

Changes in Accounting Information Value Relevance and Cash Flow Prediction: Evidence from Korea

Jeong Youn Kim

Associate Professor

Department of Accounting and Finance

College of Business Administration

Stockton Center

California State University, Stanislaus

Stockton

CA USA 95382

Kimberly G. Key

Associate Professor

School of Accountancy

301 Lowder Hall

Auburn University

AL USA 36849

Abstract

This study examines changes in value-relevance of earnings and book values for stock prices and the ability of earnings to predict future operating cash flows when there is a substantial change in a country's accounting standards and surrounding business and economic environment. The 1997 financial crisis in Korea precipitated the changes, and changes occurred well into the next decade with Korean policy makers adopting IFRS effective after 2010. Results show increased combined value relevance of current earnings and book value for stock prices as well as for earning and book value incrementally over the 1982 to 2011 period. The incremental relation between earnings and one-year ahead operating cash flows also increased, showing that changes in accounting standards motivated for external reasons (i.e., capital markets) can also have implications internal to firms. The results should be of interest in countries debating changes to domestic standards including possible IFRS adoption.

Keywords: value relevance of earnings, accounting change, Korea, IFRS

1. Introduction

This study investigates changes in value-relevance of earnings and book values for stock prices and the ability of earnings to predict future operating cash flows when there is a substantial change in a country's accounting standards and surrounding business and economic environment. Research on potential changing relations among earnings, book values, stock prices, and cash flows address fundamental capital market questions that continue to be relevant because of conflicting results in prior research and because international settings introduce new factors to the research environment and related questions. This study adds to the literature using the South Korea experience where the 1997 financial crisis precipitated significant mandatory changes to the country's domestic accounting standards. The changing standards began shortly after the financial crisis, continued for several years, and ultimately IFRS was adopted effective after 2010. The accounting changes were part of a significant overhaul of the financial, corporate governance, and auditing environment in South Korea, and the entire setting affects expectations of changes in relations among market, accounting, and cash flow information.

The study extends U.S.-based research (e.g., Collins, Maydew, and Weiss [hereafter CMW] 1997; Kim and Kross 2005) by predicting when and why relations among financial accounting and market measures would change as opposed to their U.S. settings where there are no predictions regarding the trend. It adds to a growing line of research on accounting quality that uses the stock price-earnings relation as a quality indicator (e.g., Barth et al. 2008).

The study extends Korean capital markets research including Jang et al. (2002) and Bae and Jeong (2007), by examining more years and by focusing why the price-earnings relation would change. It is also motivated by Kwon's (2009) surprising finding of no price-earnings relation.

The study also tests the ability of earnings to predict future operating cash flows, which has not been investigated to the same degree as the value-relevance of earnings. The seemingly conflicting results in Kim and Kross (2005) for earnings-stock price (weakening relation) versus earnings-future operating cash flow (increasing relation) have been called a puzzle (Bandyopadhyay et al. 2009), and results in this study may add to our understanding of the puzzle. Overall, the study contributes to our knowledge of mandatory accounting change settings, where prior results are mixed, particularly with respect to IFRS adoption, and it answers calls for in depth, single country studies (Schipper 2005; Weetman 2006).

Korea's decision to make changes to its accounting standards is somewhat a reaction to exogenous incident compared to many IFRS adoption studies where significant and long debate occurs on changing from domestic standards to IFRS. An important feature of the setting is that accounting standards changed in a broader environment of business, economic and political changes that supported the application and enforcement of new accounting standards. It was an evolving process that began shortly after the financial crisis, and changes in relations between accounting information and stock prices are expected to occur gradually throughout the process. The study has several years of data compared to many IFRS studies and employs a methodology that is well-suited to testing changes over several years.

