Sample and Variables.

BIST CODES	COMPANIES INCLUDED IN THE ANALYSIS	FREE FLOAT RATIOS (FFR)	FINANCIAL INFORMATION MANIPULATION SCORES (FIM)	PERIOD
ASELS ENKAI EREGL GUBRF OYAKC PETKM PGSUS SASA SISE TCELL THYAO	ASELSAN ENKA İNŞAAT EREĞLİ DEMİR VE ÇELİK GÜBRETAS OYAK ÇİMENTO PETKİM PETROKİMYA PEGASUS SASA POLYESTER ŞİŞE VE CAM FABR. TURKCELL TÜRK HAVA YOLLARI	The public free float ratios of firms were obtained from www.finnet.com.	The firms' financial information manipulation scores (Beneish M-Score) were obtained from www.finnet.com.	2010-2023

As part of the study, companies with missing financial information manipulation scores and those in the banking sector (Akbank, Alarko, Astor Enerji, Borusan, BİM, Doğu Otomotiv, Emlak Konut, Ford Otomotiv, Sabancı Holding, HEKTAŞ, Kardemir Karabük Demir Çelik, Koza Altın, Koç Holding, İş Bankası, TOFAŞ Otomotiv, Garanti Bankası, Doğu Otomotiv, TÜPRAŞ, and Yapı ve Kredi Bankası) were excluded from the analysis.

Lastly, the study utilized the Beneish M-Score to represent financial information manipulation. The Beneish M-Score is a statistical model developed by Beneish (1999) to evaluate the likelihood of manipulation in a company's financial statements. The model combines eight financial ratios to detect manipulation risk: Days' Sales in Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), Depreciation Index (DEPI), Selling, General, and Administrative Expenses Index (SGAI), Total Accruals to Total Assets (TATA), and Leverage Index (LVGI). The model assumes that high-risk companies are likely to exhibit anomalies in these indicators (Beneish, 1999).

3.2. Econometric Methodology and Findings

The general methodology followed in examining the relationship between free float ratios and financial information manipulation in the study is illustrated in Figure 2.

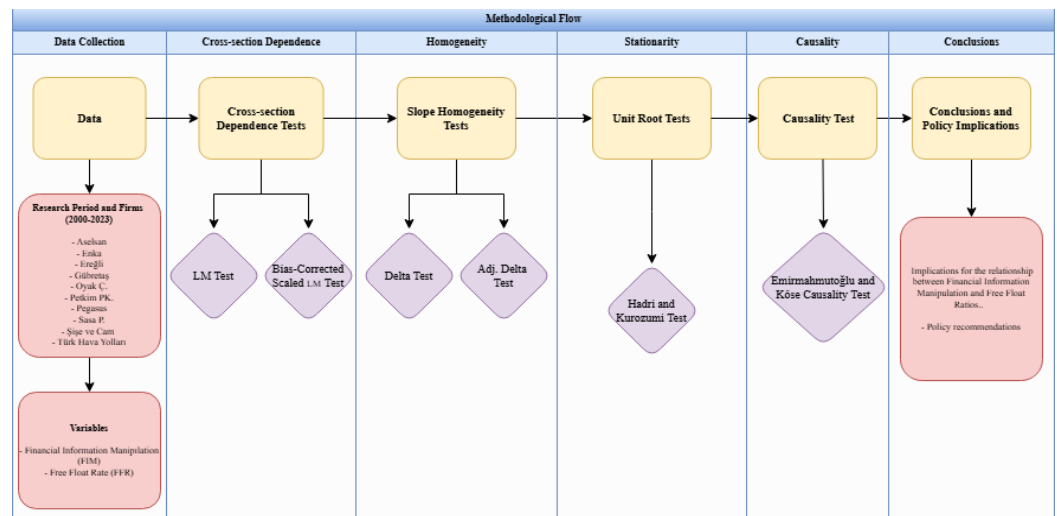


Figure 2. Methodological Flow Chart

Before proceeding with the analyses, descriptive statistics and correlation results for the variables are presented in Table 2 and Table 3.

