THE USEFULNESS OF SEGMENT REPORTING IN HONG KONG LISTED FIRMS: AN EMPIRICAL ASSESSMENT OF IFRS NO. 8

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ABSTRACT: IFRS 8 and its counterpart HKFRS 8 supersedes IAS 14 and HKAS 14 in 2006 to upgrade segment information disclosure that is increasingly becoming important financial information in investment decision making. There is little understanding of the changes in the quality of firms' segment disclosure as a consequence of implementing the new standard in Hong Kong's unique political and economic environment. This study attempts to document the usefulness of segment information disclosure by Hong Kong listed firms as a consequence of implementing HKIFRS 8.

The study employs the value relevance of accounting information theory as a measure of usefulness of segment disclosure where segmental data are analysed by the portfolio return approach and regression analysis. The purposive sampling method is used to obtain samples from Hong Kong listed firms. The study results indicate that implementation of HKIFRS 8 has improved the usefulness of segment information disclosed by Hong Kong listed firms.

JEL Classifications: M40, M41

Keywords: IFRS 8 segment disclosure, Hong Kong Financial Reporting Standard 8 (HKFRS 8), value relevance of segment information

1. INTRODUCTION

With the increasing complexity of business entities, consolidated financial statements may hide the profitability of firms when various products and services are involved. Segment reporting has become an important aspect of financial disclosure to understand a firm's financial position. Financial statement analysts and users have expressed their concerns on segmental disclosure for a long time (Benjamin, Muthaiyah, Marathamuthu & Murugaiah, 2010). As a result, International Accounting Standards (IAS) 14, Segment reporting, was issued by the International Accounting Standards Board (IASB) in 1981. It requires a firm's segmental information to be reported by line of business and by geographical area (Prather-Kinsey & Meek, 2004). However, previous research on IAS 14 highlighted some problems, notably, it has been criticized for not

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providing segmental information based on an entity's internal structure, which could significantly affect the prospects of an entity's future cash flow (Street, Nichols, & Gray, 2000). Further, IAS 14 leaves managers with considerable room for defining their reportable segments permitting some firms to exploit the standard's flexibility in defining reportable segments to avoid providing disaggregated segment disclosures (Association for Investment Management and Research, 1993; Berger, Hann, & Piotroski, 2003; Street *et al.*, 2000). Therefore, to improve the quality of segment disclosure, the IASB issued International Financial Reporting Standard (IFRS) 8, Operating Segments, in November 2006. This new standard superseded IAS 14 from 1st of January 2009. The new standard, IFRS 8, fundamentally changed the approach to identifying segments from the "industry approach" under IAS 14 to the "management approach" (International Financial Reporting Standards, 2010a). The "management approach" required a firm to identify operating segments for external reporting purposes in the same manner that management views operating segments for internal decision-making purposes (Deegan & Samkin, 2011). The primary motivation for the change in segment reporting was to allow stakeholders to assess the firm "through the eyes of management" (International Financial Reporting Standards, 2010b, p. B559).

In Hong Kong, segment disclosure was not mandatory until the Hong Kong Society of Accountants (HKSA) issued the Hong Kong standard, HKAS 14 Segment Reporting, with the same effective date and transitional provisions as IAS 14 in 2004. The HKAS 14 corresponds to IAS 14 (Hong Kong Accounting Standard, 2004). In order to be harmonized with International Accounting Standards, in 2009 the Hong Kong Institute of Certified Public Accountants (HKICPA) adopted IFRS 8, namely, Hong Kong Financial Reporting Standard No. 8, Operating Segments, with the same effective date and transitional provisions as IFRS 8, which superseded HKAS 14 (Hong Kong Financial Reporting Standard,2009; KPMG, 2007). Until now, the empirical evidence for the effectiveness of HKFRS 8 (IFRS 8 and HKFRS 8 will be used interchangeably in this thesis) has been limited. As the fast growth of stock market in Hong Kong, Hong Kong stock market has played an important role as an international capital market for global companies to raise funds (Chen, 2005). Thus, in order to make appropriate stock investment, more and more investors are concern about the usefulness of accounting information disclosed by Hong Kong listed firms (Chen, 2005). Further, Hong Kong has a unique culture, political, economic system, and business environment as a result of which its accounting practices differ significantly from those of mainland China and other advanced economies like the United States, United Kingdom and Europe (Lo, 2002). Additionally, Hong Kong has many large companies which conduct various operations representing different products or services segments. This makes the segment disclosure becoming quite essential and important for Hong Kong listed firms (Lo, 2002). It is believed that there is a necessity to examine whether the adoption of new segment standard, HKFRS 8, has improved the quality of segment information disclosed provided by Hong Kong's listed firms so that segment reporting has become more relevant and useful for investment analysis.

This study investigates whether the changes in segment reporting under HKFRS 8 improve the usefulness of segment information disclosure in the Hong Kong listed firms. This study aims to compare the usefulness of segment disclosure by Hong Kong listed firms two years before and after the adoption of new segment reporting standard, HKFRS 8. Specifically, the

study employs the value relevance theory of accounting information as a measure of the usefulness of segment disclosure where the segment disclosures of a total of 85 Hong Kong listed firms pre and post-HKFRS 8 are analysed by the portfolio return approach and regression analysis. The findings of this study show that the value relevance of segment information disclosed by those firms has improved under HKFRS 8 implying the adoption of IFRS 8 has improved the usefulness of segment disclosure in Hong Kong listed firms.

The rest of the paper is organised as follows. Following the introduction, section two introduces a brief background of the study and hypothesis development and section three presents methodology including portfolio-returns test, regression models development and sample selection of the study. A discussion of the results based on portfolio-returns and regression models are included in section four. Section five concludes the paper.

2. BACKGROUND OF THE STUDY AND HYPOTHESIS DEVELOPMENT

Segment disclosure has been a popular accounting research topic since the 1970s (Lo, 2002). However, empirical evidence regarding IFRS 8 is currently sparse, since the new segment standard came into effect only in 2009. IFRS 8 is indeed modelled on United States FASB statement 131, Disclosures about Segments of an Enterprise and Related Information (SFAS 131) issued by the United States Financial Accounting Standards Board (FASB) in 1997 to improve disclosure in respect of the diversity of multiple segment companies' operations. SFAS 131 identifies segments by using a "management approach", which requires companies to disclose segmental information based on a company's internal structure (Deegan & Samkin, 2011; International Financial Reporting Standards, 2010a). In order to harmonize accounting standards around the world, the IASB worked with the United States Financial Accounting Standards Board (FASB) to reduce the differences between US Generally Accepted Accounting Principles (US GAAP) and International Financial Reporting Standards (IFRSs). As a result, IFRS 8 was generated from the IASB's consideration of SFAS 131 (Bouvier, 2006; International Financial Reporting Standards, 2010a, Deegan & Samkin, 2011). Thus IFRS 8 corresponds to the SFAS 131 requirements except for minor differences (International Financial Reporting Standards, 2010a).

