

Have accounting measures lost their usefulness after the 2008 global financial crisis?

The 2008
global
financial crisis

The case of Kuwait

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Abstract

Purpose – This purpose of this paper is to investigate the value relevance and incremental importance of earnings and book value in the Kuwaiti market to equity holders over time and in the context of the decade after the 2008 global financial crisis.

Design/methodology/approach – Following reports in the literature, the value relevance of earnings and book values was examined using the price valuation model provided by Ohlson (1995). Observations (2,817) were collected from all firms listed on the Kuwait Stock Exchange from 1994 to 2016.

Findings – The results suggest that the value relevance of earnings and book values declined over this period, and that the loss of value relevance for earnings data was greater than that for book value. The analysis provides evidence that the decline in value relevance of earnings and book value was driven by book values in the post-GFC period and suggests an exchange of value relevance between earning and book value post GFC.

Practical implications – The results are useful for regulators, analysts, investors and academics as an assessment of effectiveness of current financial reporting. There is a need for improvement because quality information helps equity holders determine value precisely. Timely financial reporting may mitigate the drop in value relevance of financial statements.

Originality/value – This is the first study to examine value relevance accounting measures of Kuwaiti companies, in the post-GFC context. It contributes to capital market research through an empirical examination of a frontier capital market.

Keywords Declining value relevance, Financial statements, Ohlson's model, Global financial crisis, Capital markets, Kuwait

Paper type Research paper

1. Introduction

One of the primary objectives of financial statements is to provide information to investors to help in their investment decisions. Investors use the two key accounting measures (book value of equity and earnings) to determine share prices (Bepari, 2015). Value relevance research is designed to assess how well particular accounting measures produce information useful to investors in assessing a firm's equity value (Barth *et al.*, 2001). A specific accounting measure is considered relevant to investors if it significantly reflects the stock price (Beaver, 2002).

Researchers looking into capital markets have devoted considerable time and effort to the analysis of the relation between accounting measures and stock prices (Alfraih, 2016a). Beginning with the influential work of Ball and Brown (1968) and Beaver (1968), a considerable volume of work has been produced in the past five decades, documenting the



observation that market reaction is significantly associated with earnings (Habib, 2010). However, some researchers have claimed that historically based financial reporting has lost value relevance because of “wholesale” changes in the economy. Barth *et al.* (1998) studied the relative valuation roles of book value (BV) and earnings and concluded that these accounting measures were a function of a firm’s financial health. They observed that as the financial health of a firm deteriorated, the relevance of BVs increased and that of earnings decreased. Although studies during normal economic conditions suggested that the relative and incremental value relevance of BV and earnings were conditional on different factors, Bepari *et al.* (2013) argued that these factors might not be generalizable to an economy-wide exogenous shock such as the global financial crisis (GFC). Empirical research into the relative valuation roles of BV and earnings during the GFC enhances our understanding and provides insights into this issue. To date, however, very little research has focused on this issue. Based on this background and using data from the emerging Kuwaiti markets, this study investigated the changes over time and in the context of post GFC in the power of earnings and BV information to determine share prices. Specifically, the current work investigates a recent and longer historical time span covering periods of both growth and economic recession (including analyses of the full study period as well as sub-periods); therefore, it should provide more reliable findings.

Our research study resulted in three primary findings. First, using pooled cross-sectional and year-on-year regressions, it was verified that earnings and BV of equity (both joint and individual) were significant in explaining stock prices of Kuwait Stock Exchange (KSE)-listed firms during the 1994-2016 period. KSE participants relied heavily on these metrics to make investment decisions. Second (inconsistent with the research hypothesis), the findings show a noticeable drop in the value relevance of earnings and BV over the entire 23-year period, especially after the GFC. Third, although the value relevance of earnings and BV decreased overall, our study documented that the decline in earnings relevance was greater than that of BV during the pre-GFC period but not post GFC, as the BV lost usefulness during the economic downturn.

The findings of this study make several important contributions. First, they contribute to capital market research regarding changes in the value relevance of financial statement information. Second, the findings are helpful to regulators and enforcement bodies in reviewing and interpreting the effectiveness of the current financial reporting environment. Third, the observed decline in the value relevance of accounting information highlights the need for improvements in the current financial reporting environment.

