Have financial statements lost their relevance? Empirical evidence from the frontier market of Kuwait

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Abstract

Purpose – Anecdotal concerns expressed regarding developed capital markets suggest that the information provided in financial statements has lost its value relevance to equity holders over time. The purpose of this paper is to investigate the issue from the perspective of Kuwait, which is a frontier market.
Design/methodology/approach – Consistent with prior research, the design employs the price regression model. A total of 2,490 observations were collected from all firms listed on the Kuwait Stock Exchange (KSE) over a period of 21 years (1994-2014).
Findings – Although this study documents a notable decline in both the value relevance of earnings and book value for equity holders over this period, the results suggest that the decline in the value relevance of earnings was deeper and more pronounced than that of book value.
Practical implications – Because a fundamental prerequisite for the value relevance of accounting information is the quality of the financial reporting environment, the results are useful for regulators because they provide an assessment of the effectiveness of the current financial reporting environment. The results highlight the need for improvements because higher-quality information helps equity holders to determine value more precisely. As the timely dissemination of financial statements is an essential ingredient contributing to the relevance of financial statements, a direct implication of the study's findings for the management of KSE companies is that timely reporting of financial statements may mitigate the observed decline of the value relevance of financial statements produced by KSE companies.
Originality/value – This study contributes to the capital market research regarding changes in the value relevance of financial statement information through an empirical examination of a frontier capital market.

Keywords Kuwait, Financial statements, Price model, Declining value relevance, Frontier capital markets

Paper type Research paper

1. Introduction

Research into capital markets has devoted considerable time and effort to the analysis of the relation between stock prices and financial statements. A primary focus of accounting research is to assess whether stock prices move in the direction and reflect the magnitude of reported earnings and book value when financial information is disclosed to the capital market (Lim and Park, 2011). Value relevance is defined as the informativeness of financial statements (Lam *et al.*, 2013). Value relevance research examines the association between stock price (the dependent variable) and a set of independent accounting variables. An accounting variable is considered value relevant if it is significantly associated with the dependent variable (Beaver, 2002). It is assumed that the higher the value relevance, the more the financial statement information can be relied upon in making investment decisions; thus, the closer the association between the financial statements and the share price or returns of a company is (Lam *et al.*, 2013).

Journal of Advances in Management Research
Vol. 13 No. 2, 2016
pp. 225-239

0972-7981
DOI 10.1108/JAMR-06-2015-0043

Barth *et al.* (2001) argue that the key purpose of value relevance research is "to extend our knowledge regarding the relevance and reliability of accounting amounts as reflected in equity values" (Barth *et al.*, 2001, p. 80).

Beginning with the seminal work of Ball and Brown (1968) and Beaver (1968), the past four decades has produced a substantial volume of work that shows that market reaction is significantly associated with financial statement information (Habib, 2010). However, there is a widespread impression that financial statement information has lost its value relevance because of a shift from the traditional, capital-intensive economy to a high technology, service-oriented economy (Dontoh *et al.*, 2007). Examples of prior studies that have observed this decline include Harris *et al.* (1994) in Germany, and the following studies in the USA: Collins *et al.* (1997), Lev and Zarowin (1999), Francis and Schipper (1999), Brown *et al.* (1999), Ryan and Zarowin (2003) and Dontoh *et al.* (2004). Although these studies use moderately different measures to capture the value relevance of financial statements, they all find that it has declined over recent decades (Givoly *et al.*, 2013).

Conversely, certain studies have observed an improvement. For example, using Korean data, Kim and Key (2014) show an increase in the value relevance of earnings and book value over time. Finally, other studies have documented mixed results. For example, Lam *et al.* (2013) find an increase in the value relevance of some financial variables and decreases in others.

Chalmers *et al.* (2010) argue that, although the value relevance of financial statement information in developed markets has been well-documented since the seminal work of Ball and Brown (1968), the role of accounting information in securities pricing in developing and frontier markets remains an empirical issue. Prior studies have focussed minimally on such markets, in which the quality of accounting standards and their enforcement are questionable. It could be argued that accounting information is less relevant in these markets because stock prices fail to fully reflect all the available company information due to a range of market imperfections. For example, information asymmetry could be more severe than in developed markets because information sources are fewer. Conversely, this observation may mean that accounting information is more important and influential for participants in developing and frontier markets than other sources of information (Lopes, 2002).

Empirical research into the role of accounting information in frontier markets focusses on these issues and enhances our understanding. However, to date, very minimal research has investigated changes in the value relevance of financial statements over time in this context. Motivated by anecdotal concerns from financial analysts, accounting regulators and North American-centric academic research papers, the objective of this study is to fill this gap in the literature by exploring the change in the value relevance of financial statements over time in the frontier capital market of Kuwait, where the quality of accounting standards and their enforcement are questionable.

