The usefulness of segmental information disclosures and analyst forecast efficiency

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Attestation of authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Abstract

The purpose of this study is to examine whether the introduction of International Financial Reporting Standard No: 8 (IFRS 8) - "Operating Segments" has had a significant effect in improving the financial analysts' forecasting abilities of earnings per share in New Zealand (NZ), Australia, Hong Kong (HK) and China. The extent of compliance with the standard was checked using a disclosure index based on segment reporting requirements of IFRS 8 while the forecasting errors were inferred by comparing forecasts of EPS with actuals. This paper specifically investigates whether the financial forecasts accuracy during the post-implementation period of IFRS8 had improved compared to pre-implementation of IFRS 8. The financial analysts' forecast errors were also compared between code law country (China) and common law countries (NZ, Australia and HK) after the implementation of IFRS 8. Using a sample of 190 companies, including 26 NZ companies, 63 Australian companies, 70 HK companies and 31 Chinese companies, analysed by repeated measures ANOVA and the paired-sample t-test, the results indicate that the disclosure level of segment reporting of companies in NZ, Australia, HK and China increased after the implementation of IFRS 8, however, the analysts forecasts errors of post implementation periods were not statistically significantly different to those of pre implementation of IFRS 8. The results also show that the disclosure level of China (code law country) is significant lower when countries are pooled together (NZ, Australia and HK, i.e. common law countries) and compared with HK separately after the implementation of the IFRS 8. However, the financial analysts' forecast errors of Chinese companies were not significantly higher than them during the same period. The results of this paper suggest that the standard has not been perceived as beneficial by the financial analysts' for forecasting. Although a number of papers have attempted to review the success of the implementation of IFRS 8 in Europe, this dissertation serves to address a gap by statistically testing the financial forecasts errors of earnings per share of companies from New Zealand (NZ), Australia, Hong Kong (HK) and China of which there is little known.

CHAPTER 1
Introduction

1.1 Background to the research

1.1.1 The importance of segment reporting to users of financial statements

Segment reporting has long been an important issue for standard setters (Edwards & Smith, 1996). For the users of financial reporting, it is one of the most significant sets of information upon which they base their investment decisions. Users of segmental information can understand companies' unique economic dynamics, business models and corporate strategy, since most listed companies operate in complex and heterogeneous contexts (Veron, 2007). Thus, users have long voiced concerns about the compliance of segmental information disclosure (Alfaraih & Alanezi, 2011).

Segment information disclosures are fundamentally essential to the investment analysis process. "Fineness theorem" explains why it is valuable to financial analysis and other users of financial statements (Herrmann & Thomas, 1997). According to Marschak and Radner (1972), a finer information structure is more valuable to the users of financial statements than a coarser information structure. The fineness theorem argues that finer information is preferred to less fine information, if all other things are held constant. In the segment information context, this means that more detailed disaggregation such as separate segment information is preferred to consolidated information.

The profitability, returns and resources are different across each segment for firms with diversified business and geographic operations. Especially in today's global economy, many firms operate in international markets; the financial information has become even more complex than before. Thus, it is difficult for the users of financial statements to identify these differences and make sound decisions without enough segment disclosures (Hope, Kang, Thomas, & Vasvari, 2009).

Financial analysts are important users of financial statements. They can analyze the current business information and provide the predictions which can help the outside users to make sound decisions. The benefits of segment disclosure for analyst forecasts

have been investigated by previous literature. Many financial analysts indicate that segmental information disclosures are significant for the accuracy of the forecasts (Financial Accounting Policy Committee, 1992). According to Tse (1989), the security valuation was enhanced because of the disclosure of the industry segment information. Moreover, such disclosure can improve earnings per share forecasts (Swaminathan, 1991). Segment reporting allows financial analysts better integration of entity data with external data and makes for more accurate forecasts of earnings per share (Balakrishnan, Harris, & Sen, 1990). This has been confirmed by previous research for earlier US segment reporting efforts (Balakrishnan et al., 1990).

1.1.2 The introduction of IFRS 8

The standard setters have recognized the significance of segmental information for both financial analysts and other stakeholders. Thus, a series of financial reporting standards regarding the segmental reporting have been issued and revised in response to the concerns from users.

In 1997, the Financial Accounting Standards Board (FASB) US issued SFAS 131 *Disclosures about Segments of an Enterprise and Related Information*; this standard is perhaps the most widely recognized standard on segment disclosures in the world. This standard superseded SFAS 14 *Financial Reporting for Segments of a Business Enterprise* in 1997. SFAS 131 is specially targeted to address the concerns from financial analysts on the previous standard - SFAS 14, SFAS 14 allowed managers the flexibility in identifying reportable segments (Botoson & Stanford, 2005). The new standard requires entities to identify segments and related information using a "management approach". In essence, it requires a company to disclose the segment information based on the way management organizes the entity for the purpose of assessing the performance and making operating decisions (Kang & Gray, 2013). There was a consensus in the literature that under SFAS 131, more segments were reported, the disclosure level of segment reporting improved, and the value relevance of segment reporting increased (Berger & Hann, 2003, Hermann & Thomas, 2000b).

A standard equal to the requirement of SFAS 131 was issued in 2006 by the International Accounting Standards Board (IASB) to supersede IAS 14R. The new segment standard (IFRS 8) became effective on 1 January 2009 (IASB, 2006). A two-

tier approach is used for defining reportable segments under IAS 14R (Street & Bryant, 2005). Firms need to choose either business class or geographic activities as their primary segments. Then the other segment type which is not chosen for the primary segments is used to identify the secondary segments. The core principle when identifying the segments is to consider "the predominant source and nature of risks and differing rates of return facing the entity" (IAS 14R, para 27, IASC (1997)). By comparison, IFRS 8 requires the disclosure of segmental information relating to operating segments that the Chief Operating Decision Maker (CODM) uses internally to make operating decisions. The segments need to be identified based on the management approach. This management approach requires operating segments to be identified on the basis of internal reports that are "regularly reviewed by the CODM to make decisions about resources to be allocated to the segment and assess its performance" (IFRS 8, para 1, IASB (2006)). Under IFRS 8, there is no distinction between primary and secondary segments.