This report is organized as follows: In Section 2, a brief discussion of the accounting system of Kuwait is given. Section 3 surveys the related literature and presents the hypotheses, whereas Section 4 outlines the research methodology. The results are found in Section 5 and Section 6 concludes the paper with a summary and an outline of the major contributions and implications of the study.

2. Background of Kuwait

The KSE is a developing stock market that was officially established in 1977, although stock trading in the country began in the 1950s (Almujamed *et al.*, 2017). Its market capitalization has consistently been ranked among the highest in Arab stock markets, with about two hundred companies totaling \$92.7bn in market value. With a market capitalization to GDP ratio of approximately 100 per cent, the KSE is deeper than many of its regional peers (KSE, 2017). The KSE’s 2017 investor guide shows that, by the end of 2016, there were 196 listed Kuwaiti companies.

Over the past three decades, this market has experienced significant changes in its regulations (Almujaed *et al.*, 2013). In 1998, the KSE mandated that listed companies disclose accounting information about their operations on a quarterly basis (Al-Yaqout, 2006). In 2010 the Capital Market Authority (CMA) was introduced as an independent regulator of capital markets in Kuwait; this body has promulgated new regulations for quoted firms and foreign companies who wish to be listed on the KSE (KSE, 2017). Listed companies must disclose and publish any information affecting share prices, including any unusual activity in share transactions in terms of either prices or volumes. Furthermore, the listed firms must indicate whether any material information, such as speculative forecasts, news or rumors, has previously been disclosed and comment on the circumstances (KSE, 2017). In 1991, the adoption of International Financial Reporting Standards (IFRS) for all companies listed on the KSE became mandatory, which improved the timely availability of financial information to investors. It could be argued that this improved informational environment met current investor needs more effectively and attracted more investors, which in turn improved the value relevance of earnings and BV. Thus, it is hypothesized that the value relevance of earnings and BV increased over the period 1994-2016. Consistent with prior value relevance research, this paper uses Ohlson's (1995) model as a valuation framework to test the hypotheses.

The findings of this study are based on data from a typical emerging market and therefore should offer valuable policy insights on the value relevance of accounting information for Kuwait's regulatory authorities. Such insights may lead to developments which attract more international investors to the KSE. In addition, the current research should yield insights for local and foreign investors, as well as for analysts who wish to understand exactly how the value relevance of earnings and BVs has behaved during different historical sub-periods in an emerging stock market such as the KSE. Analysts and academics can build on the current findings by examining other data from different markets.

3. Related literature and research hypotheses

Relevance is one of the four principal qualitative requirements of useful financial reporting. Information is said to be relevant when it supports the users' economic decisions by helping them to evaluate past, present or future events related to an entity and confirming or correcting past evaluations (IASB, 2014). The value relevance of accounting information is a major concern for users of financial reports, because of its crucial role in the functioning of capital markets. It is also a popular topic for accounting researchers who devote considerable time to assessing differences in value relevance of accounting information between companies and across countries (Alfraih, 2017).

Several studies have been directed toward developed markets to explore changes in the value relevance of accounting information over historical periods. For instance, Collins *et al.* (1997) examined variations in the value relevance of earnings, BV and a combination of earnings and BV for US companies over a 41-year period. They arrived at three key conclusions. First, the combined value relevance of earnings and BV appeared to increase rather than decline over time. Second, although the value relevance of earnings seemed to deteriorate, the value relevance of BV increased. Third, the change in value relevance from earnings to BV appeared to be because of a growth in the frequency and significance of one-time items: changes in average firm size, the intensity of intangibles and increased frequency of negative earnings. Francis and Schipper (1999) observed the value relevance of earnings and BV for US companies from 1952 to 1994. Their conclusions indicated that the explanatory power of earnings and changes in

earnings significantly declined over a period of years. On the other hand, their assessments of the explanatory power of BV revealed no change over time. Interestingly, [Brown et al. \(1999\)](#) and [Lev and Zarowin \(1999\)](#) reported a noticeable drop in the value relevance of BV and earnings of US firms over time.