In 1991, the adoption of International Financial Reporting Standards (IFRS) for all companies listed on the Kuwait Stock Exchange (KSE) became mandatory, which led to an improvement in the availability of timely financial information to investors. It could be argued that this adoption improved the informational environment to better meet current investor needs and attract more investors, which, in turn, improved the value relevance of earnings and book value. Thus, it is hypothesized that the value relevance of earnings and book value increased over the 1994-2014 period. Consistent with prior value relevance research, this paper employs Ohlson's (1995) model as a valuation framework to test the hypotheses.

This study reports three primary findings. First, using pooled cross-sectional and year-on-year regressions, earnings and book value of equity (both jointly and individually) were significant variables in explaining the stock prices of KSE-listed firms during the 1994-2014 period, which suggests that KSE participants relied heavily on this information to make investment decisions. Second, and inconsistent with the study hypothesis, the overall results suggest a noticeable decline in the value relevance of earnings and book value during the period. Third, although the study documents declines in the value relevance of both earnings and book value, the decline in earnings was deeper and more pronounced than that of book value.

The remainder of this study is organized as follows. Section 2 discusses the related literature and presents the research hypotheses. Section 3 outlines the model and data. Empirical results are reported in Section 4. This paper concludes in Section 5 with a summary and discussion of results, and an outline of the study's major contributions and implications.

2. Related literature and research hypotheses

Researchers have devoted considerable time and effort to analyzing the relation between stock price (returns) and the financial statements provided to the capital market (Lim and Park, 2011). Value relevance research examines the association between the stock price (returns) as a dependent variable and a set of independent accounting variables (e.g. earnings, book value and cash flow). An accounting variable that is found to have a significant statistical association with the dependent variable (returns) is considered to be value relevant from an investor's perspective (Beaver, 2002).

Numerous studies have been conducted in developed markets to examine changes in the value relevance of financial statements over time. For example, Collins *et al.* (1997) investigate changes in the value relevance of earnings, book value, and a combination of earnings and book value for American firms over a 41-year period. There are three main findings. First, the combined value relevance of earnings and book value appears to increase (slightly) rather than decline over time. Second, whereas the value relevance of earnings appears to decline, that of book value increases. Third, the shift in the value relevance from earnings to book value appears to be due to an increase in the incidence and significance of one-time items, changes in average firm size, the intensity of intangibles, and the increased frequency of negative earnings. As in Collins *et al.* (1997) and Francis and Schipper (1999) examine the value relevance of earnings and book value for American firms from 1952 to 1994. The researchers' results indicate that the explanatory power of earnings, and changes in earnings, significantly decrease over time. Conversely, the researchers' test of the explanatory power of book value showed no evidence of decline. In contrast to Collins *et al.* (1997) and Francis and Schipper (1999), studies by Brown *et al.* (1999) and Lev and Zarowin (1999) report a decline in the value relevance of book value and earnings over time, again in the USA.

Brown *et al.* (1999) argue that prior studies do not control for scale effects and can be misleading. In particular, the authors argue that the documented increase in the value relevance of accounting information relates to an increase in the coefficient of variation of the scale factor. The researchers find a decline in the value relevance of both earnings and book value (measured by R^2) after controlling for these effects.

Using data from American firms, Lev and Zarowin (1999) examine the value relevance of financial information (earnings, book value and cash flow) compared to the total information available in the marketplace between 1977 and 1996. The researchers

note a systematic decline in the association between capital market value and these key financial variables during the 1980s and 1990s. The researchers argue that this decline in the usefulness of financial information is due primarily to business change, whether driven by innovation, competition or deregulation. The authors note that the current reporting system does not sufficiently capture either the impact of change on a firm's operations or economic conditions, which creates a mismatch between revenue and costs. To remedy this asymmetry, the researchers suggest that the current financial reporting system be revised to incorporate business changes, either through the comprehensive capitalization of intangible investments or the systematic restatement of financial reports.

Using Australian data, Brimble and Hodgson (2007) examine whether the relevance of earnings for valuation declined between 1973 and 2001. The study employs methodological refinements that control for transitory items based on nonlinear regressions and adjust for possible stock market inefficiencies. Consequently, the results show that the value relevance of accounting earnings did not decline during this period. Similarly, Bepari *et al.* (2013) investigate changes in value relevance during the global financial crisis and the pre-crisis period in Australian firms. These researchers' findings suggest that earnings have greater relative and incremental information content than does the cash flow that results from operations in the Australian market. Interestingly, the researchers' results reveal that the value relevance of earnings increased and that of cash flow from operations decreased during the global financial crisis compared to the pre-crisis period.