IFRS 8 brings significant changes in the ways of identification, measurement and disclosure of segment information. For improving the quality of segment reporting, IFRS 8 requires an entity to:

> "….disclose information to enable users of its financial statements to evaluate the nature and financial effects of the business activities in which it engages and the economic environments in which it operates" (IFRS 8, para 1, IASB (2006)).

Corresponding to the change in the segment reporting standard, the segment reporting practice changed significantly. Although the benefits of IFRS 8 were expected based on the research results on SFAS 131, a lot of commentators expressed their concern as to whether the IASB made the right choice. For example, Crawford, Extance, Helliar, and Power (2012) expressed their concern as to the decline of the quantity and the quality of the segment reporting at the time of the adoption of IFRS 8 in the UK. Moreover, there were also concerns about how to identify the role of the CODM, the permissibility of the use of non-IFRS measurement for segmental information and the non-mandated disclosure of geographic segments. Given the significant changes required by IFRS 8 and the concerns of users about the usefulness of segment reporting, it is significant to investigate whether the requirements of IFRS 8 have had an influence on the way firms

make segment disclosures. Moreover, most research on the new segment standard has so far been conducted on Europe (Crawford et al., 2012). It is useful to determine if the initial findings in this region can apply more generally in other countries with diversified business environments.

1.2 Research questions and objectives

Due to the mixed expectations on IFRS 8, the purpose of this research is to examine whether the adoption of IFRS 8 has made a difference to segment reporting practices in NZ, Australia, HK and China. The paper also examines the relationship of the disclosure level of segment reporting and the errors in analyst forecasts of earnings per share. The study focuses on these countries because they are major players in the Oceania market. In particular, the following research questions are considered in this paper:

Based on the study of SFAS 131, the IASB drew a conclusion that the management approach produced more relevant information. It is expected in this study that the extent of the disclosure level of segment reporting will increase after the introduction of IFRS 8. Thus the first research question is:

a. Has the IFRS 8 resulted in better quality segment disclosure in NZ, Australia, HK and China?

NZ, Australia and HK are based on common law; China is a country based on code law. It is expected that the level of segment disclosure under the common-law system will be higher than under a code-law system. Thus, the second research question is:

b. Is the disclosure level of segment reporting of Chinese firms lower than the pooled countries (NZ, Australia and HK) after the implementation of IFRS 8?

Although China and HK share the same culture, their financial institutional factors and legal systems are quite different. Chinese-listed firms are more central government controlled than HK firms. It is expected that the incentives for Chinese-listed firms to disclose the segment information for outside users of financial statements is less than for HK firms. Thus, the third research question is:

c. Is the disclosure level of segment reporting of Chinese firms lower than HK firms after the implementation of IFRS 8?

The literature shows that segment reporting is significant for financial analysts to make predictions. If IFRS 8 indeed enabled firms to provide more segment information, the analyst forecasts accuracy should improve. Thus, the fourth research question is:

d. Have financial analysts improved the accuracy of their forecasts of earnings per share following the implementation of IFRS 8?

Based on the second research question, the study expected that the segment disclosure level of China would be lower than the pooled countries. This means that the financial statements of Chinese firms provide less segment information which will help the financial analysts to make predictions. Thus, it is interesting to investigate whether the lower disclosure level of Chinese firms will result in higher forecast errors. Thus, the fifth research question is:

e. Have the financial analysts in the pooled countries (NZ, Australia and HK) made better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8?

Based on the third research question, the study expected that the segment disclosure level of China would be lower than HK. Thus, it is interesting to investigate whether the lower disclosure level of Chinese firms results in higher financial forecast errors when compared with financial analysts in HK. Thus, the sixth research question is:

f. Have the financial analysts in HK made better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8?

1.3 Outline of this dissertation

The paper evaluates the disclosure practices of NZ, Australia, HK and China and determines whether analyst forecasting errors are inversely proportional to the degree

of the disclosure level of segment reporting if indeed the standard has been perceived as beneficial.

It is expected that the extent of the disclosure level of segment reporting will increase after the introduction of IFRS 8. It is also expected that the analyst earnings per share forecasts are improved following the increased disclosure level of segment reporting. However, the findings of the study indicate that the forecasts' accuracy has not improved post the implementation of IFRS 8, though the disclosure level increased. This paper also examines the practice of segment disclosure and analyst forecasts of earnings per share based on the legal system. The results show that the disclosure level of China (code-law country) is significant lower when countries are pooled together (NZ, Australia and HK, i.e. common-law countries) and compared with HK separately after the implementation of the IFRS 8. However, the financial analysts' forecast errors of Chinese companies were not significantly higher than them during the same period.

By evaluating the firms' segment disclosures before and after the adoption of the IFRS 8 and the analyst forecast errors, the findings of this study have implications for standard-setters. Firstly, this study provides feedback to standard-setters on the effectiveness of the current segment standard. Moreover, this study contributes to the literature regarding the fineness of information structures.

The reminder of this paper is organized as follows: the second chapter provides an analysis of related literature. The third chapter develops the hypothesis. Chapter four describes the research design and methods used. Chapter five presents the empirical findings and results. Section six provides the concluding remarks, the limitations of the study and the avenues for future study.

CHAPTER 2

Literature review

This chapter is a review of prior studies in the literature. The review is organized in the following manner: First of all, the objective of IFRS is discussed. In the second part, the issues and impacts of the adoption of IFRS are drawn based on previous studies. The determinants of the quality of segmental information will then be discussed in this section. The third part discusses the importance of analyst forecasts, the forecast characteristics and the legal origin and usefulness of segment reporting for analyst forecasts.

