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Foreign investors as guardians or colluders? The moderating role of IFRS in corporate tax avoidance in Korea

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ABSTRACT

This study examines the effect of foreign ownership on corporate tax avoidance among firms listed on the Korean stock market and investigates whether this relationship is nonlinear and moderated by the adoption of International Financial Reporting Standards (IFRS) in 2011. As foreign investors have become more influential in Korea's capital market, they play an important role in shaping firms' tax behavior. While prior studies suggest that foreign ownership can reduce tax avoidance through stronger monitoring, this study also considers whether high levels of foreign ownership may support managerial interests or allow aggressive tax practices. Using panel data from KOSPI- and KOSDAQ-listed firms from 2001 to 2023, tax avoidance is measured by book-tax differences (BTD) and discretionary book-tax differences (DDBTD). The results reveal an inverted U-shaped relationship between foreign ownership and tax avoidance, indicating that tax avoidance increases at low levels of foreign ownership but decreases after reaching a certain threshold due to enhanced monitoring. This relationship remains after IFRS adoption, although the degree of nonlinearity becomes weaker in the post-IFRS period. These findings suggest that the influence of foreign ownership on corporate tax behavior depends on both the level of ownership and changes in the institutional environment, and they provide important implications for understanding the governance role of foreign investors in emerging markets.

1. Introduction

Over the past few decades, Korea's capital market has gradually opened alongside the expansion of global capital flows. As a result, foreign ownership in Korean listed firms has steadily increased, positioning foreign investors not merely as providers of capital but as influential stakeholders actively involved in corporate decision-making. These investors often engage deeply in firms' financial decisions and can play a critical role in shaping financial policies, particularly in areas such as the reliability and transparency of accounting information, the appropriateness of earnings management, and the prudence of tax strategies. Prior studies suggest that foreign investors tend to prioritize long-term firm value and the quality of financial reporting over short-term tax savings (Park and Hong, 2009; Desai and Dharmapala, 2006).

These characteristics imply that foreign investors may function as guardians who monitor firms' tax-related behaviors. Indeed, numerous domestic and international studies document that the presence of foreign investors tends to deter tax avoidance. Goh and Seo (2014) found that long-term foreign investors perform more effective monitoring compared to short-term investors, while Shi et al. (2020) provided evidence of a significant negative association between foreign ownership and the level of tax avoidance. Recent empirical work further highlights that the relationship between ownership, governance, and tax behavior is context-dependent (Choi and Park, 2022). Such findings offer empirical support for monitoring the role of foreign investors in corporate tax practices.

However, the influence of foreign investors does not always manifest as a monitoring force. When foreign investors hold substantial ownership stakes, they may share interests with management or exert excessive influence over strategic decisions, potentially leading to the tacit approval—or even encouragement—of aggressive tax avoidance. In this

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sense, foreign investors may shift from being monitors to collaborators, depending on the context. This dual potential—monitoring versus collaboration—implies that the foreign ownership–tax avoidance nexus may be nonlinear (e.g., U-shaped or inverted U-shaped), and that the precise form may depend on corporate governance arrangements and external stakeholder characteristics (Desai et al., 2007; Balakrishnan et al., 2019).

Changes in institutional environments—particularly accounting regimes—may further shape the behavior and influence of foreign investors. In Korea, the adoption of International Financial Reporting Standards (IFRS) in 2011 aims to enhance the comparability and transparency of financial statements. Empirical evidence indicates that IFRS adoption has materially affected accounting quality in Korea (Key and Kim, 2020) and has complex interactions with tax behavior and governance structures (Choi and Park, 2022). However, IFRS also grants managers greater discretion in financial reporting, which may have significant implications for tax planning practices. Studies from emerging markets point to heterogeneous effects of IFRS on tax-related outcomes, driven by institutional settings and enforcement strength (Nguyen et al., 2023; Ebaid, 2024). Such institutional changes may also alter the monitoring effectiveness of foreign investors. For example, Braga (2017) reported meaningful changes in the relationship between foreign ownership, tax avoidance, and firm value following the introduction of IFRS. Kang (2012) and Okafor et al. (2019) also argued that IFRS affects the interaction between tax strategy and corporate governance in complex ways. In addition, major macroeconomic shocks, most notably the COVID-19 pandemic, have been shown to influence corporate tax behavior, suggesting that temporal regulatory and economic events should be explicitly controlled when assessing IFRS effects (Athira and Ramesh, 2023).

Despite these insights, most prior studies on the relationship between foreign investors and tax avoidance tend to assume a linear association and do not sufficiently account for the moderating role of institutional changes. Given that the effects of foreign ownership are likely to vary across contexts and that tax avoidance strategies are responsive to changes in the accounting environment, a more refined empirical approach is required.

To address this gap, the present study pursues three objectives. First, using a long-term panel dataset covering the period from 2001 to 2023, the study empirically analyzes the effect of foreign ownership on tax avoidance among Korean listed firms. Second, it examines whether the relationship between foreign ownership and tax avoidance is nonlinear—taking the form of a U-shape or inverted U-shape—thereby providing a reinterpretation of the role of foreign investors as both monitors and collaborators. Third, it investigates how the adoption of IFRS in 2011 moderates this relationship by analyzing data separately for the pre- and post-IFRS periods.

This study contributes to the literature by offering a more nuanced understanding of the influence foreign investors exert on tax strategies and by empirically examining the interaction between corporate tax behavior and changes in accounting standards. By integrating recent empirical findings on IFRS and tax outcomes and by addressing methodological concerns commonly raised in prior work, the study provides both theoretical refinement and policy-relevant evidence on how institutional transitions—such as IFRS adoption—reshape the monitoring role of foreign investors. Furthermore, it offers practical implications for regulators and standard setters regarding disclosure, enforcement, and ownership-related governance policies.

The remainder of this paper is structured as follows. Section 2 reviews the theoretical background and related literature on foreign investors, tax avoidance, and changes in accounting standards. Section 3 describes the sample, variable definitions, and research methodology. Section 4 presents empirical findings, including both linear and nonlinear analyses as well as comparisons between pre- and post-IFRS periods. Section 5 concludes with a summary of the results, theoretical and policy implications, limitations, and suggestions for future research.

2. Theoretical background and literature review

The relationship between foreign investors and corporate tax avoidance has received considerable attention in financial accounting, international investment, and corporate governance research. As capital markets become increasingly globalized, foreign investors emerge as critical external stakeholders who directly or indirectly influence firms' strategic decisions, particularly in tax planning. This study considers foreign investors as important monitors of corporate behavior, bringing resources, expertise, and reputational considerations that can affect managerial choices regarding financial reporting and tax planning (Park and Hong, 2009; Desai and Dharmapala, 2006).

2.1. Monitoring role of foreign investors

Foreign investors may function as monitors who increase the expected costs of opportunistic tax behavior, thereby encouraging managers to adopt more conservative tax strategies. Prior evidence indicates that foreign investors tend to prioritize accounting performance and transparency over short-term tax savings. For instance, Park and Hong (2009) found a negative association between foreign ownership and tax avoidance in Korea, suggesting a monitoring effect driven by preferences for high-quality financial reporting. Goh and Seo (2014) showed that long-term investors with high ownership stakes and low portfolio turnover are

more effective in constraining aggressive tax behavior. Similarly, Shi et al. (2020) confirmed a significant negative relationship between foreign ownership and tax avoidance, highlighting the role of ownership structure in moderating managerial discretion.

2.2. Nonlinear effects of ownership concentration

The influence of foreign investors is contingent on ownership concentration. Moderate levels of foreign ownership tend to reinforce monitoring, whereas very high ownership stakes may align investor interests with management, potentially reducing the constraints on aggressive tax planning (Desai et al., 2007). This non-monotonic effect provides a theoretical rationale for considering nonlinear relationships—such as U-shaped or inverted U-shaped patterns—between foreign ownership and tax avoidance.