[Lim and Park \(2011\)](#) provided two contrasting views on what has caused the declining association between earnings and returns over time. In the first view, they speculated that the declining association was because of changes in the nature of earnings and a temporal increase in the lags and asymmetry of earnings (conditional conservatism). In contrast, the second view attributed an increase in the volatility of returns unrelated to earnings as the prime driver for the declining of value relevance of earnings ([Lim and Park, 2011](#)).

In their seminal work, [Lev and Zarowin \(1999\)](#) investigated the value relevance of accounting information produced by US firms during the 19-year period from 1977 to 1996. Their results documented a clear systematic decline in the value relevance of accounting information to investors over the study period, as demonstrated by a weakening association between stock prices and main financial variables (earnings, BVs and cash flows). [Lev and Zarowin \(1999\)](#) have provided possible justification for the observed decline in the value relevance, arguing that this decline may be attributed to business changes.

Controlling for nonlinearities and stock price inefficiencies, [Brimble and Hodgson \(2007\)](#) examined whether the relevance of earnings produced by Australian firms have changed over a 28 year period (1973-2001). The main conclusion of their study was that the value relevance of accounting information did not become less value relevant. [Brimble and Hodgson \(2007\)](#) further noted that:

- the value relevance of earnings and BVs had not significantly declined over the study period;
- BVs did not have as high a predictive power as earnings and were lower than in comparable studies conducted using US data;
- the nature of the relationship with stock prices has notably changed over time such that a linear model does not fully abstract the association between stock price and accounting measures; and
- the use of nonlinear regressions provided a robust control.

Using data from Chinese firms, [Lam et al. \(2013\)](#) investigated the changes in the value relevance of accounting information from 1994 to 2008 using 11,199 firm-year observations. They hypothesized that the value relevance of accounting measures in making decisions changed at different phases of economic development that were accompanied by accounting, auditing and institutional reforms. Interestingly, [Lam et al. \(2013\)](#) did not find uniform patterns in the changes in value relevance as measured by the R-squared for these relations. Similarly, [Kim and Key \(2014\)](#) investigated changes in the value relevance of accounting information in Korean firms for the period 1982 to 2011. The study results showed increased combined value relevance of earnings and BV. Additionally, the incremental value relevance of both earnings and BV increased. [Kim and Key \(2014\)](#) noted that their results differed from US-based research which found that incremental value relevance of earnings decreased during the periods of their studies.

Investigating the influence of the GFC on financial reporting quality, [Bepari et al. \(2013\)](#) examined the relative value relevance of earnings and cash flow from operations (CFO) and changes therein between the 2008-2009 GFC and the pre-crisis period (PCP). Their findings suggested that CFO had value relevance incremental to BV and earnings. In addition, they suggested that earnings have greater relative and incremental

information content than CFO in the Australian market. Interestingly, they documented that the value relevance of earnings had increased and that of CFO had decreased during the GFC compared to the PCP. Similarly, [Bepari \(2015\)](#) examined the value relevance of BV and earnings in Australia in the context of the 2008-2009 GFC and the non-crisis period (NCP). It was observed that the value relevance of BV had decreased and the value relevance of earnings had increased during the GFC compared to the NCP, thus supporting the hypothesis that as the financial health of a firm deteriorated, the value relevance of BV increased and that of earnings decreased.

In the transition economy of Romania, [Filip and Raffournier \(2010\)](#) investigated the value relevance of earnings on the Bucharest Stock Exchange. They observe that the association between earnings and stock returns was comparable to the levels documented by research conducted on mature markets.

In the context of the emerging market of Kuwait, early investigations by [El Shamy and Kayed \(2005\)](#) found that both accounting earnings and BV of equity (both jointly and individually) were positively and significantly linked to the evolution of stock prices. [Alfraih \(2016b\)](#) examined the effect of audit quality on the value relevance of earnings and BV on the emerging stock market of Kuwait over a 12-year period (2002-2013). As a joint audit is obligated for all listed companies in Kuwait listed companies, [Alfraih \(2016b\)](#) hypothesized that the higher the quality of the audit team (as measured by the number of Big Four audit firms in the joint audit team), the higher the value relevance of earnings and BVs for equity valuation. The results of [Alfraih's \(2016b\)](#) study revealed significant variations in the value relevance of earnings and BV jointly across the three possible auditor combinations over the study period. Similarly, [Al-Hares et al. \(2012\)](#) investigated the value relevance of BV, earnings and dividends among companies listed on the KSE over the period 2003-2009. Their results indicated that dividends were not an element of value relevance in the presence of earnings in the valuation model. Using Egyptian data, [Mostafa \(2016\)](#) showed that earnings changes were more successful than earnings levels in explaining security returns.

