Reported Profits And Effective Tax Rate Following Accounting Standards Changes Analysis Of Consolidated Financial Statements And Separate Financial Statements

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ABSTRACT

This study empirically examines how the adoption of IFRS affected the reported profits and effective tax rates of firms by analyzing consolidated financial statements and separate financial statements. Firms that adopted IFRS in 2011 were required to disclose consolidated financial statements and separate financial statements in both K-IFRS and K-GAAP for this period. We conjecture that there will be a difference in the reported profits and effective tax rates between the financial statements that adopt the two different accounting standards. This study will provide policy implications with regards to the recent IFRS adoption and the use of accounting standards.

The findings of this study are as follows. First, we find that the effective tax rate and corporate tax expenses decreased after the adoption of K-IFRS from K-GAAP. Earnings Before Tax (EBT) and net income also decreased when reported in K-IFRS. When we divide the total sample into the listed firms and KOSDAQ firms, we found a significant difference between the accounting standards in the total sample and listed firms, but did not see such a difference in KOSDAQ firms. In addition, results from the analysis of separate financial statements were analogous to those from consolidated financial statements. Additional analyses examined the effect of the early adoption of IFRS, but a significant influence due to early adoption was not found in consolidated financial statements from both parametric and non-parametric tests. However, the effective tax rate did decrease in the separate financial statements of firms that adopted K-IFRS earlier.

The implementation of K-IFRS (changes in accounting standards) has made the managerial performance of firms accounted for in the Equity Method to be reflected in EBT and net income. This entailed an increase (or decrease) in the Equity Method profit, which in turn increased reported profits and decreased effective tax rates. In other words, the total increase of reported profits in consolidated financial statements can be attributed to subsidiary companies. However, the adoption of IFRS also reduced the tax burden, which is considered to be the motivation for firms to adopt IFRS in advance.

This article attempts to provide policy implications with regards to the adoption of new accounting standards and its influence on the corporate tax expenses and effective tax rates in listed firms and KOSDAQ firms.

Keywords: K-IFRS; Corporate Tax Expense; Effective Tax Rate

I. INTRODUCTION

$\mathcal{L}$isted firms in Korea, encompassing firms in the financial industry, have been obligated since 2011 to report their financial statements following the Korean International Financial Reporting Standards (K-IFRS), the Korean version of IFRS which is widely used at international level, instead of the previously

adopted Korean Generally Accepted Accounting Principles (K-GAAP). The Korean government has made various attempts to enhance accounting transparency through internal restraint legislation including the Securities Class Action Act. Yet, the implementation of K-IFRS has been considered to be a necessity to raise international credibility. The adoption of IFRS fulfilled the needs of consistent accounting standards and eliminated various expenses that arise from differing accounting methods. The change in accounting standards can have an impact on the quality of accounting information which the firms disseminate and in turn can influence not only the decisions that parties of interest make, but also corporate tax expenses. Whereas prior studies emphasized how the effective tax rate is influenced by firm size, capital structure, and profitability, policy makers and researchers in the accounting field have taken interest in how changes in the accounting standards (from K-GAAP to K-IFRS) influence corporate tax expenses.

The major attribute of K-IFRS is that consolidated financial statements, instead of separate financial statements, are the main financial statements for reporting. From the firm's perspective, K-IFRS, which focuses on consolidated financial statements, reflect the economic substance, including the financial status and performance of the firm, more accurately than the previously adopted K-GAAP. Another attribute of K-IFRS is that firm assets and liabilities are measured not by historical cost but by fair value. This allows firms to minimize the asymmetry in accounting information, thereby reducing the overall loss in accounting information relevance. If the corporate tax expense of a firm that adopted K-IFRS is greater than when that firm adopted K-GAAP, the firm can be motivated to conduct earnings manipulation. This motivation can be an important reason for the taxation authority to amend the tax legislation. On the other hand, a firm's corporate tax expense can decrease due to the implementation of K-IFRS, which can overall lead to less tax revenue, providing yet another reason for the Tax Act amendment[1]. Therefore, change in the accounting environment from the adoption of new accounting standards entails changes in corporate tax expenses and ETR, which eventually changes the tax burden of an individual firm and the overall tax revenue.

The extant studies on the economic influence of the change in accounting standards mainly underline the empirical examination of the quality of accounting information before and after the adoption of IFRS, using samples from European countries, most of which adopted the new accounting standards in early stages. There are also several articles on the influence that K-IFRS has on the tax expenses of individual firms and the need for an amendment in the Tax Act. Nonetheless, studies[2] on how the financial statement elements under IFRS influence effective tax rates are yet to be investigated.

This study attempts to empirically investigate the impact of adopting K-IFRS instead of K-GAAP on corporate tax expenses and effective tax rates during the period[3] financial statements were disclosed under both standards. One of the major facets of IFRS is the focus on consolidated financial statements that reflect economic substance. We examine the changes that the adoption brings to both consolidated financial statements and separate financial statements and the difference between the firms that conduct early adoption and the ones that do not. We empirically examine the corporate tax expenses and effective tax rates of firms that adopt K-IFRS in advance in the year 2009 and 2010 and compare them with firms that apply K-IFRS in 2011. Simply put, we focus on the 2010 financial statements for firms that initially apply K-IFRS in 2011. This allows us to compare the 2010 financial statements in K-GAAP and the revised 2010 financial statements in K-IFRS. We compare the difference in effective tax rates displayed in the two financial statements with different accounting standards.

This paper is structured as follows: Section II introduces the concept of effective tax rates and summarizes the impact of the adoption of K-IFRS. Section III provides an explanation on the research design and data collection. Section IV tabulates the empirical findings. Lastly, Section V summarizes the results and describes the limitations.

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[1] The Tax Act reduces the tax burden of the firms that exploit various tax deductions and exemption clauses. By providing this incentive, the government attempts to stimulate R&D and investments through the enactment of the Restriction of Special Taxation Act
[2] We believe there are limitations in generalizing Jung, Jeon and Park (2011) as the sample only includes ten firms that adopt IFRS in advance.
[3] Early K-IFRS adoption firms could apply K-IFRS from 2009. The financial statements of a certain year generally report both the current term and the previous term. Therefore, early K-IFRS firms in 2009 have 2008 financial statements under both K-GAAP and K-IFRS. This makes it feasible to compare corporate tax expenses under different accounting standards.