Accounting changes include new accounting standards dictated by the Financial Supervisory Commission beginning after 1998 and the formation of the Korean Accounting Institute and Korean Accounting Standards Board (KASB) in 1999 with more changes in standards after those organizations were established. Then, in 2007 KASB announced "the roadmap" towards full IFRS adoption with IFRS implementation effective after 2010. The study's focus on the several-year evolution of Korea's accounting and institutional environment contributes to existing literature that does not have such significant changes or that compares and contrasts pre- and post-IFRS adoption periods. We believe that waiting to take a pre- and post-IFRS research approach in Korea is unlikely to show significant effects for changes in value relevance of earnings and book values because so much change happened in the 2000s before the official adoption date.

The study uses data from 1982 to 2011 to test whether the ability of earnings to predict stock prices and future operating cash flows changes over those thirty years.¹ Improvement in value-relevance is expected, but the change in the relation between earnings and future operating cash flows is theoretically more difficult to predict. Following CMW (1997) and Kim and Kross (2005), the research design uses annual cross-sectional regression analyses of the relations between earnings and book value and stock prices and between current earnings and future operating cash flows to compare time series trends in adjusted R^2 . Brown et al. (1999) adjustments to address potential scale issues in the CMW (1997) model are incorporated in sensitivity analysis.

Results show increased combined value relevance of current earnings and book value for stock prices as well as for earning and book value incrementally over the 1982 to 2011 period. The results are consistent with the changing Korean accounting standards and environment increasing the quality of earnings and its usefulness for stock price formation.² Tests of the relation between combined earnings and current operating cash flows for one-year-ahead operating cash flows show the relation increases over time. The same results obtain for the incremental ability of earnings to predict one-year-ahead operating cash flows ($p < .07$). The incremental explanatory power of current for future operating cash flows shows no change in relation over the sample period. The explanatory power of the cash flows models is fairly low, yet the results provide some evidence that changes in accounting standards motivated for external reasons (i.e., capital market focused) can have implications internal to firms as well.

¹We include 2011, the first post-IFRS adoption year, because for purposes of our study, we believe that year is a year of changing standards just like the other post-financial crisis years. Results are not sensitive to its inclusion.

²The explanatory power of the cash flow models are much lower than for the price models, which is discussed in the Results section.

The study is a first step and a broad examination of Korea's changing accounting environment, and the results inform our understanding of the accounting and market relations investigated and add to debate surrounding possible IFRS adoption in other countries.

Further, the cash flow results add to our understanding of its relation to earnings. Future research should address specific characteristics of the adoption process, which answers questions about "why?" the relations changed, as well as economic consequences of adopting IFRS.

The paper proceeds by discussing prior research on the relations among stock prices, earnings, book value, and operating cash flows. The review also highlights research related to IFRS adoption by jurisdictions and by firms. The Korean business, economic, and accounting environment after the financial crisis are explained next. Hypotheses are stated giving careful attention to theory and prior research. The research design is then described followed by results for 1) the change in the value-relevance of earnings and book value for stock prices and 2) the change in the predictive ability of earnings and current operating cash flows for one-year-ahead operating cash flows. The results are compared and contrasted with prior research to put them in some context. The paper's conclusion summarizes the study and suggests many avenues for future research.

2. Prior Value Relevance Research

Several prior studies examine the relation of earnings and book values to stock prices and stock returns, while CMW (1997) use the Ohlson (1995) valuation framework to investigate *changes* in the value-relevance of earnings and book values over the years 1953 to 1993. Their research addresses claims by some researchers and professional community members that historical cost financial statements have lost value-relevance due to "wholesale" changes in the economy. They conclude the *combined* value-relevance of book value and earnings for stock prices has not declined but has increased slightly over time. With respect to *incremental* value-relevance, earnings decreases but book value increases during the time period of their study. Using data from 1973 to 2000, Kim and Kross (2005) replicate CMW (1997) and find similar results, a weakening relationship over time between earnings and stock prices. Brown et al. (1999) control for potential scale effects in the CMW (1997) model and conclude that after controlling for the effects that there has been a decline in combined value relevance of earnings and book values for stock prices as measured by R^2 .³ These prior studies consider general time trends for United States-based firms in contrast to this study's focus on a non-U.S. system that has a substantial change in accounting, business, and economic regime.

