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Article

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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Value relevance of financial reporting: Evidence from Malaysia

Aboubakar Mirza^{1*}, Mazrah Malek¹ and Mohamad Ali Abdul-Hamid²

Abstract: The objective of this paper is to examine the value relevance of financial reporting from a developing country perspective after the adoption of the full set of IFRS. The study utilizes the Ohlson price model to determine the value relevance of financial reporting. The findings show that generally earnings, book value of equity and cash flow from operations are useful for investment decision making, whereas, there is an increasing significance of cash flow from operations in the Malaysian Capital Market. This finding is not consistent with the rationale given by conceptual framework for financial reporting regarding the dominance of earnings in investment decision making due to the perception of managerial bias in the reported earnings and book value of equity in the Malaysian Capital Market over the period 2012–2106. The findings have an important implication for regulators and local standards-setting body to curtail earnings management practices to improve the quality of earnings and book value of equity to increase the investor's confidence in general purpose financial reporting. The findings of the study contribute to the existing literature by performing a detailed empirical analysis of the value relevance of financial reporting in Malaysia, a developing country where the full set of IFRS has been implemented.

Subjects: Finance; Accounting; Financial Accounting;

Keywords: Value relevance; financial reporting; Ohlson price model; Malaysian Capital market

1. Introduction

The quality of financial reporting is a global issue and remained under discussion among academician over long decades because users rely on the accounting information for investment decision making. A survey on global economic crime had highlighted that in 2016, 18% of the



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PUBLIC INTEREST STATEMENT

The purpose of this paper is to investigate the role of financial reporting in investment decision making after the adoption of a full set of IFRS in 2012. The findings show that investors rely on the financial reporting information disclosed by the Main Board listed firms for investment decision making in the Malaysian Capital Market. Findings further show that investor relatively focuses more on the cash flow from operations as compared to the earnings and book value of equity in investment decision making due to the perception of managerial bias in the reported earnings and book value of equity.

global economic crime is associated with financial reporting frauds (PwC, 2016b). While renowned scandals around the world in the developed countries were also associated with bad financial reporting practices (e.g., Enron, Ahold, and Tyco, Adelphia, Cirio, Parmalat, Pescanova (Spanish Enron, 2012), and more recently Tesco (2014) and Toshiba (2015) (Pfanner & Fujikawa, 2015; Seaman, 2013). South East Asian countries are also dominated by big financial reporting frauds, such as, in Singapore (Keppel Corporation, Noble Group, Declout Ltd and Raffles United Holdings) (Watts & Chaturvedi, 2018), Thailand, (Group Lease Public Ltd) (Daily Mirror, 2017), Philippines, (2GO Group Incorporated) (Paz & Tomacruz, 2017) and Vietnam, (Trust Bank) (Nguyen, 2016).

Malaysia is also the part of the SouthEast Asian's region and had a long history of financial reporting frauds. A recent survey in 2016 had highlighted that 17% of economic crimes are associated with financial reporting in Malaysia (PwC, 2016a). Moreover, renowned frauds in Malaysia e.g. Transmile Group Berhad, Megan Media Holdings Berhad, Southern Bank Berhad and 1Malaysia Development Berhad (1MDB) (2013) are also associated with manipulation of the financial reporting. These firms cheated their investors by providing misleading financial reports (Fong, 2007a, 2007b; Saieed; Zunaira, 2016) that resulted in huge loss to investors due to inappropriate investment decision making based on the misleading information. These financial reporting frauds not only eroded the confidence of the investors in financial reporting but also raised the concern regarding the low-quality financial reporting in Malaysia.

Besides this, the purpose of journal purpose financial reporting is to provide accounting information about an entity that supports shareholders and creditors in making appropriate investment decisions (IASB, 2018). Consequently, accounting information should support investors in making investment decisions by selecting between alternative utilization of limited resources through the provision of relevant and faithful information. Therefore, value relevance measures usefulness of accounting information from the investor's perspective, and assess the quality of financial reporting by examining the qualitative characteristics of information from financial reports i.e. relevance and faithful representation (formally known as reliability) (Barth, Beaver, & Landsman, 2001; Francis & Schipper, 1999; Hellstrom, 2006).

The research issue highlighted in this paper is that accrual-based earnings are the primary financial reporting information that is designed by the International Accounting Standard Board (hereafter, IASB) to predict enterprise future cash flows to aid investors in investment decision making. While many studies in the recent literature raised the concern that the value relevance of earnings are lessened or diminished because of the fact that investors do not consider it relevant and reliable as opposed to the most of empirical literature including Malaysia (Almujamed & Alfraih, 2019; Kadri, Abdul Aziz, & Ibrahim, 2009; Kwon, 2018a; Mirza, Malek, & Abdul Hamid, 2019b). Contrary to this, many studies have consensus that earnings are still value relevant but its value relevance is decreased in terms of growing reliance of investors on the book value of equity (hereafter, BVE) and cash flow from operations (hereafter, CFO) in decision making including Malaysia (Gan, Chong, & Ahmad, 2016; Kwon, 2018a; Tahat & Alhadab, 2017).

The issue of the declining importance of value relevance of earnings and increasing significance of BVE and CFO was highlighted by several prior studies and attributed the reduced value relevance of earnings to the earnings management practices (Collins, Maydew, & Weiss, 1997; Marquardt & Wiedman, 2004). Actually, the issue of earning management practices has actually made it a noisy measure (Barth, Li, & McClure, 2018; Bartov, Goldberg, & Kim, 2001). Therefore, studies in the recent literature had found the BVE and CFO a more significant variable as compared to the earnings (Kwon, 2018b; Tahat & Alhadab, 2017). While previous Malaysian studies had only examined the value relevance of earnings and BVE, while ignored the CFO that explains a significant variation in the firm value (Bartov et al., 2001; Bepari, Rahman, & Taher Mollik, 2013; Tahat & Alhadab, 2017).