II. LITERATURE REVIEW

2.1 Literature on Effective Tax Rates

The conceptual definition of the Effective Tax Rate (ETR, henceforth)[4] is the ratio of corporate tax expenses to reported profits; however, in practice it is measured with various proxies for corporate tax and reported profits. ETR has been regarded as an important factor in the enactment of the Tax Act and tax reforms. ETR also offers information about both the influence of tax on firm performance and the tax burden of firms. The nominator of the ETR[5] equation is usually proxied by corporate tax expenses or corporate tax expenses after adjustments, whereas the denominator of reported profits is proxied by total sales, operating income, income before tax, economic profits, net income including depreciation, or operating cash flows.

Spooner (1986) reviews the literature on measuring ETR that utilizes information from the financial statements and provides an improved measurement with regards to ETR. Estimating ETR with information on financial statements can entail problems including the sampling bias, ambiguous industry categories, the inclusion of other tax elements including income tax and consumption tax, a discrepancy between foreign tax and tax deductions, and an inclusion of firms that incurred a loss. Omer, Molloy and Ziebart (1991) discuss the empirical process of measuring ETR and analyze the measurements in existing literature. Their findings show that the ranking of companies fluctuates greatly when using different measures of ETR. Wilkie and Limberg (1993) conjecture that estimating ETR by dividing corporate tax expenses by earnings before tax holds a conceptual problem due to the incompleteness of the structure of reported profits, in that reported profits in accrual basis accounting does not accurately reflect a firm's economic profit.

Hanlon and Heitzman (2010) and Dyreng, Hanlon and Maydew (2008) empirically examine long-term corporate tax avoidance utilizing not only the conventional ETR measure but also CASH ETR and (need to list full name for BTD and state hereinafter referred to as "BTD") BTD to proxy for corporate tax avoidance. Kim and Kim (2012) conduct research on long-term corporate tax avoidance using ETR after adopting and adjusting the proxy based on prior literature including Hanlon and Heitzman (2010) and Dyreng *et al*. (2008). Their findings demonstrate that not only GAAP ETR but also CASH ETR is an accurate estimation to predict short-term and long-term corporate tax avoidance.

2.2 Literature on the Adoption of IFRS

Recent articles on IFRS underline how the implementation of IFRS can offer users information of enhanced quality. Barth, Landsman and Leng (2008) compare the earnings quality of firms under IFRS and firms that use locally accepted accounting standards in 21 countries to find that the firms that adopt IFRS conduct less earnings manipulation and that the earnings of these firms have higher value relevance. Balsari Ozkan and Durak (2010) analyze firms listed on the Turkish stock market, which has required firms to adopt IFRS since 2005. They examine how IFRS influences the timeliness of financial reporting and conservatism and report an increase in both factors. Firm with a lower leverage ratio, small sized firms, or firms in the financial service sector demonstrate a drastic increase in timeliness and earnings conservatism. Thus, the adoption of IFRS has been verified to enhance the quality of accounting information, thereby increasing the relevance of earnings information.

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[4] Corporate tax expenses can be classified into ETR and marginal tax rates according to the calculation method. ETR (effective tax rate) is conventionally measured by dividing current corporate tax expenses by net income (Porcano, 1986), whereas marginal tax rate is the increase in tax when taxable income increases by 1 won. ETR is classified into average effective tax rates and marginal effective tax rates. Fullerton (1984) suggests various reasons for the discrepancy between average effective tax rates and marginal effective tax rates, including the taxation structure of corporate tax expenses, exemption of tax in investments, accumulated depreciation, changes in Tax Acts, inflation, and capital financing methods. Marginal tax rate is a measure that captures the intention of firms to invest in new assets, whereas ETR is more useful in measuring cash flows in current investments and evaluating the relevance of the tax burden.

[5] The economic profit in ETR3 is estimated as the summation of tax benefits and taxable income. Tax benefits include various tax deductions and exemptions. Taxable income is inaccessible as information from the footnotes of audit reports and adjustments for taxable income are difficult to collect. Extant studies propose methods to estimate economic profit by substituting annual profit with EBT. Economic profit=Tax benefits+EBT= [(Direct deductions/Corporate tax rates)+Direct deductions]+EBT

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On the other hand, Tendeloo and Vanstraelen (2005) investigate whether IFRS can hamper earnings manipulation in German firms. Their results do not demonstrate a significant difference in discretionary accruals between firms using IFRS and firms using GAAP. Ahmed, Nel and Wang (2012) study the quality of accounting earnings after the mandatory adoption of IFRS in 2005, and find an increase in the quality of accruals and flexibility in earnings. They also find conservatism, measured by the model of Basu (1997), decreases after IFRS adoption, which implies a decrease in accounting earnings quality. In the same vein, Jarva and Lanto (2012) scrutinize the effect of the obligatory adoption of IFRS on conservatism and value relevance, and report an insignificant effect on conservatism, measured by both the model of Basu (1997) and the extended version of Olson. The results also show a lower performance of IFRS firms over firms of local standards. Devalle, Magarini and Onali (2010) study European firms that adopt IFRS to observe whether earnings value relevance increases and finds that the results vary by nation. Germany, France, and the U.K. show an increase in the influence that earnings have on stock prices whereas other nations exhibit a decrease in net asset book value. Overall, in the previous literature on European countries that adopt IFRS, the influence of IFRS on earnings quality is controversial.