Kim and Kross (2005) also address whether the ability of earnings to forecast future operating cash flows has changed over time. Their results show an increase in the relationship over time. The conflicting results – earnings and stock price relation weakening but earnings and cash flow relation strengthening – have been described as a puzzle because cash flows and stock prices are theoretically correlated with each other (Bandyopadhyay et al. 2009).⁴ The current study provides new evidence by examining the Korean setting.⁵

The current study also contributes to Korean capital markets research. Jang et al. (2002) use 1981 to 2000 data and find a slight increase in combined value relevance of earnings and book value over the 20 years and an increase (decrease) in the incremental explanatory power of book value (earnings), consistent with CMW (1997). The current study has a longer time period than Jang et al. (2002), it includes all the years of Korea's changing accounting environment leading up to IFRS adoption, and it offers reasons to expect a change in value relevance of accounting information. It also addresses Kwon's (2009) finding of no price-earnings relation.

This study is also motivated by research that examines the relation between IFRS adoption and accounting quality, among other questions (e.g., Barth et al. 2008). It extends single-country research that similarly examines a pre-IFRS adoption period and that find conflicting evidence with respect to value-relevance of domestic accounting standards earnings versus IFRS-based earnings.⁶

³Their analytical results do not apply to incremental R^2 . Thus, their model is used in sensitivity analysis in this study.

⁴ Bandyopadhyay et al. (2009) attempt to resolve the puzzle by considering the effect of conservatism and the trade-offs of relevance and reliability for earnings value relevance.

⁵Very few, if any, IFRS-related studies examine the earnings and operating cash flow relation.

⁶For example, studies that find no statistically significant change in value relevance of earnings (or elements of earnings) and/or book value before and after IFRS adoption include Tsalavoutas et al. (2012) on Greece and Callao et al. (2007) on Spain. Some studies find a decline in value relevance (e.g., Oliveira et al. 2010 on Portugal), and some studies find an

Very broadly, this study contributes to academic research that can provide insights on financial reporting standards, their implementation over time, and how measures like earnings could change in their implications for financial analysis (Riedl 2010).⁷

3. Korea Setting and Statement of Hypotheses

The 1997 financial crisis precipitated numerous changes in Korea's business and economic environment including changes in financial accounting standards and disclosure and in standards-setting organizations. Kim (2000) reports that shortcomings in Korea's accounting system had been identified even before the financial crisis such that "it was very difficult, if not impossible, to compare Korean financial accounting standards (KFAS) with internationally-recognized standards." The comparability problems were due in part to certain major deviations between the standards; in addition, disclosure standards were extremely vague and varied significantly (Kim 2000). Almost all the accounting standards were to be rewritten to be in harmony with IFRS, but at the time of Kim's report, Korea had not actually decided to adopt IFRS. KASB prepared an extensive report on Korea's eventual adoption and implementation of IFRS, and the report explains that IFRS were mandated to improve investor perceptions of transparency of financial statements and to show commitment to international movement to a single set of high-quality global accounting standards (KASB 2012).⁸ The roadmap to adoption was announced in 2007 with mandatory adoption effective after 2010.⁹

The KASB report shows that Korea experienced a complex, multi-faceted accounting change process rather than a switch "on" such as can be implied by studies that separate accounting periods using strict IFRS adoption dates. The KASB report identifies several factors that were also changing at this time including the following: more professional judgment was required; there was to be more conformity to economic substance; there was more footnote disclosure; there was increased risk of diversity in practice with IFRS because it was new. There was a desire for more guidance, and some continued reporting of KFAS metrics were allowed as modifications to IFRS.¹⁰

This study's trend methodology is suitable for the Korean environment and possibly for many other settings with sufficient years of data and with a time period characterized by change. In addition, even after 2010, the application of IFRS is likely to evolve and improve so that the initial years are not the same as later years even though both technically would be in "post" periods.¹¹ These sorts of transition and implementation issues could be a factor in the lack of consistent results in prior studies of changes in the value relevance of earnings before and after IFRS adoption.