Nevertheless, previous research has several limitations. For example, the main limitation of Berger *et al.* (2003) was that they did not provide explanations for inconsistent empirical results between their research methods so their empirical results are not clear. In Lee's (2010) study, the validity of empirical designs and test results depended heavily on the nature of the summary measures. The summary measure used in Lee (2010) for investigating value relevance of segment disclosure under SFAS 131 was segment income; however segment income is not an appropriate financial measurement for a firm's performance. Also, Lee (2010) compared only two years of restated segment data in relation to SFAS 131 and SFAS 14 (or its equivalent IAS 14), which may not reflect the real situation of segment disclosure under SFAS 131.Additionally, Ettredge *et al.* (2006) focused only on the largest companies in the U.S. They did not explore the impact of SFAS 131 on the smaller companies. Overall, most previous relevant studies were based on United State evidence. The Hong Kong evidence on the segment disclosure after the adoption of HKFRS 8 is minimal. In order to fill the gaps in previous literature, this study aims to investigate the usefulness of segment disclosure through comparative study of segment reporting in Hong

Kong listed firms between the new segment standard, HKFRS 8 and preceding segment standard, HKAS 14.

In order to make proper stock investment, stock investors need to investigate the fundamental value of firms so as to evaluate the stock prices of firms. Thus, one of the main objectives of accounting reporting is to provide relevant and useful financial information to investors for estimating a firm's value (Liu & Liu, 2007). Value relevance research empirically investigates the usefulness of accounting information to stock investors (Chalmers, Clinch, & Godfrey, 2011; Hung, 2000; Lee, 2010). According to Francis and Schipper (1999) and Lee (2010), value relevance is interpreted as the capability of an accounting measure to summarize or capture information which influences the value of a firm. It is operationalized as a statistical association between firm market returns and accounting information, regardless of source, which influences share values (Hung, 2000).Following Lee (2010), this study employs the value relevance theory of accounting information as a measure of the usefulness of segment disclosure. In particular, this study investigates whether there has been an improvement in the usefulness of segment information disclosed by Hong Kong listed firms by comparing the value relevance of segment disclosure under HKAS 14 (or its counterpart IAS 14) and HKFRS 8 (or its counterpart IFRS 8).

Alford *et al.* (1993) and Francis and Schipper (1999) found that the change in value relevance of accounting earnings leads to a change in returns to a trading strategy based on "foresight of the changes" (i.e. investors know the changes in the future accounting earnings in advance) in accounting earnings. Following this principle, Lee (2010) investigated the value relevance of segment-disclosure by using the total reportable segment income as an accounting summary measure of segment information to predict firm's actual future performance. Lee demonstrated that the value relevance of segment income increased under SFAS 131, which led to an increase in market adjusted returns to the hedge portfolios based on "foresight of the changes in segment income" (i.e. investors know the changes in the future segment income in advance) disclosed by US firms after SFAS 131's implementation. However, Lee considered only the segment incomes but not segment expenses. Unlike Lee (2010), this study uses the total reportable segment profits as an accounting summary measure of segment information to predict firm's actual future performance, since segment profits consider both segment incomes and expenses so that it is more relevant to a firm's performance. Therefore, the value relevance of segment disclosure by Hong Kong listed firms is hypothesised to improve resulting in higher firms' market-adjusted returns to the hedge portfolios based on "foresight of changes in the total reportable segment profits" (i.e. investors know the changes in the future total reportable segment profit in advance) after the adoption of HKFRS 8. Thus the following relationship is hypothesised:

> H_1: *The market-adjusted returns disclosed by Hong Kong listed firms for the post-HKFRS 8 periods are higher than those for the pre-HKFRS 8 periods.*

Alford *et al.* (1993), Lang, Ready and Yetman (2003) and Barth, Landsman and Lang (2008) arrived at a similar conclusion that there was an association between firms' stock price and their annual accounting earnings by conducting an association test. The authors demonstrated that higher the relevance and usefulness of accounting figures, the higher the correlation between stock prices and accounting earnings (Alford *et al.*, 1993; Lang *et al.*, 2003; Barth *et al.*, 2008). Based on previous regression models, Lee (2010) also conducted correlation tests to measure the relationship between stock price and the total segment income per share. The author

demonstrated that the multiple on the total reportable segment income per share disclosed by US firms after the implementation of SFAS 131 was higher than before its implementation, which indicates the value relevance of segment disclosure improved under the new segment reporting standard (Lee, 2010). In order to examine the FASB's argument that IFRS 8 would provide more value-relevant segment information than IAS 14, unlike Lee (2010), this study intends to conduct the same correlation tests to measure the relationship between firms' stock prices and segment profits instead of segment income, because segment profits are the major determinant of a firm's share price. It is hypothesised that a positive relationship exists between the total reportable segment profits per share disclosed by Hong Kong listed firms and their stock price after the adoption of HKFRS 8, demonstrating that the adoption of HKFRS 8 has improved the value relevance of segment disclosure in contrast to HKAS 14. The following relationship is hypothesised.

> H_2: *The total reportable segment profit per share disclosed by Hong Kong listed firms positively influenced their stock prices after the adoption of HKFRS 8.*

Francis and Schipper (1999) measured the value relevance of accounting information using a regression model to investigate the ability of book values of assets and liabilities per share to explain the firm's stock price. They found that there was a positive relationship between the book value of assets per share and the firm's stock price indicating the value relevance of accounting reporting increased (Francis & Schipper, 1999). However, the relationship between book value of liabilities per share and the firm's stock price was negative indicating the value relevance of accounting reporting decreased. This implies that the ability of book values of assets per share and liabilities per share to explain firms' stock price increased when the value relevance of financial statement information increased and the ability of book values of assets per share and liabilities per share to explain firms' stock price declined when the value relevance of financial statement information declined (Francis & Schipper, 1999). Compared with HKAS 14 and SFAS 131, the disclosure requirement for segmental assets and liabilities under HKFRS 8 has changed (*Hong Kong Financial Reporting Standards*, 2009). Following Francis and Schipper (1999), this study uses the regression model to investigate whether the changed disclosure requirements regarding segmental assets and liabilities have improved the value relevance of segment information disclosed by Hong Kong listed firms under the new segment standard. It hypothesises an increase in the ability of book values of segmental assets per share or liabilities per share disclosed by Hong Kong listed firms to explain stock prices for those firms after the adoption of HKFRS 8. The following relationships are hypothesised:

> H_3: *The segmental assets per share disclosed by Hong Kong listed firms have positive influence on the firms' stock price after the adoption of HKFRS 8.*

> H_4: *The segmental liabilities per share disclosed by Hong Kong listed firms have positive influence on the stock price of Hong Kong firms after the adoption of HKFRS 8.*

3. RESEARCH METHOD

Previous researchers investigated the usefulness of accounting information by testing the value relevance of segment disclosure. They used portfolio-returns and regression approach (see Alford *et al.*, 1993; Francis & Schipper, 1999; Lee, 2010). Similarly, this study uses both the portfolio

and regression approaches to examine the statistical relationships between segment information and firms' market returns for Hong Kong listed firms.