The adoption of IFRS largely impacted the entire accounting system, raising the interest of many policy makers and researchers. We first enumerate the research on the impact on quality and value of accounting earnings. Choi, Kim and Choi (2011) examines the influence of K-IFRS adoption on earnings quality. Earnings Quality is proxied by performance measurements including the value relevance of (need to list all terms and say hereinafter referred to as …) ROA, BPS, and EPS and conservatism (Basu 1997 model). Firms with a low ROA tend to exhibit an increase in management performance after applying IFRS. Both BPS and EPS are contingent on market conditions and firm reports abide by conservatism. Ko (2011) analyzes the reliability and value relevance of accounting information between the firms that adopt K-IFRS in advance and the firms that do not apply K-IFRS. The results conclude that early adoption enhances the value relevance of accounting information, including net income and net assets.

Compared to the research on the relation between the change of accounting standards and entrepreneurial values, there are not many studies that delve into corporate tax expenses and tax avoidance following the change in accounting standards. The literature on taxation pinpoint the problems associated with accounting process in certain sectors (e.g., insurance sector, and construction sector) and attempt to offer improvements following the implementation of IFRS. Kim (2008) investigates the impact of IFRS on tax control after observing the accounts that require closing adjustments, such as allowance for bad debts in the financial service sector, insurance expenses in the insurance sector, and the depreciation of both tangible and intangible assets, which all can influence taxable income. The findings show the increase in discretion in accounting standards provides a chance for the firms to manipulation their earnings to minimize corporate tax expenses. Jung et al. (2011) also find early K-IFRS adoption decreases corporate tax expenses. On the other hand, it is difficult to generalize such conclusions because the sample data only contains 12 firms that adopt K-IFRS in advance in 2009. Due to the small sample size, the paper conducts a case study and does not expand the analysis to test statistical significance. The lack of tests on the influence on ETR is another factor that deters the generalization of the results. Kim and Kim (2012, b) compare ETR following the change in accounting standards, but use separate financial statements to test their hypotheses. One limitation of this approach is that the main financial statements in IFRS are the consolidated financial statements, and thus this paper examines the consolidated financial statements in the analyses.

III. RESEARCH MODEL

3.1 Research Methodology

This study compares the financial statements of 2010 in both K-GAAP and K-IFRS and examines the changes in corporate tax expenses, reported profits, and ETR. For firms that adopted K-IFRS in 2011 or later, a hypothetical 2010 financial statement is rewritten in K-IFRS. As the main financial statement for IFRS is consolidated financial statements[6] and separate financial statements are examined in the tests. Although consolidated financial statements are enough to demonstrate vital information to users, we cannot rule out

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[6] As aforementioned, the consolidated financial statements are the simple arithmetic sum of the reported earnings of the subsidiaries, which may offset the loss and profits of each subsidiary. Therefore, we analyze both types of financial statements. If there are significant differences in the consolidated financial statements accompanying the change in accounting standards but no effect on the separate financial statements in the total sample, listed firms or KOSDAQ firms, then it is safe to conjecture that the firms have the motivation to reduce burdens following the change.

possible omissions in consolidated financial statements. Each element in the consolidated financial statement is derived from the simple summation of the reported profits and corporate tax expenses in each separate subordinate firm.

Figure 1. Comparing Financial Statements[7]

2011 (IFRS C-F/S)		2011 (IFRS C-F/S)	
2011	**2010**	**2010**	**2009**
• Statement of financial position • Statement of Comprehensive Income • Changes in equity • Cash Flow Statement • FootnoteFootnote	• Statement of financial position • Statement (fix spacing of Comprehensive Income • Changes in equity • Cash Flow Statement • Footnote	• Balance Sheet • Income Statement • Changes in equity • Cash Flow Statement • Footnote	• Balance Sheet • Income Statement • Changes in equity • Cash Flow Statement • Footnote

The difference between K-GAAP and K-IFRS is tabulated in Figure 1. All listed firms in Korea are obligated to adopt K-IFRS since 2011. Therefore, as financial statements in the previous term are required to be written in the same standards, the IFRS conversion date for most firms is January 1st, 2010.

3.2 Proxies for ETR

This study implements two different definitions and measures of ETR. The first measure is estimated by dividing current term corporate tax expenses by EBT.

ETR 1 = Corporate Tax Expenses/ Earnings before Tax

Alternative measures of ETR use a different measure as the denominator, including; 1) Sum of net income and depreciation (NIPD); 2) Working capital from operation (WCFO); and 3) Cash flow from operation (CFO) (fix spacing) (Kim, 1994). Among the various cash flow measurements, ETR 2 and ETR 3 use NIPD and CFO.

ETR 2 = Corporate Tax Expenses/ (Net Income + Depreciation)

ETR 3 = Corporate Tax Expenses/ Operating Cash Flow[8]

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[7] As the main statement of IFRS is the consolidated financial statement, we tabulate how to compare the consolidated financial statement and the separate financial statements in Figure 1.
[8] To maximize earnings and value or minimize cash expenses, firms have the motivation to implement tax planning. As the importance of cash flows is increasing in firms, recent studies use ETR that reflects cash flows. (Hanlon & Heitzman 2010; Kim & Kim 2013; Choi, 2013)

3.3 Sample Collection and Data

This study empirically examines the influence that the change of accounting standards has on financial statements. We only include the listed firms that apply IFRS for the first time during the year 2011[9] because the purpose of the study is to compare the financial statements in 2010. We extract all the firms from Korea Investors Service, excluding firms that meet the following criteria:

- In financial service sector
- Fiscal year-end is not in December
- With impaired capital or classified as administrative issues.
- With omitted financial reports-except for the observed fiscal year.
- With missing financial information-except for the observed fiscal year.

The sample selection process is as follows: we first eliminate firms that are categorized as the financial service industry, which has distinctive industry specific financial statements when compared to those of the manufacturing firms, which will include inconsistency in measuring explanatory variables. The fiscal year-end for 95% of Korean firms is at the end of the year, and for convenience, we include those firms with a December year-end. Second, we identify firms with either impaired capital or those considered to have administrative issues as abnormal firms that may maintain considerably different financial information. Lastly, we also omit firms whose data is inaccessible from the sample. Firms with negative EBT and net income are also excluded from the sample. This process yielded a sample of 590 firms that hold consolidated financial statements (out of which 362 are listed firms and 228 are in KOSDAQ) and 1,280 firms with separate financial statements (555 listed firms and 725 KOSDAQ firms).