Prior research identifies country-specific factors and conditions associated with the value relevance of financial accounting information. Ali and Hwang (2000) investigate five factors with the following relevant in the Korean setting: bank-versus market-oriented financial systems, government versus private standard setters, and importance or demand for auditing services. After the 1997 crisis, Korea's financial system moved toward a more market-oriented system. Financial accounting standards were expected to be less influenced by political, economic, and social objectives.

increase in value relevance (e.g., Vieru and Schadewitz 2012 on Finland and Horton and Serafeim 2009 on the United Kingdom, Chua et al. (2012) on Australia, Alali and Foote (2012) on the Abu Dhabi stock exchange). Devalle et al. (2010) examine value relevance of both earnings and book value for five European countries and find instances of both increasing, moving in opposite directions, and no effect for one or both.

⁷Riedl (2010) makes this statement in a review article about Bandyopadhyay et al. (2009).

⁸The tone of the report is positive yet recognizes challenges and difficulties and a "bumpy" ride. It also makes suggestions for other countries that would embark on adopting IFRS.

⁹The standards apply to listed companies. Non-public entities use a different set of standards. Prior to IFRS adoption, a single set of standards applied to all companies.

¹⁰Similar issues are likely to have been or to be factors in other countries' IFRS adoption processes. As the report states, "adoption of IFRS does not instantly bring improvement of accounting transparency" (KASB, 2012).

¹¹ The KASB (2012) report highlights how important education was in the adoption process.

Further, the importance of the auditing function increased and moved from a heavily regulated environment with government protection to a market environment that recognizes a good quality audit (Kim 2000).¹²

Alali and Foote (2012) identify corporate governance regulations and financial reporting transparency as important for value relevance considerations. Tsalavoutas et al. (2012) identify factors consistent with increasing value relevance of earnings including: 1. the strength of the accounting and auditing function, 2. the extent of the differences between domestic standards and IFRS, and 3. whether financial statements are of interest nationally as well as internationally. Post-financial crisis, there was an increase in outside Board of Director committee members, increased foreign stock ownership, and improved minority shareholder rights (Kim 2006; Kim and Kim 2007), consistent with both international interest in financial statements and improved corporate governance.¹³

Overall, the Korean setting is marked by a dramatic event that precipitated sweeping changes in policies, regulations, and structures in the financial and corporate sectors with the accounting system no exception (Kim 2000). Value relevance of earnings is expected to increase during the change process. However, despite that conditions are strongly suggestive of an increase in earnings' value relevance, a plethora of changes actually needed to be implemented after the financial crisis.¹⁴ These implementation issues create some tension in the research setting so that it remains an empirical question to test changes in value relevance. The first hypothesis is as follows (stated in research form):

1. The incremental value relevance of earnings increases over the 1982 to 2011 time period.

Theoretically, the same factors contributing to a change in the value relevance of earnings could cause an opposite change in the value relevance of book value (CMW 1997). Yet correlations between 1) stock prices and earnings, 2) stock prices and book value, and 3) earnings and book value in their study and in the current study are all positive and fairly high (above .50). Further, book value reflects net income from all prior periods, so they are not two completely separate constructs. Given CMW's (1997) observation and because of conflicting results in prior research, the following null hypothesis is specified:

2. There is no change in the incremental value relevance of book value over the 1982 to 2011 time period.

With respect to combined value relevance, Kim and Kross (2005) report that prior research is mixed in conclusions. Given the likelihood of increased value relevance of earnings in the Korean environment (Hypothesis 1) and the uncertainty regarding any change in value relevance of book value (Hypothesis 2), we assume the predicted increase in the earnings-stock price relation will dominate in tests of combined value relevance. The hypothesis is as follows (stated in research form):

3. The combined value relevance of earnings and book value of equity increases over the 1982 to 2011 time period.

An earnings and cash flow relation is also investigated, although a predicted relation between the two is somewhat problematic. Subramanyam and Venkatachalam (2007) state that, despite extensive research, the relative superiority of cash flows versus earnings for future cash flow prediction remains largely unresolved. Thus, we make no prediction about the expected relations. The following null hypotheses are investigated:

¹²Bartov et al. (2005) describe a similar construct, shareholder or stakeholder models. Korea moved in the direction of the shareholder model, consistent with transactions being less frequently conducted among parties that know each other, higher standards of public disclosure, and accounting standards evolving in the market.