Table 2. Descriptive Statistics

	FFR	FIM
Mean	0.3309	-2.1151
Median	0.3400	-2.2426
Maximum	0.5400	3.6400
Minimum	0.1200	-15.1545
Std. Deviation	0.1323	1.5635
Skewness	-0.0745	-3.0751
Kurtosis	1.7080	34.7772
Statistics	10.8525	6722.225
Probability	0.000	0.004

The statistical findings regarding the variables FFR and FIM reveal significant differences in the distribution characteristics of the two variables. The FR variable exhibits a balanced distribution with a mean of 33.09% and a median of 34.00%, while its standard deviation of 13.23% indicates low dispersion. Skewness (-0.0745) and kurtosis (1.7080) values suggest that the distribution is close to normal; however, the test result (10.8525; p=0.0000) confirms a significant deviation from normality.

For the FIM variable, the mean (-2.1151) and median (-2.2426) values indicate that the distribution is asymmetric and sensitive to outliers. The skewness (-3.0751) and kurtosis (34.7772) values highlight pronounced asymmetry and peakedness. The test result (6722.225; p=0.0044) confirms that the distribution significantly deviates from normality.

These findings emphasize the need to account for outliers, particularly for the FIM variable, and apply appropriate transformations. Careful consideration of these statistics during the modeling process will enhance the reliability of the results.

Table 3. Correlation Analysis

	FFR	FIM
FFR	1	-0.0798
FIM	-0.0798	1

The correlation coefficient between FFR and FIM was calculated as -0.0798. This low and negative correlation indicates a weak inverse relationship between the two variables. In other words, it can

be suggested that as the float ratio increases, there may be a slight decrease in the tendency for financial information manipulation.

3.2.1. Cross Section Dependency

Cross-sectional dependency tests, which are among the diagnostic (preliminary) tests, are critical for ensuring the accuracy and validity of the model established between the variables. These tests help determine whether the unit root test to be selected belongs to the first generation or the second generation. Cross-sectional dependency occurs when a shock in one unit of the dataset affects other units as well.

First-generation unit root, cointegration, and causality tests are used for series without cross-sectional dependency, whereas second-generation tests are employed for series with cross-sectional dependency (Örnek & Türkmen, 2019; Menyah et al., 2014: 389-390; Baltagi, 2008: 239-247).

Since the study's dataset consists of 14 time periods (T) and 11 cross-sectional units (N), the LM test (Breusch & Pagan, 1980) and the LMadj test (Pesaran, Ullah & Yagamata, 2008) were utilized. The mathematical formulations of these tests are presented in Equations 1, 2, and 3, respectively.

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}^2 \quad (1)$$

$$LM_{adj} = \sqrt{\left(\frac{2}{N(N-1)}\right)} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij} \frac{(T-k)\rho_{ij}^2 - \mu_{Tij}}{\sqrt{v_{Tij}^2}} \quad (2)$$

Table 4 presents the results of the cross-sectional dependency tests for the variables Financial Information Manipulation and Free float ratios.

Table 4. Cross-Section Dependency Test

Variables	LM	Prob	LMadj	Prob
FFR	134.300	0.028***	3.746	0.000***
FIM	98.094	0.034***	5.355	0.000***

Note: *** indicates that the variables are cross-sectional dependent at 1% significance level.

According to the results obtained from Table 4, cross-sectional dependency is observed in both the FFR and FIM variables. The term "cross-sectional dependency" indicates that the analyzed variables are interrelated, meaning that the value of another influences the value of one variable.

In other words, there is an interaction or dependency between the FFR and FIM variables. For instance, situations where the FFR variable is high might coincide with high values of the FIM variable or vice versa. This dependency suggests that the relationship between these two variables may affect the outcomes of your model or analysis, highlighting the need for further examination of this relationship.