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IV. EMPIRICAL RESULTS

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4.1 Descriptive

We tabulate the descriptive statistics of our sample in Table 1. Panel A exhibits the descriptive statistics of consolidated financial statements. The mean value of corporate tax expenses is 15.3978, and the median is 15.3026 when applying K-IFRS, whereas the values are 15.4523 and 15.3249, respectively when applying K-GAAP. Both standards display symmetric distribution with regards to the mean. The reported earnings, which is indicated by EBT and net income, hold a mean (median) value of 17.0562(16.7659) and 16.8202(16.5806) when applying K-IFRS, and 17.0414(16.8560) and 16.7831(16.5550) when applying K-GAAP. Panel B shows the mean and median of corporate tax expenses as 14.4840 and 14.4249 respectively under K-IFRS, and 14.5122 and 14.4463 respectively under K-GAAP. EBT and net income of the firms under K-IFRS have the mean (median) value of 16.0489(15.9192) and 15.8842(15.7354), whereas the same firms under K-GAAP have a mean (median) of 16.0709(15.9538) and 15.9355(15.7532), respectively.

In Panel A, the mean (median) values of ETR1, 2, and 3 are 0.2340(0.2266), 0.2727(0.2623), and 0.2427(0.2074) under K-IFRS, whereas they are 0.2468(0.2358), 0.2892(0.2762), and 0.2400(0.2007) under K-GAAP. For separate financial statements, the mean (median) value of ETR1, 2, and 3 are 0.2096(0.2048), 0.2435(0.2409), and 0.2244(0.1837) under K-IFRS, and are 0.2056(0.2041), 0.2393(0.2386), and 0.2326(0.1875) under K-GAAP. All the distributions of ETR measurements are shown to be symmetric.

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[9] We omit firms that already adopted IFRS in year 2009 and 2010 since such firms do not meet our research objective.

Table 1. Descriptive Statistics

Panel A. Consolidated financial statements

Variables			Mean	SD	First Quartile	Median	Third Quartile	Minimum	Maximum
Corporate Tax Expense	K-IFRS		15.3978	1.9491	14.0284	15.3026	16.6142	9.0405	21.8808
	K-GAAP		15.4523	2.0245	14.0890	15.3249	16.6985	6.8298	21.8808
ETB	K-IFRS		17.0562	1.8246	15.8230	16.7659	18.1107	11.2848	23.6849
	K-GAAP		17.0414	1.8794	15.8390	16.8560	18.1553	9.2689	23.6849
Net Income	K-IFRS		16.8202	1.8622	15.6489	16.5806	17.8565	11.2126	23.5050
	K-GAAP		16.7831	1.8802	15.6053	16.5550	17.9002	9.2689	23.5050
ETR	K-IFRS	1	0.2340	0.1273	0.1655	0.2266	0.2741	0.0003	0.9511
		2	0.2727	0.1662	0.1693	0.2623	0.3361	0.0001	0.9857
		3	0.2427	0.1931	0.1010	0.2074	0.3187	0.0006	0.9855
	K-GAAP	1	0.2468	0.1294	0.1796	0.2358	0.2856	0.0003	0.9364
		2	0.2892	0.1617	0.1849	0.2762	0.3571	0.0001	0.9223
		3	0.2400	0.1899	0.0978	0.2007	0.3224	0.0007	0.9466

Panel B. Separate financial statements

Variables			Mean	SD	First Quartile	Median	Third Quartile	Minimum	Maximum
Corporate Tax Expense	K-IFRS		14.4840	1.7863	13.3997	14.4249	15.4501	6.1255	21.3071
	K-GAAP		14.5122	1.8420	13.4216	14.4463	15.5229	5.9162	21.3065
EBT	K-IFRS		16.0489	1.6451	15.0848	15.9192	16.8904	9.7162	23.4333
	K-GAAP		16.0709	1.7981	15.0720	15.9538	16.9545	0.0000	23.4324
Net Income	K-IFRS		15.8842	1.6097	14.9288	15.7354	16.6847	9.9959	23.3062
	K-GAAP		15.9355	1.6593	14.9404	15.7532	16.7566	10.9981	23.3057
ETR	K-IFRS	1	0.2096	0.1233	0.1457	0.2048	0.2468	0.0005	0.9894
		2	0.2435	0.1486	0.1517	0.2409	0.3019	0.0004	0.9715
		3	0.2244	0.1865	0.0890	0.1837	0.2859	0.0001	0.9720
	K-GAAP	1	0.2056	0.1211	0.1415	0.2041	0.2447	0.0006	0.8777
		2	0.2393	0.1464	0.1537	0.2386	0.2984	0.0004	0.9846
		3	0.2326	0.1923	0.0957	0.1875	0.3013	0.0001	0.9767

Note 1) Variables (in 100 million won) except for ETR are used after conversion to their natural log value.
2) Variable, with the exception of ETR, are winsorized at the 98% level at both ends after log conversion to eliminate the bias from outliers.
3) ETR 1 is estimated by dividing corporate tax expenses with EBT; ETR 2 is estimated by dividing corporate tax with the sum of net income and depreciation; ETR 3 is estimated is by dividing corporate tax expense with operating cash flows.

4.2 Comparison of Corporate Tax Expenses and Reported Profits Under K-IFRS and K-GAAP

4.2.1 Comparison of Corporate Tax Expenses

The comparisons of corporate tax expenses between K-IFRS and K-GAAP are shown in Table 2. For consolidated financial statements, we find the difference between the mean value of corporate tax expenses before and after the adoption of IFRS to have a parametric t-test statistic of –2.158 (fix spacing) (p-value=0.031) in the total sample, which is negative and statistically significant at the 5% level. When we classify listed firms and KOSDAQ firms, we find the difference of mean values to be –0.1213 for listed firms, which is statistically significant at the 1% level with a t-value of –4.200 (fix spacing) (p-value=0.000). However, we do not identify a significant difference in KOSDAQ firms.