Based on the emerging Chinese market, Lam *et al.* (2013) investigate changes in the value relevance of financial statements between 1994 and 2008, during which time accounting reforms were launched to improve disclosure and provide higher-quality accounting information. Interestingly, the researchers find increases in the value relevance of some financial variables and decreases in others, which suggests that accounting information may help to explain the pricing process of stocks and shares at different levels. More recently, Kim and Key (2014) examine changes in the value relevance of earnings and book value in Korean firms for the 1982 to 2011 period. Interestingly, the results show an increase in the combined value relevance of current earnings and book value for stock prices, and incrementally for earnings and book value.

Collectively, although the overall empirical results of value relevance studies suggest that both balance sheet information (book value) and income statements (earnings) are value relevant in developed financial markets, at least in the American market, their importance appears to have declined over time. The literature demonstrates a growing interest in investigating these changes in developed Anglo-Saxon and non-Anglo-Saxon countries (Chamisa *et al.*, 2012). However, minimal focus has been accorded to developing and frontier markets, where the quality of accounting standards and their enforcement are questionable. This study contributes to filling this gap, by exploring the issue in the frontier market of Kuwait.

It has been argued that the value relevance of accounting information in less-developed markets is generally lower than in developed markets (Hellstrom, 2006). However, in Kuwait, the opposite may be true. The lack of credible sources of useful information may mean that financial statements have a greater influence on the stock market than in developed countries. Furthermore, the substantial increase in the number of listed companies and market participants in the KSE between 1994 and 2006 may have improved the informational environment and consequently better met the

needs of investors. Financial statements play a critical role in providing credible information, and there have been substantial improvements in the KSE informational environment. These changes include the mandatory adoption of IFRS standards and the requirement to immediately disclose any financial information that may affect a firm's business or financial position. Consequently, it is hypothesized that:

H1. There has been a significant increase in the value relevance of earnings information disclosed by KSE-listed companies during the 1994-2014 period.

H2. There has been a significant increase in the value relevance of book value information disclosed by KSE-listed companies during the 1994-2014 period.

3. Model and data

3.1 Model

This study investigates the changes, if any, in the power of earnings and book value information to explain share prices. These two indicators are often used as a proxy because they represent reasonable summaries of two fundamental elements of financial statements, namely, the balance sheet and the income statement. It is assumed that earnings are a proxy for future performance, whereas the book value of equity embodies capital input and past performance.

In her review of the valuation-based accounting research, Barth (2000) documents Ohlson's (1995) accounting-based model, which includes both earnings and book value of equity as variables. The model provides a direct link between financial statements and company value. Barth (2000) argues that this feature has resulted in it becoming the most pervasive model in valuation-based accounting research. Prior empirical studies have used this model extensively (Collins *et al.*, 1997, 1999; Barth *et al.*, 1998; Francis and Schipper, 1999; Lev and Zarowin, 1999; Chamisa *et al.*, 2012; Kim and Key, 2014; Tsalavoutas and Dionysiou, 2014). Consistent with earlier work, the study employs the model as a valuation framework to test the research hypotheses. The model can be expressed as follows:

$$P_{it} = \beta_0 + \beta_1 \mathrm{EPS}_{it} + \beta_2 \mathrm{BVS}_{it} + \varepsilon_{it} \tag{1}$$

Consistent with Collins *et al.* (1999), the following two equations are used to investigate the individual relative explanatory power of earnings and book value:

$$P_{it} = \chi_0^0 + \chi_1^0 \, \mathrm{EPS}_{it} + \varepsilon_{it} \tag{2}$$

$$P_{it} = \delta_0^0 + \delta_1^0 \mathrm{BVS}_{it} + \varepsilon_{it} \tag{3}$$

where P_{it}, the stock price per share for firm i at time t, three months after the end of the fiscal year at time t; EPS_{it}, earnings per share of firm i at time t; BVS_{it}, book value per share of firm i at time t; t, 1994, …, 2014, corresponding to the years 1994-2014; ε_{it}, other value relevant information.

The statistical correlation between stock price and earnings and book value is the primary metric used to measure the value relevance of financial statements. If these variables are value relevant to investors, it is expect the coefficients of earnings and book value to be statistically significant. The explanatory power (R^2) of the regression model measures this association.

3.2 Data

The sample is derived from companies listed on the KSE. The KSE was officially established in 1983, and it is the oldest exchange among member states of the Gulf Cooperation Council. The KSE's market capitalization has consistently been one of the highest in Arab markets, with approximately two hundred companies that total over $100 billion in market value. With a market capitalization to GDP ratio of approximately 100 percent, the KSE is deeper than many of its regional peers (KSE, 2014). The KSE's 2014 investor guide shows that, by the end of 2014, there were 171 listed Kuwaiti companies. Table I shows the number of companies listed on the KSE between 1994 and 2014.