2.1 The adoption of International Financial standard (IFRS)

Since there is variety of national GAAP which have been developed within individual countries, different results from financial statements always yield because the financial statements need to meet the requirement of one particular jurisdiction (Street, Nichols, & Gray, 2000). Therefore, in some capital markets, it requires the disclosure of reconciliation statements of published accounts (Haller, 2002). Street et al. (2000) noted that the costs for these reconciliations were increasing over time. It became more apparent that there are many benefits to the harmonization of the financial reporting standards of different countries. The harmonization of accounting standards can benefit multinational firms. Under the circumstances of the accelerated pace of globalization, the harmonization of the accounting standards enables the users of financial statements to use a set of financial statements (Street & Shaughnessy, 1998). Although their subsidiaries are spread all over the world, they can make the financial statements according to one set of accounting standards (Buchanan, 2003).

In 1973, the International Accounting Standards Committee (IASC) was established and it became the main driving force for the harmonization process. From the 1990s, the focus has shifted from harmonization to convergence. In 2001, the International Accounting Standards Board (IASB) replaced the IASC. The responsibility of the IASB is to develop International Financial Reporting Standards (IFRS) and to promote its application. The ultimate objective of IFRS is to develop a single set of accounting standards which will be applied all over the world.

According to KPMG (2007), more than 100 countries now use the IFRS. However, the adoption process for different countries has been sporadic. For instance, Australia adopted IFRS in 2005, NZ adopted IFRS in 2007. Moreover, the applications are inconsistent between countries. The level of non-compliance with IFRS has been noteworthy. Street & Bryant (2005) by examining 49 companies around the world indicated that compliance with these accounting standards is varied across countries.

The literature indicates that there are a variety of problems which have influenced the level of the adoption of IFRS. For example, political, legal and environmental factors may impact the disclosure level of financial information across different countries (Jaggi & Low, 2000). Moreover, the development of the capital market, the impact of the state, commercial law and taxation, and the role of finance may have impacted on the financial reporting (McLeay, 2000). In addition, Daske and Gebhardt (2006) indicate that national GAAP in Anglo-Saxon countries have more mandatory disclosure than that of its counterparts. Thus, it can be seen from the literature that there are a variety of complicated factors which can influence the adoption of IFRS and the disclosure of financial information.

2.2 The adoption of IFRS 8

In response to the needs of financial statement users and as part of the convergence project with the US GAAP, IASB issued IFRS 8. The new segment standard, IFRS 8, became effective on 1 January 2009.

The post-implementation review of IFRS 8 was issued in 2013. This paper pointed out several improvements for the financial reporting which were expected by IASB. However, critics also emerged during the due process period. The following section will review the literature on segment disclosure under IFRS 8.

2.2.1 The issues with IFRS 8

A number of problems were highlighted by the prior literature with regards to segmental information disclosures. Under IFRS 8, the disclosure of segment information is required to be prepared and measured for internal management decisions instead of for stewardship and external user decisions. It has become the

main criticism of IFRS 8 following the publication of the draft in 2007 (Neveling, 2007; Sukhraj, 2007a). Street and Bryant (2005) indicate that managerial discretion in segmental information disclosure is a big issue. IFRS 8 adopted a "management approach" which relies on the discretion of management to determine the composition of a group's segments for internal reporting requirements. Also, it relies on management discretion to determine how these segments' performances are to be reported and measured. Murphy (2007) argued that:

> "The data doesn't have to reconcile with the audited accounts, which is staggering. And they don't have to use the same process of accounting for segments as they do for the rest of the accounts. Therefore the accounts are totally and utterly open to manipulation" (p.7).

Moreover, according to the *Post-implementation Review: IFRS 8 operating segment* (2013), some preparers indicated that it is difficult to identify the Chief Operating Decision Maker (CODM) as required by the standard. The difficulty herein is the identification of a specific person in the entity's management hierarchy as required by the standard and the difficulty of identifying whether his/her role is principally strategic or operational. Sukhraj (2007a) argued that IFRS 8 gives the COMD power to change his or her mind on segments from one year to the next. The term COMD was taken from the US segment standard; it doesn't have any specific meaning in other IFRSs.

According to Nichols, Street, and Cereola (2012), the adoption of the IFRS 8 results in a lack of comparability in segment profitability measures and extensive reporting of non-IFRS measures because management can choose what to disclose and in what ways to disclose.

In terms of the reconciliation, it is not clear as to how it should be presented and how reconciling amounts should be disclosed (Nichols et al., 2012). Under IFRS 8, the explanation of how segmental assets and results have been measured needs to be presented; it is also required to reconcile "the total segment amounts to the amounts recognized in the entity's financial statements" (IFRS 8, para 28, IASB (2006)). However, firms may have sizeable differences when reconciling items with non-IFRS measures in order to reconcile the total segment amounts to the total figures in the

main financial statement. IFRS 8 also requires that firms disclose and explain the material reconciling items; however, the term “material” is not defined. Crawford et al. (2012) found that the respondents had difficulties following the aggregation guidance in practice and inappropriate aggregation may lose value to investors.

IFRS 8 also requires disclosure at a country level if the foreign country is considered material. But the term “material” is not defined in the standard. Herrmann and Thomas (2000b) indicate that the potential advantages from the disclosure of country level information may never be realized due to the lack of guidance as companies may adopt high materiality thresholds. Sukhraj (2007b) also expressed the concern that the disclosure of geographical information might be reduced though the information is very significant to investors.

Furthermore, the inventors cannot conduct trend analysis due to the change in the segments of companies from year to year. It will not be comparable if the segments are different between different years (He, He, & Evans, 2012).

Overall, the above studies point out many issues regarding the implementation of IFRS 8, whether these concerns are proved in the changes in financial reporting is a matter for future investigation.