When the same analysis is conducted on separate financial statements, we find the discrepancy to be –0.0282 with a t-value of –1.696 (p-value=0.090), which is significant at the 10% level. When we divide the total sample into listed firms and KOSDAQ firms, we find the difference to be negative and statistically significant at the 1% level for listed firms, but do not find a significant difference in KOSDAQ firms.

Overall our findings show that the corporate tax expenses have decreased in both consolidated and separate financial statements after the adoption of K-IFRS. When the total sample is divided into listed firms and KOSDAQ firms, the

reduction in corporate tax expenses is statistically significant exclusively in listed firms. The change in corporate tax expense is shown to decrease in the same direction as ETR, thereby implying that the reduction in ETR can be attributed to the decrease of corporate tax expenses. In both consolidated and separate financial statements, the corporate tax expenses decreased under K-IFRS. Similar results are shown when we test the listed firms but not in KOSDAQ firms. This result, as seen in the analysis of ETR, implies that the consolidated financial statements, which better reflect the economic substance, demonstrate decreasing corporate tax expenses under IFRS. A similar result is also observed in the asymmetric results of the comparison between consolidated financial statements and separate financial statements.

Table 2. Difference[10] in Corporate Tax Expenses[11] between K-IFRS and K-GAAP

Panel A. Consolidated financial statements

Variable	TOTAL				KOSPI			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**	**K-IFRS**	**K-GAAP**	**Difference**	**t(p-value)**
Corporate Tax Expense	15.3979	15.4523	-0.0544	-2.158 (0.031)**	16.1541	16.2754	-0.1213	-4.200 (0.000)***

Variable	KOSDAQ			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**
Corporate Tax Expense	14.2154	14.1662	0.0492	1.039 (0.300)

Panel B. Separate financial statements

Variable	TOTAL				KOSPI			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**	**K-IFRS**	**K-GAAP**	**Difference**	**t(p-value)**
Corporate Tax Expense	14.4840	14.5122	-0.0282	-1.696 (0.090)*	15.4111	15.4827	-0.0716	-2.686 (0.007)***

Variable	KOSDAQ			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**
Corporate Tax Expense	13.7301	13.7230	0.0071	0.339 (0.735)

4.2.2 Comparison of Reported Earnings

Table 3 is on the comparison between the two accounting standards in EBT and net income. In the analysis of the consolidated financial statements, the discrepancy between standards for net income is 0.0371 with statistical significance at the 10% level, but no significant difference is shown from EBT. When we examine the separate financial statements of the total sample, the difference of net income between the two accounting standards is –0.0513, which holds statistical significance at the 1% level. On the other hand, as in consolidated financial statements, we do not find any significant results for EBT. Overall, we find the net income of the separate financial statements to be smaller when written under K-IFRS, whereas the difference is in the opposite direction for consolidated financial statements.

On the contrary, the investigation of the difference of reported earnings in consolidated financial statements demonstrates a significant effect in KOSDAQ firms but not in listed firms. The EBT and net income of KOSDAQ firms are 16.0208, 15.7729 under K-IFRS and 15.9162, 15.6736 under K-GAAP. The differences between the two accounting standards are 0.1046 and 0.0997, both of which are statistically significant at the 5% level. On the other hand, when we examine the separate financial statements of listed firms, the differences of EBT and net income are 0.1957 and -0.1471, which are also statistically significant at the 1% level. The same financial statement analysis on KOSDAQ firms yields insignificant results.

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10 The consolidated financial statement sample of this study is composed of 362 listed firms and 228 KOSDAQ firms, whereas the sample of the separate financial statement is composed of 505 listed firms and 621 KOSDAQ firms.

11 The actual expense that is incurred to a firm is not the corporate tax expense reported in financial statements but the amount imposed under taxation. We regard this caveat as a limitation of our study.

To summarize, in the case of the consolidated financial statements, reported earnings increase under K-IFRS, but in separate financial statements, reported earnings decrease under K-IFRS. In other words, the main financial statements exhibit higher earnings under K-IFRS but separate financial statements demonstrate lower earnings. This contradiction between the two financial statements can cause confusion to information users. In addition, the results show an increase in EBT but a decrease in net income, the measure that incorporates corporate tax expenses. This implies that the change in accounting standards reduces the tax burden.

Table 3. Difference[12] in Reported Profits between K-IFRS and K-GAAP

Panel A. Consolidated financial statements

Variable	TOTAL				KOSPI			
	K-IFRS	K-GAAP	Difference	t(p-value)	K-IFRS	K-GAAP	Difference	t(p-value)
EBT	17.0562	17.0414	0.0148	0.657 (0.511)	17.6569	17.6960	-0.0391	-1.481 (0.139)
Net Income	16.8202	16.7831	0.0371	**1.683 (0.093)** *	17.4404	17.4407	-0.0003	-0.011 (0.991)

Variable	KOSDAQ			
	K-IFRS	K-GAAP	Difference	t(p-value)
EBT	16.0208	15.9162	0.1046	**2.475 (0.014)** **
Net Income	15.7729	15.6736	0.0993	**2.182 (0.030)** **

Panel B. Separate financial statements

Variable	TOTAL				KOSPI			
	K-IFRS	K-GAAP	Difference	t(p-value)	K-IFRS	K-GAAP	Difference	t(p-value)
EBT	16.0489	16.0709	-0.0220	-1.040 (0.298)	16.8648	16.6691	0.1957	**5.477 (0.000)** ***
Net Income	15.8842	15.9355	-0.0513	**-3.131 (0.002)** ***	16.6691	16.8122	-0.1431	**-5.139 (0.000)** ***

Variable	KOSDAQ			
	K-IFRS	K-GAAP	Difference	t(p-value)
EBT	**5.477 (0.000)** ***	15.4148	15.3849	0.0299
Net Income	**-5.139 (0.000)** ***	15.2739	15.2564	0.0175

We interpret the results of the difference in ETR by incorporating the difference in corporate tax expense and reported earnings. When firms adopt K-IFRS, the reduction of ETR is ascribed to a decrease in corporate tax expense and either a relatively small decrease or increase in reported earnings.