Given the relatively small number of firms that were listed during the 1994-2014 period, the sample includes all companies for which accounting and stock price data are available from the KSE's Auto Documentation and Archival Department. Consistent with the recommendations of Barth *et al.* (1992) and Kothari and Zimmerman (1995), this study uses the per share value of price, earnings and book value to reduce heteroscedastic disturbances and scaling effects. In addition, and again consistent with the literature, the heteroscedasticity in yearly ordinary least squares (OLS) was corrected using White's (1980) heteroscedastic-consistent estimator. Heteroscedasticity and autocorrelation in the pooled OLS was corrected using the Newey-West (1987) heteroscedasticity and autocorrelation estimator.

4. Results and discussion

4.1 Descriptive statistics

Descriptive statistics, including Pearson bivariate correlation coefficients, are presented in Table II. These statistics reveal that the mean stock price per share for

Year	Number of firms	Cumulative percentage
1994	40	1.61
1995	44	1.77
1996	53	2.13
1997	63	2.53
1998	68	2.73
1999	75	3.01
2000	71	2.85
2001	69	2.77
2002	84	3.37
2003	96	3.86
2004	113	4.54
2005	142	5.70
2006	163	6.55
2007	164	6.59
2008	160	6.43
2009	184	7.39
2010	184	7.39
2011	184	7.39
2012	180	7.23
2013	182	7.31
2014	171	6.85
Total	2,490	100.0

Table I.
Number of companies listed on the KSE 1994-2014

1994-2014 is Kuwait Dinar (KD) 0.381; the range is from KD 0.010 to 3.920. Mean earnings per share were KD 0.026, ranging from KD −0.290 to 0.980. The mean book value per share was KD 0.222, ranging from KD −0.140 to 0.980. The Pearson bivariate correlation coefficients presented in Panel B of Table II provide preliminary evidence that the stock price (P_{it}) is positively and significantly ($p < 0.01$) related to earnings (EPS_{it}) and book value of equity (BVS_{it}). No pair-wise coefficient exceeds 0.8; therefore, there are no multicollinearity concerns (Pallant, 2013). The variance inflation factors are well within acceptable limits.

Table III presents the slope coefficients of the pooled cross-sectional time-series regression for Models (1) to (3) using annual data for the 1994-2014 period. The first column of Table III reports the results of the regressions of price on earnings and book value for Model (1), which show that the model was statistically significant ($F = 2068$, $p < 0.01$). The adjusted R^2 indicates that earnings and book value jointly explained 62 percent of the variation in stock prices between 1994 and 2014. The adjusted R^2 of the yearly cross-sectional regressions of price on earnings and book value ranged from 92 percent in 1994 to 50 percent in 2008. Annual OLS regressions reveal that Model (1) performs well in all years, shown by the positive and highly significant coefficient estimates for earnings and book value, as well as the highly significant F-statistics. These results consistently support the pooled results. Fama and MacBeth's (1973) approach of averaging coefficients and calculating t-statistics was applied as a robustness check.

Consistent with the results obtained for Model (1), the second and third columns of Table III show that the pooled and yearly OLS regressions for Models (2) and (3) also result in positive and highly significant coefficient estimates for earnings and book value individually.

With respect to changes in the value relevance of earnings and book value over time, Table IV provides summaries of the adjusted R^2 of the yearly cross-sectional regressions of Models (1) to (3). Consistent with Collins *et al.* (1997), the study decomposes total explanatory power into two parts: the incremental explanatory power of (1) earnings; and (2) book value. Figure 1 provides a line plot of the changes in the yearly adjusted R^2 of earnings and book value, jointly and individually, over the period. The graph shows an obvious decline over this period. Upon closer inspection, the figures suggest that, although both earnings and book value individually declined, the decline in earnings was more obvious than the decline in book value.

Panel A: descriptive statistics

Variable	n	Mean	SD	Min.	Max.
Price (P_{it})	2,490	0.381	0.439	0.010	3.920
Earnings (EPS_{it})	2,490	0.026	0.056	–0.290	0.980
Book value (BVS_{it})	2,490	0.222	0.179	–0.140	1.760

Panel B: correlation among variables

Variable	Price	Earnings	Book value
Price (P_{it})	1	0.773***	0.741***
Earnings (EPS_{it})	0.682***	1	0.678***
Book value (BVS_{it})	0.739***	0.632***	1

Note: ***Correlation is significant at ⩽0.01 level (two-tailed)

Table II. Descriptive statistics and correlations for firm-year observations 1994-2014

Table III.
Pooled and yearly cross-sectional regressions of price on earnings and book value 1994-2014