¹³ Kim (2006) also explains that restrictions on M&A by foreigners were abolished and that foreign investment in land and real estate were liberalized. These changes are consistent with empirical research that concludes IFRS represents a vehicle for making capital markets more accessible to foreign investors (Hope et al. 2006).

¹⁴ Kim (2010) makes this point by identifying control mechanisms, business climate changes, internationalization, business cycle, and economic development as factors that could work against increasing value relevance. He notes that standard-setting is a political process and that accounting standards' organizations may be required to make trade-offs in standard setting where there could be a need to satisfy multiple parties with conflicting interests.

4. There is no change in the relation between combined earnings and current operating cash flows and future operating cash flows over the 1982 to 2011 time period.
5. There is no change in the incremental relation between earnings and one-year ahead operating cash flows over the 1982 to 2011 time period.

4. Methodology

This study tests the value relevance of accounting information consistent with CMW (1997) and Kim and Kross (2005) using the following three equations:

$$P_{i,t} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 BV_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$P_{i,t} = \beta_0 + \beta_1 E_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$P_{i,t} = \gamma_0 + \gamma_1 BV_{i,t} + \varepsilon_{i,t} \quad (3)$$

$P_{i,t}$ is firm i 's stock price at the end of March _{$t+1$} , $E_{i,t}$ is earnings per share of firm i during year t , and $BV_{i,t}$ is firm i 's book value per share at year end. The coefficients of determination from equations (1)-(3) are denoted R^2_1 , R^2_2 , and R^2_3 , respectively. The explanatory power of equation (1), R^2_1 , is decomposed into the incremental explanatory power of earnings, $R^2_{EPS} = R^2_1 - R^2_3$, and the incremental explanatory power of book value, $R^2_{BV} = R^2_1 - R^2_2$. R^2_1 , R^2_{EPS} , and R^2_{BV} are used to test whether there is a change in the explanatory powers of earnings and book values for stock prices using the following specification:

$$R^2_x = \phi_0 + \phi_1 TIME_t + \varepsilon_t \quad (4)$$

$TIME_t = 1, 2, 3, \dots, 30$ and corresponds to the years 1982 to 2011 and x represents combined, BV, or EPS. Hypotheses 1, 2, and 3 are tested by examining ϕ_1 with positive coefficients predicted for earnings and book value combined and for incremental earnings. Brown et al. (1999) add coefficients of variation of price and book value per share to equation (4), and we also follow their approach to address whether the results are sensitive to potential data scale effects.¹⁵

Operating cash flows (CFO) and earnings (E) are measured consistent with Kim and Kross (2005) to test the relation between earnings and future cash flows.¹⁶ The method follows the value relevance tests.

The sample is obtained from the KIS-Value database maintained by the Korean Listed Company Association and includes all firms except financial institutions and insurance companies with necessary data and December 31 year ends. The selection method yields 12,109 firm-year observations. To control for the effects of extreme observations, amounts are truncated at three standard deviations.¹⁷

5. Results

Descriptive data are reported in Table 1.¹⁸ Mean stock price and earnings per share over the 30 years, 1982 to 2011, are 20,142 won and 1,811 won, respectively.¹⁹ Medians are lower in both cases. Earnings and cash flow from operations, both scaled by average total assets, are .022 and .024 won, respectively.

¹⁵Their analytical results do not apply to incremental R^2 , so the sensitivity analysis is appropriate in our study.