2.2.2 The Impacts of IFRS 8 on business and geographic disclosures

2.2.2.1 Number of segments and items of disclosure

The likely impacts of IFRS 8 are examined by a number of studies in the accounting literature. Crawford et al. (2012) examined the views of segment reporting preparers, auditors, regulators, and users on the potential impacts of implementing IFRS 8 in Europe during the period 2008-2009. Most of the respondents considered that the implementation of the “management approach” for the identification of segments was helpful. Their study found an increase in the mean number of operating segments following the adoption of IFRS 8. However, most firms disclosed the same number of operating segments under IAS 14R and IFRS 8. Moreover, they found a decrease in the disclosure of IFRS 8 items that had been mandatory under IAS 14R. Nichols et al. (2012) examined the impacts of adopting IFRS 8 segment disclosures on European

blue-chip companies. Consistent with Crawford et al. (2012), their study found that there was an increase in the number of reportable segments on average and a majority of the sample firms reported the same number of operating segments following the adoption of the IFRS 8. In terms of the number of items of disclosure, their findings indicate a significant decrease in the average number of disclosures after the adoption of IFRS 8. Pisano and Landriana (2012) also found an increase in the average number of operating segments by examining the disclosure practice of 122 Italian-listed firms following the adoption of the IFRS 8. Mardini, Grawford, and Power (2012) examined the potential impacts of IFRS 8 on Jordanian-listed companies. They found that IFRS 8 resulted in an increase in the mean number of operating segments compared to the segmental disclosure required under IAS 14R. However, they also found most firms disclosed the same number of segments under IAS 14R and IFRS 8. Their study also indicated a significant increase in the number of items disclosed per operating segment under IFRS 8. Consistent findings were yielded in Australia by Kang and Gray (2013). Their study examined the segment disclosure practice of 189 listed firms in the Australian Stock Exchange. Kang and Gray (2013) found a significant increase in the average number of operating segments and 45% of firms reported the same number of operating segments following the adoption of the IFRS 8. Similar results were also found by He et al. (2012) by investigating 173 Australian stock exchange companies.

The IASB expected that the number of reportable operating segments would increase after the introduction of IFRS 8. The literature shows that there was an increase in the average number of operating segments disclosed. Moreover, the critics predicted that there would be a decrease in the number of segment items disclosed such as assets and liabilities because the items need to be disclosed only if it is reported to the CODM. Crawford, et al. (2012) and Nichols et al. (2012) found that there was a significant decline in the average number of segment items disclosed. While Mardini et al. (2012) found different results.

2.2.2.2 Entity-wide geographic disclosures

Prior studies have examined the influence of IFRS 8 on entity-wide geographic disclosures. Crawford et al. (2012) indicated that most firms would continue to disclose the segmental information based on geographic segment though this

information is not mandated under IFRS 8. Their research found a significant increase in the mean number of geographic segments following the adoption of IFRS 8 for FTSE 100 companies. However, their study also found a significant decrease in the number of items disclosed in each geographic segment because many firms did not disclose capital expenditure. An investigation of European companies by Nichols et al. (2012) found that most companies disclosed geographic entity-wide information following the adoption of IFRS 8 and there was an increase in the average number of geographic areas reported under IFRS 8. Weissenberger and Franzen (2012) investigated the segment reports of German-listed firms and found a significant increase in the number of geographic segments disclosed following the adoption of IFRS 8. There was also an increase in firms providing country-specific information. However, there was a decrease in the number of items disclosed in each geographic segment because many firms did not disclose capital expenditure. Consistent with Weissenberger and Franzen (2012); Mardini et al. (2012) and He et al. (2012) found an increase in the average number of entity-wide geographic segments disclosed. However, He et al. (2012) found most companies did not change the number of geographic segments reported. Similar to the results of Crawford et al. (2012) and Weissenberger and Franzen (2012), their study also found a decrease in the number of items disclosed in each geographic segment.

Overall, previous research has found that firms report more entity-wide geographic segments and more country-level segments. However, the literature shows that there was a significant decrease in the disclosure of capital expenditure.

2.2.3 The determinants of the quality of segmental information

2.2.3.1 Organization-specific variables

The degree of compliance with the standard is influenced by organization-specific variables. Hence, the quality of segmental information disclosure is expected to differ across companies and countries (Hermann & Thomas, 1997). Prencipe (2004) employed the theoretical framework of Proprietary Costs Theory to explain that companies may limit the level of disclosure due to the cost related to preparing and disseminating such information. The study indicated that firm size, growth rate, listing status, ownership diffusion, age and leverage are the essential determinants of the

extent of disclosure. Talha, Sallehhuddin, and Mohammad (2007) state that companies' size, profitability level, growth, financial leverage and ownership structure are the determinants of the extent to which segmental information is disclosed by companies. Also, Kevin and Zain (2001) argue that company size and proportion of assets in place are important factors in segment disclosure. Low, MatZain, and Johl (n.d.) found that firms that disclosed segmental information are highly financially leveraged; these firms have less earnings volatility and less assets in place. Leuz (2004) examined the segment disclosure practices of German firms and found that companies with lower ownership concentration and higher foreign sales tend to disclose voluntarily. Birt, Bilson, Smith, and Whaley (2006) examined 263 Australian entities and found that there is a positive correlation of statistical significance between the segmental disclosure and the intensity of competition in the industry which the companies belong to. In addition, they found that companies disclosed more segmental information than others where the equity ownership was concentrated in a limited number of shareholders. Abu-Serdaneh and Zuriekat (2009) examined the segment disclosure practices of Jordanian firms and found that larger firms, firms with less ownership diffusion and higher assets in place tend to disclose more segment information.