3.1. Portfolio-Returns Test

According to Alford *et al.* (1993), Francis and Schipper (1999) and Hung (2000), the portfolio-returns method defines the value relevance of accounting measures as the proportion of information in stock returns captured by the accounting measures. Furthermore, Thinggaarda and Damkierb (2008) defined "value relevance as the difference between the return on the long (investors purchases a stock when they expect that the stock price will rise in the future) and short position, (investors sells a stock when they expect that the stock price will drop in the future. This is opposite of a long position) which is the market-adjusted return that can be earned on the long position and the market-adjusted return that can be lost on the short position" (cited in Khanagha, Mohamad, Hassan & Sori, 2011ÿp. 99). Moreover, the hedge portfolio-returns approach "measures value relevance as the total return that could be earned from a portfolio based on perfect foresight of earnings (i.e. investors know the future earning in advance). Value relevance is scaled by the total return earned on a portfolio based on advance knowledge of market prices" when investors know the future market prices in advance (Hung, 2000, p. 41).

Previous researchers investigated the value relevance of accounting information using the portfolio-returns method to examine firms' market-adjusted returns that could be earned from foresight of change in accounting earnings (see Alford *et al.*,1993; Francis & Schippe,1999; Hung, 2000; Thinggaard & Damkier, 2008; Lee, 2010; Khanagha *et al.*, 2011). For example, in order to examine the relative informativeness of accounting disclosures in different countries from 1983 to 1990, Alford *et al.* (1993) formed earnings-based hedge portfolios and took long positions in stocks with the highest 40% of income changes and short positions in stocks with the lowest 40% of income changes. Following this, they computed market-adjusted stock returns for sample firms included in each earnings-based hedge portfolio for the 15 months. Another return-based hedge portfolio was formed to take long positions in the highest 40% of the stocks and short positions in the lowest 40% of the stocks. In the end, the ratio of earning-based hedge portfolio return to the return-based hedge portfolio return was calculated. That is the mean market-adjusted return for the earning-based hedge portfolio divided by the return for the return-based hedge portfolio. This ratio indicates the measurement of the proportion of all information incorporate in stock prices that is captured by accounting earnings (Alford *et al.*, 1993). Similarly, in order to test the changes in value relevance of accounting information over time from 1952 to 1994, Francis and Schipper (1999) formed accounting-based hedge portfolios long position in stocks with positive changes in earnings before extraordinary items and short position in stocks with negative changes in earnings before extraordinary items. Following this, the 15-month market-adjusted stock returns were calculated for sample firms included in each hedge portfolio. The authors then formed returns-based portfolios which were long in the stocks with positive 15-month market-adjusted returns and short in stocks with negative 15-month market-adjusted returns (Francis & Schipper, 1999).

Finally, the market-adjusted returns of stocks in accounting-based hedge portfolios were scaled by the market-adjusted returns of stocks in returns-based portfolios. This scaled measurement describes the proportions of all information in stock returns captured by the

accounting-based measures (Francis & Schipper, 1999). Following previous studies, Lee (2010) calculated the market-adjusted returns in accounting-based hedge portfolios based on the change in segment income, which took long positions in stocks with positive (negative) change in segment income. Lee then ranked sample firms by the firms' market-adjusted returns. Following this, Lee computed return-based hedge portfolio returns that took long positions in stocks with positive stock returns and short positions in stocks with negative stock returns. The ratio of accounting-based hedge portfolio returns to return-based hedge portfolio returns was calculated to measure the proportion of all information incorporated in stock prices which were captured by the total reportable segment income (Lee, 2010). Similarly, studies by Thinggaard and Damkier (2008) and Khanagha *et al.* (2011) computed market-adjusted returns on the hedge portfolio formed on the basis of accounting information to investigate the value relevance of their national accounting standards. Therefore, following Alford *et al.* (1993), Francis and Schippe (1999), Thinggaard and Damkier (2008), Lee (2010), and Khanagha *et al.* (2011), this study investigates the value relevance of segment disclosure for Hong Kong listed firms by using the hedge portfolio approach to calculate the proportion of all information in stock returns which is captured by reportable segment profits disclosed by Hong Kong listed firms. This approach is particularly appropriate for examining the first hypothesis.

This study uses the following procedures to conduct the portfolio-returns approach:

First, we determines the reportable segments of each sample Hong Kong firm to be able to calculate the total reportable segment profit (SR_I_t) disclosed by each firm at the end of each fiscal year (Lee, 2010).

Second, all the sample firms are ranked based on the changes in their total reportable segment profits (ΔSR_I_t) at the end of each fiscal year (Lee, 2010).

Third, the mean of 15-month's market-adjusted returns is calculated by forming three hedge portfolios as follows:

(1) SIGN_ΔSR_I_t portfolio (accounting-based hedge portfolio) refers to the hedge portfolio formed on the sign of changes in the total reportable segment profit per share in year t deflated by the beginning-of-year firm stock price, specifically $\Delta SR\_I_t = (SR\_I_t - SR\_I_{t-1})/P_{t-1}$. Then the long position in stocks is taken with positive ΔSR_I_t and short position in stocks with negative ΔSR_I_t (Francis & Schipper, 1999; Lee, 2010; Thinggaard & Damkier, 2008; Khanagha *et al.*, 2011). It should be said that positive and negative ΔSR_I_t means a firm's the total reportable segment profits per share deflated by the beginning –of-year firm stock price increased or decreased respectively at the end of each fiscal year compared with previous year.

(2) MAG_ΔSR_I_t portfolio (accounting-based hedge portfolio) refers to the hedge portfolio formed on the magnitude of changes in the total reportable segment profit per share in year t deflated by the beginning-of-year firm stock price, $\Delta SR\_I_t = (SR\_I_t - SR\_I_{t-1})/P_{t-1}$. Specifically, the firms in the sample are ranked by "SR_I_t before taking long positions in stocks with the highest 40% of ΔSR_I_t and short positions in stocks with the lowest 40% of ΔSR_I_t (Alford *et al.*, 1993; Francis & Schipper, 1999; Lee, 2010; Hung, 2000; Thinggaard & Damkier, 2008; Khanagha *et al.*, 2011).

(3) Return-based hedge portfolio refers to the hedge portfolio formed on the basis of the market adjusted returns. Like Francis and Schipper (1999) and Lee (2010), this return-based hedge portfolio is computed by assuming perfect foreknowledge of future stock returns or in other word, investors know future stock return in advance. Specifically, firms included in the accounting hedge portfolios are ranked by their market-adjusted returns and then long positions are taken only in the stocks with positive 15-months market-adjusted returns and short positions in stocks with negative 15-months market-adjusted returns (Francis & Schipper, 1999; Khanagha *et al.*, 2011).