Irrespective of the abundant research on the value relevance of accounting information in developed markets, there is a scarcity of literature regarding value relevance research in the developing countries (Dosamantes, 2013). The studies on the value relevance of accounting information in Malaysia are also inconclusive and insufficient. Despite this fact, the main motivation behind this paper is the implementation of the full set of IFRS from 1 January 2012 by the Malaysian regulators. Therefore, it is timely and important to examine the value relevance of financial reporting (earnings, BVE and CFO) to understand the investors' perception after the adoption of the full set of IFRS. So, this paper contributes to the literature by providing empirical evidence on the value relevance of accounting information in Malaysia as a developing country after the adoption of the full set of IFRS. This paper also contributes to the literature in a way that examines the value relevance of CFO along with earnings and BVE in the developing countries' setting, where CFO is not empirically tested before.

This paper is organized as follows. In section 2, the Malaysian financial reporting environment, conceptual framework, literature review and related hypotheses are developed. Section 3 presents the research methodology, sample selection, statistical results and discussion. Section 4 concludes the paper, including the main contributions, implications for policymakers and limitations as well.

2. Literature review

2.1. Malaysian financial reporting environment

In view of the development in the Malaysian economy, authorities have implemented good financial reporting practices gradually over the period. The Malaysian regulators have implemented the IFRS from January 2006 and a full set of IFRS from January 2012. Under the Malaysian Financial Reporting Act, accounting framework was also established in 1997 in Malaysia. Two regulatory bodies were developed, the Malaysian Accounting Standards Board (MASB), which is regarded as accounting standards setters in Malaysia and the Financial Reporting Foundation (FRF). FRA 1997 enforced the adoption of MASB standards for the listed and non-listed firms. The issue of the compliance with MASB standards is given to several bodies like the Securities Commission, Bank Negara Malaysia, Companies Commission of Malaysia and capital market (Bursa Malaysia).

2.2. Conceptual framework

Accounting information, especially earnings are considered to be the most superior information for investment decision making, while the information from the statement of financial position and statement of cash flows is also useful for investment decision making (IASB, 2018). Marquardt and Wiedman (2004) and Whelan and McNamara (2004) argued that when a firm provides lower quality earnings, it weakens the association between the accounting earnings and value relevance. In that case, investors focus on the other accounting information for decision making as well i.e. CFO and BVE along with earnings for decision making (Bo, 2009; Kwon, 2018b; Mirza, Malek, & Abdul Hamid, 2019a; Tahat & Alhadab, 2017; Vichitsarawong, 2011). Therefore, this study suggests assessing simultaneously the value relevance of earnings, BVE and CFO.

2.3. Value relevance

The term "value relevance" is used for the first time in the literature by Amir, Harris, and Venuti (1993). While, origins and foundations were placed in the 1960s and afterwards, most of the value-relevance work, as it is known currently, is predominantly based on research from the past twenty years. As per one of the definitions by Francis and Schipper (1999), value relevance is a statistical association between accounting information and firm value or stock returns. As per this definition, value relevance is elaborated as an ability of accounting information to capture or summarize information affecting share price or stock return. According to measurement perspective given by Hellstrom (2006), value relevance is an association among the firm's market value and the financial reporting information. The approach that is given by Hellstrom (2006) is consistent with

the definition given by Barth et al. (2001), the relevant accounting information will be reflected in firm value or stock return if an investor finds it useful.

Normally value relevance research is dominated by the earnings and BVE (Kothari, 2001). The domination behind is the Ohlson (1995) price model's theoretical foundation of valuation that explains the firm value as a function of the BVE plus future residual income's present value and other information. While recent literature also suggests that CFO also contains value relevant information (Bepari et al., 2013; Tahat & Alhadab, 2017). Additionally, regulators in the US, UK, Australia, Canada and International Accounting Standard Board (IASB) also supports the notion that CFO contains value relevant information (Bartov et al., 2001; IASB, 2018). Past literature also suggested that the value relevance of earnings decreases, when firms engage in earnings management practices and cash part the earnings is not influenced due to these practices (Marquardt & Wiedman, 2004). The facts mentioned above highlight the importance of CFO in investment decision making along with earnings and BVE. Therefore, this study will consider earnings, BVE along with CFO as an independent variable.

2.3.1. *Value relevance of earnings, book value of equity and cash flow from operations*

The beginning of research on the value relevance of earnings is associated with the seminal paper by Ball and Brown (1968), who provided empirical evidence that earnings are value relevant. Beaver (1968) also supported the main findings of Ball and Brown (1968). Most of the value relevance research in the early stages focused on value relevance of earnings and conducted in the developed countries and demonstrated that earnings are value relevant and support investors in investment decision making (Beaver, Clarke, & Wright, 1979; Collins & Kothari, 1989; Easton & Harris, 1991; Foster, 1977; Lev, 1989; Patell & Wolfson, 1984).

Later in the 90s, Ohlson (1995) and Feltham and Ohlson (1996) redefined the appropriate objective of value relevance research by providing some structure for modelling in the field of accounting by relating the earnings and the BVE with firm value. Collins et al. (1997) based his work on the Ohlson (1995) model and argued that BVE has become a more important value relevant factor in contrast with the earnings. The shift in value-relevance from earnings to BVE can be explained by the rising rate of firms reporting losses, the magnitude of the non-recurring item adjusted against earnings and changes in average firm size. Barth, Beaver, and Landsman (1998) presented evidence on the US data in different industries and explained the roles of the statement of financial position and statement of comprehensive and stated that firms that declare a loss or having small earnings are valued only based on BVE.