2.2.3.2 Competitive advantage and fees

Moreover, perceived threat from the competitors who could undermine the competitive advantage from such information is also considered to be another deterrent (Abu-Serdaneh & Zuriekat, 2009). According to the *Post-Implementation Review: IFRS 8 Operating Segment* (2013), many respondents are concerned about the disclosure of commercially sensitive information, which could harm their competitive advantage. Since segmental information disclosure requirements call for details about the operating margins, return on assets, growth rate and risks of segments in addition to information on different product lines and geographical segments that companies have, it exposes both the weaknesses and opportunities of the business; competitors and other parties can exploit their competitive advantage (Deppe & Omer, 2000). Mohammad, Abdullah and Junaini (2007) found that the competitive disadvantage did exist by investigating 116 Malaysian-listed firms. They also found larger firms experienced greater competitive disadvantage than smaller firms. Moreover, according to Sander, Alexander, and Clark (2006), the cost of

disclosing segment information is reflected from the higher audit fees, as extra work is required by auditors to test the segmental information.

2.2.3.3 Legal system

Further, the legal system, culture, taxation system, accident and any other external environment can also affect the disclosure levels in segment reporting. According to Glaeser and Shleifer (2002), the literature identifies two types of legal system which are common law and code law. According to Habib (2007), common law can be defined as: “Body of law based on custom and general principles and that, embodied in case law, serves as precedent or is applied to situations not covered by statute. Under the common-law system, when a court decides and reports its decision concerning a particular case, the case becomes part of the body of law and can be used in later cases involving similar matters” (p. 1). La Porta, Lopez-de-Silanes, and Shleifer (2002) state that a characteristic of common-law systems is that there are formal institutions which can enforce regulations and rules. Thus, the minority shareholders' interest can be protected effectively. According to Habib (2007), code law can be defined as: “Body of law based on statute, judges apply principles embodied in statutes rather than turning to case precedent” (p. 1). Ball, Kothari, and Robin (2000) state that a characteristic of code-law systems is that there are informal networks to enforce the regulations and rules rather than formal institutions.

The accounting literature indicated that the quality of accounting information is higher in common-law systems than code-law systems (Ball et al., 2000; Ali & Hwang, 2000). Under common-law systems, countries are operated based on a “shareholder” governance model. The financial information of disclosure becomes the main approach to resolve the information asymmetry problems between the firm’s manager and shareholders. In corporate governance mechanisms, earnings information plays a significant role under this setting. According to La Porta, Lopez-de-Silanes, and Shleifer et al. (2000) and Levine, Loayza, and Beck (2000), under a common-law system, countries have much stronger investor protection systems so that they have stronger equity markets. The demand for this financial information is more intense. By reducing the information asymmetries between managers and outside financial statement users, accounting information disclosure in common-law countries can

reach economies of scale at a low cost compared with code-law countries (Bushman & Piotroski, 2006).

However, Ball et al. (2000) state that under the code-law system, the main stakeholders develop a closer relationship. In these countries, the banking system is strong and it can access the financial information of companies directly. Private communication is a better approach to reduce information asymmetries between a small number of contracting parties and companies' managers (Sun, 2005). According to O'Brien (1998) and Lang, Lins, and Miller (2004), the accounting practices are oriented less towards satisfying the demands of outside investors. The laws of investor protection are weaker in these countries (La Porta et al. 1997, 1998, 2000). Generally, it seems that the quality of accounting systems is lower in their ability to reflect the underlying economic activities accurately in code-law countries (Guenther & Young, 2000; Bhattacharya, Daouk, & Welker, 2003; Francis, Schipper, & Vincent, 2002).

2.3 Analyst forecasts

2.3.1 The importance of analyst forecasts

Financial analysts are important users of financial statements. By collecting the companies' information through public and private sources, they not only can analyze the current performance of companies but also can make predictions about future performance such as earnings and growth rate and make recommendations. Outside users of financial statements can better understand the content with the facilitation of financial analysts. A high quality of financial statement and high level of disclosure enables financial analysts to better make earnings forecasts and stock recommendations. Compared to time-series models of earnings, analyst forecasts are more accurate as the forecast is based on superior information (Brown, Hagerman, Griffin, & Zmij, 1987). Also, many studies in the literature indicate that stock prices can be affected by the analyst earnings forecasts and recommendations (Kothari, 2001; Ramnath, Rock, & Shane, 2006).

2.3.2 Forecast characteristics and the legal origin

There are a number of studies in the literature that have examined the forecast characteristics and the legal origin. A study conducted by Chang, Khanna, and Palepu (2000) examined analyst activities in 47 countries. Their study indicated that there is a negative relationship between forecast errors, dispersions and legal origin, and the quality of variables of financial disclosure. The study indicates that countries with better legal protection mechanisms for outside investors leads to better quality in financial statements so that the analyst forecasts' performance can be improved. On the other hand, the possibility of earnings management and smoothing earnings will increase as a result of weaker legal protection for outside users if less stringent financial reporting standards are followed.

Bamiv, Myring, and Thomas (2005) investigate the analysts' abilities on resource, experience and effort to demonstrate the forecast accuracy across different legal origins. The hypothesis of their study is that in common-law countries, the incentive to provide more accurate earnings information has a positive relationship with the high quality of financial statements demanded by investors and strong protection laws for investors. This hypothesis was further supported by the empirical evidence. However, they found a mixed result from code-law countries. Overall, the study indicated that the quality of financial reporting is a significant determinant of forecast characteristics such as forecast accuracy, forecast dispersion and analysts' following.

Hope (2003) investigated the influence of the enforcement of accounting standards and the disclosure levels of financial reporting on forecast accuracy for multinational firms around the world. The enforcement variables used by their study were trading laws, judicial efficiency, the rule of law, shareholder protection and audit spending. The results indicated that there were significant positive relationships among the level of disclosure, these variables and forecast accuracy. However, the results show that there was no significant positive relationship with the variable of legal origin. A possible interpretation could be that the effect of legal origin was captured by these variables of enforcement.

Moreover, in common-law countries, financial information is value relevant as it increases the investors' ability to make decisions. Thus, the economic incentives

provided by the information demand from investors make financial analysts compete in providing accurate earnings forecasts. The market-based reward forces the financial analysts to outperform other analysts if they have the ability and valuable resources (Schipper, 1991). The rewards outweigh the costs of gathering and processing information under this system. In code-law countries, the demand for financial information is weak so that the superior financial analysts' economic incentives to outperform their peers are reduced. The costs of processing and gathering information will outweigh the rewards for providing a superior earnings forecast by the financial analysts.

