The Impact of IFRS Adopter on Effective Tax Rates in Korea: Analysis of Consolidated Financial Statements

Jeong Ho Kim
Silla University
Jeong Kyo Kim
Pusan National University

Abstract

As the Korean International Financial Reporting Standards (IFRS) are being adopted from 2011 onwards in Korea, all listed firms and most financial institutions must use the IFRS standard for their financial reporting. This new economic environment created confusion and uncertainty for Korean companies as the rules applied by IFRS differs greatly to that of the Korean Generally Accepted Accounting Principles (K-GAAP). Despite economic substance remaining unchanged, the potential changes in tax expense and effective tax rates has become of great concern to the firms planning to adopt IFRS. Accordingly, this study examines whether adopters of IFRS has been impacted in any significant ways by the changes in tax expense and effective tax rates under IFRS as compared to the previous system of K-GAAP.

For those firms that have adopted IFRS in 2011, this case study examines 600 of KOSPI (Korean Composite Stock Price Index) and KOSDAQ (Korean Securities Dealers Automated Quotations) firms. These firms have reported financial statements for both IFRS and K-GAAP in 2010, due to the gradual shift from one accounting standard, K-GAAP, to another, IFRS. The firms that have adopted IFRS in 2011 were required by the financial supervisory service of Korea to restate their 2010 financial statements using IFRS and disclose the reconciliation of the differences between the two sets of accounting standards. Thus, even when economic substance remains unchanged among these firms, it has enabled us to conduct a comparative analysis on tax expense.

The main results for adopters of IFRS for the 2010 fiscal year are as follows: First, a majority of adopters of IFRS have decreased effective tax rates as compared to K-GAAP. Second, a majority of adopters of IFRS have effectively experienced an decrease in tax expense as compared to K-GAAP. Third, there are strong indicators that show a majority of adopters of IFRS have effectively increased their income or loss before income taxes and net profit as compared to K-GAAP.

Finally, for these firms, there exists a difference in results between firms on the KOSPI and KOSDAQ. KOSPI firms exhibit similar results as compared to the outcome of the total number of firms (TOTAL=600 firms) used for analysis, but KOSDAQ firms show differences with this total.

These results contribute to research about how firms are affected by the changes to accounting standards on tax expense and effective tax rates. Also these results contribute to research about how firms are affected by the changes to accounting standards as segregated by KOSPI firms and KOSDAQ firms.

Key Words: IFRS, K-GAAP, tax expense, Effective Tax Rates

Ⅰ. Introduction

As the International Financial Reporting Standards (IFRS) is being adopted from 2011 in Korea, all listed firms and most financial institutions must use the IFRS standard in their financial reporting. A radical change of the accounting environment affects corporate accounting information quality. For instance, the decision making process of any corporation's interested parties are influenced by the quality of the accounting information. Therefore, it can affect the accounts of capital finance and investment activity as well as tax expense and effective tax rates (ETR). While previous researchers were interested in tax expense and how it affects the size of firms, capital structure, and profitability, this paper focuses on how the changing accounting standards from Korean Generally Accepted Accounting Principles (K-GAAP) to IFRS affects corporate tax expense and ETR on their business.

Unfortunately, for the short term during the transition period from K-GAAP to IFRS, firms would undoubtedly incur additional burdens, like time and costs and extra momentary costs, with the implementation of new standards. However, Korean firms stand to gain more than lose with the adoption of IFRS, as the reliability and credibility of Korean firm's financial improve statements as this shift creates unity in accounting practices in multiple countries throughout the world. The simplification to internationally accepted standards has also made it easier for overseas investors to positive in investment opportunities in Korea through greater transparency.

Previous studies in the EU on the economic impacts of changing accounting standards mostly presented their view of how adopters of IFRS were affected in regards to the quality of their accounting information (Barth *et al.* 2008; Balsari *et al.* 2010; Devalle *et al.* 2010) On the other hand, most previous research in Korea presented their view of how adopters of IFRS were affected as well but most of this research was limited in scope or scale using very narrow case studies or specific industries.