Following previous studies, this study uses market-adjusted return formula (equation one), which is used widely by previous researchers, to calculate market-adjusted return of each hedge portfolio mentioned above (Alford *et al.*, 1993; Francis & Schipper, 1999; Khanagha *et al.*, 2011; Lee, 2010; Thinggaard & Damkier, 2008). The market-adjusted return for a firm-return period is the compound with-dividend return for the firm for that period less the comparable return on the equally weighted portfolio (Alford *et al.*, 1993; Francis & Schipper, 1999; Lee, 2010). For comparison with Lee (2010), market adjusted return (R_{it}) is computed over the 15 months beginning in the first month of the firm's fiscal year and ending three months after the fiscal year-end. Specifically, the following equation (1) is used to calculate the market-adjusted return:

$$R_{it} = (P_{it} - P_{it-1} + D_{it})/ P_{it-1} - R_{wt}   \qquad (1)$$

In equation (1), R_{it} is the market-adjusted return for sample firm i at year t and P_{it} is the share price of company i in period t. P_{it-1} and D_{it} are the share price of company i in the period preceding period t and the dividend of company i for the period t respectively while R_{wt} st and for the return on the equally weighted market portfolio for the period t. This study uses Hang Seng index return as the proxy of the return on the equally weighted market portfolio. It should be explained that Khanagha, *et al.* (2011) uses share index return as the proxy of the return on the equally weighted market portfolio, but this study uses Hang Seng index return since all the sample firms of this study are Hong Kong listed firms.

The market-adjusted return is particularly computed for both the long and short position as an average of returns for all sample firms included in the long /short positions, which is expressed in equations (2) and (3) respectively:

$$R_t^L = \sum_{i=1}^{N_{Lt}} \frac{R_{it}}{N_{Lt}}   \qquad (2)$$

$$R_t^s = \sum_{i=1}^{N_{st}} \frac{R_{it}}{N_{st}}   \qquad (3)$$

In the above two equations, R_t^L and R_t^S are the market-adjusted return for the long position at year t and the market-adjusted return for the short position at year t respectively while R_{it} represents the market-adjusted return for a sample firm i at year t. Included in equations (2) and (3), N_{Lt} and N_{st} are the numbers of companies in the long and short position at year t, respectively. In this study the hedge portfolio return is defined as the difference between the return on the

short and long positions, which is the market-adjusted return that can be lost on the short position and earned on the long position. This is expressed in equation (4) as follows:

$$R_t^H = R_t^L - R_t^S \tag{4}$$

The new parameter in equation 4 (R_t^H) explains the market adjusted-return for hedge portfolios. Finally, in order to control over-time differences in the variation in the market-adjusted returns, the accounting-based hedge portfolio returns are expressed as a percentage of the return-based hedge portfolio returns for each year. Specifically, the accounting-based hedge portfolio returns in year t are scaled by the return-based hedge portfolio returns. This measurement of accounting-based hedge portfolios scaled by the return-based hedge portfolios for each year describes the proportion of information incorporate in stock returns that is captured by the reportable segment profit for a given period (Francis & Schipper, 1999; Khanagha *et al.*, 2011).

3.2. Regression Model

In order to measure the value relevance of accounting information, some researchers have used regression model to examine the relationship between firms' accounting information and their market value (see Alford *et al.*, 1993; Lang *et al.*, 2003; Barth *et al.*, 2005; Lee, 2010). The regression model shows a firm's value can be expressed as a function of its book value and earnings. Furthermore, in order to investigate the value relevance of segment information disclosed by US firms under SFAS 131, Lee (2010) using a regression model to measure the relationship between stock price and the total reportable and non-reportable segment income per share found a positive relationship between the total reportable segment income per share disclosed by US firms and their stock price after the adoption of IFRS 8. Following Lee (2010), this study uses regression model to measure the value relevance of segment disclosure when investigating the relationship between the stock prices of Hong Kong listed firms and their total reportable and non-reportable segment profits per share pre and post HKFRS 8 periods. We classify segments as reportable as opposed to non-reportable because under segment standards, firms can classify their segments as reportable or non-reportable (Lee, 2010). The regression model is expressed as follows:

$$MV_i = \alpha_0 + \alpha_1 BV_i + \alpha_2 RS\_P_i + \alpha_3 NRS\_P_i + \varepsilon_i \tag{5}$$

Equation (5) presents MV_i as the market value of Hong Kong listed firm i's equity three months after fiscal year end. In this equation BV_i is the book value of Hong Kong listed firm i's equity at the fiscal year end and RS_P_i represent the total reportable segment profit for Hong Kong listed firm i at the fiscal year end. Moreover NRS_P_i is considered as the total non-reportable segment profit for Hong Kong listed firm i at the fiscal year end. If the firm names a segment as "Other", "Corporate", "unallocated" or "eliminations", the segments are classified as non-reportable as opposed to reportable segments.

Equation (5) is based on Ohlson (1995) and Lee (2010) where the value of a company is expressed as a function of its book value and earnings. In this equation, segment profits are divided into two components: the total reportable and non-reportable segment profits. This regression model aims to test the second hypotheses of the study (The segmental profit per share positively influence the firms' stock price as a consequence of HKFRS 8 adoption).

The study of Lev (1989) addressed the explanatory power approach which is the ability of earnings to explain returns as the appropriate measure of accounting information usefulness. Following Lev's (1989) result, in order to measure the value relevance of accounting information, Francis and Schipper (1999) used the explanatory power approach to investigate the ability of book values of assets and liabilities to explain firms' market value. They performed regression analysis to examine the relationship between the stock price of the firm and its assets and liabilities per share disclosed in firm's financial statements (Francis & Schipper, 1999). Following Francis and Schipper (1999), this study uses a regression model to measure the value relevance of segment disclosure to investigate the relationship between the stock price of Hong Kong listed firms and their total reportable and non-reportable segment assets per share and liabilities per share pre and post HKFRS 8 period. The regression model is expressed as follows:

$$MV_i = \beta_0 + \beta_1 RS\_ASSET_i + \beta_2 NRS\_ASSET_i + \beta_3 RS\_LIAB_i + \beta_4 NRS\_LIAB_i + \varepsilon_i \qquad (6)$$

In the above equation MV_i is the same as explained in equation (5). In this equation, RS_ASSET_i is per share book value of firm i's reportable segment assets at the end of the fiscal year and NRS_ASSET_i = represent per share book value of firm i's non-reportable segment asset at the end of the fiscal year. RS_LIAB_i and NRS_LIAB_i are per share book value of firm i reportable and non-reportable (respectively) segment liabilities at the end of the fiscal year.

Equation (6) is based on the "balance sheet relation" model drawn from the study of Francis and Schipper (1999), where the firm's stock price was regressed on the book value of its reportable and non-reportable segment assets and liabilities per share. This regression model aims to test the third and fourth hypotheses of the study (The segmental assets/liabilities per share positively influence the firms' stock price as a consequence of HKFRS 8 adoption). In Equation (6), segment assets are divided into two components: the total reportable and non-reportable segment assets. Similarly, segment liabilities are divided into two components: the total reportable and non-reportable segment liabilities.