Overall, there appears to be a growing body of literature expressing the widespread impression that accounting measures have lost their value relevance because of the shift from a traditional capital-intensive economy to a high-technology, service-oriented economy. These conclusions are based on past studies that examined the association between accounting numbers (i.e. earnings and BVs) and stock prices and showed that, in general, the association between accounting information and stock prices has been weakening over time ([Dontoh et al., 2007](#)). However, little consideration has been paid to developing and emerging markets, where the quality of accounting standards and their enforcement are questionable. This study attempts to fill that gap by exploring the issue in the capital 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, because of the substantial increase in the number of listed companies and market participants in the KSE over the period 1994-2016, the informational environment may have improved and consequently better met the needs of investors. Financial statements play a critical role in providing credible information, and over the years the KSE has achieved substantial improvements in the availability of good financial information. These changes include the mandatory adoption of IFRS standards and the

requirement to immediately disclose any financial information that might affect a firm's business or financial position. As a result, it is hypothesized that:

- H1. There is a significant increase in the value relevance of *earnings* in companies listed on the KSE.
- H2. There is a significant increase in the value relevance of *BV of equity* in companies listed on the KSE.

4. Research methodology

4.1 Model and definitions of variables

This study investigated the changes, if any, in the power of earnings and BV information to explain share prices. These two indicators are often used as proxies as 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 BV of equity embodies capital input and past performance.

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

$$P_{it} = \beta_0 + \beta_1 \text{EPS}_{it} + \beta_2 \text{BVS}_{it} + \varepsilon_{it} \quad (1)$$

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

$$P_{it} = \chi^0 + \chi^1 \text{EPS}_{it} + \varepsilon_{it} \quad (2)$$

$$P_{it} = \delta^0 + \delta^1 \text{BVS}_{it} + \varepsilon_{it} \quad (3)$$

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, . . . , 2016, corresponding to the years 1994-2016; and

ε_{it} = Other value relevant information.

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

4.2 Data

Given the relatively small number of firms that were listed during the period 1994-2016, the sample includes all companies for which accounting and stock price data are available from the Auto Documentation and Archival Department on the KSE's website. Consistent with the recommendations of [Barth et al. \(1992\)](#) and [Kothari and Zimmerman \(1995\)](#), this study used the per-share value of price, earnings and BV to reduce heteroscedastic disturbances and scaling effects. In addition, and again consistent with the literature, 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 and West \(1987\)](#) heteroscedasticity and autocorrelation estimator ([Table I](#)).

4.3 Descriptive statistics

Descriptive statistics are presented in Panel A of [Table II](#). They reveal that the mean stock price per share for 1994-2016 is Kuwait Dinar (KD) 0.363, ranging from KD 0.010 to KD 3.920. Mean earnings per share were KD 0.024, ranging from KD -0.290 to KD 0.980. The mean BV per share was KD 0.220, ranging from KD -0.140 to KD 1.760. The descriptive statistics shows noticeable variation among the variables.

5. Results

5.1 Validity test

The Pearson bivariate correlation coefficients presented in Panel B of [Table II](#) provide preliminary evidence that stock prices (P_{it}) are positively and significantly ($p < 0.01$) related

Year	No. of firms	(%)
1994	40	1.4
1995	45	1.6
1996	53	1.9
1997	65	2.3
1998	69	2.4
1999	76	2.7
2000	75	2.7
2001	76	2.7
2002	84	3.0
2003	96	3.4
2004	112	4.0
2005	142	5.0
2006	163	5.8
2007	164	5.8
2008	160	5.7
2009	182	6.5
2010	184	6.5
2011	184	6.5
2012	180	6.4
2013	182	6.5
2014	171	6.1
2015	166	5.9
2016	148	5.3
Total	2817	100.0

Table I.
Number of
companies listed on
the KSE 1994–2016

to earnings (EPS_{it}) and BV of equity (BVS_{it}). No pair-wise coefficient exceeds 0.8, and therefore there are no multicollinearity concerns (Pallant, 2013). Variance inflation factors (VIF) are well within acceptable limits.