2.3. Institutional environment: IFRS adoption

Institutional settings shape the effectiveness of foreign investors' monitoring. In Korea, the adoption of IFRS in 2011 introduced changes in accounting standards, measurement discretion, and disclosure requirements (Kang, 2012; Braga, 2017). These changes affect how managers exercise discretion in financial reporting and tax planning, potentially strengthening or weakening the monitoring role of foreign investors. IFRS adoption thus provides a theoretical basis for examining how institutional shifts moderate the foreign ownership–tax avoidance relationship.

2.4. Corporate resources and governance mechanisms

Corporate resources and internal governance mechanisms further condition firms' responses to external monitoring. Accounting policies, discretionary expenses, and investment decisions interact with tax planning and are influenced by both external monitoring and internal governance structures. Research shows that strong governance, including effective boards and ownership structures, can reduce incentives for tax avoidance and shape the interpretation of book-tax differences as either value-enhancing or opportunistic behavior (Desai et al., 2007; Plesko, 2004; Desai and Dharmapala, 2009). This study adopts these perspectives to model the ways in which foreign ownership and institutional changes jointly affect corporate tax strategies.

2.5. Synthesis

In sum, prior research indicates that foreign investors influence corporate tax behavior through monitoring, while the magnitude and direction of this influence depend on ownership concentration, governance quality, and institutional settings such as IFRS adoption. Nonlinear patterns and regulatory shifts provide a theoretical foundation for empirically analyzing the complex relationship between foreign ownership and tax avoidance. The present study builds on these insights to examine how foreign investors shape tax strategies in the Korean context.

3. Hypothesis development and research model

3.1. Hypothesis development

Foreign investors tend to value the transparency and quality of financial information and generally act in ways that promote firms' long-term growth and market credibility (Park and Hong, 2009; Desai and Dharmapala, 2006). They often take a critical view of aggressive tax avoidance strategies, given the associated tax risks and potential damage to corporate reputation. As such, they are likely to play a monitoring role in firms' tax practices, encouraging compliance and discouraging overly aggressive tax planning. Firms with greater foreign ownership may therefore exhibit higher levels of tax compliance and, consequently, lower levels of tax avoidance.

Moreover, foreign investors typically operate under conditions of information asymmetry and rely heavily on publicly disclosed financial data. To mitigate these informational disadvantages, they may place a premium on financial soundness and tax legitimacy, using their equity stakes as a mechanism to reinforce external monitoring. Based on this theoretical reasoning and prior empirical findings, this study proposes the following hypothesis:

H1: Foreign ownership is negatively associated with corporate tax avoidance.

However, the influence of foreign investors does not always manifest strictly through monitoring. When foreign investors hold substantial ownership stakes, they may share aligned interests with management or exert influence over corporate strategies, potentially leading to a tolerance or even encouragement of tax avoidance. In such cases, the role of foreign investors may shift from that of a guardian to that of a colluder. This suggests that the relationship between foreign ownership and tax avoidance may not be linear, but rather nonlinear—taking the form of a U-shape or inverted U-shape. Prior studies (e.g., Desai et al. (2007) and Balakrishnan et al. (2019)) highlighted how the impact of tax avoidance is contingent upon corporate governance structures and stakeholder dynamics, reinforcing the notion that the behavior of foreign investors may vary across different contexts. Accordingly, the following hypothesis is proposed:

H2: The relationship between foreign ownership and tax avoidance is nonlinear.

The adoption of International Financial Reporting Standards (IFRS) in Korea in 2011 aims to enhance the comparability and transparency of financial reporting, but it also introduces increased managerial discretion in accounting practices. This institutional change potentially affects both firms' tax planning behavior and the effectiveness of foreign investors' monitoring. Braga (2017) reported that the relationship among foreign ownership, tax avoidance, and firm value undergoes meaningful changes following the adoption of IFRS. Given these shifts, it is important to examine whether the IFRS regime moderates the relationship between foreign ownership and tax avoidance. Thus, the study formulates the following hypothesis:

H3: The relationship between foreign ownership and tax avoidance significantly differs before and after the adoption of IFRS.

3.2. Research model

This study employs four regression models to empirically examine the impact of foreign ownership on corporate tax avoidance. The dependent variables are the book-tax difference (BTD)—defined as the difference between financial accounting income and taxable income—and the discretionary book-tax difference (DDBTD), which is the residual term obtained by regressing total accruals on BTD. The DDBTD serves as a more refined proxy for tax avoidance that reflects managerial discretion in financial reporting.

Models (1) and (2) estimate the linear association between foreign ownership (FO) and tax avoidance:

<Research model 1>: $BTD_{i,t} = \beta_0 + \beta_1 FO_{i,t} + \beta_2 AD_{i,t} + \beta_3 RDE_{i,t} + \beta_4 DON_{i,t} + \beta_5 LEV_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 ROA_{i,t} + \beta_9 GRW_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} NID_{i,t} + \beta_{12} MD_{i,t} + \beta_{13} \sum ID + \beta_{14} \sum YD + \varepsilon_{i,t}$

<Research model 2>: $DDBTD_{i,t} = \beta_0 + \beta_1 FO_{i,t} + \beta_2 AD_{i,t} + \beta_3 RDE_{i,t} + \beta_4 DON_{i,t} + \beta_5 LEV_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 ROA_{i,t} + \beta_9 GRW_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} NID_{i,t} + \beta_{12} MD_{i,t} + \beta_{13} \sum ID + \beta_{14} \sum YD + \varepsilon_{i,t}$

Models (3) and (4) incorporate the squared term of foreign ownership (FO^2) to examine the potential non-linear (i.e., U-shaped or inverted U-shaped) relationship between foreign ownership and corporate tax avoidance, as suggested by Morck et al. (1988).

<Research model 3>: $BTD_{i,t} = \beta_0 + \beta_1 FO^2_{i,t} + \beta_2 FO_{i,t} + \beta_3 AD_{i,t} + \beta_4 RDE_{i,t} + \beta_5 DON_{i,t} + \beta_6 LEV_{i,t} + \beta_7 MTB_{i,t} + \beta_8 CF_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} GRW_{i,t} + \beta_{11} AGE_{i,t} + \beta_{12} NID_{i,t} + \beta_{13} MD_{i,t} + \beta_{14} \sum ID + \beta_{15} \sum YD + \varepsilon_{i,t}$

<Research model 4>: $DDBTD_{i,t} = \beta_0 + \beta_1 FO^2_{i,t} + \beta_2 FO_{i,t} + \beta_3 AD_{i,t} + \beta_4 RDE_{i,t} + \beta_5 DON_{i,t} + \beta_6 LEV_{i,t} + \beta_7 MTB_{i,t} + \beta_8 CF_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} GRW_{i,t} + \beta_{11} AGE_{i,t} + \beta_{12} NID_{i,t} + \beta_{13} MD_{i,t} + \beta_{14} \sum ID + \beta_{15} \sum YD + \varepsilon_{i,t}$.

where,

$BTD_{i,t}$: The discrepancy between financial accounting income and taxable income for firm i in year t,
$DDBTD_{i,t}$: The residual component derived from regressing total accruals on the BTD measure for firm i in year t, capturing discretionary differences between book and tax reporting,
$FO_{i,t}$: The proportion of shares held by foreign investors in firm i as of the end of fiscal year t,
$AD_{i,t}$: The ratio of advertising expenses to sales for firm i in year t,
$RNE_{i,t}$: The ratio of research and development expenditures to total sales for firm i in year t,
$DON_{i,t}$: The proportion of donation expenditures relative to total sales for firm i in year t,
$LEV_{i,t}$: The ratio of total liabilities to total assets for firm i at the end of year t, representing financial leverage.,
$MTB_{i,t}$: The market-to-book ratio calculated as the market value of equity divided by the book value of equity for firm i at the end of year t,
$CF_{i,t}$: Internal cash flow measured as the sum of net income and depreciation expenses scaled by total assets at the end of year t for firm i,
$ROA_{i,t}$: Return on assets, defined as accounting earnings in year t divided by total assets at the beginning of the same year for firm i,
$GRW_{i,t}$: Annual revenue growth, calculated as the change in sales from year $t–1$ to t, scaled by sales in year $t–1$ for firm i,
$AGE_{i,t}$: The natural logarithm of the number of years since the firm's establishment, representing firm age,
$NID_{i,t}$: Dummy variable indicating whether firm i reports positive net income in year t. It takes the value of 1 if net income is greater than zero, and 0 otherwise.
$MD_{i,t}$: Dummy variable representing the listing market classification for firm i in year t, where 1 indicates firms listed on the KOSPI (main board), and 0 indicates firms listed on KOSDAQ.
$\varepsilon_{i,t}$: The disturbance term in the regression model for firm i in year t.