Meanwhile, researchers also started focusing on the CFO in the developed countries because it shows not only the organization's ability to survive in long run and also is the best available measure to predict future cash to aid investors in investment decision making especially when earnings are subject to earning management practices (Lee, 1974). Most of the empirical literature still believes that in the developed countries both earnings and CFO provide value relevant accounting information, but the relative value relevance of earnings are greater than CFO (Bepari, 2015; Charitou, Clubb, & Andreou, 2001; Garrod, Giner, & Larran, 2003; Habib, 2008; Miranda-Lopez & Nichols, 2012). While studies analysing the comparative value relevance of earnings, BVE and CFO among countries following Anglo-Saxon model i.e. (US, UK and Canada) and non-Anglo-Saxon model of corporate governance i.e. (Japan and Germany) showed that the countries following Anglo-Saxon model, earnings are more value relevance in contrast with CFO and BVE because financial reporting structure is designed to fulfil the equity investor's needs rather banks (Bartov et al., 2001; Black & White, 2003). A recent study by the Kwon (2018b) on the comparative value relevance of accounting information on the developed stock markets such as, Korea, Japan and developing stock markets such as China. The findings reveal that accounting earnings are the most value relevant variable in Korea, Japan, and China, followed by BVE and CFO. Contrary to above some authors in developed countries also claimed that earnings are not value relevant variable or its value relevance is reduced as compared to other accounting information due to the lack of investors' reliance on earnings (Amir & Lev, 1996; Arora & Bhimani, 2016; Kwon, 2009).

The prior literature related to value relevance of financial reporting in the developing countries also found that earnings, BVE and CFO are value relevant but earnings are more value relevant as compared to BVE and CFO, these results show that the investor relies on the earnings for their investment decision making (Badu & Appiah, 2018; Khanagha, Mohamad, Hassan, & Sori, 2011; Mostafa & Mostafa, 2016; Papadatos & Makri, 2013; Prihatni, Subroto, Saraswati, & Purnomosidi, 2018; Shamki & Rahman, 2011; Subramanyam & Venkatachalam, 2007). While some authors also claim the earnings are not value relevant or its value relevance is reduced, such results indicate that investors prefer the use of other accounting information instead of the statement of comprehensive income due to the weak information content or earnings management practices (Almujaed & Alfraih, 2019; Mirza et al., 2019b; Pervan & Bartulovic, 2014; Saeedi & Ebrahimi, 2010).

While some studies also supported the notion that BVE is more value relevant as compared to other accounting information such as earnings and CFO and investor put more emphasis on the BVE for their investment decision making (Ben Naceur & Nachi, 2006; Kargin, 2013; Mehmood, Hidthiir, & Nor, 2019; Mirza et al., 2019b; Sharma, Kumar, & Singh, 2012; Tanaka, 2015). Some authors also found BVE as an irrelevant factor for investment decision making (Amir et al., 1993; Der, Masri, & Abubakari, 2018; Omokhudu & Ibadin, 2015). On the other hand, some studies also supported the notion that CFO is more value relevant as compared to other accounting information such as earnings and BVE because investors put more emphasis on CFO for their decision making due to the fact that it is less subject to managerial bias (Bo, 2009; Kwon, 2009; Vichitsarawong, 2011). Some authors also found CFO irrelevant in decision making (Mostafa & Mostafa, 2016; Penman & Yehuda, 2009; Saeedi & Ebrahimi, 2010; Sharma et al., 2012; Vishnani & Shah, 2008).

In Malaysia, only a few authors explored the area of value relevance of financial reporting and examined the value relevance of earnings and BVE and stated that both variables are value relevant (Ali, Saffa, Besar, & Mastuki, 2018; Graham & King, 2000; Jamaluddin, Mastuki, & Elmiza Ahmad, 2009; Kadri, 2015; Nejad, Ahmad, & Embong, 2018). While some studies stated that both variables are value relevant, but BVE is more relevant than earnings and reduced value relevance of earnings is going to be substituted by increasing value relevance of BVE (Gan et al., 2016; Graham & King, 2000; Kwong, 2010; Mirza et al., 2019b). While one study by Kadri et al. (2009) claimed that earnings are not relevant in the property sector of the Malaysian capital market. Most of the studies conducted in Malaysia did not consider firms specific factors as control variables irrespective of the fact that these factors had a significant impact on the value relevance of financial reporting (Bepari et al., 2013; Hayn, 1995; Mirza et al., 2019b; Tahat & Alhadab, 2017). Moreover, these studies were based on small sample size, therefore, their results may not be generalized. The issue highlighted above in the Malaysian studies requires further investigation to assess the perception of investors in the Malaysian Capital Market especially, CFO, which is not tested by any of the prior Malaysian studies. Another important fact is the introduction of a full set of IFRS in 2012 in Malaysia, that highlights the need to assess the investor's perception regarding accounting information after the IFRS introduction.

The conceptual framework for financial reporting IASB (2018), which states that the statement of comprehensive income, statement of financial position and statement of cash flows support investors in decision making. This argument is further strengthened by the prior empirical literature on the value relevance of earnings, BVE and CFO, it is well-established fact that these variables are value relevant for the investment decision making. Therefore, the following hypotheses can be developed:

H1: Earnings, BVE and CFO are value relevant in the Malaysia Capital Market.