2.3.3 The usefulness of segment reporting for analyst forecasts

Security analysts are an important group to focus on, to test the influence of segment reporting. Segment information can enhance the analyst earnings per share forecast (Baldwin, 1984; Swaminathan, 1991; Hussain & Simon, 1998; Lobo, Kwon, & Ndubizu, 1998; Behn, Nancy, Nichols, & Donna, 2002). Similarly, according to Balakrishnan et al. (1990), analysts consider that segment reporting can improve the analysis of the risk profiles and growth rates of various companies. The disclosure of segment information can therefore provide more accurate information to the security analysts in making earnings per share forecasts (Herrmann & Thomas, 2000). The accuracy and confidence of earnings forecasts can be improved due to a better integration of the entity's data with external data. Birt and Shailer (2011) examined whether differences in the level of detail in segment disclosures were related to users' confidence levels for the earnings forecast in Australia. Their study indicates that the higher level disaggregation under AASB 114 resulted in higher value to users, compared to disclosure under AASB 1005. Epistein and Palepu (1999) surveyed 140 financial analysts and found that segmental information was considered as the most significant information in the process of forecasting earnings per share. Ahadiat's (1993) study indicates that geographically segmented earnings improve the accuracy of predictions. Mande and Ortman (2002) investigated Japanese firms and found that analyst forecasts in sales improved with the provision of segmental information. However, their study showed that the forecast of net income did not improve. Ettredge, Kwon, Smith, and Zarow (2005) found the segment information under SFAS 131 has improved the market's ability to forecast firms' future earnings. He et al. (2012) found that analyst forecast accuracy was significantly improved after the adoption of the

IFRS 8 equivalent; however, there was no significant reduction in forecast dispersion after the IFRS 8 equivalent adoption.

2.4 Chapter summary

This chapter reviews the literature of segment reporting and analyst forecasts' accuracy. The literature shows that the introduction of IFRS 8 resulted in an increase in the average of business and geographical segments disclosed. Moreover, the organization-specific variables such as company size, profitability level and ownership diffusion etc. will influence the disclosure level of segment reporting. The competitive disadvantage and fees are also a deterrent to segment reporting. Legal origin is another significant factor which will influence the disclosure level of segment reporting. In terms of the financial analyst forecasts errors, the literature shows that the legal origin and the disclosure level of segment reporting are important factors which will affect the forecasts' accuracy. Based on the revision of this literature, the author concludes that the practice of segment reporting and the usefulness of segment reporting for the users of financial statements needs to be further investigated. The following chapter discusses the development of the hypotheses.

CHAPTER 3

Development of the hypotheses

This chapter is a discussion of the development of the hypotheses. To answer the research questions, six hypotheses are developed in this chapter. The first three hypotheses discuss the disclosure level of segment reporting. The last three hypotheses discuss financial analyst forecasts errors of earnings per share.

3.1 Hypothesis 1

As part of the convergence effort with the US GAAP, the International Accounting Standards Board published IFRS 8, *Operating Segment*. This standard resembles the "through the eyes of management" approach of FASB statement no. 131's disclosures about segments of an enterprise and related information. The IASB stated that there are many benefits to using the management approach because the literature indicates that the segment reports disclosed more useful information under SFAS 131 than the previous standard governing segment information SFAS 14. For example, by examining the views of 56 financial analysts, Maines, McDaniel, and Harris (1997) found that financial analysts will consider segment information as being more reliable when there is congruence between the externally reported segment definitions and internal segment definitions. The IASB indicated that many studies in the literature examined the level of disclosure of segment information. These studies showed that there is an increase in the number of reportable operating segments, more segment information is provided, and that consistency with other sections of the annual report such as management discussion and analysis is enhanced (Crawford et al., 2012; Nichols et al., 2012; Pisano & Landriana, 2012; Weissenberger & Franzen, 2012)**.** However, the management approach became the main criticism of IFRS 8 when the draft was published during 2007 (Neveling, 2007; Sukhraj, 2007a). Some concerns were raised regarding the non-IFRS segment measures allowed under the management approach; other concerns regarding a potential reduction in geographic segment disclosures and liabilities due to the requirement to disclose segment liabilities was eliminated under IFRS 8 (Crawford et al., 2012; Nichols et al., 2012). Based on the literature, the disclosure levels of segment reporting for many companies in different countries were changed. Consistently, the study expected that the disclosure levels in

NZ, Australia, HK and China were changed before and after the implementation of IFRS 8. The study also expected the disclosure level of segment reporting improved after the implementation of IFRS 8.

Thus, the first hypothesis of the study is that:

Hypothesis 1: The disclosure level after the implementation of IFRS 8 is higher than before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China.

3.2 Hypothesis 2

In addition, it is expected that companies in countries with a very different legal system would depict differing patterns of compliance and hence the assessment of success of the implementation of IFRS 8 should be contextualized from its legal origins. NZ, Australia and HK's legal systems are based on common law, while China has a legal system based on code law. The accounting literature indicated that the quality of accounting information is higher in common-law systems than code-law systems (Ball et al., 2000; Ali & Hwang, 2000). This provides a good basis to compare the degree of compliance between China (code law) and other countries governed by common law i.e. NZ, Australia and HK.

Thus, the second hypothesis of the study is that:

Hypothesis 2: The disclosure level of segment reporting for China post implementation is lower than the disclosure level of segment reporting for the pooled countries (NZ, Australia and HK).

3.3 Hypothesis 3

HK is a Special Administrative Region of China. Although they share the same culture, the legal systems are different between them. China is based on code law; HK is based on common law. The different legal systems would influence the disclosure level of segment reporting in China and HK.