Column			(1)			(2)		(3)	
Model			$P = \beta_0 + \beta_1$ EPS $+ \beta_2$ BVS $+ \varepsilon$			$P = x^0 + x^1 +$ EPS $+ \varepsilon$		$P = \delta_0 + \delta_1$ BVS $+ \varepsilon$	
Year	n	β_1 EPS	β_2 BVS	Adj. R^2_{Γ}	F-stat.	x^1 EPS	Adj. R^2_{EPS}	δ_1 BVS	Adj. R^2_{BVS}
1994	40	6.53***	1.74***	0.922	232.83***	8.53***	0.861	1.78***	0.630
1995	44	8.13***	1.40***	0.889	176.60***	9.32***	0.885	2.34***	0.678
1996	53	2.47***	1.71***	0.711	64.88***	5.82***	0.489	2.24***	0.664
1997	63	1.64***	2.15***	0.558	41.41***	2.27***	0.495	2.34***	0.552
1998	68	3.87***	1.42***	0.798	135.39***	7.25***	0.677	2.34***	0.552
1999	75	3.55***	1.29***	0.816	167.84***	7.35***	0.730	2.12***	0.766
2000	71	5.63***	0.94***	0.835	188.51***	8.78***	0.812	2.31***	0.771
2001	69	3.38***	0.77**	0.710	92.76***	5.73***	0.694	1.72***	0.678
2002	84	6.17***	0.96**	0.723	105.93***	8.50***	0.694	2.59***	0.592
2003	96	6.33***	1.27***	0.755	143.29***	8.85***	0.676	2.57***	0.551
2004	113	11.14***	1.01***	0.681	117.19***	11.23***	0.642	2.86***	0.527
2005	142	1.79***	1.01***	0.667	109.31***	3.63***	0.529	1.67***	0.580
2006	163	3.13***	1.20***	0.636	139.86***	6.00***	0.472	1.72***	0.559
2007	164	1.59***	2.02***	0.621	133.41***	4.42***	0.246	2.12***	0.621
2008	160	0.64***	1.41***	0.495	76.82***	1.36***	0.112	1.53***	0.480
2009	184	1.13***	1.08***	0.589	128.82***	1.95***	0.230	1.29***	0.572
2010	184	2.33***	1.25***	0.736	250.27***	5.65***	0.551	1.70***	0.689
2011	184	5.06***	0.58***	0.642	161.95***	6.25***	0.564	1.10***	0.349
2012	180	3.02***	1.02***	0.695	201.88***	6.37***	0.450	1.33***	0.628
2013	182	1.33***	1.23***	0.654	169.30***	5.10***	0.316	1.36***	0.640
2014	171	6.69***	0.69***	0.730	230.70***	10.15***	0.650	1.32***	0.584
Pooled	2,490	2.80***	1.26***	0.623	2068***	5.34***	0.465	1.81***	0.546
Fama-MacBeth Averaging	4.07***	1.24***			6.40***		1.92***		

Note: **,***Significant at the 0.05 and 0.01 levels, respectively (two-tailed)

Year	n	A Adj. R^2 EPS and BVS (jointly)	B Adj. R^2_{EPS} (individually)	C Adj. R^2_{BVS} (individually)	$A-C$ Incremental earnings	$A-B$ Incremental book value
1994	40	0.922	0.861	0.630	0.292	0.061
1995	44	0.889	0.885	0.678	0.211	0.004
1996	53	0.711	0.489	0.664	0.047	0.222
1997	63	0.558	0.495	0.552	0.006	0.063
1998	68	0.798	0.677	0.552	0.246	0.121
1999	75	0.816	0.730	0.766	0.050	0.086
2000	71	0.835	0.812	0.771	0.064	0.023
2001	69	0.710	0.694	0.678	0.032	0.016
2002	84	0.723	0.694	0.592	0.131	0.029
2003	96	0.755	0.676	0.551	0.204	0.079
2004	113	0.681	0.642	0.527	0.154	0.039
2005	142	0.667	0.529	0.580	0.087	0.138
2006	163	0.636	0.472	0.559	0.077	0.164
2007	164	0.621	0.246	0.621	0.000	0.375
2008	160	0.495	0.112	0.480	0.015	0.383
2009	184	0.589	0.230	0.572	0.017	0.359
2010	184	0.736	0.551	0.689	0.047	0.185
2011	184	0.642	0.564	0.349	0.293	0.078
2012	180	0.695	0.450	0.628	0.067	0.245
2013	182	0.654	0.316	0.640	0.014	0.338
2014	171	0.730	0.650	0.584	0.146	0.080
Pooled	2,490	0.623	0.465	0.546	0.077	0.158