¹⁶CFO = income before depreciation expense – interest expense + interest revenue – taxes – ΔWC . ΔWC = the changes in receivables, inventory, and other current assets minus the changes in accounts payable, taxes payable, other current liabilities, and deferred taxes. CFO and earnings are deflated by average total assets.

¹⁷If an observation for a variable is more than three standard deviations above or below the average for that variable, the value is set equal to the plus/minus three standard deviations amount.

¹⁸All financial amounts are presented in won. A very simplified rule of thumb for average won-U.S. dollar exchange rates is 1,000 won = 1 dollar. Thus, the mean price of 20,142 won equals approximately U.S. \$20.

¹⁹These amounts for 1953 to 1993 U.S. data in CMW (1997) are \$17.58 and \$1.29.

Table 1: Descriptive Statistics

n=12,109

Variables	Mean	Standard Deviation	Median	Minimum	Maximum
Price	20142	41262	8650	31	476992
EPS	1811	7152	898	-254905	97747
BV	27769	47450	15729	-327231	535963
EARN	0.02178	0.09759	0.02471	-1.40917	1.52828
CFO	0.02369	0.13469	0.03365	-2.22733	2.36793

Amount are in Korean won.

PRICE is the stock price at the end of the third month after year-end.

EPS is earning per share for the year, and BV is the book value per share at year-end.

EARN is earnings and CFO is operating cash flows for the year where both are deflated by average total assets.

Table 2 reports correlation coefficients. Price is positively correlated with both earnings per share and book value (Spearman correlation coefficients = .53 and .62, respectively), consistent with CMW (1997) and Jang et al. (2002) but with somewhat different magnitudes.²⁰ Spearman correlations between earnings and current and one-year-ahead operating cash flows are both .36 and .33, respectively. The correlation between the cash flow measures, .147, is statistically significant but rather low compared to Kim and Kross (2005).²¹

Table 2: Correlations

n=12,109

	Price	EPS	BV	EARN _t	CFO _t	CFO _{t+1}
Price		0.543	0.736			
EPS	0.530		0.581			
BV	0.617	0.620				
EARN _t					0.454	0.291
CFO _t				0.365		0.095
CFO _{t+1}				0.326	0.147	

Upper right and lower left are Pearson and Spearman correlation coefficients, respectively.

All correlations are statistically significant ($p < .01$).

PRICE is the stock price at the end of the third month after year-end.

EPS is earning per share for the year, and BV is the book value per share at year-end.

EARN is earnings and CFO is operating cash flows for the year where both are deflated by average total assets. $t =$ year.

Annual cross-sectional regressions of price on earnings and/or book value are estimated, with the adjusted R^2 amounts used as dependent variables to test value relevance Hypotheses 1, 2 and 3. Table 3 reports results for the tests of hypotheses for the changes in value relevance of earnings and book value for stock prices. The regression equations reflect trends in R^2 (TIME), the variable of interest for hypothesis testing. In all five estimations TIME is positive and statistically significant, indicating that combined value relevance of earnings and book value as well as their incremental value relevance increase over the 1982 to 2011 time period.²² Thus, data are consistent with Hypotheses 1 and 3, which predict increases for combined and incremental earnings specifications.

²⁰For example, the correlation between price and earnings in CMW (1997) is .77 compared to .52 in Table 2. The .52 is higher than .4 reported for Korean data from 1981 to 2000 in Jang et al. (2002). Kim and Kross (2005) do not tabulate this information.

²¹Kim and Kross (2005) report the following correlations: .54 for earnings and current cash flows, .43 for earnings and one-year-ahead cash flows, and .46 for current and one-year-ahead cash flows.

²²CMW (1997) do not tabulate these data, so it is not possible to compare details such as model adjusted R^2 . They only report t statistics.