5.2 Regression results

Table III presents the slope coefficients of the pooled cross-sectional time-series regression for Models (1) to (3) using annual data for the 1994-2016 period. The first column of Table III shows the results of the regressions of price on earnings and BV for Model (1), which indicate that the model was statistically significant ($F = 2226.67, p < 0.01$). The adjusted R^2 indicates that earnings and BV jointly explained 61.3 per cent of the variation in stock prices between 1994 and 2016. The adjusted R^2 of the yearly cross-sectional regressions of price on earnings and BV ranged from 92.2 per cent in 1994 to 39.5 per cent in 2016. Annual OLS regressions reveal that Model (1) performs well for the vast majority of the years, shown by the positive and highly significant coefficient estimates for earnings and BV and the highly significant F -statistics. However, in the years 1997 and 2007, the reported coefficient estimates for earnings were not significant and this could be explained by the sharp decline experienced by the KSE[1]. Overall, the findings 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 BV individually.

With respect to changes in the value relevance of earnings and BV 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), we decomposed total explanatory power into two parts: the incremental explanatory power of earnings and BV. Figure 1 provides a line plot of the changes in the yearly adjusted R^2 of earnings and BV, jointly and individually over the period. The graph shows an obvious decline over this time. Upon closer inspection, Table IV and Figure 1 suggest that although both earnings and BV individually declined, the decline in earnings was more obvious than the decline in BV.

To control for the influence of companies in the financial sector, a dummy variable representing financial companies was incorporated into the valuation model. The untabulated analysis shows that there were no significant differences in the value relevance of earnings and BVs between financial and non-financial companies listed on the KSE during the 1994-2016 period.

Panel A: Descriptive statistics

Variable	N	Mean	Std Dev.	Min.	Max.
Price (P_{it})	2817	0.363	0.431	0.010	3.920
Earnings (EPS_{it})	2817	0.024	0.055	-0.290	0.980
Book Value (BVS_{it})	2817	0.220	0.177	-0.140	1.760

Panel B: Correlation among variables

Variable	Price	Earnings	Book value
Price (P_{it})	1	0.679***	0.723***
Earnings (EPS_{it})	0.679***	1	0.612***
Book Value (BVS_{it})	0.723***	0.612***	1

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

Table II. Descriptive statistics and correlations for firm-year observations 1994–2016