In consolidated financial statements, we find that the numerator, tax expense, decreases and that the denominator, reported earnings, increases after the adoption of K-IFRS. In separate financial statements, both the numerator and denominator decrease, yet the decrease of the denominator is smaller. We ascribe such increase in reported earnings to either an increase in profits or a decrease in the losses from the equity method.

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[12] The consolidated financial statement sample of this study is composed of 367 EBT observations and 363 net income observations for listed firms and 213 EBT observations and 213 net income observations for KOSDAQ firms. The sample of the separate financial statement is composed of 1,280 EBT observations and 1,280 net income observations for listed firms and 725 EBT observations and 725 net income observations for KOSDAQ firms.

4.3 Comparison of ETR Under K-IFRS and K-GAAP

The difference of ETR under K-IFRS and K-GAAP are in Table 4. We use the widely used parametric paired sample t-test[13] to examine statistical significance in both consolidated financial statements and separate financial statements. We first report our analysis of consolidated financial statements as follows. For the total sample, we find the mean value of ETR1 and 2 to be 0.2340 and 0.2727, respectively under K-IFRS, and 0.2468 and 0.2892 under K-GAAP. The differences between the two accounting standards are –0.0128 for ETR1 and –0.0165 for ETR2, both of which are significant at the 1% level. Nonetheless, ETR3, in which we divide the corporate tax expense with operating cash flows, does not show a significant difference between the two accounting standards.

We divide the total sample into listed firms and KOSDAQ firms. Similar results are exhibited in listed firms in which the differences for ETR1 and 2 are statistically significant, as in the total sample. (test for ETR1 yields t=-2.806 (p-value=0.005) and test for ETR2 yields t=-4.369 (p-value=0.000)). Nevertheless, KOSDAQ firms do not have a statistical significance in the differences for every ETR measure.

In the analysis of the separate financial statements, the mean value of ETR3 under K-IFRS is 0.2244 and 0.2326 under K-GAAP. The difference between the two values is –0.0082, which is significant at the 1% level. However, both ETR1 and 2 do not display a significant difference.

Next, when the whole sample is divided into KOSPI firms and KOSDAQ firms, the differences of ETR1 and 3 between the two accounting standards are statistically significant (For ETR1, t=2.080 (p-value=0.038), and for ETR3, t=-2.682 (p-value=0.008)). On the other hand, KOSDAQ firms do not exhibit a significant difference in ETR.

The most important attribute of IFRS is that firms are obligated to report consolidated financial statements as the main financial statements. Reported earnings and corporate tax expenses in consolidated financial statements are the summation of the values from separate financial statements. Thus, it is highly possible that a separate financial statement's reported earnings and corporate tax expenses of a subsidiary may offset those of other subsidiaries. The results show that in the separate financial statements, only the difference in ETR3 is negative and significant, whereas in consolidated financial statements, the differences of ETR1 and 2 are negative and significant. This implies that the change in accounting standards from K-GAAP to K-IFRS entails a reduction in ETR. Consolidated financial statements that reflect the economic substance and separate financial statements with asymmetric information show results that are similar to the analysis of the total sample and listed firms. Firms that follow IFRS, like listed firms, are mostly large sized and thereby are conjectured to demonstrate similar results to that of listed firms. On the other hand, KOSDAQ firms mostly consist of small firms, and thus the change in accounting standards do not strongly influence financial statements.

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[13] If the distribution of ETR is asymetric, we can use Wilcoxon's matched pairs signed rank test. In additional analyses, we conduct both parametric and non-parametric tests, due to the lack of early IFRS adoption firms.

Table 4. Difference[14] in ETR between K-IFRS and K-GAAP

Panel A. Consolidated financial statements

Variable	TOTAL				KOSPI			
	K-IFRS	K-GAAP	Difference	t(p-value)	K-IFRS	K-GAAP	Difference	t(p-value)
ETR 1	0.2340	0.2468	-0.0128	**-2.980 (0.003)*****	0.2440	0.2582	-0.0142	**-2.806 (0.005)*****
ETR 2	0.2727	0.2892	-0.0165	**-3.129 (0.002)*****	0.2825	0.3101	-0.0276	**-4.369 (0.000)*****
ETR 3	0.2427	0.2400	0.0027	0.355 (0.723)	0.2579	0.2575	0.0004	0.041 (0.967)

Variable	KOSDAQ			
	K-IFRS	K-GAAP	Difference	t(p-value)
ETR 1	0.2204	-0.0105	-1.302 (0.194)	0.2204
ETR 2	0.2593	0.003	0.314 (0.754)	0.2593
ETR 3	0.2165	0.007	0.615 (0.539)	0.2165

Panel B. Separate financial statements

Variable	TOTAL				KOSPI			
	K-IFRS	K-GAAP	Difference	t(p-value)	K-IFRS	K-GAAP	Difference	t(p-value)
ETR 1	0.2096	0.2056	0.0040	1.399 (0.162)	0.2321	0.2232	0.0089	**2.080 (0.038)****
ETR 2	0.2435	0.2393	0.0042	1.237 (0.216)	0.2713	0.2653	0.0060	1.049 (0.295)
ETR 3	0.2244	0.2326	-0.0082	**-2.034 (0.042)****	0.2394	0.2590	-0.0196	**-2.682 (0.008)*****

Variable	KOSDAQ			
	K-IFRS	K-GAAP	Difference	t(p-value)
ETR 1	0.1912	0.1913	-0.0001	-0.016 (0.987)
ETR 2	0.2208	0.2182	0.0026	0.673 (0.501)
ETR 3	0.3643	0.2198	0.1445	1.393 (0.164)

4.4 Additional Analyses

4.4.1 Comparison of ETR in Early IFRS Adoption Firms

Firms listed on the Korean stock market have been mandated to report financial statements under K-IFRS since January 1st 2011. However, as this change in accounting standards can temporarily distress firms, firms were allowed to adopt IFRS in advance from 2009. Those firms that implement IFRS from 2009 (fix spacing) (2008) set January 1st, 2009 (January 1st, 2008) as the IFRS conversion date following the Early Reporting Act[15].