The conceptual framework for financial reporting states that earnings are the primary accounting information for investment decision making due to its ability to predict the firm's future cash flows

IASB (2018). Despite this fact, prior literature had inconclusive findings regarding the relative value relevance of earnings, BVE and CFO. The reason behind this is explained by Barton, Hansen, and Pownall (2010) and Bartov et al. (2001), the authors concluded that no single performance measure dominates in its association with the market value of the firm, the evidence indicates that optimal performance measures useful in equity valuation vary across different economic circumstances, accounting regimes and earnings management practices. Consequently, the dominance of earnings over BVE and CFO is difficult to generalize. Therefore, the following hypotheses can be developed:

H2: There is no difference in the value relevance of earnings, BVE and CFO in the Malaysian Capital Market.

3. Research methodology

3.1. Valuation model

To examine the association between accounting information and share price (share price as a proxy for firm value or value relevance), generalized Ohlson (1995)'s valuation framework was used by this paper. The valuation framework of Ohlson's (1995) price model defines firm value as a function of BVE plus earnings and other information but not specified the other information (Ohlson, 1995). Therefore, this study has incorporated the CFO as another accounting information along with earnings and BVE. Most of the recent empirical literature that has investigated the value relevance of earnings, BVE and CFO used Ohlson's (1995) price model (Gan et al., 2016; Mirza et al., 2019b; Nejad et al., 2018; Tahat & Alhadab, 2017). The earnings are calculated as profit after interest and tax of a firm divided by the total number of ordinary shares outstanding. BVE is measured by total assets of the firm less claims on the assets divided by the total number of ordinary shares outstanding. CFO is measured by cash flow from operating activities of a firm by dividing the total number of ordinary shares outstanding. The dependent variable is measured as the share price at end of four months following financial year-end.

Researchers have also analyzed the individual component changes, and how an individual component change explains the variation in firm value. This is defined as price changes model or stock returns specification. However, Barth et al. (2001) stated that selection of price levels and price or return change model depends on research questions that a study wants to address; failure to consider the research questions will result in the wrong conclusion. Moreover, it is further specified that the price change or return model is unable to explain what is reflected in firm value, and only explains the drivers of change in firm value. Prior literature has established that the return model is better to examine the value relevance of earning and flow variables, whereas it is not suitable when investigating the value relevance of BVE and other stock measures (Barth, Clement, Foster, & Kasznik, 1998; Hung, 2000). The major reason behind this is that the nature of BVE is stable that makes it less attractive for researchers to focus on determining the drivers of change in firm value; additionally, there is a domination of earning changes on the return model (Hung, 2000). According to prior studies, testable models of valuation are developed on the basis of the level of firm market value (Ohlson, 1995). Moreover, the change model of value relevance is only suitable for studies that aim to analyze earning changes (Hung, 2000). This study is specifically interested in determining the role of accounting information in the valuation of the firm. Therefore, it is better to use the price levels specification.

In line with the previous studies, this paper also controls firm-specific variables, i.e. firm size, leverage and growth (Bepari et al., 2013; Mirza et al., 2019b; Nejad et al., 2018; Tahat & Alhadab, 2017). The full control model that will be utilized to investigate the association among earnings, BVE, CFO and share price, specified through the regression equation is given below to test hypotheses H1 and H2. A formal model is presented below:

$$SPPS_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \beta_3 CFOPS_{it} + \beta_4 SIZE_{it} + \beta_5 LEVERG_{it} + \beta_6 GROW_{it} + \varepsilon_i$$

$SPPS_{it}$: Share price per share after a four-month¹ period following the at year t and firm i ,

EPS_{it} : Earning per share for a firm at year t and firm i ,

$BVPS_{it}$: Book value of equity per share for a firm at year t and firm i ,

$CFOPS_{it}$: Cash flow from operations per share for a firm at year t and firm i ,

$SIZE_{it}$: Natural log of total assets at year t and firm i ,

$LEVERG_{it}$: Ratio of debt to total assets at year t and firm i ,

$GROW_{it}$: book-to-Market ratio at year t and firm i ,

ε_{it} : error term,

3.2. Sample selection

The Malaysian capital market (Bursa Malaysia) is divided into three markets, Main Market, ACE (access, certainty, efficiency) Market and Leap Market. The Main Market of Bursa Malaysia is a combination of the prior main and second board firms. The firms which were formerly listed under the main and second board are all now listed in the Main Market. This was made through an amalgamation process which took place in 2009. The ACE Market which is the new name for the formerly known MESDAQ (Malaysian Exchange of Securities Dealing and Automated Quotation) market. MESDAQ came into existence in 1997 when it was the home of mainly technological stocks and today it is replaced by the ACE Market under Bursa Malaysia. The ACE Market is seen as the ideal market for start-ups and new companies which are governed by entrepreneurs who are looking for more capital by listing their firms. The LEAP Market is a platform for small and medium enterprises (SMEs) to raise funds in the capital market, despite not being able to meet the criteria for listing on the Main and ACE Market.

The population of this paper is based on the all Non-Financial firm listed on the Bursa Malaysia Main Market for the period 2012–2016. The reason for considering only the Main Market's listed firms is because these firms are more established and exposed to the public eye than firms on the ACE and leap Market and significant market capitalization lies with these Main Market's listed firms. The market capitalization of Main Market's listed firms as at 3 November 2018 was 1690 Billion MYR (Malaysian Ringgit), whereas, the market capitalization of the ACE market was only 13.78 Billion MYR at the same date (CEIC, 2018). Therefore, this study has considered only the Main Market's listed firm in the sample due to the significant presence on the Bursa Malaysia in terms of market capitalization. Moreover, the reason for the selection of the sample period from 2012–2016 is that the Malaysian regulators implemented the full set of IFRS in 2012. Moreover, in 2017, Malaysia was suffering from political and economic instability due to election in 2018. The political and economic instability have severe implications for the capital markets in terms of market capitalization, therefore, this study limits the sample up to 2016 to avoid the influence of political and economic influences on the findings.