Year	Column Model N	(1)				(2)		(3)		
		$P = \beta_0 + \beta_1 \text{EPS} + \beta_2 \text{BVS} + \varepsilon$	$\beta_1 \text{EPS}$	$\beta_2 \text{BVS}$	Adj. R^2_T	F Stat.	$P = \chi_0 + \chi_1 \text{EPS} + \varepsilon$	$\chi_1 \text{EPS}$	Adj. R^2_{EPS}	$P = \delta_0 + \delta_1 \text{BVS} + \varepsilon$
1994	40	6.53***	0.74***	0.922	232.83***	8.53***	0.861	1.78***	0.630	
1995	44	8.13***	0.41***	0.889	176.60***	9.32***	0.885	2.37***	0.678	
1996	52	2.47***	1.71***	0.711	64.88***	5.82***	0.489	2.24***	0.664	
1997	64	0.64	2.15***	0.558	41.41***	2.27***	0.195	2.34***	0.552	
1998	68	3.87***	1.42***	0.798	135.39***	7.25***	0.677	2.31***	0.712	
1999	75	3.55***	1.29***	0.816	167.84***	7.35***	0.730	2.12***	0.766	
2000	71	5.63***	0.95***	0.835	188.51***	8.78***	0.812	2.31***	0.771	
2001	75	3.38***	0.77**	0.710	92.76***	5.73***	0.694	1.72***	0.678	
2002	83	6.17***	0.96***	0.717	105.93***	8.50***	0.690	2.59***	0.587	
2003	95	6.33***	1.27***	0.755	143.29***	8.85***	0.673	2.57***	0.546	
2004	111	8.407***	1.01***	0.661	109.31***	11.22***	0.638	2.86***	0.523	
2005	141	1.79***	1.08***	0.631	121.67***	3.63***	0.526	1.67***	0.577	
2006	162	3.12***	1.20***	0.632	139.86***	6.00***	0.469	1.72***	0.556	
2007	163	0.59	2.02***	0.619	133.41***	4.43***	0.241	2.12***	0.618	
2008	159	0.64***	1.41***	0.488	76.82***	1.82***	0.129	1.52***	0.477	
2009	181	1.13***	1.08***	0.589	128.82***	3.862***	0.405	1.31***	0.571	
2010	183	2.32***	1.25***	0.732	251.39***	5.63***	0.546	1.70***	0.689	
2011	183	5.06***	0.58***	0.638	161.95***	6.25***	0.561	1.10***	0.345	
2012	179	3.02***	1.02***	0.692	201.88***	6.37***	0.450	1.30***	0.626	
2013	181	1.33***	1.22***	0.650	169.30***	5.10***	0.316	1.36***	0.638	
2014	170	6.69***	0.69***	0.730	230.70***	10.15***	0.650	1.32***	0.584	
2015	165	4.14***	0.832***	0.630	141.43***	5.55***	0.408	1.093***	0.426	
2016	147	3.823***	0.830	0.395	49.071***	5.03***	0.316	1.309***	0.247	
Pooled	2817	2.991***	1.197***	0.613	2226.67***	5.37***	0.461	1.76***	0.523	
Fama-MacBeth		3.86***	1.13***			6.75***		2.21***		
Averaging										

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

Table III.
Pooled and yearly
cross-sectional
regressions of price
on earnings and book
value 1994-2016

Consistent with Collins *et al.* (1997) and Francis and Schipper (1999), we looked in greater detail at the change in value relevance. The adjusted R^2 values obtained from yearly cross-sectional regressions of price on earnings and BV jointly and individually from Models (1) to (3) were regressed on a time-trend variable ($TIME$) as follows:

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

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

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

where

R^2_T , R^2_{EPS} and R^2_{BVS} are the adjusted R^2 values obtained from Models (1) to (3) and $TIME = 1, \dots, 21$, corresponding to the years 1994-2016. Francis and Schipper (1999) argued that the value relevance of earnings and BV is assumed to have increased (decreased) over time if the estimated time coefficient ($a_1 TIME_t$) is significantly positive (negative) at conventional significance levels. Table V presents these results.

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

Year	N	A <i>Adj. R²</i> EPS ^{and} BVS (Jointly)	B <i>Adj. R²</i> EPS (individually)	C <i>Adj. R²</i> BVS (individually)	A – C Incremental earnings	A – B Incremental book value
1994	40	0.922	0.861	0.63	0.292	0.061
1995	44	0.889	0.885	0.678	0.211	0.004
1996	52	0.711	0.489	0.664	0.047	0.222
1997	64	0.558	0.195	0.552	0.006	0.363
1998	68	0.798	0.677	0.712	0.086	0.121
1999	75	0.816	0.73	0.766	0.05	0.086
2000	71	0.835	0.812	0.771	0.064	0.023
2001	75	0.71	0.694	0.678	0.032	0.016
2002	83	0.717	0.69	0.587	0.13	0.027
2003	95	0.755	0.673	0.546	0.209	0.082
2004	111	0.661	0.638	0.523	0.138	0.023
2005	141	0.631	0.526	0.577	0.054	0.105
2006	162	0.632	0.469	0.556	0.076	0.163
2007	163	0.619	0.241	0.618	0.001	0.378
2008	159	0.488	0.129	0.477	0.011	0.359
2009	181	0.589	0.405	0.571	0.018	0.184
2010	183	0.732	0.546	0.689	0.043	0.186
2011	183	0.638	0.561	0.345	0.293	0.077
2012	179	0.692	0.45	0.626	0.066	0.242
2013	181	0.65	0.316	0.638	0.012	0.334
2014	170	0.73	0.65	0.584	0.146	0.08
2015	165	0.63	0.408	0.426	0.204	0.222
2016	147	0.395	0.316	0.247	0.148	0.079
Pooled	2817	0.613	0.461	0.523	0.09	0.152