3.3. Sample Selection

This study used the purposive sampling method to obtain samples firms. The segmental data for this study were retrieved from the Investor Relations Asia Pacific database which contains detailed financial statements of 301 Hong Kong listed firms. In order to fill the gaps in previous literature, the firms sampled in this study include not only large size companies, but also small to medium size companies are included. This study analyses yearly segment reports of sample firms from 2006 fiscal year to the 2011 fiscal year. The pre-HKFRS 8 period sample consists of observations from the 2006 to 2008 fiscal years and the post-HKFRS 8 period sample consists of observations from the 2009 to 2011 fiscal years. This study removed firms from the sample if any of the following conditions held: (1). A firm has not disclosed all 6 years (2006-2011) of financial statements on the Investor Relations Asia Pacific database; (2). A firm has missing segment information such as segment profits, segment assets or segment liabilities in the sample period; (3). A firm has not had segment reporting in the sample period because it only has one single-segment; (4). A firm's stock price was missing in the sample period; and (5). A firm changed its segment disclosures because of acquisitions or a merger. In the end, a total of 85 multi-segment firms with the required segmental data available on the Investor Relations Asia Pacific database

were selected as samples for this study. The stock prices information for sample firms was obtained from the DataStream database. All the segment information was directly manually-collected from sample firms' annual financial statements. Data was analysed using Eviews and SPSS software.

4. RESULTS AND DISCUSSION

Results of portfolio-returns and regression models (first and second) are discussed in the following sections. The 2009 data are excluded from the sample since this year is considered as the transition period for the adoption of HKFRS 8.

4.1. Results of Portfolio-returns Approach

The hedge portfolio approach calculates the proportions of all information in stock returns captured by reportable segment profits disclosed by Hong Kong listed firms. In particular, following Francis and Schipper (1999), Lee (2010), and Khanagha *et al.* (2011), this study computes the difference between the returns on long and short position, which is the market-adjusted returns that can be earned on the long position and the market-adjusted returns that can be lost on the short position. Three different hedge portfolios are formed: (1) SIGN_ΔSR_It portfolio refers to the accounting-based hedge portfolio which takes long positions in firms with positive changes and short position in firms with negative changes in the total reportable segment profit per share deflated by the beginning-of-year stock price; (2) MAG_ΔSR_It portfolio refers to the accounting-based hedge portfolio which takes long positions in firms with the highest 40% changes and short positions in firms with the lowest 40% changes in the total reportable segment profit per share deflated by the beginning-of-year stock price; and (3) Mkt portfolio refers to the return-based hedge portfolio which takes long positions in the stocks in each accounting-based hedge portfolio with positive 15-month market-adjusted returns and short positions in the stocks in each accounting-based hedge portfolio with negative 15-month market-adjusted returns.

Table 1 shows the results for the mean market-adjusted return for each portfolio. In this table AdjRet denotes the mean market-adjusted return for each accounting-based hedge portfolio while Mkt-SIGN_ΔSR_It denotes the mean market-adjusted return for a return-based hedge portfolio calculated by taking long (short) positions in the stocks in a SIGN_ΔSR_It portfolio. Mkt-MAG_ΔSR_It denotes the mean market-adjusted return for a return-based hedge portfolio calculated by taking long (short) positions in the stocks in a MAG_ΔSR_It portfolio. Proportion of Mkt portfolio denotes the ratio of each accounting–based hedge portfolio return (AdjRet) to the return-based hedge portfolio (mkt) which measures the proportion of the total hedge portfolio market-adjusted return which can be earned by perfect foreknowledge of the segment profit information.

Under SIGN_ΔSR_It portfolio, the mean market-adjusted return increases after the adoption of HKFRS 8. Specifically, the mean market-adjusted return for the SIGN_ΔSR_It portfolio in the post-HKFRS 8 period is 4.05% implying that investors could earn a 4.05% market-adjusted return when they take long (short) positions in the stocks with positive (negative) changes in segment profit per share deflated by the beginning-of-year stock price each year after the adoption

Table 1
Market-Adjusted Returns to Hedge Portfolios Based on Perfect Knowledge of
Segment Information, 2007-2011

Year	N^a	SIGN_ΔSR_It Portfolio		MAG_ΔSR_It portfolio		Mkt portfolio	
		AdjRet (%)	Proportion of Mkt portfolio (%)	AdjRet (%)	Proportion of Mkt portfolio (%)	Mkt-SIGN_ΔSR_It (%)	Mkt-MAG_ΔSR_It (%)
Pre-HKFRS 8							
2007	85	-30.30	-19.40	-16.13	-10.61	156.22	152.01
2008	85	31.78	36.87	13.44	15.2	86.20	88.38
Pooled Years:(1)[b]		0.74	0.61	-1.35	-1.12	121.21	120.20
Post-HKFRS 8							
2010	85	21.81	24.95	27.38	29.54	87.40	92.68
2011	85	-13.72	-10.63	-27.43	-20.94	129.07	130.99
Pooled Years:(2)[c]		4.05	3.74	-0.03	-0.02	108.24	111.84

Note: N^a is the total sample of 85 firms used to calculate each portfolio. Pooled Year[b] is the mean (average) market-adjusted return to each portfolio pre-HKFRS 8. Pooled Year[c] is the mean (average) market-adjusted return to each portfolio post-HKFRS 8.

of HKFRS 8. The mean market-adjusted return for Mkt portfolio in the post-HKFRS 8 period is 108.24%. This figure implies that investors could gain a 108.24% market-adjusted return when they take long (short) positions in the stocks under the SIGN_ΔSR_It portfolio, with a positive (negative) 15-month market-adjusted return after the adoption of HKFRS 8. Consequently, the value relevance of the reportable segment profit disclosed by the sample firms, which is the mean market-adjusted return for the SIGN_ΔSR_It portfolio divided by the mean market-adjusted return for the Mkt portfolio, is 3.74% after the adoption of HKFRS 8. This indicates that about 3.74% of perfect foresight returns is available to investors with advance knowledge of an increase or decrease in a Hong Kong listed firm's reportable segment profit under HKFRS 8. However, compared to post-HKFRS 8, the mean market-adjusted return for SIGN_ΔSR_It portfolio in the pre-HKFRS 8 period is 0.74% which is much lower than 4.05% in the post-HKFRS 8 period. Consequently, the value relevance of the reportable segment profit disclosed by the sample firms which is the mean market-adjusted return for the SIGN_ΔSR_It portfolio divided by the mean market-adjusted return for the Mkt portfolio is 0.61% before the adoption of HKFRS 8. This indicates that investors would earn 0.61% perfect foresight returns with advance knowledge of an increase or decrease in a Hong Kong listed firm's segment profit reported under the preceding standard, HKAS 14. This figure is lower than the 3.74% for post-HKFRS 8.

On the other hand, the results of the MAG_ΔSR_It portfolio are similar to the SIGN_ΔSR_It portfolio. The mean market-adjusted returns for the MAG_ΔSR_It portfolio in the post-HKFRS 8 period are slightly higher than in the pre-HKFRS 8 period. For instance, the mean market-adjusted return for the MAG_ΔSR_It portfolio in the post-HKFRS 8 period is -0.03%, compared to -1.35% in the pre-HKFRS 8 period. Consequently, the value relevance of reportable segment profits disclosed by the sample firms which is the mean market-adjusted return for the MAG_ΔSR_It portfolio divided by the mean market-adjusted return of the Mkt portfolio is -0.02% in the post-HKFRS 8 period. This figure indicates that investors would lose about 0.02%

of perfect foresight returns with advance knowledge of the highest (lowest) 40% of changes in the total reportable segment profit per share under HKFRS 8 period. The comparable value relevance of reportable segment profit in the pre-HKFRS 8 period (which is the mean marketed-adjusted returns for the MAG_ΔSR_It portfolio divided by the mean marketed-adjusted returns for the Mkt portfolio in the pre-HKFRS 8 period) is -1.12%. This is lower than that those in the post-HKFRS 8 period.