In all four models, the main independent variable of interest is FO, the foreign ownership ratio. The inclusion of the squared term FO^2 allows for the testing of nonlinear effects, reflecting the possibility that the influence of foreign investors changes depending on the ownership level. Control variables are selected based on prior research and include firm characteristics (e.g., advertising intensity, R&D ratio, financial leverage, profitability, growth, firm age) and governance-related indicators (e.g., profitability dummy, market classification), along with industry and year fixed effects.

3.3. Variable definitions and measurements

This study employs two alternative dependent variables to capture corporate tax avoidance. The first is the book–tax difference (BTD), defined as the gap between financial accounting income and taxable income for a given firm-year; BTD measures the aggregate discrepancy that may arise from timing differences, permanent differences, and managerial choices in accounting and tax reporting.

The second dependent variable is the discretionary book–tax difference (DDBTD), which is constructed as the residual term from a regression that links total accruals to the BTD measure; DDBTD is intended to capture the discretionary component of book–tax divergence that more closely reflects managerial discretion in reporting and tax-planning behavior.

The primary independent variable of interest is foreign ownership (FO), measured as the proportion of ordinary shares held by foreign investors at the fiscal year end. To test for potential nonlinearity in the impact of foreign ownership on tax avoidance, the squared term of foreign ownership (FO^2) is included in the non-linear specifications; the squared term allows the study to detect U-shaped or inverted U-shaped relationships that may arise as monitoring effects attenuate or reverse at different ownership concentrations.

Control variables are included to isolate the effect of foreign ownership from other firm characteristics that influence taxable income and reporting discretion. Advertising intensity (AD) is measured as advertising expenses scaled by sales and is included because advertising outlays both reduce taxable income (as deductible expenses) and may signal management's investment strategy and future cash flows. R&D intensity (RDE) is measured as R&D expenditures scaled by sales; RDE is controlled for because R&D items are treated differently for accounting and tax purposes (e.g., expensing vs. capitalization, tax credits) and thus affect book–tax differences. Donation ratio (DON), defined as donations scaled by sales, is included since donations are tax-deductible within legal limits and may be associated with related-party transfers or governance practices that influence tax planning.

Financial and operating controls comprise leverage (LEV), measured as total liabilities divided by total assets, to capture capital structure effects on tax incentives; market-to-book ratio (MTB), computed as market value of equity divided by book value of equity, to capture growth/options-related incentives for tax planning; internal cash flow (CF), calculated as the sum of net income and depreciation scaled by total assets, to reflect internal financing capacity; return on assets (ROA), measured as accounting earnings divided by total assets, to control for profitability; and annual sales growth (GRW), calculated as the year-over-year change in sales scaled by prior-year sales, to capture growth dynamics that may affect tax strategies. Firm age (AGE) is proxied by the natural logarithm of years since establishment to control for lifecycle effects, while a profitability dummy (NID) equals one when net income is positive and zero otherwise to capture basic financial viability. A market dummy (MD) indicates listing venue (KOSPI = 1, KOSDAQ = 0) to account for differences in listing requirements and investor bases. Finally, industry and year fixed effects are included to control for unobserved heterogeneity across sectors and macro/temporal shocks.

All continuous monetary and ratio variables are scaled appropriately (by sales or total assets as specified) to ensure comparability across firms. To reduce the influence of extreme observations, the study first conducts a preliminary regression analysis to identify outliers with a Cook's distance greater than 1 or an absolute value of standardized residuals greater than 2 and then excludes these observations from the main analysis.

3.4. Consideration of IFRS adoption

To evaluate whether Korea's IFRS adoption in 2011 moderates the foreign ownership–tax avoidance relationship, the study divides the sample period (2001–2023) into pre-IFRS and post-IFRS subperiods and estimates the models separately for each period. This approach allows for the identification of structural changes in the monitoring role of foreign investors under different institutional environments.

4. Empirical analysis

4.1. Sample selection

This study investigates the relationship between foreign ownership and corporate tax avoidance using firm-level data from companies listed on the Korean capital market over the period 2001 to 2023. All financial and non-financial data used for the analysis are obtained from VALUESearch, a professional database specializing in publicly listed Korean firms.

A total of 78,614 firm-year observations are initially collected. The sample is then refined based on the following criteria. First, to ensure comparability in accounting periods, only firms with a December fiscal year-end are included. This controls for potential bias arising from differences in financial reporting timelines across firms. Second, firms in a capital impairment (undercapitalized) status are excluded, as their financial behavior may deviate from normal conditions. This criterion aligns with prior literature that controls financial soundness.

Third, firms in the financial sector, namely, banks and insurance companies, are excluded due to their distinct revenue structures and accounting standards. This step minimizes distortions arising from industry-specific accounting heterogeneity. Fourth, firms lacking data for key variables required in the regression analysis are excluded to ensure the feasibility of empirical testing.

To enhance the reliability of the final sample, outliers are also removed. Based on preliminary regressions, observations with standardized residuals exceeding ±1 or Cook's distance values greater than 1 are identified as outliers and excluded from the dataset. This procedure is designed to prevent distortion in regression estimates and to enhance the robustness of the empirical findings.

After applying all the above screening criteria, the final sample comprises 41,866 firm-year observations, providing a solid foundation for ensuring internal validity and generalizability of the study's results (Table 1).

Table 1: Sample selection

Sample obtained from the VALUESearch database (2001–2023)	78,614
- Firms that do not have a fiscal year-end in December - Firms experiencing capital impairment - Firms in the banking and insurance industries - Firms with insufficient data for empirical analysis	36,748
Final sample Data	41,866

4.2. Descriptive Statistics

Table 2 presents the descriptive statistics for the key variables used in this study. Based on 41,866 firm-year observations, Table 2 reports the mean, standard deviation, median, minimum, and maximum values for each variable, allowing for an overview of their distributional characteristics.

The mean value of Book-Tax Differences (BTD), which captures the gap between accounting income and taxable income, is 0.039, with a standard deviation of 1.047. While the median (0.029) is close to the mean, the distribution exhibits substantial variability, ranging from −6.544 to 180.525. The Discretionary BTD (DDBTD)—the residual obtained from regressing BTD on total accruals—shows a mean of 0.011 and a standard deviation of 1.044, with extreme values reaching up to 180.788. These wide ranges indicate considerable firm-level discretion in income reporting.

The foreign ownership ratio (FO) has a mean of 4.13% and a median of 0.28%, suggesting that foreign investors tend to concentrate their holdings in a limited number of firms. The advertising expense ratio (AD) averages 1.30%, but the median is only 0.038%, with a maximum of 89.13%. This pattern indicates that most firms allocate minimal resources to advertising, while a few outliers invest substantially.

The R&D expenditure ratio (RDE) records a relatively high average of 14.46%, but also exhibits considerable dispersion, with a standard deviation of 14.67 and a maximum of 2,961, implying a highly skewed distribution. The donation ratio (DON) has a mean of 0.25%, with a median close to zero (5.09E−05), reflecting the fact that most firms either make no charitable contributions or do so only to a negligible extent.