There are 801 listed firms on 31 December 2016. The 83 firms that have changed the fiscal year during 2012–2016 and the 34 firms listed on Bursa Malaysia after 2012 are excluded from the sample. In line with the previous studies, 32 financial, insurance institutions and 15 real estate investment trust (REITs) are excluded from the sample due to the different regulatory framework that is different from the non-financial firms, in line with Malaysian and international studies (Bepari et al., 2013; Gan et al., 2016; Graham & King, 2000; Kwon, 2009; Mirza et al., 2019b). The 20 firms with missing data on share price and 3 firms with missing annual reports are also excluded. Finally, the 7 firms with negative BVE are also excluded from the sample because the firms with the negative BVE are likely to be in financial difficulties, and this might influence the

results in a different way among the earnings, BVE, CFO and share price, in line with the prior literature (Bepari et al., 2013; Jamaluddin et al., 2009). The final sample for this paper is consisting of 607 firms and 3035 firm-year observations. The data related to independent, dependent and control variables is collected from the Thomson Reuters DataStream.

3.3. Results

3.3.1. Descriptive statistics

Table 1 below explains the frequency distribution of firms-year observations among different industries based on classification assigned by the Malaysian Capital Market (Bursa Malaysia). The sample is widely dispersed among the different sectors and represents most of the sectors on the Bursa Malaysia. The highest concentrations lie in the sector of industrial products (29.49%) followed by the trading/services (23.40%), consumer products (16.64 %) and properties (12.85%) is identical to the population of firms listed on Bursa Malaysia Main Board. The lowest concentration lies in the mining sector (16%).

Table 2 presents descriptive statistics for the sample firms. Skewness and kurtosis statistics recommends that there is a lack of normality in the variables. However, to normalize the data, one way is to exclude outliers from the data, whereas it can be difficult because it may influence regression interpretation in undesirable ways and generally causes new outliers (Wooldridge, 2002). Additionally, it is observed that the outliers in the data are genuine and drawn from reliable sources (e.g. Thomson Router Database). Consequently, the approach of outlier's deletion is not appropriate unless if the researcher finds appropriate justification based on his assessment (Hair, Black, Babin, & Anderson, 2010).

According to Hair, Bill, Barry, and Anderson (2006) and Hayes (2018), normality should be considered as the least important assumption in linear regression analysis. Gujarati (2003) states that, if the data is not normally distributed, then rely on the central limit theorem, whereby central limit theorem specifies that the sampling distribution of any statistic will become normal or nearly normal in case of large sample size ($N > 30$). Finally, Hair et al. (2010, p. 70) state that, as far as normality is concerned, the researcher must consider the impact of sample size. Sample size has the impact of increased statistical power by decreasing sampling error. In addition, larger sample size reduces the detrimental effects of nonnormality. For a sample size of 200 or more, the effects may be negligible. Consequently, as the sample sizes become large, the researcher should not be worried about non-normal variables. Thus,

Table 1. Industry classification

Bursa Sector	Frequency	Percent	Cum. Percent
Construction	185	6.1	6.1
Consumer products	505	16.64	22.73
Hotel	15	0.49	23.23
Industrial products	895	29.49	52.72
Infrastructure project	20	0.66	53.38
Mining	5	0.16	53.54
Plantation	180	5.93	59.47
Property	390	12.85	72.32
Technology	130	4.28	76.61
Trading/services	710	23.39	100
Total	3,035	100	

Source: Thomson Reuters Data Stream and Bursa Malaysia Official Website

Table 2. 2012–2016 descriptive statistics

Variable	Observations	Mean	Minimum	Maximum	Median	St. D	Skewness	Kurtosis
SPPS	3035	2.0779	.03	82	.84	5.1735	8.6938	99.9292
EPS	3035	.11760	−3.963	14.477	.058	.40570	15.957	534.9132
BVPS	3035	1.5569	.013	17.691	1.013	1.7443	3.2191	17.8890
CFOPS	3035	.1490	−2.1890	3.7970	.0687	.3735	3.8283	29.6802
SIZE	3035	13.1332	9.9533	18.7048	12.9349	1.4784	.8021	3.7470
LEVERG	3035	18.3539	0	76.01	15.9	15.521	.6757	2.17822
GROW	3035	1.5293	.006	50	1.2346	4.3449	12.6969	353.0301

Source: Secondary data, Stata 14

the non-normal distribution of data in this paper may not be an issue due to the large sample size. Based on the above discussion, this paper will proceed with non-normal data.

3.3.2. Correlation analysis

First, to fulfil the assumption of the regression, Pearson's correlation coefficient was performed. The findings are shown in Table 3, the correlation between SPPS on BVPS, EPS and CFO were 0.5668, 0.4600 and 0.7575. It determines that the earnings, BVE and CFO have a positive relationship with the share price. Further, to dig out the problem of multicollinearity, Pearson's correlation coefficients between independent variables were analyzed. The correlation among independent variables was: EPS and BVPS, 0.3447: EPS and CFO, 0.5020 and CFO and BVPS 0.4722. As the value was smaller than 0.8, multicollinearity is not a serious issue in the ordinary least square regression (OLS) (Hair et al., 2006).

Multicollinearity issue can further be investigated by the variance inflation factor (VIF). As per Hair et al. (2006), as the VIF value is less than 10, indicates that there is no multicollinearity. Findings are shown in Table 4. The value of VIF of each independent variable is less than 10, suggesting no multicollinearity.