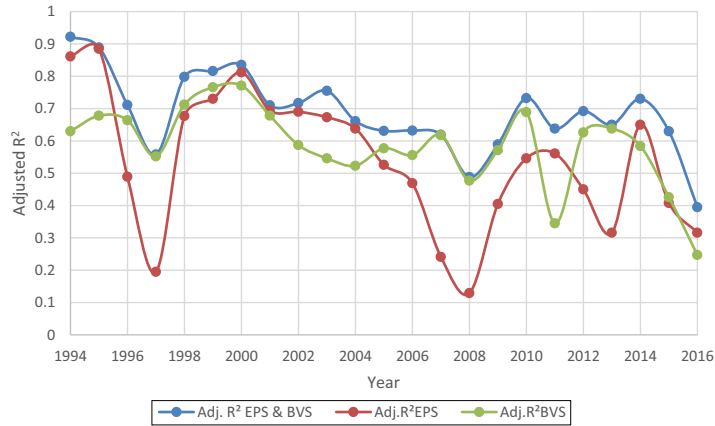


Figure 1.
Trends of value relevance of earning and Blook Values

Column 1 of [Table V](#) shows that after this regression, the earnings and BV *TIME* coefficient (ϕ_1) was negative and statistically significant ($p < 0.05$). This result suggests a decline in the value relevance of earnings and BV (jointly) in explaining the cross-sectional variation in stock prices over the period. As shown in Columns 2 and 3 of [Table V](#), a similarly significant

($p < 0.05$) decline in the value relevance of earnings and BV individually, Models (2) and (3), was revealed by the earnings *TIME* coefficient (ψ_1) and the BV *TIME* coefficient (γ_1).

With respect to changes in the value relevance of earnings and BV over the period investigated, we also examined the value relevance of earnings and BV considering the effects of the GFC. Gore (2010) pointed out that the global financial crisis started on 1 December 2007 and ended on 30 June 2009. During this time, the vast majority of global stock markets experienced sharp declines in most of their stock prices (Blundell-Wignall *et al.*, 2008). We followed the approach taken by Lev and Zarowin (1999) and Hellstrom (2006) and split company-years observations into two sub-periods: 1994-2008 as pre crisis and 2008-2016 as post crisis. A dummy variable was created that equals 1 for post-crisis years and 0 for the PCP. The dummy variable was incorporated into Models (1), (2) and (3) and the interaction was examined. The following four equations were formulated after incorporating the post-crisis dummy variable and the interaction with earnings and BV:

$$P_{it} = \eta_0 + \eta_1 EPS_{it} + \eta_2 BVS_{it} + \eta_3 CRISIS + \varepsilon_{it} \quad (7)$$

$$P_{it} = \nu_0 + \nu_1 EPS_{it} + \nu_2 CRISIS + \nu_3 CRISIS * EPS_{it} + \varepsilon_{it} \quad (8)$$

$$P_{it} = \rho_0 + \rho_1 BVS_{it} + \rho_2 CRISIS + \rho_3 CRISIS * BVS_{it} + \varepsilon_{it} \quad (9)$$

$$P_{it} = \eta_0 + \eta_1 EPS_{it} + \eta_2 BVS_{it} + \eta_3 CRISIS + \eta_4 CRISIS * EPS_{it} + \eta_5 CRISIS * BVS_{it} + \varepsilon_{it} \quad (10)$$