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[14] In the consolidated financial statements, the total number of firms are ETR 1 = 553, ETR 2 = 527, ETR 3 = 433; among these firms, the number of listed firms are ETR 1 = 347, ETR 2 = 333, ETR 3 = 263, and that of KOSDAQ firms are ETR 1 = 206, ETR 2 = 194, ETR 3 = 170. On the other hand, as for separate financial statements, the number of total firms are ETR 1 = 1,115, ETR 2 = 1,073, ETR 3 = 868; among these, the number of listed firms are ETR 1 = 501, ETR 2 = 482, ETR 3 = 362, and the number of KOSDAQ firms are ETR 1 = 614, ETR 2 = 591, ETR 3 = 516.

[15] Early reporting minimizes the confusion that can arise following changes in financial statements and management performance from the adoption of the international accounting standards. It also allows firms to organize accounting systems and employ professionals.

Table 5 exhibits how the ETR is different in the early IFRS adoption firms[16]. We intend to conduct an additional analysis on the early IFRS adoption firms in order to capture the self-selection bias and other factors. In this additional test, we not only use the widely adopted t-test but also Wilcoxon's matched pairs signed rank test[17], considering the asymmetry of ETR distribution.

We find that there is no significant difference in ETR in both consolidated financial statements and the separate financial statements. Nevertheless, separate financial statements exhibit a significant difference in corporate tax expenses and reported earnings in the non-parametric test. In Table 6 and Table 7, corporate tax expenses are 22.7144 under K-IFRS and 22.8911 under K-GAAP, entailing a discrepancy between the two of –0.1767. The non-parametric z-statistics of the difference in ETR1 is –2.112 (fix spacing) (p-value=0.035), which is statistically significant at the 5% level. However, we do not find any significant influence of the change in accounting standards in the parametric test.

The differences in EBT and net income before and after the implementation of K-IFRS are –0.0830 and 0.0690, respectively. The non-parametric z-statistics of EBT is –2.257 (fix spacing) (p-value=0.024) and that of net income is –1.924 (fix spacing) (p-value=0.054), both of which imply a statistically significant and negative effect. Consolidated financial statements do not have a significant difference and we attribute this result to the offset between the corporate tax expenses and reported earnings.

Table 5. Difference[18] in ETR between K-IFRS and K-GAAP for early adoption firms

Panel A. Consolidated financial statements

Variable	parametric test				non-parametric test			
	early K-IFRS	early K-GAAP	Difference	t(p-value)	early K-IFRS	early K-GAAP	Difference	z(p-value)
ETR 1	0.2128	0.2170	-0.0042	-0.119 (0.907)	0.2128	0.2170	-0.0042	-0.094 (0.925)
ETR 2	0.2515	0.3135	-0.0620	-1.465 (0.167)	0.2515	0.3135	-0.0620	-0.722 (0.470)
ETR 3	0.2452	0.2293	0.0159	0.268 (0.793)	0.2452	0.2293	0.0159	-0.722 (0.470)

Panel B. Separate financial statements

Variable	parametric test				non-parametric test			
	early K-IFRS	early K-GAAP	Difference	t(p-value)	early K-IFRS	early K-GAAP	Difference	z(p-value)
ETR 1	0.1890	0.2113	-0.0223	-1.188 (0.246)	0.1890	0.2113	-0.0223	-0.148 (0.882)
ETR 2	0.2613	0.2843	-0.0230	-1.273 (0.215)	0.2613	0.2843	-0.0230	-0.363 (0.716)
ETR 3	0.2243	0.2096	0.0147	0.173 (0.864)	0.2243	0.2096	0.0147	-0.283 (0.778)

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[16] The early IFRS adoption firms in the year 2009 are 14 firms that consists of 7 KOSPI firms and 7 KOSDAQ firms. The early IFRS adoption firms in the year 2010 are a total of 47, and includes 24 KOSPI firms and 23 KOSDAQ firms.

[17] Due to lack of sample, we use both t-tests assuming normal distribution and non-parametric Wilcoxon's matched pairs signed rank test to analyze early IFRS adoption firms.

[18] The sample of consolidated financial statements is composed of 14 firms and that of separate financial statements is 25 firms. We omit the firms that of which ETR, reported earnings or corporate tax expenses is either negative or zero. Due to the small sample size, we conduct both the parametric test and the non-parametric Wilcoxon's matched pairs signed rank test.

Table 6. Difference in Corporate Tax Expense between K-IFRS and K-GAAP for early adoption firms

Panel A. Consolidated financial statements

Variable	parametric test				non-parametric test			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**	**K-IFRS**	**K-GAAP**	**Difference**	**z(p-value)**
Corporate Tax Expense	23.5993	23.8515	-0.2522	-1.083 (0.299)	23.5993	23.8515	-0.2522	-0.847 (0.397)

Panel B. Separate financial statements

Variable	parametric test				non-parametric test			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**	**K-IFRS**	**K-GAAP**	**Difference**	**z(p-value)**
Corporate Tax Expense	22.7144	22.8911	-0.1767	-1.806 (0.084)	22.7144	22.8911	-0.1767	**-2.112** (0.035)[**]

Table 7. Difference in Reported Profit between K-IFRS and K-GAAP for early adoption firm

Panel A: Consolidated financial statements

Variable	parametric test				non-parametric test			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**	**K-IFRS**	**K-GAAP**	**Difference**	**z(p-value)**
Corporate Tax Expense	25.2944	25.5351	-0.2407	-1.124 (0.281)	25.2944	25.5351	-0.2407	-1.099 (0.272)
Net Income	25.1600	25.2413	-0.0813	-1.111 (0.287)	25.1600	25.2413	-0.0813	-1.099 (0.272)

Panel B: Separate financial statements

Variable	parametric test				non-parametric test			
	K-IFRS	**K-GAAP**	**Difference**	**t(p-value)**	**K-IFRS**	**K-GAAP**	**Difference**	**z(p-value)**
Corporate Tax Expense	24.6241	24.7071	-0.0830	-1.666 (0.109)	24.6241	24.7071	-0.0830	-2.257 (0.024)[**]
Net Income	24.4028	24.3338	0.0690	-1.621 (0.118)	24.4028	24.3338	0.0690	-1.924 (0.054)[*]