In China, company shares can be traded in either the Shanghai Stock Exchange (SSE) or the Shenzhen Stock Exchange (SZSE). Many listed companies are still under central government control, and the trading of shares is also subject to strict government control (Qi, Wu & Zhang, 2000). Therefore, the incentive for companies to disclose the financial information would be less. In contrast, HK is an international financial centre. The financial market in HK is constantly refined and monitored. Hence, it can be seen that the different financial environments of China and HK would influence the disclosure level of segment reporting.

Thus, the third hypothesis of the study is that:

Hypothesis 3: The disclosure level of segment reporting for China post implementation is lower than the disclosure level of segment reporting for HK.

3.4 Hypothesis 4

Based on the different compliance levels of segment reporting in different countries, this paper will evaluate the analyst forecasts of earnings per share before and after the implementation of the IFRS 8. According to Baldwin (1984), there are several reasons for this evaluation. Firstly, the earnings forecasts are a matter of public record. Secondly, the literature indicated that analysts believe this information is very useful for earnings projections. Thirdly, persuasive evidence exists that financial analysts incorporate this information into their forecasts.

During the past few decades, numerous studies have indicated that segment reporting provides useful information to financial markets. Backer and McFarland (1968) suggested that segment information is significant to making sound investment decisions, especially when entities operate in different environments with different risks, profitability and rates of growth. Epistein and Palepu (1999) found most analysts consider segment information is the most important information for their investment decision making. The analyst earnings forecasts were enhanced as the segment report provides information on the past, present and future performance of companies (Behn et al, 2002).

This study expected that the disclosure level of segment reporting will increase after the introduction of IFRS 8. Hence, financial analysts can get more accurate operating

information on businesses from the segment reporting, which in turn will help the financial analysts to make the forecasts of earnings per share. The study assumes that if there is an increase in the level of segment disclosures after the adoption of the IFRS 8, analyst forecast errors of earnings per share should decrease.

Therefore, the fourth hypothesis of this study is that:

Hypothesis 4: The financial analyst forecast errors of earnings per share after the implementation of IFRS 8 is lower than before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China.

3.5 Hypothesis 5

Accounting practices vary around the world. There are many factors which contribute to the differences in accounting practices; one factor is the legal system.

The legal systems of NZ, Australia and HK are based on common law, while China has a legal system based on code law. These different legal systems may have different impacts on the segment reporting practice in these countries (Dunne, Fifield, Finningham & Fox, 2008). In this study NZ, Australia and HK are expected to have a higher quality of segment reporting than China. Further, the study expects that the level of segment information disclosure will have a negative relationship on the analyst earnings per share forecast errors. Therefore, in the post-implementation period, China is expected to have higher earnings forecast errors than the pooled countries (NZ, Australia and HK).

Therefore, it is hypothesized that:

Hypothesis 5: The financial analyst forecast errors of earnings per share for China post implementation will be higher than for the pooled countries (NZ, Australia and HK).

3.6 Hypothesis 6

Although China and HK share a common cultural identity, they have different legal systems. China's is based on code law; HK has a legal system based on common law.

It could be argued that the disclosure choices for segment reporting of companies tend to be varied in China and HK so that China is expected to have a lower disclosure level of segment reporting and higher earnings forecast errors than HK.

Therefore, it is hypothesized that:

Hypothesis 6: The financial analyst forecast errors of earnings per share for China post implementation will be higher than in HK.

3.7 Chapter summary

This chapter discussed six hypotheses which will be tested in this study. The first three hypotheses discuss the influence of the introduction of IFRS 8 on the segment reporting practice in NZ, Australia, HK and China. The other three hypotheses investigate whether the financial analyst forecasts errors of earnings per share would be inversely proportional to the degree of the disclosure level of segment reporting.

The following chapter discusses the data collection and research methodology.

CHAPTER 4

Data collection and research methodology

The first part of this chapter will describe the sample and data collection process. This is followed by a discussion of the research methodology, the specific research methods used to test the hypotheses to answer the research questions.

4.1 Data collection

For evaluating the disclosure level, a disclosure index checklist based on segment reporting requirements of IFRS 8 was developed. This was applied to each of the companies for the years 2007-2010. In particular, the checklist collected information about: the numbers of segments that have been reported; the information based on segmentation of product and services and geographical areas; the information in reconciliations; information on profit or loss, assets and liabilities; information about major customers and so forth. **See appendix 1**. The disclosure index described above was used to calculate the total disclosure score for each company. The disclosure score was developed by using an un-weighted disclosure index approach. This approach treats each item in the disclosure index as equally important to avoid any subjectivity in the analysis (Marston & Shrives, 1991; Gray, Williamson, Karp, & Dalph, 2007). Therefore, a value of 1 was recorded if the item was disclosed in the segment reporting of a company. A value of 0 was given if the item was not disclosed in the segment reporting of the company. The total disclosure score (TD) for a company was calculated by adding the individual scores for the different items.

$$TD = \sum_{i=1}^{r} d_i \quad \cdots\cdots(1)$$

where d =1 if the item was disclosed in the segment reporting; d=0 if the item was not disclosed in the segment reporting; r is the total items included in the index.

The annual reports of these companies were collected from NZX, Australia Security Exchange, HK Exchange and Shanghai Stock Exchange. To increase the reliability of the disclosure index, the annual reports for these companies from the financial years

2007-2010 were read twice. This strategy was used to avoid any mistakes before the disclosure indices were analyzed.

To measure the errors in financial analyst forecasts of earnings per share, the actual earnings per share and the financial analyst forecasts of earnings per share for each company were collected from the Datastream. Datastream is a global research database. This database provides a times-series analysis by using a broad range of financial instruments. The same earnings base was used in this study which is diluted earnings per share. Forecast error is defined as an absolute percentage error in this study, or

$$FE_{it}=\left|\frac{Fit-Ait}{Ait}\right| \quad \cdots\cdots(2)$$

where FE_{it} = absolute percentage forecast error for firm i during period t; Fit = forecasts of earnings per share for firm i during period t, and Ait = Actual earnings per share for firm i during period t.