The results presented in Table VI show that the coefficients of *CRISIS* of Model (7) are negative and statistically significant ($p < 0.01$), suggesting that the value relevance of earnings and BV significantly declined in the post-crisis period. The findings for the value relevance for earnings of Model (8), individually, are also negative and statistically significant ($p < 0.01$), suggesting that the value relevance of earnings, significantly declined in the post-crisis period. However, the coefficients of the interaction *CRISIS*EPS* of Model (10), jointly, are negative but statistically insignificant suggesting that earnings did not significantly decline in the same period. The interaction *CRISIS*BVS* of Models (9) and (10) are negative and significant ($p < 0.01$), suggesting that the value relevance of BV, jointly and individually, significantly declined in the post-crisis period. These results allow us to reject hypotheses *H1* and *H2*. The analysis provides empirical evidence that the decline in the value relevance of earnings and BV was driven by the BVs in the post-crisis period. This

Column	(1)	(2)	(3)
	$R^2_T = \varphi_0 + \varphi_1 TIME_t + \varepsilon$		$R^2_{EPS} = \psi_0 + \psi_1 TIME_t + \varepsilon$
	$R^2_{BVS} = \gamma_0 + \gamma_1 TIME_t + \varepsilon$		
φ_0	$\varphi_1 TIME_t$	R^2	ψ_0
13.106**	-0.011**	0.355	7.644**
			$\psi_1 TIME_t$
			-0.016**
			R^2
			0.232
			γ_0
			10.938**
			$\gamma_1 TIME_t$
			-0.011**
			R^2
			0.311

Table V.
Regression of R^2_T ,
 R^2_{EPS} , and R^2_{BVS} on a
time-trend variable
1994-2016

Note: **Significant at the 0.05 level (two-tailed)

result suggests that there was an exchange of value relevance between earnings and BV after the financial crisis.

6. Conclusions

This study examined the changes and the incremental value relevance of earnings and BV in the Kuwaiti stock market to equity holders over the period from 1994 to 2016 and in the context of the GFC. We predicted that developments in the KSE regulatory environment, in the present of the CMA, had increased the availability of timely financial information. We anticipated that the improved informational environment would both meet the needs of current analysts and investors and attract new participants, which in turn would improve the value relevance of accounting earnings and BV. Thus, we hypothesized that the value relevance of accounting earnings (*H1*) and BV (*H2*) would increase over the 1994-2016 period. Consistent with prior value relevance research, we used [Ohlson's \(1995\)](#) model as a valuation framework to test these hypotheses.

There are three primary findings. First, accounting earnings and BV of equity, both jointly and individually, were significant variables in explaining stock prices. This suggests that the KSE participants relied heavily on this information to make investment decisions. Second – and inconsistent with the study hypotheses – the results over the entire 23-year period (1994-2016) indicate a noticeable decline, practically, post GFC. 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 BV declined, the decline in the latter was deeper and more pronounced than the former. Fourth, the findings suggest that the decline in the value relevance of earnings was more obvious than that of BV. However, the investigation suggests that the decline in the value relevance of earnings and BV was driven by the BVs in the post-crisis period and suggests an exchange of the value relevance between earnings and BV post GFC.

The study findings have several interesting implications. First, they 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. They highlight the need for improvements, as 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

Table VI.
Results of price regressions of earnings and book value after incorporating a pre- and Post-Financial crisis dummy variable

Model Variable	Model (7) Coefficient	Model (8) Coefficient	Model (9) Coefficient	Model (10) Coefficient
Intercept	0.090***	0.269***	-0.008	0.029**
EPS	2.627***	5.467***	-	2.401***
BVS	1.224***	-	2.086***	1.516***
CRISIS	-0.110***	-0.062***	-0.006	-0.007
CRISIS *EPS	-	-0.962***	-	-0.071
CRISIS *BVS	-	-	-0.766***	-0.481***
Adj. R^2	0.627	0.472	0.588	0.636
F-stat	1557.278***	839.943***	1339.247***	985.163***
N	2817	2817	2817	2817

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

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 as they suggest that these entities should focus their efforts on the quality, accuracy and precision of financial statements.

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

Note

1. The KSE witnessed a sharp decline during this period. In 1997, the central bank of Kuwait's stop margin for banks lending for stocks caused a decline for the majority of listed Kuwaiti firms ([Almujamed, 2011](#)). In 2008, the KSE, like most emerging and developed markets, was also affected by the global financial crisis ([Blundell-Wignall et al., 2008](#)).

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