4.4.2 Examining the Difference in ETR for Early IFRS Adoption Firms

The difference of ETR between K-IFRS and K-GAAP for early IFRS adoption firms examined through a parametric test and non-parametric test are shown in Table 8. Due to the small sample size of the early IFRS adoption firms, paired sample t-tests are conducted on the early IFRS adoption firms with the three measures of ETR. The results on consolidated financial statements exhibit no significant difference in both parametric and non-parametric tests. Conversely, when the same analysis was conducted on separate financial statements, the difference of ETR1 (subtracting the value under early K-IFRS adoption from the normal pre-adoption standards) was significant at the 1% level with the test statistic of 2.704 in the parametric test. In the non-parametric test, the test statistics of the difference in the three ETR measurements are -2.999 (p-value=0.003), -1880 (p-value=0.060), and –2.397 (p-value=0.017), all of which are significant at a minimum of the 10% level.

The overall result of this analysis demonstrates an insignificant effect of early IFRS adoption in both parametric and non-parametric tests. Nonetheless, for separate financial statements, the effect of early adoption on ETR1 in parametric test and on all three ETR in the non-parametric test was negative and statistically significant. This implies that early IFRS adoption firms are imposed with relatively lower ETR as the early implementation of IFRS reduces corporate tax expenses. From the decrease in the corporate tax expenses, we conclude that the motivation of self-selective tax avoidance exists in firms that implemented IFRS in advance.

Table 8. Difference[19] in ETR between K-IFRS and K-GAAP for early adoption firms

Panel A. Consolidated financial statements

Variable	parametric test				non-parametric test			
	K-IFRS	early K-GAAP	Difference	t(p-value)	K-IFRS	early K-GAAP	Difference	z(p-value)
ETR 1	0.2416	0.2128	0.0288	1.091 (0.282)	0.2416	0.2128	0.0288	-1.032 (0.302)
ETR 2	0.2806	0.2515	0.0345	0.944 (0.351)	0.2806	0.2515	0.0291	-1.244 (0.213)
ETR 3	0.2458	0.2452	0.0006	0.011 (0.991)	0.2458	0.2452	0.0006	-0.769 (0.442)

Panel B. Separate financial statements

Variable	parametric test				non-parametric test			
	K-IFRS	early K-GAAP	Difference	t(p-value)	K-IFRS	early K-GAAP	Difference	z(p-value)
ETR 1	0.2378	0.1890	0.0488	2.704 (0.009)***	0.2378	0.1890	0.0488	-2.999 (0.003)***
ETR 2	0.2969	0.2613	0.0356	1.240 (0.219)	0.2969	0.2613	0.0356	-1.880 (0.060)***
ETR 3	0.2510	0.2243	0.0267	0.519 (0.605)	0.2510	0.2243	0.0267	-2.397 (0.017)***

V. CONCLUSION

The Korean financial market has made numerous attempts to enhance the accounting transparency of the overall market after the 1997 East Asian Crisis, which is coined the IMF Crisis in Korea. The Korean government introduced internal restraint legislation, including the Securities Class Action Act, to reinforce transparency. For international credibility, the adoption of IFRS was assessed to be essential. This dramatic change in accounting standards influenced not only the quality of the accounting information which firms provide to the stake holders and decision makers, but also capital budgeting, investments, and even corporate tax expenses.

This study casts light on how the transition of accounting standards can influence ETR, using firms that adopt K-IFRS in 2011. The empirical test of statistical significance is conducted using parametric paired sample t-test. In addition, we test the influence on accounts in the income statement including reported profits and corporate tax expenses of firms that adopt IFRS in advance. Considering the asymmetric characteristic of the sample, the paired sample t-test was conducted as a parametric test and Wilcoxon's matched pairs signed rank test as a non-parametric test. The sample for analysis is from 2010 financial statements.

We summarize our findings from listed firms and KOSDAQ firms as follows: for consolidated financial statements, ETR1 and ETR2 (which are different measures for ETR) of listed firms decrease after the change in accounting standards. ETR3 from separate financial statements also decreases as well. Conversely, KOSDAQ firms do not exhibit any significant difference. Secondly, corporate tax expenses of both the total sample and the sample of listed firms all display a decline after the implementation of K-IFRS. On the other hand, the denominator term of ETR, EBT and net income, increase in consolidated financial statements under K-IFRS (and decrease in separate financial statements). Listed firms, under K-IFRS, include the management performance of invested stocks accounted in the equity method EBT and net income, which thereby increases the reported profits.

When we conduct our analysis on firms that adopt IFRS early, we do not observe any significant difference. In separate financial statements, we find both corporate tax expenses and reported profits decrease after the adoption of K-IFRS (yet an increase in net income). However, only insignificant effects are shown in consolidated financial statements. Although ETR in consolidated financial statements does not display a significant variation, a significant

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[19] The matched sample tests if there are discrepancies among early IFRS adoption firms by year. We test IFRS adoption firms with both parametric and non-parametric tests using the three measures of ETR.

increase in ETR is observed in separate financial statements. In other words, early IFRS adoption firms are shown to hold motivation to minimize tax burdens through the early adoption.

Prior literature mostly delves into revisions that should be made in legal aspects and taxation, whereas this study finds policy implications with regards to the implementation of new accounting standards. We contribute to identifying the influence of the change in practice. Whereas the majority of the studies underline the positive influence of the adoption of IFRS, including transparency in accounting information, this study captures the tendency of actual tax expenses decreasing with the adoption. Another contribution is that this paper uses various data to analyze the effect. We conduct an analysis on both consolidated financial statements and separate financial statements, on both listed firms and KOSDAQ firms, and on both general IFRS adoption firms and early IFRS adoption firms. Finally, despite the inaccessibility of the real tax expense data paid by the firms, through utilizing various proxies for ETR, this study offers various interpretations of the results. Overall, we hope this study can offer practical information to policy makers.

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