Such dependency should be carefully evaluated, particularly in financial analyses, as it may violate the assumptions of independent variables. Addressing this dependency is crucial to ensuring the reliability and robustness of the results.

3.2.2. Delta Test (Homogeneity / Heterogeneity)

In panel data analyses, after testing whether the variables exhibit cross-sectional dependency, another preliminary test performed to select the appropriate model is the Delta Test.

The Delta Test is a significant method used to evaluate the applicability of a common model in the dataset. This test examines the homogeneity of the units in the dataset to determine whether the units share similar characteristics. Homogeneity tests serve as a critical preliminary assessment tool in the model selection process for panel data analysis. By assessing the structural similarities among

the units in the dataset, these tests contribute to selecting the appropriate modeling strategy (Pesaran & Yamagata, 2008).

In this study, the homogeneity of the variables was examined using the $\tilde{\Delta}$ (Delta tilde) and $\tilde{\Delta}_{adj}$ (Delta tilde adj) tests. These tests were developed by Pesaran and Yamagata (2008) and are expressed in the equations shown below:

$$\tilde{\Delta} = \sqrt{N} \left(\frac{N^{-1}\tilde{S} - k}{\sqrt{2K}} \right) \tag{3}$$

$$\tilde{\Delta}_{adj} = \sqrt{N} \left(\frac{N^{-1}\tilde{S} - E(\tilde{Z}_{it})}{\sqrt{Var(\tilde{Z}_{it})}} \right) \tag{4}$$

The results of the Delta Test (regarding the variables Financial Information Manipulation and Free float ratios) are presented in Table 5.

Table 5. Delta Test Results

Variables	$\hat{\Delta}$		$\hat{\Delta}_{adj}$	
	Statistics	Prob	Statistics	Prob
FFR	7.258	0.000***	8.470	0.000***
FIM	3.650	0.000***	4.140	0.000***

Note: *** indicates that the variables are heterogeneous at 1% significance level.

According to the Delta Test results obtained from Table 5, FFR and FIM variables were found to be heterogeneous within a 99% confidence interval. This indicates that both variables exhibit variability within themselves and are influenced by different factors.

3.2.3. Panel Unit Root (Stationarity) Analysis

In this study, due to the presence of cross-sectional dependency in the variables and the heterogeneous nature of slope coefficients, the Hadri & Kurozumi (2012) unit root test, one of the second-generation panel unit root tests, was used to assess the stationarity of the variables.

The Hadri & Kurozumi (2012) unit root test is a panel stationarity test that accounts for serial correlation in error terms and the presence of common factors in panel data analysis. Building on Pesaran’s (2007) approach, this test aims to enhance the robustness of stationarity testing in heterogeneous panel datasets with cross-sectional dependency and serial correlation. This advanced method contributes to obtaining more accurate and reliable results in stationarity analysis for panel data.

The mathematical formulation of the test is presented as follows:

$$y_{it} = Z_t S_i + f_t Y_i + e_{it} + e_{it} = \phi_{i1} e_{it-1} + \dots + \phi_{ip} e_{it-p} + v_{it} \tag{5}$$

The unit root test results for the variables are presented in Table 6.

Table 6. Hadri Kurozumi Panel Stationarity Analysis Results

Variables	I(0)	I(1)
FFR	-1.34 [0.8533]***	-
FIM	-1.39 [0.8480]***	-

Note: *** indicates that the variables are stationary at 1% significance level.

The results in Table 6 indicate that both the FFR and FIM variables are stationary at their levels. This means that both variables fluctuate around a constant mean over time and do not contain a unit root. In other words, the variables have no long-term trend, and their use at levels in the analyses is appropriate.

These findings demonstrate that the stationary criterion, which is a fundamental prerequisite for obtaining reliable and valid results in panel data analysis, has been satisfied.