Therefore, this paper analyzes two different financial standards (K-GAAP and IFRS) reported for the same year (2010) and the exact same firms with a specific focus on tax expense and ETR. Normally, finance statements draw upon information from both the current year and the previous year for comparison. Korea adopted IFRS in 2011. Consequently, a great opportunity arose from this switch from K-GAAP to IFRS for the 2010 fiscal year. This is because financial reports were made for both K-GAAP and IFRS for 2010 fiscal year. This paper researches on how the changing accounting standards from K-GAAP to IFRS affects corporate tax expense and ETR on their business.

The remainder of the paper is organized as follows: Section 2 reviews previous studies on the measurements of ETR and the effects of IFRS. Section 3 explains the research design and sample selection. Section 4 discusses the empirical results. Finally, section 5 concludes.

Ⅱ. Advanced Research

2.1 ETR Measurement

Generally, ETR provides valuable information on the effectiveness and efficiency of an enterprise's activity and its burden of taxation. Previous research studied the measuring factors of various ETR in relation to business activities, investing activities, financing activities, and so on. The ETR for a corporation is the average rate at which its pre-tax profits are taxed. For corporations, the effective tax rate is computed by dividing total tax expenses by the firm's earnings before taxes. The effective tax rate is the net rate a taxpayer pays if all forms of taxes are included and divided by taxable income.

Spooner (1986) discusses the different methodologies for measuring average effective tax rates from financial statements. Effective tax rates can be divided into two broad classifications: average effective tax rates and marginal effective tax rates. The first are generally defined as the amount of tax paid as a percentage of income. The marginal tax rate is the percentage of the expected return on an additional investment that is expected to be paid in tax. Tax rates may be calculated by comparing three different measures of taxes paid with book income: current tax expense, which represents taxes expected to be currently payable; the total provision for taxes, which represents the taxes payable on that year's book income in the current year or in the future; or current taxes plus some portion of deferred taxes. Measuring the relative effective tax rates of industries serves to illustrate the consequences of the accumulation of tax benefits. Average effective tax rates may capture not only the details of specific tax provisions but also the changing role of those provisions over time. Meanwhile marginal rates are more appropriate for measuring the incentives in a tax system. From this point of view the measures may be complementary rather than competitive. Omer *et al.* (1991)

investigates two issues relating to the use of ETRs: the potential for defensible alternative measures to provide different results and the problems associated with using financial statement information to estimate tax and income. Results indicate that alternative ETR measures and systematic deferred tax reporting differences in the financial statements cause notable shifts in estimated ETRs. The systematic deferred tax differences have a predictable directional effect on estimated ETRs.

On the other hand, Gupta and Newberry (1997) examines the determinants of the variability in corporate effective tax rates. The results suggest that ETRs are associated with many firm-specific characteristics such as size, capital structure, asset mix, and profitability. Moreover, the finding that the fixed-effects regression model provides a superior specification over a simple-pooled model indicates that certain other unobserved firm-specific factors have an important and nontrivial relation with ETRs, and that these unobserved variables are likely correlated with the included variables. Thus, standard cross-sectional and time-series tests of an association between ETRs and other variables of interest are biased and inconsistent.

2.2 Effects of IFRS

Recently, the focus of much research is on the quality of accounting practice and information and whether or not it has improved. Barth *et al.* (2008) examines whether the application of International Accounting Standards is associated with higher accounting quality. The result shows that 21 countries generally evidence less earning management, and more value relevance of accounting amounts in relation with sample firms applying a non-U.S. domestic standard. Balsari *et al.* (2010) is considering the need for understanding the economic consequences of harmonization, they investigate the impact of IFRS adoption on the earnings conservatism as a dimension of reporting quality in Turkey. The results of the study show that IFRS adoption has increased both the timeliness and earnings conservatism (asymmetric timeliness), while the impact is stronger for financial firms, for firms having lower debt levels, and for smaller firms. Devalle *et al.* (2010) states the adoption of IFRS in the EU created mixed results in the accounting quality of individual EU nations with some experiencing improved accounting quality, while others worsened. Case in point, Britain, Germany, and France benefitted from the change to IFRS with increased stock prices. However, with the exception of Britain, most countries experienced net asset decreases. Tendeloo and Vanstraelen (2005) investigate whether German companies that have adopted IFRS engage significantly less in earnings management compared to German companies reporting under German generally accepted accounting principles (GAAP), while controlling for other differences in earnings management incentives. The results suggest that IFRS-adopters do not present different