The null of Hypothesis 2, that the incremental explanatory power of book value does not change, is rejected. These results differ from CMW (1997) who found only a slight increase in the combined value-relevance, a slight decrease in the price-earnings relation, and an increase in value-relevance of book value.²³ When we re-estimate the total, earnings, and book value regressions adding proxies for scale effects following Brown et al. (1999), the two additional variables are statistically significant in only one specification, and the conclusions regarding TIME are the same as the results reported in Table 4 (not tabulated). Thus, given this study's assumption that a stronger stock price-earnings relation indicates higher accounting quality, the results are consistent with Korea meeting the goal to improve its accounting standards.

Table 3: Regression Results for Price, Earnings, and Book Value

Dependent Variables n= 30		TIME		Model AdjustedR ²
		ϕ_0	ϕ_1	
Total R ²	Coefficient Estimate	-0.00633	0.0251	0.8405
	T statistic	-.18	12.4	
Earnings R ²	Coefficient Estimate	-0.02076	0.0178	0.5317
	T statistic	-.38	5.82	
Book Value R ²	Coefficient Estimate	-0.01672	0.0232	0.8718
	T statistic	-.57	14.08	
Incremental Earnings	Coefficient Estimate	.01039	.0019	.1498
	T statistic	.76	2.47	
Incremental BV	Coefficient Estimate	.01443	.0073	.3253
	T statistic	.43	3.87	

Models of Yearly Regressions of Price on Earnings and Book Value:

$$(1) P_{i,t} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 BV_{i,t} + \varepsilon_{i,t}$$

$$(2) P_{i,t} = \beta_0 + \beta_1 E_{i,t} + \varepsilon_{i,t}$$

$$(3) P_{i,t} = \gamma_0 + \gamma_1 BV_{i,t} + \varepsilon_{i,t}$$

P = stock price at the end of the third month after year-end, E = earnings per share, BV = book value per share, i = firm, and t = year.

The following regressions are estimated using the adjusted R² from Equations (1) to (3):

$$(4) R^2 = \phi_0 + \phi_1 \text{TIME}_t + \varepsilon_t$$

TIME = 1 to 30 corresponding to years 1982 to 2011.

Annual cross-sectional regression of one-year-ahead operating cash flows on current earnings and/or operating cash flows are estimated for 1982 to 2011. Adjusted R² amounts are lower than those for price, earnings, and book value, and clear trends are harder to identify, and compared to Kim and Kross (2005) are lower (not tabulated).

Table 4 reports results for the trends in R² with respect to earnings and current operating cash flow relations to future operating cash flows. Adjusted R² statistics are rather low, ranging from .08 to .12 for specifications that include earnings but basically equal zero for models with only current operating cash flows.

²³Comparisons to the two prior Korean-based studies cannot be made because they do not use the same methodology as CMW (1997) and this paper. The results also differ from Brown et al. (1999) who, after making methodology adjustments to CMW (1997), find a slight decrease in the combined explanatory power of earnings and book value.

Results for the combined relevance and for the incremental relevance of earnings for predicting one-year ahead cash flows show TIME is positive and statistically significant (two-tailed p-value = .07 for the latter).²⁴ These results reject null Hypotheses 4 and 5. The positive earnings-future cash flow relation is consistent with Kim and Kross (2005).²⁵

Table 4: Regression Results for Future Operating Cash Flows, Earnings, and Current Operating Cash Flows

Dependent Variables n= 30		φ_0	TIME φ_1	Model AdjustedR ²
Total R ²	Coefficient Estimate	.06994	.00280	.1208
	T statistic	3.15	2.23	
CFO R ²	Coefficient Estimate	.01299	.00041	-.006
	T statistic	1.65	.9137	
Earnings R ²	Coefficient Estimate	.06742	.0161	.0824
	T statistic	3.096	1.899	
Incremental CFO R ²	Coefficient Estimate	.0025	.00047	-.004
	T statistic	.287	.941	
Incremental Earnings R ²	Coefficient Estimate	.0570	.0024	.0817
	T statistic	2.54	1.89	

Models of Yearly Regressions of Future Operating Cash Flows on Earnings and Current Operating Cash Flows:

$$(1) \text{CFO}_{i,t+1} = \alpha_0 + \alpha_1 \text{CFO}_{i,t} + \alpha_2 \text{E}_{i,t} + \varepsilon_{i,t}$$

$$(2) \text{CFO}_{i,t+1} = \beta_0 + \beta_1 \text{CFO}_{i,t} + \varepsilon_{i,t}$$

$$(3) \text{CFO}_{i,t+1} = \gamma_0 + \gamma_1 \text{E}_{i,t} + \varepsilon_{i,t}$$

CFO = operating cash flows, E = earnings, i = firm, and t = year.