Table IV.
Changes in the yearly adjusted R^2 and the incremental explanatory power of earnings and book value

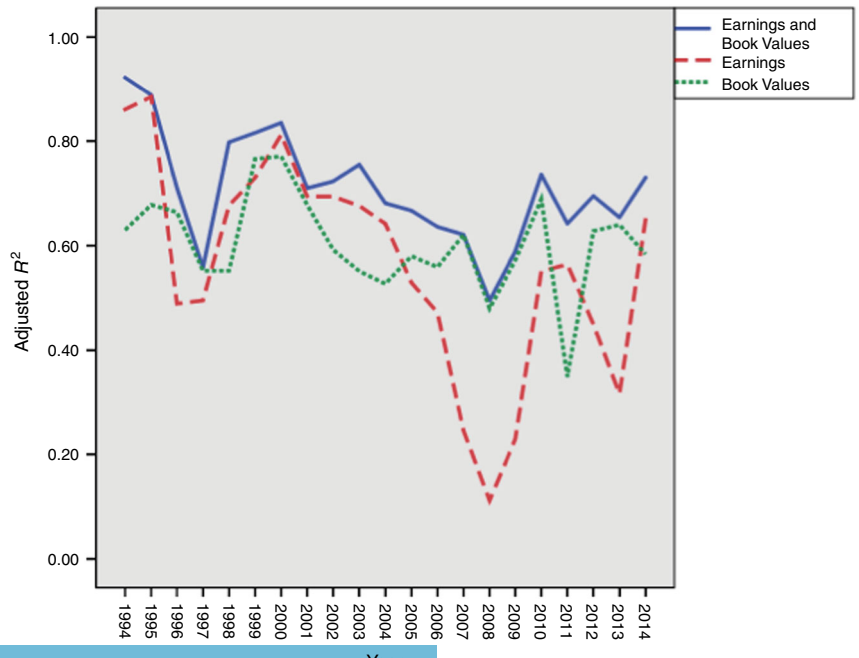

Figure 1.
Trends of value relevance of earnings and book values

Consistent with Collins *et al.* (1997) and Francis and Schipper (1999) the study examined in greater detail the change in value relevance. Therefore, the adjusted R^2 obtained from yearly cross-sectional regressions of price on earnings and book value jointly and individually from Models (1) to (3) were regressed on a time-trend variable (TIME), as shown below:

$$R^2_T = \phi_0 + \phi_1 \text{ TIME} + \varepsilon \quad (4)$$

$$R^2_{\text{EPS}} = \psi_0 + \psi_1 \text{TIME}_t + \varepsilon \quad (5)$$

$$\text{R}^2_{\text{BVS}} = \gamma_0 + \gamma_1 \text{ TIME}_t + \varepsilon \quad (6)$$

where R^2_T, R^2_{EPS}, and R^2_{BVS} are the adjusted R^2 values obtained from Models (1) to (3), and TIME $= 1, \ldots, 21$, corresponding to the years 1994-2014. Francis and Schipper (1999) argue that the value relevance of earnings and book value is assumed to have increased (decreased) over time if the estimated time coefficient (a_1TIME$_t$) is significantly positive (negative) at conventional significance levels. Table V presents these results.

Column 1 of Table V shows that, after this regression, the earnings and book value TIME coefficient (ϕ_1) was negative and statistically significant ($p < 0.05$). This result suggests a decline in the value relevance of earnings and book value (jointly) in explaining the cross-sectional variation in stock prices over the period. As shown in Column 2 of Table V, a similar significant ($p < 0.01$) decline in the value relevance of earnings individually, Model (2), was revealed by the earnings TIME coefficient (ψ_1). However, Column 3 of Table V shows that the book value TIME coefficient (γ_1), Model (3), although negative, was statistically insignificant.

To investigate these changes in more detail, in accordance with the approach taken by Lev and Zarowin (1999) and Hellstrom (2006), the study splits company-years observations into two sub-periods; specifically 1994-2004 and 2005-2014. A dummy variable was created that equals 1 for post-2005 years and 0 for the pre-2005 period. The dummy variable was incorporated into Models (1), (2) and (3), and the interaction was examined. The following three equations were formulated after incorporating the the post-2005 dummy variable and the interaction with earnings and book value:

$$P_{it} = \eta_0 + \eta_1 \text{ EPS}_{it} + \eta_2 \text{ BVS}_{it} + \eta_3 \text{ POST} + \eta_4 \text{POST} \times \text{EPS}_{it} + \eta_5 \text{ POST} \times \text{BVS}_{it} + \varepsilon_{it} \quad (7)$$

$$P_{it} = v_0 + \text{b}_1 \text{EPS}_{it} + v_2 \text{ POST} + v_3 \text{ POST} \times \text{EPS}_{it} + \varepsilon_{it} \quad (8)$$

$$P_{it} = \rho_0 + \rho_1 \text{ BVS}_{it} + \rho_2 \text{ POST} + \rho_3 \text{ POST} \times \text{BVS}_{it} + \varepsilon_{it} \quad (9)$$