earnings management behavior compared to companies reporting under German GAAP. These findings contribute to the current debate on whether high quality standards are sufficient and effective in countries with weak investor protection rights. They indicate that voluntary adopters of IFRS in Germany cannot be associated with lower earnings management.

Analysis of this previous research demonstrates that the overall quality of information is inconclusive after the implementation of IFRS in the EU, with research both registering improving and worsening quality. Before the switch to IFRS, both the accounting standards and accounting environment were expected to undergo comprehensive change. With this in mind, policy makers and academic researchers were anticipating what these changes meant and how it would affect Korea. There were two parts to these expectations and concerns. The first part was to pinpoint potential problem areas and develop viable solutions. Special attention was put on critical segments of the economy that would be affected the most, such as financial, insurance, and construction firms. The second part was concerned about the quality of the information presented by firms and the related issues of taxation.

The study by Kyu-Ho Kim (2008) focused on financial institutions and the effects of switching to IFRS, specifically on the allowance of bad debts and insurance. The results demonstrate increases in earning management. Woon-Oh Jung *et al.* (2011) studied the early adoption of IFRS by Korean firms and its effects on corporate tax expense. Their analysis shows decreases in tax expense from K-GAAP to IFRS, but, in total, only 12 Korean firms were sampled. Previous research done in Korea was limited to very narrow case studies or specific industries.

This paper researches on how the changing accounting standards from K-GAAP to IFRS affect 600 corporations (KOSPI firms and KOSDAQ firms) which adopted IFRS. Analysis concentrates on corporate tax expense and ETR on their business in 2010.

Ⅲ. Research Design

3.1 Model

All listed firms and most financial institutions must use the IFRS standard in their financial reporting after 2011. This paper studies ETR and measures different types of ETR.

The first measure of ETR 1 is current tax expense over income or loss before income taxes.

ETR 1 = tax expense / income or loss before income taxes

	before 2008	2009-2010	after 2011
early adopter of IFRS	K-GAAP	IFRS	IFRS
listed company			
unlisted company			

The next measures of ETR 2 and ETR 3 are current tax expense over different types of cash flows. Generally speaking, there are three divisions to cash flow: 1) net profit plus depreciation or NIPD; 2) working capital from operation or WCFO; and 3) cash flow from operation or CFO (Jeong-Kyo Kim 1994). This research uses measures of NIPD and CFO.

ETR 2 = tax expense / (net profit + depreciation cost)

ETR 3 = tax expense / cash flow from operations

3.2 Sample Selection

This research follows a process of statistical data selection. In the first step, data on firms were collected through the FnGuide program offered by Financial and Guide Co. The total collected data comprised of 1,734 firms for the 2010 fiscal year. The second step entailed further refinement of the data due to incomplete data of firms, but also of firms reporting zero or negative book income or tax expense. As a result, a total of 1,000 out of 1,734 firms were cut out from this selection process. A final data selection process post-data analysis was used to trim outlier data. With the application of winsorization, an additional 134 firms were taken out of the 600 firms used. All in all, this paper researches on how the changing accounting standards from K-GAAP to IFRS affects the final sample of 600 firms regarding their tax expense and ETR on their business in 2010. A further break down reveals that out of 600 corporations used in this analysis, 362 are KOSPI firms and 238 are KOSDAQ firms.