The leverage ratio (LEV) shows a mean of 35.0% and a median of 35.1%, indicating a distribution close to normal, although the maximum of 871.49% suggests the presence of highly leveraged firms. The market-to-book ratio (MTB) has a mean of 1.379 and a very large standard deviation of 43.46, with a maximum value of 8,848, highlighting the influence of extreme outliers in market valuation.

Operating cash flow (CF) averages 3.88%, with a median of 4.42%, and ranges from −6.35 to 7.28, suggesting substantial variation in firms' internal financing capacity. Return on assets (ROA) averages 8.17%, but ranges widely from −32.50 to 565.64, revealing that a small number of firms exhibit extraordinarily high or low profitability.

Sales growth (GRW) displays a mean of 48.98% but a median of only 2.32%, indicating that most firms experience modest growth while a few outliers—some with a maximum of 3,852%—distort the average. Firm age (AGE), measured as the natural logarithm of firm age, has a mean of 10.29 and a median of 11.99, with the minimum value of zero indicating the inclusion of newly established firms.

The dummy variable NID, indicating the presence of net income, has a mean of 0.80, implying that approximately 80% of firms report a net profit, while the remainder record net losses. Lastly, the market classification dummy MD has a mean of 0.324, suggesting that around 32.4% of the sample consists of firms listed on the KOSPI (Main Board), with the majority coming from the KOSDAQ (Secondary Board).

Table 2: Descriptive statistics

Variables	N	Mean	Standard deviation	Median	Minimum	Maximum
BTD	41,866	0.03909	1.04663	0.02863	-6.54359	180.5248
DDBTD	41,866	0.01063	1.04361	-0.00966	-2.36223	180.788
FO	41,866	0.04128	0.09444	0.00279	0	1
AD	41,866	0.01302	0.50346	0.000378	0	89.12844
RDE	41,866	0.14462	14.66678	0.00229	0	2961
DON	41,866	0.00251	0.20093	5.09E-05	0	33.07972
LEV	41,866	0.34999	0.24962	0.35098	0	8.71492
MTB	41,866	1.379	43.45897	0.63591	0	8848
CF	41,866	0.03881	0.15646	0.04418	-6.34532	7.27911
ROA	41,866	0.08169	3.69786	0.03282	-32.4959	565.6367
GRW	41,866	0.48976	23.11938	0.02319	-1	3852
AGE	41,866	10.29223	4.27641	11.98982	0	16.82274
NID	41,866	0.79972	0.40022	1	0	1
MD	41,866	0.3237	0.46789	0	0	1

4.3. Correlation analysis

Table 3 presents the correlation matrix of the key variables used in this study. The upper triangle of the matrix reports Pearson correlation coefficients, while the lower triangle shows Spearman rank correlations. Most correlations appear statistically significant, providing a useful reference for assessing the presence of potential multicollinearity among the variables.

The two primary proxies for tax avoidance—BTD (book-tax difference) and DDBTD (discretionary book-tax difference)—exhibit a very high positive correlation. Specifically, the Pearson correlation between BTD and DDBTD is 0.9933 ($p < 0.0001$), while the Spearman correlation is 0.6670 ($p <$

0.0001). This result suggests a strong association between the two measures, though the lower Spearman correlation indicates that DDBTD captures discretionary elements beyond those reflected in BTD, potentially offering greater discriminatory power.

BTD shows strong positive correlations with internal cash flow (CF, r = 0.8546, p < 0.0001) and return on assets (ROA, r = 0.7772, p < 0.0001), implying that more profitable firms with higher cash flows tend to report larger differences between book income and taxable income. DDBTD also correlates positively and significantly with CF (r = 0.5788) and ROA (r = 0.5551), supporting the interpretation that corporate profitability may relate positively to tax avoidance behavior.

Foreign ownership (FO) exhibits weak but statistically significant positive correlations with BTD (r = 0.0128, p = 0.0088) and DDBTD (r = 0.0146, p = 0.0028). Given the small magnitudes of these coefficients, the results suggest that the effect of foreign ownership on tax avoidance is unlikely to be fully captured by a simple linear relationship. This observation implies the possibility of a nonlinear mechanism, which warrants further examination in subsequent regression analyses.

FO also shows significant positive correlations with strategic expenditure variables, including the advertising expense ratio (AD, r = 0.2660, p < 0.0001), R&D expense ratio (RDE, r = 0.1755, p < 0.0001), and donation ratio (DON, r = 0.3635, p < 0.0001). These results suggest that foreign investors may value firms that engage in long-term investment and socially responsible activities. Additionally, FO correlates positively with market-to-book ratio (MTB, r = 0.6850, p < 0.0001) and firm age (AGE, r = 0.5375, p < 0.0001), indicating that firms with higher foreign ownership tend to be both more growth-oriented and more mature.

Advertising expenses are positively correlated with both R&D (r = 0.0701, p < 0.0001) and donations (r = 0.3152, p < 0.0001), suggesting that firms often undertake marketing and CSR activities concurrently. Moreover, advertising expenses are significantly related to both financial and ownership variables, reinforcing their relevance in the context of corporate tax strategies.

The leverage ratio (LEV), a proxy for financial stability, is positively associated with BTD (r = 0.0396), ROA (r = 0.1809), AD (r = 0.2602), DON (r = 0.2176), and AGE (r = 0.3163). In contrast, it shows a significant negative correlation with internal cash flow (r = –0.0748, p < 0.0001), suggesting that firms relying more heavily on external capital may exhibit lower internal liquidity.

Firm age (AGE) is positively correlated with FO (r = 0.5375), DON (r = 0.3956), and AD (r = 0.2879), indicating that older firms tend to have stronger relationships with foreign investors and higher levels of social engagement. AGE is also positively associated with MTB (r = 0.4516), reflecting the accumulation of market recognition and firm reputation over time.

Finally, sales growth (GRW) correlates positively with BTD (r = 0.3315), CF (r = 0.3579), and ROA (r = 0.4492), suggesting that high-growth firms generally enjoy greater profitability, stronger cash flows, and a larger gap between book and taxable income. Interestingly, GRW shows a weak but significant negative correlation with FO (r = –0.0247, p < 0.0001), implying that foreign investors do not necessarily prefer firms solely based on growth potential.

Overall, while several variables exhibit moderate to high correlations, most coefficients remain below the commonly cited multicollinearity threshold of 0.7. Thus, there appears to be no serious concern regarding multicollinearity, supporting the validity of subsequent regression analyses. Furthermore, the observed relationships highlight the complex interactions between foreign ownership, tax avoidance, and firm-specific characteristics, reinforcing the rationale for the study's empirical framework and hypotheses.