3.2.4. Panel Causality Test

According to the results of the preliminary diagnostic tests conducted in the study, it was determined that the variables exhibit cross-sectional dependency and are heterogeneous in nature. Additionally, it was found that the variables became stationary at the I(0) level.

In light of these findings, the causality relationship between the variables was analyzed using the causality test developed by Emirmahmutoğlu and Köse (2011). This test is a robust method for panel data causality analysis and does not require the series to exhibit stationarity or cointegration. Therefore, it allows for causality analysis even when the series have different stationarity levels.

The Emirmahmutoğlu and Köse (2011) test examines the causality relationship using the level values of the series and is applicable without requiring the stationarity condition. The test is formulated using the following equations. The first equation analyzes the impact of the lagged values of the independent variable on the dependent variable, while the second equation examines the reverse relationship, assessing the impact of the lagged values of the dependent variable on the independent variable.

This bidirectional analysis identifies both unidirectional and bidirectional causality relationships. The mathematical formulation of the test is presented in the following equations;

$$x_{i,t} = \mu_i + A_{i1}x_{i,t-1} + \dots + A_{ik}x_{i,t-k_1} + \sum_{j=k_i+1}^{k_i+dmax_i} A_{ij}x_{i,t-j} + e_{i,t} \quad (6)$$

$$y_{i,t} = \mu_i + A_{i1}y_{i,t-1} + \dots + A_{ik}y_{i,t-k_1} + \sum_{j=k_i+1}^{k_i+dmax_i} A_{ij}y_{i,t-j} + e_{i,t} \quad (7)$$

The results of the causality test for the variables are presented in Table 7 and Table8;

Table 7. Emirmahmutoglu-Köse (2011) Panel Causality Test

FFR \Rightarrow FIM			
COMPANIES INCLUDED IN THE ANALYSIS	LAG LENGTH	WALD STATISTICS	SIGNIFICANCE VALUE
ASELSAN	2	0.758	0.685
ENKA İNŞAAT	3	11.663	0.009***
EREĞLİ DEMİR VE ÇELİK	3	2.927	0.403
GÜBRETAŞ	2	0.981	0.612
OYAK ÇİMENTO	3	31.214	0.000***
PETKİM PETROKİMYA	3	41.642	0.000***
PEGASUS	2	2.105	0.349
SASA POLYESTER	3	0.588	0.899
ŞİŞE VE CAM FABR.	2	0.213	0.899
TURKCELL	3	654.185	0.000***
TÜRK HAVA YOLLARI	2	0.917	0.632
Panel Fisher Statistics: 736.091		P-Value: 0.000***	
Note: *** indicates that the variables are stationary at 1% significance level.			

According to the firm-specific results in Table 7, a causality relationship from FFR to FIM was identified for the companies Enka İnşaat, Oyak Çimento, Petkim, and Turkcell. Additionally, the panel-wide results also confirm a causality relationship in the same direction.

This finding suggests that changes in the FFR of these companies may trigger manipulative behaviors in their financial reporting and information disclosure processes.

Furthermore, the panel data analysis results indicate that this relationship is not limited to individual firms but is also observed across the entire panel (spanning multiple firms or periods), confirming a consistent causality relationship throughout the dataset.

Table 8. Emirmahmutoglu-Köse (2011) Panel Causality Test

FIM → FFR			
COMPANIES INCLUDED IN THE ANALYSIS	LAG LENGTH	WALD STATISTICS	SIGNIFICANCE VALUE
ASELSAN	1	0.029	0.864
ENKA İNŞAAT	1	0.003	0.954
EREĞLİ DEMİR VE ÇELİK	2	0.069	0.966
GÜBRETAŞ	1	0.332	0.564
OYAK ÇİMENTO	2	33.105	0.000***
PETKİM PETROKİMYA	2	3.452	0.178
PEGASUS	2	0.032	0.984
SASA POLYESTER	2	5.639	0.060*
ŞİŞE VE CAM FABR.	2	0.020	0.990
TURKCELL	1	0.859	0.354
TÜRK HAVA YOLLARI	1	0.130	0.719
Panel Fisher Statistics: 46.584		P-Value: 0.002***	

Note: *** indicates that the variables are stationary at 1% significance level.