Overall, the above results indicate that the market-adjusted returns for both accounting-based hedge portfolios (SIGN_ΔSR_I portfolio and MAG_ΔSR_It portfolio) formed on the advance knowledge of changes in the total reportable segment profit disclosed by the Hong Kong listed firms have increased in the post-HKFRS 8 period. Lee (2010) confirmed this empirically, showing that the market-adjusted returns for accounting-based hedge portfolios based on foreknowledge of changes in reportable segment income increased under SFAS 131 which is identical to HKFRS 8. This is because HKFRS 8 requires firms to make adjustments in their segment disclosure to be consistent with their internal management organization which leads to an increased number of some segment items such as segment revenue, non-current assets, interest income and interest and income tax expenses (Li, 2013). Also, there is more additional entity-wide information about products and services, geographical areas and major customers provided by the Hong Kong listed firms (Li, 2013). Thus, investors can see an entity through the eyes of management to acquire a clearer and more accurate insight into the firm's financial position which helps them to predict a firm's future cash flow thus enabling them to earn greater stock returns by making appropriate stock investment decisions. Thus, the segment profits reported under HKFRS 8are more useful and reliable to investors compared with HKAS 14.

A great deal of research has been done regarding the value relevance of accounting information such as Francis and Schipper (1999), Alford *et al.* (1993), Hung (2000), Lee (2010) and Khanagha *et al.* (2011). These authors arrived at a consensus that an increase in the value relevance of accounting information led to an increase in market-adjusted returns to the hedge portfolios based on the changes in accounting earnings (Khanagha *et al.*, 2011; Thinggaard & Damkier, 2008). Lee (2010), in particular, indicates that the value relevance of segment income increased under SFAS 131, which led to an increase in market-adjusted returns to the hedge portfolios based on foresight of the changes in segment income disclosed by US firms after SFAS 131's implementation. Therefore, according to the findings of Francis and Schipper (1999), Alford *et al.* (1993), Hung (2000), Lee (2010) and Khanagha *et al.* (2011), the results of SIGN_ΔSR_I and MAG_ΔSR_It portfolios consistently demonstrate that segment profits reported by the Hong Kong listed firms under HKFRS 8 are more value relevant for investors to make proper investment decisions compared to HKAS 14. This study therefore concludes that the value relevance of segment profit disclosed by the Hong Kong listed firms has improved resulting in higher firms' market-adjusted returns to the hedge portfolios based on foresight of changes in total reportable segment profit after the adoption of HKFRS 8. Thus, the first hypothesis is accepted.

4.2. Results of Regression Model

Two regression models are employed to test the hypotheses of the study that are explained in the following sections.

4.2.1. Results of First Regression Model

The first regression model 1 (equation 5) is based on the framework of Lee (2010) where the value of a firm is expressed as a function of its reportable and non-reportable segment profits and book value. Following Lee (2010), the dependent and explanatory variables of model (1) are deflated by the number of shares in order to investigate whether a firm's market value per share (stock price) is correlated to the total of reportable and non-reportable segment profits per share and the equity book value per share. The total sample size for model (1) is 85 firms but observations were eliminated when any of following conditions held: the observations showed a negative equity book value or revealed that each variable had an extreme value. Table 2 reports the regression results of the Hong Kong firms' market value of equity on their equity book value and reportable and non-reportable segment profits.

Table 2
Coefficient Estimates of Regression Model (1) -Market Value of Equity on Sum of Reportable and Non-Reportable Segment Profit, 2007-2011

Number of Shares as a Deflator

Yearly Regressions	n^b	$\alpha0$	$\alpha1$	$\alpha2$	$\alpha3$	*Adj. R^2*
Pre-HKFRS 8 Period:						
2007	72	0.6**	0.48**	1.2	-0.88	0.52
		(2.54)	(3.85)	(1.38)	(-0.99)	
2008	73	0.37*	0.34**	1.3**	0.07	0.55
		(2.41)	(6.98)	(6.92)	(0.16)	
Average^c		0.485	0.41	1.25	-0.405	
Post-HKFRS 8 Period:						
2010	75	0.05	0.5**	3.42**	-0.72	0.55
		(0.08)	(2.8)	(3.07)	(-0.63)	
2011	74	0.36	0.32**	3.15**	0.73	0.51
		(0.67)	(2.8)	(4.5)	(0.65)	
Average^c		0.205	0.41	3.285	0.005	

Note: n^b= the number of observations used to estimate the regression model (1). All t-statistics are in parentheses.* significant at the 0.05 level. ** significant at the 0.01 level. Average^c is a simple average of coefficients for two years within the pre- and post-HKFRS 8 periods.

Table 2 results show the estimated coefficients of the firms' reportable segment profits per share ($\alpha2$) are positively correlated with their stock price (significant at 1% level) following the adoption of the new segment standard HKFRS 8. This indicates that a firm's higher reportable segment profit per share is associated with its higher stock price. This may be due to the fact that a firm with higher segment profits per share attracts more stock investors so that the firm's stock price rises. Lee (2010) demonstrates this empirically, showing that there is significantly positive relationship between reportable segment profits per share and a firm's stock price. This implies that a firm's reportable segment profit significantly explains its stock price in the post-HKFRS 8 period. Specifically, the estimated coefficient of the total reportable segment profits per share was 3.42 (significant at 1% level) in 2010 which means that a $1.00 increase in reportable segment profits per share translated into a $3.42 stock price increase. Similarly, in 2011, the coefficient of the total reportable segment profits per share was 3.15 (significant at 1% level) meaning that a $1.00 increase in reportable segment profit per share translated into a

$3.15 stock price increase. However, compared with the post-HKFRS 8 period, the estimated coefficients of the total reportable segment profits per share in the pre-HKFRS 8 period were much smaller. For instance, the coefficient of the total reportable segment profits per share was only 1.20 (not significant in 2007) which indicates the change in a firm's reportable segment profits per share did not correlate with its stock price change in 2007. Although the coefficient of the total reportable segment profit per share increased from 1.2 (not significant) in 2007 to 1.3 (significant at 1% level) in 2008, it was still much lower than the post-HKFRS 8 period. This indicates that a firm's stock price had a stronger reaction to its reportable segment profit per share during the post-HKFRS 8 period than the pre-HKFRS 8 period. Similarly, on average, the estimated coefficient of the total reportable segment profits per share throughout the post-HKFRS 8 period was 3.285, which was higher than 1.25 for the pre-HKFRS 8 period.