Table 3: Correlation analysis

	BTD	DDBTD	FO	AD	RDE	DON	LEV	MTB	CF	ROA	GRW	AGE	NID	MD
BTD	1	0.99331	0.01281	-0.00163	-0.00796	-0.00029	-0.02026	-0.00278	0.08654	0.00433	0.00019	0.01262	0.062	0.00759
		<.0001	0.0088	0.7385	0.1034	0.9522	<.0001	0.5696	<.0001	0.376	0.9689	0.0098	<.0001	0.1204
DDBTD	0.667	1	0.01463	-0.00135	-0.00481	-0.00052	-0.00502	-0.00008	0.01127	0.00321	0.00081	0.02158	0.0244	0.00763
	<.0001		0.0028	0.7817	0.3254	0.9146	0.3047	0.9865	0.0211	0.5116	0.8684	<.0001	<.0001	0.1185
FO	0.16547	0.21393	1	0.00071	-0.00225	-0.0019	-0.00349	0.00632	0.08808	-0.00037	-0.00541	0.20445	0.05725	0.24603
	<.0001	<.0001		0.8846	0.6457	0.697	0.4752	0.1961	<.0001	0.9393	0.2684	<.0001	<.0001	<.0001
AD	0.19027	0.17332	0.26602	1	0.07012	0.31519	-0.00737	0.00107	-0.01803	-0.00105	-0.00023	0.00531	-0.01932	-0.00539
	<.0001	<.0001	<.0001		<.0001	<.0001	0.1316	0.8271	0.0002	0.8304	0.9632	0.2773	<.0001	0.2703
RDE	0.12223	0.11254	0.17548	0.31529	1	0.00675	-0.00168	0.00147	-0.05267	-0.00132	-0.00019	0.00242	-0.01657	-0.00623
	<.0001	<.0001	<.0001	<.0001		0.1672	0.7317	0.763	<.0001	0.7878	0.9685	0.6205	0.0007	0.2026
DON	0.27515	0.27681	0.36352	0.42164	0.23731	1	-0.00591	0.00005	-0.00279	-0.00052	-0.00026	0.00126	-0.00668	-0.00441
	<.0001	<.0001	<.0001	<.0001	<.0001		0.2267	0.9913	0.5684	0.9155	0.958	0.797	0.1715	0.3673
LEV	0.03955	0.07008	0.09067	0.26016	0.22127	0.21762	1	0.01917	-0.07479	0.01256	0.01806	0.51779	-0.22339	0.07633
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	0.0102	0.0002	<.0001	<.0001	<.0001
MTB	0.08922	0.1561	0.68497	0.31258	0.28572	0.31855	0.15885	1	-0.02786	-0.00083	-0.00039	0.01294	-0.02044	-0.00485
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	0.8659	0.9362	0.0081	<.0001	0.3208
CF	0.85461	0.5788	0.13665	0.17501	0.18715	0.26318	0.12527	0.0681	1	0.0241	0.00278	0.08627	0.47347	0.02567
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	0.5695	<.0001	<.0001	<.0001
ROA	0.77724	0.55514	0.10131	0.2193	0.14866	0.27521	0.18088	0.06137	0.80549	1	0.00114	0.00509	0.00223	0.00081
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		0.816	0.2978	0.6488	0.868
GRW	0.33149	0.1783	-0.02471	0.12938	0.1004	0.08142	0.18627	-0.00118	0.35788	0.44915	1	0.00162	-0.00066	-0.00748
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.8086	<.0001	<.0001		0.7411	0.8921	0.1257
AGE	0.15472	0.2006	0.5375	0.28785	0.14794	0.3956	0.31627	0.45163	0.15152	0.11628	-0.01374	1	-0.20289	0.11286
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0049		<.0001	<.0001
NID	0.60462	0.30551	-0.1006	-0.11833	-0.15511	0.00706	-0.22556	-0.23955	0.60415	0.5215	0.19836	-0.14695	1	0.03511
	<.0001	<.0001	<.0001	<.0001	<.0001	0.1488	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001
MD	0.04974	0.08117	0.26378	0.07815	-0.15847	0.1739	0.08336	0.04345	0.01476	-0.00293	-0.04686	0.33886	0.03511	1
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0025	0.5493	<.0001	<.0001	<.0001	

Pearson correlations are indicated above the diagonal, while Spearman correlations are shown below the diagonal

4.4. The relationship between foreign ownership and tax avoidance (full sample)

Table 4 presents empirical results examining the impact of foreign ownership on corporate tax avoidance using the full sample. Two regression models are employed: Model 1 uses the book-tax difference (BTD) as a proxy for tax avoidance, while Model 2 adopts the discretionary component of BTD (DDBTD), which controls total accruals. These models aim to evaluate whether the share of foreign ownership is associated with distortions in financial reporting or with strategic earnings management related to tax avoidance.

Model 1 reports a high adjusted R-squared of 0.7999, indicating strong explanatory power, while Model 2 shows a relatively moderate but stable level at 0.2808. In addition, all variance inflation factors (VIF) values remain below 2, confirming that multicollinearity is not a major concern in either model.

Foreign ownership exhibits a statistically significant and positive relationship with tax avoidance in both models. In Model 1, the coefficient on foreign ownership is 0.02615 ($t = 7.10$, $p < .0001$), while in Model 2, it is 0.0983 ($t = 16.9$, $p < .0001$). Both coefficients are significant at the 1% level. These results suggest that firms with higher foreign ownership tend to report larger gaps between book income and taxable income, indicating a higher level of tax avoidance.

Notably, this finding holds not only for BTD, which captures general differences between accounting and taxable income, but also for DDBTD, which reflects abnormal accruals that are not explained by normal operations. Because DDBTD isolates the discretionary portion of BTD, its significant association with foreign ownership suggests that foreign investors may be linked to more strategic and persistent forms of tax avoidance behavior.

The control variables also provide meaningful insights. Internal cash flow (CF) has a significantly positive effect on tax avoidance in both models, implying that firms with more liquidity are better positioned to engage in tax planning through the hiring of tax experts or the design of sophisticated tax strategies. In contrast, research and development expenditure (RDE) is negatively associated with tax avoidance, suggesting that firms focusing on technological innovation are more likely to prioritize long-term value creation over aggressive tax planning. Leverage (LEV) also shows a significant negative effect in both models, indicating that highly leveraged firms, which already benefit from interest deductions, may have reduced incentives to pursue additional tax avoidance.

Other firm-level variables, such as return on assets (ROA), market-to-book ratio (MTB), and sales growth (GRW), display statistically significant coefficients in some models, highlighting the potential influence of financial performance and market perception on corporate tax behavior. Moreover, the net income dummy (NID) and market listing dummy (MD) both yields significantly positive coefficients, suggesting that firm-specific characteristics and institutional environments also play important roles in determining tax avoidance strategies.

Taken together, the finding that foreign ownership is positively associated with tax avoidance runs counter to Hypothesis 1, which posits a negative relationship based on the expectation that foreign investors serve as effective monitors (Desai and Dharmapala, 2006; Park and Hong, 2009).

Several interpretations may explain this contradiction. First, foreign investors may fail to serve as effective monitors or may even tolerate or encourage tax avoidance as a means of enhancing shareholder value. Second, foreign investors may exhibit a stronger focus on short-term profitability and market performance, thereby implicitly supporting tax avoidance strategies that increase after-tax income. In institutional settings such as South Korea, where foreign capital inflow is active but regulatory oversight remains relatively weak, the presence of foreign investors does not necessarily translate into enhanced financial transparency or greater tax compliance.

Table 4: Regression results on the relationship between foreign ownership and tax avoidance (full sample)

Variable	<Research model 1>				<Research model 2>			
	coefficient	t-value	Pr > |t|	VIF	coefficient	t-value	Pr > |t|	VIF
Intercept	-0.0154	-7.55	<.0001	0	-0.06711	-20.96	<.0001	0
FO	0.02615	7.1	<.0001	1.15621	0.0983	16.9	<.0001	1.1561
AD	2.02E-05	0.03	0.9763	1.11779	-0.00085	-0.78	0.434	1.146
RDE	-5.5E-05	-2.5	0.0125	1.00967	-0.00154	-7.09	<.0001	1.0382
DON	0.000926	0.55	0.5855	1.11206	-0.00052	-0.19	0.8465	1.11224
LEV	-0.03382	-21.34	<.0001	1.4962	-0.02465	-9.85	<.0001	1.49391
MTB	0.00016	1.61	0.1068	1.07618	0.000442	2.82	0.0048	1.07561
CF	0.89371	325.59	<.0001	1.4714	0.31924	81.61	<.0001	1.38898
ROA	0.000326	3.72	0.0002	1.0022	0.00057	4.12	<.0001	1.00203
GRW	1.82E-05	1.3	0.1923	1.00101	5.42E-05	2.45	0.0143	1.00101
INT	0.00126	12.42	<.0001	1.78988	0.00512	32.22	<.0001	1.77089
NID	0.01247	12.52	<.0001	1.51924	0.02935	19.08	<.0001	1.45073
MD	0.00613	8.44	<.0001	1.10654	0.00321	2.8	0.0052	1.10661
∑ID			Included				Included	
∑YD			Included				Included	
F-Value			4,403.74				431.04	
Adj-R2			0.7999				0.2808	
Samples*			41,855				41,857	

*: Outliers removed

4.5. The nonlinear relationship between foreign ownership and tax avoidance (full sample)

Table 5 presents the regression results of Research Models 3 and 4, which test the nonlinear relationship between foreign ownership and corporate tax avoidance. In these models, tax avoidance is the dependent variable—measured by BTD in Model 3 and DDBTD in Model 4. Both models include the foreign ownership ratio (FO) and its squared term (FO^2), allowing for the possibility that the effect of foreign investors is not strictly linear. This approach is grounded in the theoretical perspective that foreign investors may tolerate or overlook tax avoidance at lower ownership levels but switch to a monitoring role as their ownership stake increases.