Ⅳ. Empirical Results

4.1 Descriptive Statistics

〈Table 1〉 presents descriptive statistics of 600 firms on all variables used in the analysis herein segregated as tax expense, income or loss before income taxes, net profit, and ETR. As shown in 〈Table 1〉, the mean (median) of the tax expense for IFRS are 15.3978 (15.3026), while under K-GAAP, this tax expense are 15.4523 (15.2349). Next, in regards to income or loss before income taxes, the IFRS mean (median) are 17.0562 (16.7659). However, under K-GAAP, the mean (median) comes out to be 17.0414 (16.7560). Furthermore, the net profit under IFRS comes to a mean (median) of 16.8202 (16.5806) with K-GAAP of 16.7831 (16.5550).

Finally, ETR 1 of IFRS has a mean (median) of 0.2340 (0.2266), with K-GAAP at 0.2468 (0.2357). Moving onto ETR 2, analysis shows that the IFRS mean (median) are 0.2727 (0.2623) and K-GAAP are 0.2892 (0.2762). As demonstrated, there is

symmetrical distribution for ETR 1 and ETR 2. Also, ETR 3 has symmetrical distribution since the data shows that the normal distribution curve has shifted to the right. Here, the mean (median) for ETR 3 of IFRS are 0.2427 (0.2074) and K-GAAP are 0.2399 (0.2007).

〈Table 1〉 Descriptive Statistics

Factor			Mean	Std. Dev	1Q	Median	3Q	Min	Max
tax expense	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
earnings before taxes	IFRS		17.0562	1.8246	15.8230	16.7659	18.1107	11.2848	23.6849
	K-GAAP		17.0414	1.8794	15.8390	16.7560	18.1553	9.2689	23.6849
net profit	IFRS		16.8202	1.8622	15.6489	16.5806	17.8565	11.2126	23.5050
	K-GAAP		16.7831	1.8803	15.6053	16.5550	17.9002	9.2689	23.5050
ETR	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	0.2357	0.2856	0.0003	0.9364
		2	0.2892	0.1617	0.1849	0.2762	0.3571	0.0001	0.9223
		3	0.2399	0.1899	0.0978	0.2007	0.3224	0.0007	0.9466

Note 1) The factors are measured with the natural logarithm of the real data (Base: 100 million KRW)
2) winsorization used
3) ETR 1 = tax expense / income and loss before income taxes,
ETR 2 = tax expense / (net profit + depreciation cost),
ETR 3 = tax expense / cash flow from operations

4.2 Difference of Tax Expense K-GAAP vs. IFRS

〈Table 2〉 presents the comparison of tax expense between the pre- and post- adoption of IFRS. This is represented in three parts as TOTAL, KOSPI, and KOSDAQ listed firms with a further differentiation for K-GAAP and IFRS. Looking at the TOTAL (600 firms), the tax expense for K-GAAP and IFRS are 15.4523 and 15.3978, respectively, which demonstrates significance for the t-test. Using the KOSPI data (362 firms), tax expense for K-GAAP and IFRS show significance at the 1% level of the t-test at 4.200 (p-value=0.000). Yields significance for the t-test. On the other hand, results for KOSDAQ (238 firms) on tax expense for K-GAAP and IFRS yields no significance for the t-test.

Case of TOTAL and KOSPI, tax expense of IFRS are decrease compared tax expense of K-GAAP, show significance at the 5% level of

〈Table 2〉 Difference of Tax Expense K-GAAP vs. IFRS

CLASSIFICATION			MEAN	DIFFERENCE	t(p-value)
tax expense	TOTAL (N=600)	K-GAAP	15.4523	0.0545	**2.158 (0.031)**
		IFRS	15.3978		
	KOSPI (N=362)	K-GAAP	16.2754	0.1213	**4.200 (0.000)**
		IFRS	16.1541		
	KOSDAQ (N=238)	K-GAAP	14.1662	-0.0492	-1.039 (0.300)
		IFRS	14.2154		

the t-test at 2.158 (p-value=0.031) and at the 1% level of the t-test at 4.200 (p-value=0.000), the reason is offset to effect equity method or offset to effect inter-corporate of group firms.