The adjusted R^2 of regression model (1) for each sample year was around 50%, which means about 50% of the variability of the firms' stock prices can be explained by the book value of equity per share and reportable- and non- segment profit per share. The results indicate that compared with the pre-HKFRS 8 period, Hong Kong listed firms' reportable segment profits per share were more strongly associated with the firms' stock prices in the post-HKFRS 8 period implying that the segment profit disclosed by those firms under HKFRS 8 were more reflective of the firms' stock prices than under HKAS 14. Thus, compared with HKAS 14, HKFRS 8 leads investors to make better stock investment decisions by looking at firms' reportable segment profits. This is because the management approach under HKFRS 8 requires a firm's segment disclosure to be consistent with its internal management organization which leads to improved disclosure by the Hong Kong listed firms' of segment information such as segment revenue items per segment and interest expenses (Li, 2013). This enables the segment disclosure to reflect a firm's financial status more accurately and transparently which helps investors to make better-informed stock investment decisions in reliance on more detailed reportable segment profit disclosure under HKFRS 8 than HKAS 14. This is consistent with the finding of Lee (2010). While limited research has been carried out on the relationship between a firm's reportable segment profits and its market value, Lee (2010) in what appears to be the only relevant study found that the multiple on the sum of reportable segment income per share for the post-SFAS 131 period was higher than for the pre-SFAS 131 period. This implies that the segment income recognition under the new segment standard, SFAS 131 improved the value relevance of segment disclosure. Therefore, this study concludes that the reportable segment profit recognition under HKFRS 8 improves the value relevance of segment disclosure in contrast to HKAS 14 thus validating hypothesis two.

However, unlike the reportable segment profits, the incremental coefficients of the sum of non-reportable segment profit per share ($\alpha3$) are not statistically significant for the pre- and post-HKFRS 8 periods. This implies that non-reportable segment profits have less economic value and indicates that changes in a firm's total non-reportable segment profits per share are not related to changes in the firm's stock price. The non-reportable segment profits are considered as common corporate profits which cannot be easily allocated to separate segments such as finance cost, interest income, and impairment on goodwill. This indicates that investors focus on a firm's reportable segment profits instead of non-reportable segment profits when they make investment decisions. These results are also consistent with the findings of Lee (2010)

who established that there is no relationship between a firm's non-reportable segment profits and the market value of its equity under SFAS 131.

Additionally, Table 2 shows that the incremental coefficients of the book value of a firm's equity per share are significant at 1% level and positively correlated to a firm's stock price both pre- and post-HKFRS No 8 period. That means that a firm's higher equity book value is associated with its higher stock price. This may be because investors prefer to invest in firms with a higher equity book value since it is a measure of the firm's asset value (Deegan & Samkin, 2011). This differs from the finding of Lee (2010) that the incremental coefficient on equity book value per share is negative, but none of them are statistically significant in the post-SFAS 131 period. The difference may be due to different investment environments and company sizes in Hong Kong and the US (Lo, 2002; Chen, 2005). The average incremental coefficient of the equity book value per share ($\alpha1$) in the pre-HKFRS 8 period is the same as in the post-HKFRS 8 (0.41) period, indicating the correlation between a firm's equity book value and stock price differs very little between the pre-and post-HKFRS 8 periods. However, compared with the coefficients of the equity book value per share (0.41) the coefficients of the reportable segment profit per share ($\alpha2$) for both pre HKFRS 8 (1.25) and post HKFRS 8 (3.285) periods are higher. This indicates that firms' reportable segment profits have a higher explanatory power than their equity book value which means reportable segment profits have more influence on firms' stock prices than book value. This may be because investors focus more on a firm's segment profits than its equity book value when investing since segment profits are a better indicator of a firm's performance than equity book value. The implication is that firms' reportable segment profits play a more significant role in explaining their stock price than the book value of their equity.

4.2.2. Results of Second Regression Model

Regression model 2 (equation 6) is created from the "balance sheet relation" model used in the study of Francis and Schipper (1999) where the market value of a firm's equity is regressed on the book value of its reportable and non-reportable segment assets and liabilities. The total sample size for model (2) is 85 firms but observations were eliminated when any of following conditions held: the observations showed a negative BV or revealed that each variable had an extreme value.

Table 3 shows the slope coefficients of a firm's reportable segment assets per share ($\hat{a}1$) are positively correlated with its stock price after the adoption of HKFRS 8. This implies an increase in the reportable segment assets per share appears to be associated with a higher stock price. Thus, a firm's reportable segment assets per share significantly explain its stock price post-HKFRS 8 period. This is because a firm with higher reportable segment assets attracts more investors to buy its stock so that its stock price goes up. This result is consistent with Francis and Schipper (1999) who found a positive relationship between a firm's total assets (liabilities) per share and its stock price where the book values of assets (liabilities) can explain the variation in equity market values. Specifically, the slope coefficient on reportable segment assets per share was 0.3 (significant at 1% level) in 2010, whereby an increase of $1.00 in the book value of reportable segment assets per share translated into a $0.3 stock price increase in Hong Kong listed firms. Similarly, the estimated coefficient of reportable segment assets per share was 0.2

(significant at 5% level) in 2011, whereby an increase of $1.00 in the book value of reportable segment assets per share corresponded to a $0.2 stock price increase in the sample firms.

Table 3
Coefficient Estimates of Regressions Model (2) Market Value of Equity on Sum of
Reportable and Non-Reportable Segment Assets and Liabilities

Yearly Regressions	n^b	$\beta 0$	$\beta 1$	$\beta 2$	$\beta 3$	$\beta 4$	Adjusted R-squared
Pre-HKFRS 8 period							
2007	73	0.57*	0.35**	1.19**	-0.007	-0.24	0.47
T-statistics		(2.02)	(2.65)	(4.19)	(-0.02)	(-0.92)	
2008	74	0.26	0.04	0.57**	0.1	0.04	0.46
T-statistics		(1.82)	(0.64)	(4.4)	(0.66)	(0.3)	
Average[c]		0.415	0.195	0.88	0.0465	-0.1	
Post-HKFRS 8 period							
2010	76	-0.22	0.3**	1.64**	0.13	-0.09	0.68
T-statistics		(-0.50)	(2.79)	(7.32)	(0.49)	(-0.34)	
2011	74	0.07	0.2*	0.92**	0.11	0.05	0.46
T-statistics		(0.16)	(2.43)	(4.16)	(0.66)	(0.17)	
Average[c]		-0.075	0.25	1.28	0.12	-0.02	

Note: n[b] is the number of observations used to estimate the regression model (2). All t-statistics are in parentheses.* significant at the 0.05 level. ** Significant at the 0.01 level. Average[c] is a simple average of coefficients for two years, pre- and post- HKFRS 8.