The regression results reveal that foreign ownership (FO) exerts a significantly positive influence on tax avoidance in both models, while the squared term (FO^2) shows a significantly negative effect. Specifically, in Model 3, the coefficient for FO is 0.04481 ($p < .0001$), and for FO^2 is -0.04118 ($p = 0.0162$). In Model 4, FO is 0.1397 ($p < .0001$), and FO^2 is -0.09134 ($p = 0.0007$). These results, significant at the 1% level, indicate an inverted U-shaped nonlinear relationship, in which foreign ownership initially promotes tax avoidance but eventually suppresses it beyond a certain threshold.

The results regarding control variables also offer meaningful insights. Internal cash flow (CF) has a strongly positive and statistically significant effect in both models, suggesting that firms with greater liquidity are more capable of engaging in tax avoidance by hiring tax professionals or leveraging tax planning strategies. Conversely, R&D expenditure (RDE) shows a negative association with tax avoidance, implying that firms focused on long-term technological innovation are less inclined to pursue aggressive tax strategies.

Leverage (LEV) consistently exhibits a significant negative effect on tax avoidance in both models. This result suggests that firms already benefiting from interest deductibility may have weaker incentives to engage in additional tax avoidance. Other variables, including return on assets (ROA), market-to-book ratio (MTB), and growth rate (GRW), are statistically significant in some models, indicating that financial performance and market expectations can influence a firm's tax behavior. Furthermore, net income dummy (NID) and market division (MD) are positively associated with tax avoidance, emphasizing the role of institutional characteristics and firm-specific attributes in shaping tax strategies.

These findings challenge the linear perspective that foreign investors always act as effective monitors. At lower levels of ownership, foreign investors may prioritize short-term profitability and post-tax earnings, showing limited interest in curbing tax avoidance. However, as their ownership stake increases, they are more likely to exert real influence and serve as monitors of management, thereby discouraging aggressive tax behavior. Thus, foreign investors can be seen as dual agents who oscillate between the roles of guardians and colluders, depending on the level of ownership and contextual factors. Overall, these empirical results support Hypothesis 2, which posits that "the relationship between foreign ownership and tax avoidance is nonlinear." Consistent with previous studies (Desai et al., 2007; Balakrishnan et al., 2019), the findings confirm that the effects of foreign ownership vary depending on governance structures, stakeholder alignment, and investment objectives, and therefore cannot be adequately captured by a simple linear model.

Table 5: Regression results on the nonlinear relationship between foreign ownership and tax avoidance (full sample)

Variable	<Research model 1>				<research model 2>			
	coefficient	t-value	Pr > |t|	VIF	coefficient	t-value	Pr > |t|	VIF
Intercept	-0.01529	-7.5	<.0001	0	-0.06689	-20.89	<.0001	0
FO2	-0.04118	-2.4	0.0162	5.78188	-0.09134	-3.37	0.0007	5.78172
FO	0.04481	5.22	<.0001	6.29707	0.1397	10.29	<.0001	6.29693
AD	2.16E-05	0.03	0.9746	1.11779	-0.00085	-0.78	0.436	1.146
RDE	-5.5E-05	-2.5	0.0125	1.00967	-0.00154	-7.1	<.0001	1.0382
DON	0.000928	0.55	0.5846	1.11206	-0.00051	-0.19	0.8478	1.11224
LEV	-0.03353	-21.1	<.0001	1.50469	-0.02402	-9.57	<.0001	1.50237
MTB	0.000148	1.49	0.1356	1.0788	0.000416	2.65	0.0081	1.07824
CF	0.89368	325.59	<.0001	1.47144	0.31915	81.6	<.0001	1.38904
ROA	0.000326	3.73	0.0002	1.0022	0.000571	4.13	<.0001	1.00204
GRW	1.84E-05	1.31	0.1898	1.00102	5.44E-05	2.46	0.0139	1.00102
AGE	0.00122	11.97	<.0001	1.82446	0.00505	31.45	<.0001	1.80538
NID	0.01242	12.47	<.0001	1.5199	0.02924	19.01	<.0001	1.45136
MD	0.00592	8.07	<.0001	1.12377	0.00273	2.36	0.0185	1.12386
∑ID			Included				Included	
∑YD			Included				Included	
F-Value			4,291.47				420.38	
Adj-R2			0.7999				0.2810	
Samples*			41,855				41,857	

*: Outliers removed

4.6. The relationship between foreign ownership and tax avoidance: Pre-IFRS vs. post-IFRS

Table 6 presents empirical results examining how the introduction of International Financial Reporting Standards (IFRS) moderates the relationship between foreign ownership and corporate tax avoidance. This analysis tests Hypothesis 3 (H3), which posits that changes in financial reporting standards alter the monitoring effectiveness and strategic influence of foreign investors. The sample is divided into two sub-periods: the pre-IFRS period

(up to 2010) and the post-IFRS period (from 2011 onward). Two regression models are employed—Model 1 uses the book-tax difference (BTD) as the dependent variable, while Model 2 uses the discretionary component of BTD (DDBTD), which controls accrual-based earnings management.

During the pre-IFRS period, foreign ownership (FO) exhibits a significantly positive association with tax avoidance in both models. Specifically, the coefficient on FO is 0.03944 ($p < .01$) in Model 1 and 0.10844 ($p < .01$) in Model 2. These findings suggest that foreign investors may not perform a monitoring role but instead tolerate or even facilitate corporate tax avoidance. Notably, the stronger coefficient in Model 2 implies a closer connection between foreign ownership and aggressive tax strategies, including abnormal tax planning activities.

In the post-IFRS period, FO continues to show a significant positive effect on tax avoidance: 0.02703 ($p < .01$) in Model 1 and 0.09559 ($p < .01$) in Model 2. Although the coefficient in Model 1 declines compared to the pre-IFRS period, Model 2 maintains a high level of statistical significance. This pattern indicates that IFRS adoption does not necessarily enhance the monitoring function of foreign investors. Rather, foreign investors appear to retain their strategic influence over firms' accounting judgments and tax planning even in the new reporting regime.

The Chow test (Chow, 1960) was conducted to formally assess whether the relationship between FO and tax avoidance differs significantly across the two periods. The test yields F-values of 2.46 and 2.28 for Models 1 and 2, respectively, both with p-values less than 0.0001. These results confirm that the relationship significantly changes following IFRS adoption, thereby supporting Hypothesis 3 (H3).

These findings align with the proposition of Desai et al. (2007) and Balakrishnan et al. (2019) that foreign investors may shift roles between being monitors (guardians) and collaborators (colluders), depending on institutional and firm-level conditions. They also corroborate Braga (2017), who documented that the economic effects of foreign ownership on tax avoidance and firm value vary after the introduction of IFRS. Conversely, the results contradict studies such as Desai and Dharmapala (2006) and Park and Hong (2009), which argued that foreign investors consistently enhance financial transparency.