3.3.3. Diagnostic tests for autocorrelation, heteroscedasticity and cross-sectional dependence

Further, to diagnose the autocorrelation and heteroscedasticity in the panel data. Wooldridge test was used to detect autocorrelation and corresponding results found P-value<0.01 and for heteroscedasticity, Breusch-Pagan test was performed, found corresponding P-value<0.01. These tests highlighted the presence of heteroscedasticity and autocorrelation in the panel data. Brooks (2014) stated that the presence of heteroscedasticity can invalidate the efficiency of the statistical results, however, biasness in the estimated standard errors may lead to invalid the inferences. While cross-sectional dependence (CSD, hereafter) is another common issue in panel data, that has got little attention in the research (Certo & Semadeni, 2006). This may also lead to invalid statistical inferences (Certo & Semadeni, 2006; Hoechle, 2007). Pesaran test of CSD was performed and found P-value<0.01 and the average absolute value of the off-diagonal elements = 0.454, it shows the existence of CSD in the panel data. Results for diagnostic tests are presented in Table 5 below.

To account for the influence of CSD, Parks (1967) developed a technique known as Feasible Generalized Least Squares (FGLS) based on the algorithm. Unfortunately, FGLS is not appropriate for medium and large panels because of two reasons. First, this method is feasible in case, when T is greater than N; this requirement is an essential prerequisite for the mathematical computations required to model CSD; secondly, FGLS has a tendency to generate unacceptable small standard errors (Beck & Katz, 1995). It is believed that FGLS should be avoided when a researcher is going to test a theory where N is greater than T. Moreover, it should also be noted FGLS ignores unit heterogeneity. The theoretical weaknesses of FGLS raise questions on the large body of empirical studies using FGLS estimators (Certo & Semadeni, 2006; Reed & Webb, 2010). Beck and Katz (1995) recommended

Table 3. 2012–2016 pearson correlation matrix

	SPPS	EPS	BVPS	CFOPS	SIZE	LEVERG	GROW
SPPS	1.0000						
EPS	0.5668**	1.0000					
BVPS	0.4600**	0.3447**	1.0000				
CFOPS	0.7575**	0.5020**	0.4722**	1.000			
SIZE	0.2970**	0.2029**	0.4683**	0.2962**	1.0000		
LEVERG	– 0.0683**	– 0.1023**	–0.0685**	–0.0871**	0.3282**	1.0000	
GROW	–0.1936**	–0.1698**	–0.0009	–0.0774**	0.1010**	0.0091	1.0000

* significance at 0.05 levels, ** significance at 0.01 significance levels

Source: Secondary data, Stata 14

Table 4. 2012–2016 variance inflation factor

Variable	VIF	1/VIF
EPS	1.39	.7189
BVPS	1.63	.6139
CFOPS	1.59	.6305
SIZE	1.58	.6341
LEVERG	1.23	.8136
GROW	1.05	.9483
Mean VIF	1.41	

Source: Secondary data, Stata 14

Table 5. 2012–2016 diagnostic tests

Wooldridge test for Auto-Correlation		Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity		Pesaran CD Test for Cross-Sectional Dependence	
F Value	20.90	Chi ²	34,412.67	Chi ²	62.74
				off-diagonal elements value	0.454
Prob > F Value	0.00	Prob > Chi ²	0.00	Prob > Chi ²	0.00

Source: Secondary data, Stata 14

estimating linear models of panel data by OLS through a sandwich type estimator of the covariance matrix of the estimated parameters PCSE, that provides robust standard errors in the presence of the non-spherical error structure, and also in the case when N is greater than T. Interestingly, PCSE does not require T to be considerably higher than N and it has been found to perform better than FGLS (Bailey & Katz, 2011; Jonsson, 2005; Mellado & Saona, 2018). According to Reed and Webb (2010), Beck and Katz (1995) correctly determined that FGLS performs inappropriately in most of the applied practical research, while PCSE almost always offers an improvement over FGLS with respect to the estimation of standard errors.

The PCSE has been employed in many of the recent studies in the field of accounting, including value relevance studies, to deal with the problems mentioned above (Arowolo & Che-Ahmad, 2017; Ayadi & Boujelbene, 2015; Boussaada & Labaronne, 2015; Lazzem & Jilani, 2018; Mellado & Saona, 2018; Schank, Murgea, & Enache, 2017). Therefore, this study adopted the PCSE approach to perform a multivariate regression analysis to handle the problem of (i) group-wise heteroskedasticity; (ii) first-order serial correlation; and (iii) CSD.

3.3.4. Empirical results

3.3.4.1. Value relevance of earnings, book value of equity and cash flow from operations (H1). H1 and H2 are tested based on the price model developed by Ohlson (1995). It is anticipated that earnings, BVE and CFO are useful for investment decision making for Malaysian investors. The R-squared is mainly used to measure value relevance of earnings, BVE and CFO consistent with prior studies. Additionally, the coefficients and respective p-values describe the relationship and significance level (Bowerman & Sharma, 2016). Table 6 presents estimated regression results of share prices on earnings, BVE and CFO. The R² is 57.10%, it recommends that accounting information as earnings, BVE, and CFO explains 57.10% variation in share prices of Main Market's listed firms. In comparison with the previous Malaysian studies (Gan et al., 2016; Jamaluddin et al., 2009; Kadri et al., 2009; Kwong, 2010), the overall R² is reduced, it shows that after the introduction of the full set of IFRS in Malaysia, value relevance of financial reporting is reduced. This finding is