Table V.
Regression of R^2_T, R^2_{EPS}, and R^2_{BVS} on a time-trend variable 1994-2014

Column	(1)			(2)			(3)		
$R^2_T = \phi_0 + \phi_1$ TIME $+ \varepsilon$				$R^2_{\text{EPS}} = \psi_0 + \psi_1$ TIME$_t + \varepsilon$			$R^2_{\text{BVS}} = \gamma_0 + \gamma_1$ TIME$_t + \varepsilon$		
ϕ_0	ϕ_1 TIME$_t$	R^2	ψ_0	ψ_1 TIME$_t$	R^2	γ_0	γ_1 TIME$_t$	R^2
18.850**	–0.009**	0.283	39.732***	–0.020**	0.340	11.094	–0.005	0.119

Note: **,***Significant at the 0.05 and 0.01 levels, respectively (two-tailed)

The results presented in Table VI show that the coefficients of the interaction POST*EPS of Models (7) and (8) are negative and significant ($p < 0.01$), which suggests that the value relevance of earnings, jointly and individually, significantly declined in the post-2005 period. In contrast, the coefficients of the interaction POST × BVS of Models (7) and (9) are negative but statistically insignificant, which suggests that book value did not significantly decline in the same period. Similar results were obtained when comparing the R^2 obtained from the sub-period models.

To investigate when changes in the value relevance of earnings and book value began, the study period was divided into four sub-periods, specifically: 1994-1999; 2000-2004; 2005-2009 and 2010-2014. Sub-period dummy variables were incorporated into Model (1) as follows:

$$\begin{aligned} P_{it} = {} & \varpi_0 + \varpi_1 \,\mathrm{EPS}_{it} + \varpi_2 \,\mathrm{BVS}_{it} + \varpi_3 \,\mathrm{SECOND}_{it} \\ & + \varpi_4 \,\mathrm{THIRD}_{it} + \varpi_5 \,\mathrm{FOURTH}_{it} + \varpi_6 \,\mathrm{SECOND}_{it} \times \mathrm{EPS}_{it} \\ & + \varpi_7 \,\mathrm{SECOND}_{it} \times \mathrm{BVS}_{it} + \varpi_8 \,\mathrm{THIRD}_{it} \times \mathrm{EPS}_{it} \\ & + \varpi_9 \,\mathrm{THIRD}_{it} \times \mathrm{BVS}_{it} + \varpi_{10} \,\mathrm{FOURTH}_{it} \times \mathrm{EPS}_{it} \\ & + \varpi_{11} \,\mathrm{FOURTH}_{it} \times \mathrm{BVS}_{it} + \varepsilon_{it} \end{aligned} \tag{10}$$

Table VII shows that the coefficient of the interaction SECOND×EPS are positive and significant ($p < 0.01$) for the second sub-period (2000-2004). The coefficients of the interaction THIRD×EPS and FOURTH×EPS are negative and significant, which suggests that the decline in the value relevance of earnings began in the third sub-period (2005-2009) and continued into the fourth sub-period (2010-2014).

The interactions between book value and sub-period dummy variables presented in Table VII show that the coefficient of the interaction SECOND×BVS was negative and significant ($p < 0.01$) for the second sub-period (2000-2004). Although negative, the results show that the interaction THIRD×BVS was insignificant during the third sub-period (2005-2009). However, the coefficient of the interaction FOURTH × BVS was negative and significant in the fourth sub-period (2010-2014).

5. Conclusion

This study investigated changes in the value relevance of financial statements produced by KSE-listed firms between 1994 and 2014. The study predicted that improvements in the KSE regulatory environment had increased the availability of

Model Variable	Model (7) Coefficient	Model (8) Coefficient	Model (9) Coefficient
Intercept	0.003	0.185***	–0.087***
EPS	5.009***	8.029***	–
BVS	1.324***	–	2.532***
POST	0.014	0.058***	0.062***
POST × EPS	–2.950***	–3.488***	–
POST × BVS	–0.069	–	–0.890
Adj. R^2	0.660	0.502	0.586
F-stat	967.625***	839.241***	1,180.759***
n	2,490	2,490	2,490

Note: ***Significant at the 0.01 level (two-tailed)

Table VI. Results of regressions of price on earnings and book value after incorporating a pre- and post-2005 dummy variable