4.3 Difference of Book Income K-GAAP vs. IFRS

〈Table 3〉 presents the comparison of book income between the pre- and post- adoption of IFRS. Focusing on income or loss before income taxes (earnings before taxes), again the analysis is split into TOTAL, KOSPI, and KOSDAQ listed firms for K-GAAP and IFRS. Beginning with the TOTAL, the mean for earnings before taxes of both K-GAAP and IFRS are 17.0414 and 17.0562, respectively, representing no significance for the t-test. For KOSPI, the t-test does show no significance with the mean of K-GAAP at 17.6960 and IFRS at 17.6569. However, there is yet further significance with KOSDAQ. With K-GAAP at 15.9162 and IFRS at 16.0208, the earning before taxes shows significance at the 5% level for the t-test at -2.475 (p-value=0.014)

On the other hand, Net profit comprises as the second factor for book income. Consequently, the net profit for TOTAL has K-GAAP at 16.7831 and IFRS at 16.8201. With this in mind, analysis shows significance with the t-test. Likewise, KOSDAQ data for net profit also shows significance for the t-test with K-GAAP at 15.6736 and IFRS at 15.7729. Significance is at the 5% level for the t-test at -2.182 (p-value=0.030). But KOSPI, the K-GAAP and IFRS of net profit are 17.4407 and 17.4404, respectively. In this case, there is no significance t-test.

〈Table 3〉 Difference of Book Income K-GAAP vs. IFRS

CLASSIFICATION			MEAN	DIFFERENCE	t(p-value)
earning before tax	TOTAL (N=593)	K-GAAP	17.0414	-0.0148	-0.657 (0.511)
		IFRS	17.0562		
	KOSPI (N=367)	K-GAAP	17.6960	0.0391	1.481 (0.139)
		IFRS	17.6569		
	KOSDAQ (N=226)	K-GAAP	15.9162	-0.1046	**-2.475 (0.014)**
		IFRS	16.0208		
net profit	TOTAL (N=589)	K-GAAP	16.7831	-0.037	**-1.683 (0.093)**
		IFRS	16.8201		
	KOSPI (N=363)	K-GAAP	17.4407	0.0003	0.011 (0.991)
		IFRS	17.4404		
	KOSDAQ (N=226)	K-GAAP	15.6736	-0.0993	**-2.182 (0.030)**

4.4 Difference of ETR K-GAAP vs. IFRS

〈Table 4〉 presents the comparison of ETR before and after the adoption of IFRS; the three parts being TOTAL (Panel A), KOSPI (Panel B), and KOSDAQ (Panel C) listed firms. Consequently, each panel is further divided into ETR 1, ETR 2, and ETR 3. Referring to 〈Table 4, Panel A〉, ETR 1 of TOTAL consists of K-GAAP at a mean of 0.2468 and IFRS at 0.2340. Moving further down 〈Table 4, Panel A〉 ETR 2 for K-GAAP and IFRS are 0.2892 and 0.2727, the means are 0.2400 for K-GAAP and 0.2427 for IFRS ETR 3. Analysis shows that for the instances of ETR 1 and ETR 2, there is significance with the data for the t-test only. Looking at 〈Table 4, Panel B〉, ETR 1 of TOTAL consists of K-GAAP at a mean of 0.2582 and IFRS at 0.2440. Moving further down 〈Table 4, Panel B〉 ETR 2 for K-GAAP and IFRS are 0.3101 and 0.2825, the means are 0.2575 for K-GAAP and 0.2579 for IFRS ETR 3. Analysis shows that for the instances of ETR 1 and ETR 2, there is significance at the 1% level of the t-test only. Finally, in reference to 〈Table 4, Panel C〉, all data like TOTAL, KOSPI and KOSDAQ shows no significance t-test.