Table 6. 2012–2016 panel multivariate regression analysis

Dependent Variable Share Price		
VARIABLES	Prais-Wisnton Regression	Drisc/Kraay Regression
EPS	1.711** (0.735)	2.671** (0.817)
BVPS	0.611*** (0.143)	0.412*** (0.0391)
CFOPS	5.762*** (1.226)	7.371*** (0.432)
SIZE	0.0967* (0.0541)	0.0333** (0.00993)
LEVERG	−0.00143 (0.00415)	0.00175 (0.00292)
GROW	0.253*** (0.0644)	0.244** (0.0737)
Constant	−1.542** (0.651)	−0.794*** (0.157)
Observations	3,035	3,035
R-squared	57.1%	66.6%
Number of groups	607	
Number of groups		607

*** significance at 1% levels (1-tailed), ** significance at 5% levels (1-tailed), * significance at 10% levels (1-tailed); NOTE: Heteroscedasticity, autocorrelation and cross-sectional dependence in the panel data was corrected by using Beck and Katz (1995) panel corrected standard errors (PCSE) with corresponding standard errors in parentheses; For robustness, heteroscedasticity, autocorrelation and cross-sectional dependence was corrected by using Driscoll and Kraay (1998) with corresponding standard errors in parentheses; SPPS: Share price after four-month period; EPS: Earning per share; BVPS: Book value of equity of equity per share; CFOPS: Cash flows from operation per share; SIZE: Natural logarithm of total assets; LEVERG: Ratio of debt to total assets; GROW: Market- to- book ratio

Source: Secondary data, Stata 14

consistent with a recent study by the Ali et al. (2018), which also showed the lower explanatory power of regression model (R^2 39.3%) even less than the current study after the adoption of a full set of IFRS in Malaysia. This study was based only on the value relevance of earnings and BVE, while current study includes CFO as well, therefore, the current study R^2 is greater than the study by Ali et al. (2018). The reduced explanatory power of model after the adoption of a full set of IFRS may be attributed to the fact that investors in Malaysia are relying on the source of information for investment decision making other than financial reporting's information consistent with (Badu & Appiah, 2018; Subramanyam & Venkatachalam, 2007).

The findings related to H1 based on the multiple regression analysis show the positive and significant association between earnings and share price ($\beta = 1.711$, $p < 0.05$), the relationship between BVE and share price is positive and significant as well ($\beta = 0.611$, $p < 0.01$), finally, the relationship between CFO and share price is also significant and positive ($\beta = 5.762$, $p < 0.01$). These findings confirm that H1 is supported. Moreover, it confirms the significance of earnings, BVE and CFO for market valuation as suggested by the Ohlson's model (1995), and for the decision making as suggested by the conceptual framework for financial reporting (IASB, 2018). Therefore, it infers that the investors consider earnings, BVE and CFO as value relevant accounting information for investment decision making in the Malaysian capital market after the adoption of a full set of IFRS. It further concludes that earnings, book value of equity and CFO are relevant and faithfully presented by the Main Market's listed firms in the Malaysian Capital Market.

This finding is consistent with several Malaysian studies on the value relevance of earning and BVE that both are significantly value relevant variable for investment decision making in the Malaysian Capital Market (Ali et al., 2018; Gan et al., 2016; Jamaluddin et al., 2009; Kadri, 2015; Kwong, 2010; Mirza et al., 2019b; Nejad et al., 2018), except a study by the Kadri et al. (2009), who stated that earnings are irrelevant in Malaysian Capital Market, this study was based on only the property sector of the Malaysian Capital Market, therefore, its result may not be generalized to other sectors. The results are also in line with the recent studies, which confirmed the significance of earnings and BVE for investment decision making in the developed countries such as UK and the US (Barth et al., 2018; Tahat & Alhadab, 2017) and developing countries such as Ghana, Indonesia, India and Thailand (Badu & Appiah, 2018; Bhatia & Mulenga, 2019; Boonlert-U-Thai & Sen, 2019; Prihatni et al., 2018).

The result further confirms the significance of CFO also for market valuation and investors consider CFO as a value relevant variable for investment decision making in the Malaysian Capital Market. This finding is consistent with several past international studies that endorsed the CFO as a value relevant variable in investment decision making in developed countries such as US, Japan, Korea, Canada and the UK (Barth et al., 2018; Bartov et al., 2001; Black & White, 2003; Hu & Kim, 2019; Kwon, 2018b, 2009; Tahat & Alhadab, 2017) and developing countries such as Iran, Indonesia and Jordan (Khanagha et al., 2011; Prihatni et al., 2018; Shamki & Rahman, 2011).

Malaysian's regulators have implemented the IFRS gradually over time to reduce the difficulties in the implementation process for the firms. Therefore, in 2006, Malaysian regulators have implemented international Accounting standard (IAS) for the first time and in January 2012, the full set of IFRS is implemented. Overall, these results indicate that the implementation of the full set of IFRS is considered as a positive step by the Malaysian investors even though the explanatory power of the model is reduced after the full set of IFRS adoption. This may be because the IFRS is now based on the fair value accounting and its implementation may be difficult for the Malaysian investors to understand. Therefore, it resulted in a decline of the explanatory power of the model.

3.3.4.2. Relative value relevance of earnings book value of equity and cash flow from operations (H2). According to the findings presented in Table 6, the primary accounting information in the Malaysian Capital Market is the CFO ($\beta = 5.762$) followed by earnings ($\beta = 1.711$) and BVE ($\beta = 0.611$), based up the variation explained by the β coefficients, do not support H2 by providing empirical evidence that value relevance of earnings, BVE and CFO is different from each other in the Malaysian Capital Market after the adoption of the full set of IFRS. These results highlight that after the CFO the most significant accounting information is the earnings, consistent with the previous Malaysian studies conducted on the period before the application of a full set of IFRS on the value relevance of earnings and BVE (Gan et al., 2016; Jamaluddin et al., 2009). Therefore, it provides empirical evidence that pre and post-adoption of the full set of IFRS have not influenced the relative value relevance of earnings and BVE. Whereas, the dominance of CFO over BVE and earnings in investment decision making is supported by studies in the prior literature that earnings, BVE and CFO are value relevant variable, but CFO is the most relevant accounting information, that explains the highest variation in the share price (Hu & Kim, 2019; Kwon, 2018a, 2009; Tahat & Alhadab, 2017; Vichitsarawong, 2011).