The control variables also yield several noteworthy implications. Internal cash flow (CF) shows a consistently positive and significant association with tax avoidance across both periods, indicating that firms with greater financial resources may be better positioned to implement sophisticated tax strategies. Research and development expenditure (RDE) consistently exerts a significant negative effect, suggesting that firms focused on long-term value creation are less inclined to engage in tax avoidance.

Leverage (LEV) has a significantly negative effect pre-IFRS adoption, implying that firms with high debt levels may already benefit from interest tax shields and have fewer incentives for further avoidance. However, the significance of LEV diminishes in some post-IFRS models, possibly reflecting reduced marginal tax savings from debt financing under the new regime.

Return on assets (ROA), sales growth (GRW), and firm age (AGE) are also significant in certain models, implying that corporate performance and life cycle stages influence tax behavior. Notably, net income dummy (NID) shows a stronger positive effect in the post-IFRS period, indicating that profitable firms may be more inclined to engage in tax avoidance. Furthermore, the market listing dummy (MD) loses significance after IFRS adoption, suggesting a potential reduction in market-based institutional effects.

Overall, the results suggest that changes in the accounting regime moderate the relationship between foreign ownership and corporate tax strategies. While the monitoring function of foreign investors appears to weaken somewhat after IFRS adoption, their influence remains statistically and economically significant. These findings underscore that foreign investors do not uniformly enhance transparency or compliance and highlight the need for a nuanced, multi-layered analysis that considers corporate governance structures, accounting systems, and institutional contexts.

4.7. Nonlinear relationship between foreign ownership and tax avoidance: Pre-IFRS vs. post-IFRS

Table 7 presents the results of regression analyses that examine whether the relationship between foreign ownership and corporate tax avoidance exhibits a nonlinear (inverted U-shaped) pattern, distinguishing between the pre- and post-IFRS adoption periods. Model 3 employs the book-tax difference (BTD) as the dependent variable, while Model 4 uses DDBTD, which isolates the discretionary component of tax avoidance after controlling for accruals.

During the pre-IFRS period, the squared term of foreign ownership (FO^2) yields significantly negative coefficients in both models, estimated at -0.10315 and -0.1207, respectively. At the same time, the linear term (FO) shows significantly positive coefficients of 0.08701 and 0.16411. These findings support the hypothesis of a nonlinear (inverted U-shaped) relationship: foreign investors tend to promote tax avoidance when their ownership stake is relatively low, but they increasingly assume a monitoring role as their ownership surpasses a certain threshold, thereby constraining aggressive tax strategies. A similar pattern emerges in the post-IFRS period. In Model 4, FO^2 remains significantly negative (-0.12152), while FO is significantly positive (0.15029), confirming the persistence of the nonlinear structure even after the adoption of IFRS. However, Model 3 shows a nonsignificant coefficient for FO^2 (-0.02337), while FO still has a significant

positive effect (0.03754). This partial weakening of the nonlinear pattern may reflect the institutional shifts introduced by IFRS, such as enhanced managerial discretion, which could reduce the effectiveness of foreign investors' monitoring functions in some firms.

Table 6: Regression results on the relationship between foreign ownership and tax avoidance: Pre-IFRS vs. Post-IFRS

Variable	Pre-IFRS				Post-IFRS			
	<Research model 1>		<Research model 2>		<Research model 1>		<Research model 2>	
	coefficient	VIF	coefficient	VIF	coefficient	VIF	coefficient	VIF
Intercept	0.01452***	0	-0.06274***	0	-0.02968***	0	-0.04847***	0
FO	0.03944***	1.14185	0.10844***	1.14185	0.02703***	1.1544	0.09559***	1.15595
AD	0.00649**	3.84287	-0.00295	3.84287	4.27E-05	1.04407	-0.00074	1.04424
RDE	-0.00265**	1.05836	-0.00751***	1.05836	-0.00094***	1.85598	-0.00136***	1.85791
DON	-0.00375	3.89145	0.00168	3.89145	0.11596	1.78994	0.08104	1.79256
LEV	-0.04608***	1.95257	-0.04158***	1.95257	-0.03843***	1.245	-0.00456	1.25501
MTB	0.000116	1.03329	0.000429**	1.03329	7.96E-05	1.12569	0.00074***	1.12921
CF	0.9524***	1.49203	0.36731***	1.49203	0.69595***	1.56174	0.29648***	1.60439
ROA	0.000247***	1.00244	0.000343**	1.00244	0.04822***	1.16103	0.07138***	1.17401
GRW	-2.6E-06	1.00182	4.92E-05	1.00182	1.28E-05	1.00236	2.75E-05	1.00239
AGE	0.0016***	2.16042	0.00581***	2.16042	0.00141***	1.33798	0.00303***	1.34765
NID	0.000584	1.53534	0.00982***	1.53534	0.03839***	1.45782	0.02855***	1.48447
MD	0.01215***	1.10691	0.01144***	1.10691	0.00177	1.1176	-0.0018	1.1183
∑ID	Included		Included		Included		Included	
∑YD	Included		Included		Included		Included	
F-Value	3,564.09		277.19		1,968.40		380.51	
Adj-R2	0.8388		0.2874		0.6976		0.3080	
Samples*	17,125		17,125		24,728		24,726	
Chow Test:	Break Point		Den DF		F Value		Pr > F	
Research Model 1	17,128		41,786		2.46		<.0001	
Research Model 2	17,128		41,786		2.28		<.0001	

**: p < 0.05; ***: p < 0.01; *: Outliers removed

The results of the Chow test further confirm the existence of a structural change between the two periods. The F-statistics for Models 3 and 4 are 2.40 and 2.22, respectively, with p-values below 0.0001. These results indicate that the regression coefficients differ significantly before and after IFRS adoption. Therefore, the findings provide empirical support for Hypothesis 3, showing that changes in accounting standards significantly modify the relationship between foreign ownership and tax avoidance.

The results for the control variables also provide important insights. Internal cash flow (CF) shows a consistently strong and significant positive relationship with tax avoidance across all models, indicating that firms with higher liquidity have greater ability to engage in tax planning activities. Return on assets (ROA) is also positive and statistically significant in all models, suggesting that more profitable firms are more likely to reduce their tax burdens.

Conversely, R&D expenditure (RDE) demonstrates a consistently significant negative association, implying that innovation-oriented firms are less likely to engage in aggressive tax avoidance. Leverage (LEV) has a significantly negative coefficient during the pre-IFRS period but loses its significance in post-IFRS Model 4, suggesting that the tax benefits from interest deductions may have diminished under the new regime. Other firm characteristics—such as firm age (AGE), profitability status (NID), and market listing type (MD)—also exhibit significant associations in several models, underscoring the role of firm-specific and institutional factors in shaping tax avoidance behavior.

These findings contribute to the literature by providing empirical validation of a key theoretical proposition. Previous studies, such as Desai et al. (2007), argued that the role of foreign investors is not monolithic and may shift from monitoring agents to facilitators of tax avoidance depending on the context. The current analysis confirms this proposition by demonstrating a nonlinear effect contingent on the level of foreign ownership. It also aligns with Braga (2017), who reported a post-IFRS transformation in the economic consequences of foreign ownership.

Furthermore, this study extends the literature by empirically identifying the "threshold point" at which the function of foreign investors shifts, an aspect often overlooked in prior research. By doing so, it deepens the theoretical understanding of the dual role of foreign ownership and highlights the importance of institutional contexts, such as accounting regimes, in moderating this relationship.

5. Conclusion

This study empirically examines the impact of foreign ownership on corporate tax avoidance using panel data from 2001 to 2023. Unlike prior studies that often assume foreign investors function uniformly as external monitors, the findings reveal that their role is conditional and dynamic. Specifically, the results show that foreign ownership significantly increases tax avoidance at lower levels of ownership, while the inclusion of the squared term confirms an inverted U-shaped relationship: foreign investors initially tolerate or encourage tax avoidance to boost returns, but once their ownership exceeds a certain threshold, they exert stronger monitoring power and restrain opportunistic tax strategies.