The following regressions are estimated using the adjusted R² from Equations (1) to (3):

$$(4) R^2 = \varphi_0 + \varphi_1 \text{TIME}_t + \varepsilon_t$$

TIME = 1 to 30 corresponding to years 1982 to 2011.

With respect to the prior “puzzle” of different earnings-stock price and earnings-future operating cash flow relations, this study shows that in a setting where increased quality of accounting information is likely, both relations have strengthened. Thus, although Korea’s stated purposes in changing from domestic GAAP are largely external (e.g., for transparency purposes and for greater investor confidence), the results suggest there are internal ramifications as well.

²⁴The null hypotheses, and thus, two-tailed tests are conservative. We believe the framing of the hypotheses in the null form justifies rejecting the null given the t-statistic.

²⁵Kim and Kross (2005) only report t-statistics for their TIME-equivalent tests, so no other comparisons can be made to their results.

6. Conclusion

This study adds to the literature on value relevance of earnings and book value and earnings' ability to predict future operating cash flows by examining Korea's changing accounting standards following the 1997 financial crisis. Results show increased combined value relevance of earnings and book value for stock prices from 1982 to 2011. Further, incremental value relevance of both earnings and book value increase. The results differ from U.S.-based research that finds incremental value-relevance of earnings decreases during the time periods of their studies (e.g., CMW 1997; Kim and Kross 2005). The findings are consistent with the changing standards increasing accounting quality and with improvements due to changes in supporting institutional structures (e.g., auditing function and corporate governance). Tests of the relation between current earnings and operating cash flows for future operating cash flows show the combined relation and the incremental earnings relation increased over time. The interplay and potential trade-offs in the accounting and environmental factors are not addressed in this study but are potentially fruitful areas for future research.

This study shows the importance of considering the extent of changes in accounting regimes *and* concomitant changes in the business, economic and political environment. Significant accounting regime changes are explicitly or implicitly assumed in most country-level IFRS adoption studies. However, a change in standards does not necessarily justify predicting changes in value relevance of earnings. The divergence of domestic standards before IFRS adoption is a factor. The accounting environment surrounding a change to IFRS is also important. This study carefully documents reasons to expect accounting changes would be "real" and carried out effectively. Other settings may have less reason to expect changes in accounting standards will produce changes in value relevance of earnings.

This research is a first and broad step in examining the effects of Korea's accounting changes. Without an answer to the questions of changes in value relevance of earnings and cash flow prediction, questions of "why?" have no context. Future Korean-based research could examine dimensions of earnings quality to ascertain more specifically what earnings characteristics are associated with the apparent change in earnings quality (e.g., earnings smoothing, accruals quality and timeliness based on Barth et al. (2012); earnings management and timely loss recognition based on Chua et al. (2012)). Corporate governance and other setting features could also be investigated, similar to Bae and Jeong (2007). Debt contracts and arrangements and liability characteristics are of potential interest as well. Research should continue to identify and sort out conditions that affect decisions to change accounting standards, as well as consequences of doing so. Brown (2013) offers a lengthy list of potentially interesting questions (e.g., accounting labor markets and access to international agency funds) that would move research inquiries away from capital market outcomes. Tsilavoutas et al. (2012) use one of the Hofstede (1983) cultural variables to describe the Greek setting, which shows some creativity that could be extended to other research. Finally, comparing and contrasting Korea and Japan with their geographic proximity but different approaches to accounting regimes would also be informative.

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