Model (10): $P_{it} = \varpi_0 + \varpi_1 \text{EPS}_{it} + \varpi_2 \text{BVS}_{it} + \varpi_3 \text{SECOND}_{it} + \varpi_4 \text{THIRD}_{it} + \varpi_5 \text{FOURTH}_{it} + \varpi_6 \text{SECOND}_{it} \times \text{EPS}_{it} + \varpi_7 \text{SECOND}_{it} \times \text{BVS}_{it} + \varpi_8 \text{THIRD}_t \times \text{EPS}_{it} + \varpi_9 \text{THIRD}_{it} \times \text{BVS}_{it} + \varpi_{10} \text{FOURTH}_{it} \times \text{EPS}_{it} + \varpi_{11} \text{FOURTH} \times \text{BVS}_{it} + \varepsilon_{it}$

Variable	Unstandardized coefficient β	Standardized coefficient β	t-stat.	Sig.
Intercept	–0.007		–0.230	0.818
EPS	2.531	0.324	5.548	0.000***
BVS	1.612	0.658	9.331	0.000***
SECOND (2000-2004)	0.038	0.033	1.042	0.298
THIRD (2005-2009)	0.034	0.036	1.012	0.312
FOURTH (2010-2014)	0.027	0.030	0.849	0.396
SECOND × EPS	4.041	0.244	6.898	0.000***
SECOND × BVS	–0.609	–0.159	–2.944	0.003***
THIRD × EPS	–1.081	–0.114	–2.253	0.024**
THIRD × BVS	–0.143	–0.055	0.790	0.430
FOURTH × EPS	–1.766	–0.039	–2.655	0.008***
FOURTH × BVS	–0.661	–0.215	–3.633	0.000***
Observations	Adj. R^2	F-statistic	F-stat. sig.	
2,490	0.680	480.579	0.000***	

Note: **,***Significant at the 0.05 and 0.01 levels, respectively (two-tailed)

Table VII. Regressions of price on earnings and book value including sub-period dummy variables

timely financial information. The study anticipated that the improved informational environment would both meet the needs of current investors and attract new participants, which, in turn, would improve the value relevance of accounting earnings and book value. Thus, the study hypothesized that the value relevance of accounting earnings (*H1*) and book value (*H2*) increased over the 1994-2014 period. Consistent with prior value relevance research, the study employed Ohlson's (1995) model as a valuation framework to test these hypotheses.

There are three primary findings. First, accounting earnings and book value of equity, both jointly and individually, were significant variables in explaining stock prices. This finding suggests that KSE participants relied heavily on this information to make investment decisions. Second, and inconsistent with the study hypotheses, the results over the entire 21-year period (1994-2014) indicate a noticeable decline. These findings are consistent with prior studies in the USA, including Collins *et al.* (1997), Lev and Zarowin (1999), Francis and Schipper (1999), Brown *et al.* (1999), Ryan and Zarowin (2003), and Dontoh *et al.* (2004). Third, although the value relevance of both earnings and book value declined, the decline in the former was deeper and more pronounced than the latter.

The study findings have several interesting implications. First, the findings contribute to capital market research regarding changes in the value relevance of financial statement information, through an empirical examination of a frontier capital market. Second, the results are useful for regulators because they provide an assessment of the effectiveness of the current financial reporting environment. The results highlight the need for improvements because higher-quality information helps equity holders to determine value more precisely. Third, a fundamental prerequisite for the value relevance of accounting information is the quality of accounting regulations and the mechanisms that exist to ensure adherence to the prescribed standards. The study shows that the decline in the value relevance of accounting information is associated with market participants losing confidence in the quality of

financial statements. Consequently, the findings have direct implications for regulators and enforcement bodies because they suggest that these entities should focus their efforts on the quality, accuracy and precision of financial statements. Fourth, a recent study by Alfraih (2016) shows that there is a wide range in the dissemination of financial statements among KSE companies, ranging from seven to 159 days. It is argued that those delays in the publication of financial statements may deteriorate the relevance of those statements to investors, as investors turn to more to more timely information sources. Because the timely dissemination of financial statements is an essential ingredient contributing to the relevance of financial statements to investors, a direct implication of the study's findings for the management of KSE companies is that timely reporting of financial statements may mitigate the observed decline of the value relevance of financial statements produced by KSE companies.

Consistent with other research, this study has certain limitations, which nevertheless suggest several areas for further work. For example, the study solely used Ohlson's (1995) model as a valuation framework. It would be interesting to investigate these changes using alternative valuation models. Second, the study examined two accounting measures: earnings and book value. Future work could focus on changes in the value relevance of other measures, such as cash flow. Finally, although this study provided insight into the decline in the value relevance of financial statements it is important to also understand why this has occurred. Further work is needed to identify the underlying issues and the role of firm-specific characteristics.

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