While the findings are not in line with the conceptual framework for financial reporting, which specified that earnings based on the accrual process provide a better basis to assess future cash flow generation than information based on the cash flows. The main reason behind the dominance of CFO is the investor's perception of managerial bias in the reported earnings and BVE, whereas, CFO is less subject to managerial manipulation (Barth et al., 2018; Bartov et al., 2001; Lee, 1974; Marquardt & Wiedman, 2004). Another explanation for this finding is that, CFO presents useful information regarding the solvency and liquidity of the firm to assess credit and bankruptcy risks of the firm, ability to access sources of external funds and organization's ability to continue in long-run (Previts, Bricker, Robinson, & Young, 1994; Zeitun, Tian, & Keen, 2007). Therefore, Malaysian

investors rely more on the information content regarding the firm's liquidity and survival in long-run provided by the CFO in investment decision making. Whereas, this information is not provided by the earnings and BVE.

Finally, Driscoll and Kraay (1998) regression is performed to further validate the main findings based on the alternative regression technique that is also used to correct standard errors in the presence of heteroscedasticity, autocorrelation and CSD as suggested by Hoechle (2007). The coefficients for earnings at ($p < 0.05$), BVE and CFO at ($p < 0.01$) are significant and positive. Moreover, the R^2 suggests earnings, BVE, and CFO explain 66.6% variation in the share price. The findings of both regression techniques validate each other and thus confirm H1 and H2 that earnings, BVE and CFO are useful to Malaysian Investors, and CFO the most significant accounting information in the Malaysian Capital market during 2012–2016.

Conclusively, the findings of the study based on the Ohlson (1995) price model offer substantial evidence that the earnings and BVE are very useful in the Malaysian Capital Market over the period 2012–2016. Therefore, it infers that the earnings, BVE and CFO are relevant and faithfully presented by the Main Market' listed firms in the Malaysian Capital Market. Though, CFO is found to be the most useful for the investors than earnings and BVE. This recommends that financial reporting is generally valuable, whereas, the statement of cash flows provides more relevant information to Malaysian investors in comparison with the statement of comprehensive income and statement of financial position.

4. Conclusions

Motivated by the scarcity of research on the value relevance of accounting information in Malaysia, the current paper aims at investigating the extent to which accounting information especially earnings, BVE and CFO explain variation in the share price after the adoption of a full set of IFRS based on the Ohlson (1995) Price model.

The regression results based on the Prais-Winsten Panel Corrected Standard Errors (PCSE) find that earnings, BVE and CFO significantly and positively explain the variation in the share price of Main Market's listed firms. The findings are in line with the rationale given by the conceptual framework for financial reporting (2018) that the statement of cash flows, statement of financial position and statement of comprehensive income provide value relevant information for investment decision making. The findings further recommend that although accounting information is generally aid investors in investment decision making in the Malaysian Capital Market, whereas, CFO is the most significant accounting information in comparison with earnings and BE for investment decision-making. Consequently, it highlights the role of the statement of cash flows (particularly, CFO) has been increasingly important as compared to the statement of comprehensive income and statement of financial position (particularly earnings and BVE). While this finding does not support the argument of the conceptual framework for financial reporting (2018) that states, earnings are the most relevant accounting information. This result infers that in the Malaysian Capital Market, investors perceive that firms are using earning management practices, consequently, they assign earnings and BVE less weight in investment decision making as compared to CFO. Alternatively, investors are focusing more on the information associated with the liquidity and survival of a firm in the long run given by the CFO.

Malaysia has implemented a complete set of IFRS in 2012 to strengthen the quality of accounting information. Therefore, based on findings of this study, valuable conclusion and significant implication are offered to the investors and local standard setters. The findings suggest that investors in the Malaysian Capital Market rely more on CFO as compared to the other accounting information. Local Standard setters should consider strict and appropriate action to enhance the quality of BVE and earnings as well by reducing the earning management practices to improve investor's perception in the reported earnings and BVE of Malaysian Main Board listed firms.

There are several limitations, the study is based on the Non-Financial Main Market's listed firms and excluded the ACE, Leap market and financial sector's listed firms in Malaysia. Therefore, the

problem of generalization to all sector in the Malaysian Capital Market may be problematic due to the different regulatory framework for these firms. Moreover, the findings may also not be generalized to the other developing countries due to the different legal, institutional and economic environment. Apart from these limitations, findings though contribute to value relevance literature from a developing countries perspective.

This study also offers some unique avenues for future research. The study is based on the value relevance of earnings, BVE and CFO, therefore, future research may consider value relevance of other accounting information such as items in comprehensive income statement, statement of financial position and statement of cash flows other than earnings, BVE and CFO such as dividend, cash flow from investing and financing activities, research and development expenditure and environmental performance. Further research could also be carried out in other developing countries with the different legal, institutional, economic environment, so that, the value relevance of financial reporting in other regimes can be explored.

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Note

1. In Malaysia, publicly listed companies are required to publish their annual reports within the 4 months after their fiscal year end under the section (9.23), continuing obligations of listing requirements, Bursa Malaysia.

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