However, not all the estimated coefficients of the total reportable segment assets per share were statistically significant in pre-IFRS No 8 period. For instance, although the coefficient of the sum of reportable segment assets was 0.35 (significant at 1% level) in 2007 the coefficient was not statistically significant in 2008, indicating that a firm's reportable segment asset per share was not associated with its stock price in 2008. Furthermore, the average coefficient on the total reportable segment assets per share in the post-HKFRS 8 period is 0.25 indicating that on average, the reportable segment asset per share disclosed by the sample firms explains 25% of the variation in their equity market values. The comparable average coefficient of the total reportable segment assets per share was lower (0.195) in the pre-HKFRS 8 period. Thus, the comparison of the average estimated coefficients of the total reportable segment assets per share in the pre- and post-HKFRS 8 period indicates that the segment assets reported by Hong Kong listed firms under HKFRS 8 have a closer correlation to their stock price than those reported under HKAS 14 since the average estimated coefficients of the total reportable segment assets per share in the post-HKFRS 8 period were higher than those in the pre-HKFRS 8 period. The adjusted R^2 of model (2) for each sample year was 47% in 2007. This means that about 47% of the firms' stock price variability could be explained by the book value of reportable- and non-reportable segment assets and liabilities per share that year. The corresponding adjusted R^2 was respectively 46% in 2008 and 2011 and 68% in 2010. These results indicate an increase in the ability of book values of segmental assets disclosed by Hong Kong listed firms to explain the market value of their equity after the adoption of HKFRS 8. Therefore, Hypothesis three of this study is accepted:

Table 3 also shows the slope coefficients of the total non-reportable segment assets per share ($\beta 2$) are positive and statistically significant at 1% level for both in the pre-and post-

HKFRS 8 periods, indicating that a firm's total non-reportable segment assets per share significantly correlates with its stock price. The non-reportable segment assets are considered as the corporate common assets which cannot easily be allocated to each segment such as finance interest and good will. Similar to the total reportable segment assets per share, the average coefficient estimates of a firm's total non-reportable segment assets per share in the post-HKFRS 8 period was 1.28, which is higher than 0.88 in the pre-HKFRS 8 period. This indicates that a firm's non-reportable segment assets classified under HKFRS 8 are more highly associated with the firm's stock price than under HKAS 14. Overall, the results indicate that both reportable and non-reportable segment assets per share disclosed under HKFRS 8 had a greater influence on a firm's stock price than under HKAS 14. This may be due to the fact that under HKFRS 8, the number of firms disclosing non-current assets for each operating segment to increase so enabling investors to have a deeper insight into the value of the firm's assets and better informing their investment decisions (Li, 2013). Investors can make more appropriate stock investments in reliance on the more detailed reportable segment assets disclosure under HKFRS 8 than under HKAS 14. There appears to be no previous research on the relationship between firms' stock prices and segment assets and liabilities. Francis and Schipper (1999) indicate that there is an improvement in the value relevance of accounting information representing an increase in the slope coefficients of the total assets (liabilities) per share of firms. The results of this study demonstrate that the slope coefficients of both reportable and non-reportable segment assets per share have increased since the adoption of HKFRS 8. This is consistent with the study of Francis and Schipper (1999) since total assets are considered as a combination of reportable and non-reportable segment assets. Therefore, this study concludes that the value relevance of segment assets has improved under HKFRS 8.

On the other hand, unlike segment assets, none of the coefficients of reportable and non-reportable segment liabilities per share for both pre- and post-HKFRS 8 periods have had a significant correlation with stock prices. This implies that there is no relationship between a Hong Kong listed firm's stock price and reportable or non-reportable segment liabilities per share. This indicates that investors consider a firm's segment assets per share rather than its liabilities when investing in stocks. This may be because segment assets are a measure of a firm's value and a firm with higher value will always attract more investors, thus its stock price goes up. For example, firm size is considered one of the most important aspects for evaluating stocks (CHEUNG & Ng, 1992; Fama & French, 1995). Investors consider the smaller the firm, the more volatile and risky the investment so they prefer to invest in large international firms or state-owned enterprises (Brennan, Jegadeesh, & Swaminathan, 1993; Fama & French, 1995). This finding differs from Francis and Schipper (1999) who suggested that there was a negative relationship between a firm's total liabilities per share and its stock price. This is due to the socio-economic differences in the US and Hong Kong. Therefore, Hypothesis four cannot be accepted.

5. CONCLUSIONS

This study aims to fill the gap by using empirical measures to assess the quality of segment disclosure in Hong Kong listed firms under the HKFRS 8. The objective of this study is to ascertain whether HKFRS 8 has actually improved the usefulness of segment reporting by Hong

Kong listed firms compared to HKAS No 14. This study uses the portfolio return approach and regression to compare the value relevance of segment information disclosed by Hong Kong listed firms two years before and after the adoption of HKFRS 8. The portfolio return approach shows that HKFRS 8 has improved the value relevance of segment profit resulting in firms' higher market-adjusted returns to the hedge portfolios based on foresight of changes in the total reportable segment profit disclosure. The regression models investigate the relationship between the stock price of Hong Kong listed firms and the sum of their reportable and non-reportable segment profits, assets and liabilities pre- and post-HKFRS 8. The results of the first regression model show that there has been a more significant positive relationship between the sums of reportable segment profits disclosed by the firms and the market value of their equity after the adoption of HKFRS 8 compared with the preceding standard HKAS 14. The results of the second regression model demonstrate that the sum of reportable segment assets disclosed by the Hong Kong listed firms exhibits a more significant positive correlation with the market value of a firm's equity as a consequence of the adoption of HKFRS 8 compared with the position under the previous standard, HKAS 14. There is no evidence that segment disclosure about liabilities is correlated to the market value of their equity. Therefore, the empirical results of both portfolio return and regression model approaches consistently demonstrate that HKFRS 8 has improved the value relevance of segment information disclosed by the Hong Kong listed firms. Therefore, this study concludes that the adoption of HKFRS 8 has improved the value relevance of segment information disclosed by the Hong Kong listed firms. This implies that HKFRS 8 gives firms discretion in determining segment disclosure leading to an improvement in the usefulness of segment information to investors. So, investors can rely more on the segment information disclosed under HKFRS 8 to make appropriate stock investment decision than under HKAS 14. This result is consistent with the study of Crawford, Extance, Helliar, and Power (2012) which indicated that segmental information was useful for investors' decision making. This confirms IASB's assertion that the management approach under the new segment standard provides more useful information to investors not available under the old standard, IAS 14.

The findings of this study contributes to accounting literature in two ways: first, previous researchers have not investigated whether firms' disclosure of all the segment profits, segment assets and segment liabilities under the new segment reporting standard, IFRS 8 is enhanced than under the previous standard, IAS 14. This study takes all the segment profits, segment assets and segment liabilities into consideration to extract the results. This is the first investigation of the wider aspects of segment information. Thus, this study contributes to the literature by providing a deeper insight into whether segment disclosure actually improved under the new segment reporting standard, IFRS 8.

Second, this study also investigates the value relevance of financial information from an investment perspective by examining firms' stock prices and returns which are of benefit to accounting standard-setters seeking to revise accounting standards according to the needs of the wider firms' investors.

However, the results of this study should be taken with cautions due to the limitations of the study including first, owing to data availability the sample size was relatively small making generalisations difficult. Second, this study investigated only two years before and after the

adoption of HKFRS 8 because this accounting standard became effective only in 2009. It is difficult to discern the robustness of IFRS 8 and the true position regarding the implementation of IFRS 8 within this short period of time. Third, this study excludes some other factors affecting the stock price of firms such as GDP, inflation rate, interest rate and bond yield. Therefore, In order to improve the reliability of research results and to increase the generalizability of the research findings, in the future research projects the number of sample firms for investigation should be increased to make generalisation more sensible. Also, the longer-term impact of IFRS 8 should be investigated for a longer time span (possibly five years) than the pre and post comparison of the current study.

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