These findings are consistent with prior arguments by Desai et al. (2007) and Balakrishnan et

al. (2019). The moderating role of institutional change is also evident.

The inverted U-shaped relationship is stronger in the pre-IFRS period but becomes weaker after IFRS adoption, even though the positive linear effect remains significant. This suggests that while IFRS improves transparency, it simultaneously expands managerial discretion, thereby reducing the effectiveness of foreign investors' monitoring role. These findings are in line with Braga (2017), Kang (2012), and Okafor et al. (2019), who emphasized the complex impact of accounting standard reforms on investor–firm interactions. From a policy perspective, the findings carry significant implications for Korea. First, regulators should recognize that the monitoring effect of foreign investors is not guaranteed and may even reverse under certain ownership structures. Therefore, tax-related disclosure requirements must be strengthened to enhance transparency in corporate tax practices. For instance, Korean firms could be required to provide more detailed segmental disclosures on effective tax rates, deferred tax assets and liabilities, and cross-border transactions, enabling both regulators and investors to evaluate the appropriateness of tax strategies more clearly.

Table 7: Regression results on the nonlinear relationship between foreign ownership and tax avoidance pre-IFRS vs. post-IFRS

Variable	Pre-IFRS				Post-IFRS			
	<Research model 3>		<research model 4>		<research model 3>		<research model 4>	
	coefficient	VIF	coefficient	VIF	coefficient	VIF	coefficient	VIF
Intercept	0.01453***	0	-0.06273***	0	-0.02953***	0	-0.04773***	0
FO2	-0.10315***	6.07585	-0.1207***	6.07585	-0.02337	5.65648	-0.12152***	5.6588
FO	0.08701***	6.50718	0.16411***	6.50718	0.03754***	6.15972	0.15029***	6.16641
AD	0.00638**	3.84313	-0.00307	3.84313	4.4E-05	1.04407	-0.00073	1.04425
RDE	-0.00263**	1.05838	-0.00749***	1.05838	-0.00094***	1.856	-0.00136***	1.85794
DON	-0.00366	3.89169	0.00179	3.89169	0.11564	1.79	0.07942	1.79261
LEV	-0.04551***	1.95948	-0.04091***	1.95948	-0.03825***	1.25354	-0.00356	1.26419
MTB	9.99E-05	1.0347	0.00041**	1.0347	6.6E-05	1.13157	0.000669**	1.13518
CF	0.95227***	1.49213	0.36716***	1.49213	0.6959***	1.56202	0.2962***	1.60467
ROA	0.000248***	1.00246	0.000345**	1.00246	0.04824***	1.16128	0.07152***	1.17425
GRW	-2.3E-06	1.00183	4.96E-05	1.00183	1.29E-05	1.00237	2.77E-05	1.00239
AGE	0.00153***	2.20072	0.00572***	2.20072	0.00138***	1.36462	0.0029***	1.37497
NID	0.000606	1.53536	0.00985***	1.53536	0.03835***	1.45951	0.02834***	1.48604
MD	0.01178***	1.11577	0.01101***	1.11577	0.00161	1.14308	-0.00261	1.14398
∑ID	Included		Included		Included		Included	
∑YD	Included		Included		Included		Included	
F-Value	3,430.39		266.89		1,902.80		368.49	
Adj-R2	0.8389		0.2876		0.6976		0.3084	
Samples*	17,125		17,125		24,728		24,726	
Chow Test:	Break Point		Den DF		F Value		Pr > F	
Research Model 3	17,128		41,784		2.40		<.0001	
Research Model 4	17,128		41,784		2.22		<.0001	

**: p < 0.05; ***: p < 0.01; *: Outliers removed

Second, a differentiated regulatory approach is needed based on the type of foreign investor. Long-term strategic investors, such as sovereign wealth funds and pension funds, are more likely to support sustainable governance and are less inclined to accept aggressive tax practices. In contrast, short-term speculative investors often focus on immediate returns and may therefore encourage tax avoidance. Accordingly, policymakers should design tax governance measures that reflect investors' time horizons and institutional characteristics, rather than applying a uniform approach to all foreign investors.

Third, Korea's corporate governance system should be further strengthened. Boards of directors and audit committees, particularly in firms with dispersed foreign ownership, should be required to explicitly review and approve major tax planning strategies. This would help limit excessive managerial discretion, which has become more pronounced under IFRS.

Nevertheless, several limitations should be noted. First, this study does not distinguish between different types or nationalities of foreign investors, which may influence tax behavior in different ways. Second, the tax avoidance measures used (BTD and DDBTD) may not fully capture all forms of corporate tax planning. Third, the adoption of IFRS coincides with other major macroeconomic events, such as the global financial crisis and the COVID-19 pandemic, which may partly influence the results. In addition, the analysis does not explicitly address potential endogeneity issues, including reverse causality and omitted variable bias. Future research could address these limitations by using more detailed ownership classifications, alternative tax avoidance measures, and econometric techniques that better identify causal effects. Accordingly, the findings should be interpreted with caution, as the empirical design does not allow for strong causal conclusions.

Future research should address these limitations by examining investor heterogeneity in greater detail and by incorporating more direct tax data, including confidential filings and regulatory disclosures. Moreover, future studies should employ more advanced econometric techniques—such as instrumental variable (IV) estimation, difference-in-differences (DiD) approaches, or dynamic panel models—to better mitigate endogeneity and strengthen causal inference. Additionally, the growing importance of ESG standards and global minimum tax rules offers promising avenues for future inquiry into how evolving institutions reshape

the relationship between foreign ownership and tax behavior.

By analyzing both linear and nonlinear dynamics and incorporating institutional transitions such as IFRS adoption, this study provides a deeper understanding of the dual role foreign investors can play in corporate tax avoidance. It highlights the need for enhanced tax disclosure standards and differentiated regulatory frameworks for foreign investors in Korea, offering meaningful guidance for policymakers navigating the challenges of globalization and financial integration.

List of abbreviations

AD	Advertising intensity, measured as advertising expenses scaled by sales.
AGE	Firm age, measured as the natural logarithm of the number of years since the firm's establishment.
BTD	Book–tax difference, defined as the difference between financial accounting income and taxable income.
BTDi,t	Book–tax difference for firm i in year t.
CF	Internal cash flow, measured as the sum of net income and depreciation expenses scaled by total assets.
DDBTD	Discretionary book–tax difference, defined as the residual obtained from regressing total accruals on the book–tax difference.
DDBTDi,t	Discretionary book–tax difference for firm i in year t.
DON	Donation ratio, measured as donation expenditures scaled by sales.
FO	Foreign ownership, measured as the proportion of shares held by foreign investors.
FO^2	Squared term of foreign ownership, included to test nonlinear effects.
GRW	Sales growth, calculated as the annual change in sales scaled by prior-year sales.
IFRS	International Financial Reporting Standards.
KOSDAQ	Korean Securities Dealers Automated Quotations market.
KOSPI	Korea Composite Stock Price Index market.
LEV	Leverage, measured as total liabilities divided by total assets.
MD	Market dummy variable indicating listing market, where 1 represents KOSPI-listed firms and 0 represents KOSDAQ-listed firms.
MTB	Market-to-book ratio, calculated as the market value of equity divided by the book value of equity.
NID	Net income dummy, equal to 1 if the firm reports positive net income and 0 otherwise.
RDE	Research and development intensity, measured as R&D expenditures scaled by sales.
ROA	Return on assets, measured as accounting earnings divided by total assets.
VIF	Variance inflation factor, used to assess multicollinearity in regression models.
$\varepsilon_{i,t}$	Error term in the regression model for firm i in year t.
$\sum$ID	Industry fixed effects included in the regression models.
$\sum$YD	Year fixed effects included in the regression models.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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