〈Table 4〉 Difference of ETR K-GAAP vs. IFRS

Panel TOTAL

CLASSIFICATION		MEAN	DIFFERENCE	t(p-value)
ETR 1 (N=562)	K-GAAP	0.2468	0.0128	**2.980 (0.003)**
	IFRS	0.2340		
ETR 2 (N=536)	K-GAAP	0.2892	0.0165	**3.129 (0.002)**
	IFRS	0.2727		
ETR 3 (N=441)	K-GAAP	0.2400	-0.0027	-0.355 (0.723)
	IFRS	0.2427		

Panel B KOSPI

CLASSIFICATION		MEAN	DIFFERENCE	t(p-value)
ETR 1 (N=347)	K-GAAP	0.2582	0.0142	**2.806 (0.005)**
	IFRS	0.2440		
ETR 2 (N=333)	K-GAAP	0.3101	0.0276	**4.369 (0.000)**
	IFRS	0.2825		
ETR 3 (N=263)	K-GAAP	0.2575	-0.0004	-0.041 (0.967)
	IFRS	0.2579		

Panel C KOSDAQ

CLASSIFICATION		MEAN	DIFFERENCE	t(p-value)
ETR 1 (N=215)	K-GAAP	0.2309	0.0105	1.302 (0.194)
	IFRS	0.2204		
ETR 2 (N=203)	K-GAAP	0.2563	-0.003	-0.314 (0.753)
	IFRS	0.2593		
ETR 3 (N=178)	K-GAAP	0.2095	-0.007	-0.615 (0.539)
	IFRS	0.2165		

Ⅴ. Conclusions

The Financial Supervisory Service of Korea (FSS), a government financial authority, began implementing a public process for the gradual adoption of IFRS in Korea. A Roadmap was outlined and officially announced on March 15, 2007. We call it IFRS which will start to implement from 2011. As the IFRS are being adopted from 2011 onwards in Korea, all listed firms and most financial institutions must use the IFRS standard for their financial reporting. This new economic environment created confusion and uncertainty for Korean companies as the rules applied by IFRS differs greatly to that of K-GAAP. Despite economic substance remaining unchanged, the potential changes in tax expense and effective tax rates has become of great concern to the firms planning to adopt IFRS. Accordingly, this study examines whether adopters of IFRS has been impacted in any significant ways by the changes in tax expense and effective tax rates under IFRS as compared to the previous system of K-GAAP.

Unfortunately, for the short term during the transition period from K-GAAP to IFRS, firms would undoubtedly incur additional burdens, like time and costs and extra momentary costs, with the implementation of new standards. However, Korean firms stand to gain more than lose with the adoption of IFRS, as the reliability and credibility of Korean firm's financial improve statements as this shift creates unity in accounting practices in multiple countries throughout the world. The simplification to internationally accepted standards has also made it easier for overseas investors to positive in investment opportunities in Korea through greater transparency.

For those firms that have adopted IFRS in 2011, this case study examines 600 of KOSPI and KOSDAQ firms. These firms have reported financial statements for both IFRS and K-GAAP in 2010, due to the gradual shift from one accounting standard, K-GAAP, to another, IFRS. The firms that have adopted IFRS in 2011 were required by the financial supervisory services of Korea to restate their 2010 financial statements using IFRS and disclose the reconciliation of the differences between the two sets of accounting standards. Thus, even when economic substance remains unchanged among these firms, it has enabled us to conduct a comparative analysis on tax expense and effective tax rates as caused by the two different sets of accounting standards in areas such as corporate tax.

The main results for adopters of IFRS for the 2010 fiscal year are as follows: First, a majority of adopters of IFRS have decreased effective tax rates as compared to K-GAAP. Second, a majority of adopters of IFRS have effectively experienced an decrease in tax expense as compared to K-GAAP. Third, there are strong indicators that show a majority of adopters of IFRS have effectively increased their income or loss before income taxes and net profit as compared to K-GAAP. Finally, for these firms, there exists a

difference in results between firms on the KOSPI and KOSDAQ. KOSPI firms exhibit similar results as compared to the outcome of the total number of firms (TOTAL=600 firms) used for analysis, but KOSPI firms show differences with this total.

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