According to the firm-specific results in Table 8, a causality relationship from financial information manipulation to free float ratios was identified for Oyak Çimento and Sasa Polyester. Additionally, the panel-wide results also confirmed a causality relationship in the same direction between the variables. This finding suggests that manipulative financial reporting behaviors could influence companies' float ratio strategies. The panel data analysis results further validate that this causality relationship is not limited to specific firms but exists more broadly between the variables in general.

4. Conclusions and Policy Recommendations

Accurate financial information is critically important for investors, regulators, auditors, company managers, financial analysts, consultants, employees, and other stakeholders to make sound decisions. Manipulated (altered) financial information, particularly, can lead investors to make misguided decisions and suffer financial losses. In this context, this study aimed to test the effect of companies' free float ratios on financial information manipulation. Companies with high free float ratios, having a broad investor base and facing higher levels of public scrutiny, may be compelled to act more cautiously in terms of financial information manipulation.

This study analyzed the relationship between companies' free float ratios and financial information manipulation using annual data for BIST 30 firms for the 2010–2023 period. The results of the panel causality analysis reveal a significant causality relationship between financial information manipulation and free float ratios for Oyak Çimento and Sasa Polyester. Similarly, the panel data analysis results also support the presence of a causality relationship in the same direction between these two variables. On the other hand, a causality relationship from free float ratios to financial information manipulation was identified for Enka İnşaat, Oyak Çimento, Petkim, and Turkcell. The panel results provide further evidence from a broader perspective on the direction and consistency

of the interaction between these variables. The findings indicate a reciprocal interaction between companies' financial reporting behaviors and their free float ratios, highlighting the importance of corporate governance mechanisms.

These results offer significant benefits for various stakeholders. From an academic perspective, the interaction between financial information manipulation and free float ratios contributes both theoretically and empirically to the literature, enabling a better understanding of corporate governance and financial transparency dynamics. For regulatory authorities, these relationships can guide policy-making processes aimed at ensuring the efficient functioning of financial markets and maintaining investor confidence. For company managers and investors, the findings assist in making more informed financial decisions by clarifying how free float ratios influence the financial reporting quality and how this relationship is perceived in the market. Lastly, auditing and consulting firms can develop more effective risk management and auditing strategies by taking these relationships into account. These results also support broader efforts to enhance financial transparency and corporate governance standards.

Policymakers can adopt various strategies to improve market efficiency and protect investor confidence by considering the relationship between financial information manipulation and free float ratios. First, it is essential to tighten financial reporting standards and regularly monitor their implementation. More effective oversight and audit mechanisms can be established, particularly for publicly traded companies, to ensure transparency and prevent manipulation in financial reports.

Future research could benefit from using datasets covering longer time periods to comprehensively analyze the temporal dynamics of the relationship between financial information manipulation and free float ratios. Including companies from different countries and regions could shed light on the heterogeneity of this relationship in a global context and reveal the impact of geographical factors. Comparisons between developed and emerging economies, in particular, could illuminate the role of economic development levels in this relationship. Additionally, sector-specific analyses focusing on industries such as energy, technology, and finance could provide detailed insights into how structural characteristics and market conditions influence tendencies for financial manipulation. Such sector-focused studies could offer valuable information on how the structural features and market conditions of specific industries affect financial manipulation tendencies.

Finally, long-term relationships and trends between variables can be examined if appropriate econometric methods and data conditions are met. Cointegration analysis, for instance, could investigate long-term interactions between free float ratios and financial information manipulation and whether these interactions remain stable over time. These approaches could provide significant theoretical and practical contributions to the literature.

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