As has been defined above, forecast errors refer to the measure of the ability of financial analysts to forecast the actual earnings per share (Tan, Wang, & Welker, 2011). The absolute value of the forecast error is used in this study, otherwise the effect of the negative and positive forecast errors would cancel each other when this error is tested statistically.

4.2 Sample selection

The sample for this study consists of 50 randomly selected companies that traded on the NZ Exchange, 100 randomly selected companies that traded on the Australian Security Exchange, 100 randomly selected companies that traded on the HK Exchange and 100 randomly selected companies that traded on the Shanghai Stock Exchange during the year 2013. Six NZ financial companies, 20 Australian financial companies, 10 HK financial companies and 30 Chinese financial companies were excluded from the sample. Among the remaining companies, the forecast errors were calculated for each of the companies. The outliers of forecast errors were excluded from the sample. Finally, a review of the annual reports from 2007 to 2010 was carried out in order to exclude

companies which did not have segment reporting every year from 2007 to 2010. The final sample was composed of 190 companies, including 26 NZ companies, 63 Australian companies, 70 HK companies and 31 Chinese companies, as shown in Table 1.

Table 1: Summary of the sample selection process

	NZ	Australia	HK	China	Total
Randomly selected companies	50	100	100	100	350
Financial companies	6	20	10	30	66
Outliers	12	15	11	10	48
Companies that did not have segment reporting	6	2	9	29	46
Final sample	26	63	70	31	190

4.3 Descriptive statistics

Table 2. Mean disclosure level of different countries

	Year	Mean	Std. Deviation	N
Disclosure level NZ	2007	13.88	10.76	26
	2008	17.85	8.666	26
	2009	19.88	6.501	26
	2010	20.58	4.615	26
Disclosure level Australia	2007	22.29	8.398	63
	2008	22.9	7.933	63
	2009	23.95	7.669	63
	2010	24.19	6.505	63
Disclosure level HK	2007	22.04	8.537	70
	2008	22.36	8.156	70
	2009	23.76	5.837	70
	2010	23.81	5.496	70
Disclosure level China	2007	12.32	9.867	31
	2008	15.97	9.229	31
	2009	19.03	6.39	31
	2010	17.23	8.621	31

Table 2 shows the descriptive information about the mean disclosure level based on the disclosure index for NZ, Australia, HK, and China from 2007 to 2010. There are 26 NZ companies, 63 Australian companies, 70 HK companies and 31 Chinese companies. It can be seen from the table that the mean disclosure levels for NZ, Australia and HK increase gradually during the four years. However, for China, the mean disclosure level declines in 2010 after a stable rise from 2007 to 2009. This is because two Chinese

companies did not disclose the segment information in 2010 though they disclosed the segment information from 2007 to 2009. The overall mean disclosure level of Chinese companies after the implementation of the IFRS 8 (2009-2010) is still higher than the overall mean disclosure level before the implementation of the IFRS 8 (2007-2008). Moreover, it can be seen from the table that during the four years, the disclosure level of Australian companies is consistently highest during the four years (22.29 in 2007, 22.9 in 2008, 23.95 in 2009, 24.19 in 2010), while Chinese companies consistently have the lowest disclosure level during the test period (12.32 in 2007, 15.97 in 2008, 19.03 in 2009, 17.23 in 2010).

Table 3: The distribution of the disclosure level

	2007		2008		2009		2010	
NZ	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
No disclosure information	8	31	3	12	1	4	0	0
18 or under	10	38	9	35	9	35	7	27
19-27	5	19	11	42	13	50	16	62
28-39	3	12	3	12	3	12	3	12
Total	26	100	26	100	26	100	26	100
Australia								
No disclosure information	5	8	4	6	3	5	0	0
18 or under	10	16	7	11	7	11	13	21
19-27	31	49	34	54	32	51	28	44
28-39	17	27	18	29	21	33	22	35
Total	63	100	63	100	63	100	63	100
HK								
No disclosure information	7	10	6	9	1	1	1	1
18 or under	11	16	10	14	12	17	11	16
19-27	35	50	36	51	37	53	37	53
28-39	17	24	18	26	20	29	21	30
Total	70	100	70	100	70	100	70	100
China								
No disclosure information	10	32	6	19	2	6	4	13
18 or under	8	26	10	32	9	29	9	29
19-27	13	42	14	45	20	65	16	52
28-39	0	0	1	3	0	0	2	6
Total	31	100	31	100	31	100	31	100

Table 3 shows that the distribution of the disclosure level of companies in NZ, Australia, HK and China from 2007 to 2010. To evaluate the disclosure level, a disclosure index checklist of segment reporting based on the requirement of IFRS 8 was developed to

assess the segment information for each of the companies. The disclosure score was calculated for each of the firms. The lowest score is 0, which means the company did not disclose the segment information. The highest score is 39. The companies were divided into four groups based on the quartiles. The quartiles are the three points which divide the data into four equal groups and every group includes a quarter of the data (Hyndman & Fan, 1996). These companies are divided into companies that did not disclose any segment information; companies that got an 18 or under disclosure score; companies that got a 19-27 disclosure score and companies that got a 28-39 disclosure score. For NZ, Australia and HK, the number of companies that didn't disclose segment information decreases gradually from 2007 to 2010. However, for China, the number of companies that didn't disclose segment information increases from 2009 (2) to 2010 (4). The number of "28-39" companies in Australia and HK increases from 2007 to 2010. While for China, only one company in 2008 and two companies in 2010 are "28-39"companies; in 2007 and 2009 no Chinese company is a "28-39" company. Compared with the companies in NZ and China, more companies in Australia and HK get a "28-39" score from 2007 to 2010. For Australia (HK), the percentage of companies that get a "28-29" score from 2007 to 2010 is 27%, 29%, 33% and 35% (24%, 26%, 29% and 30%).

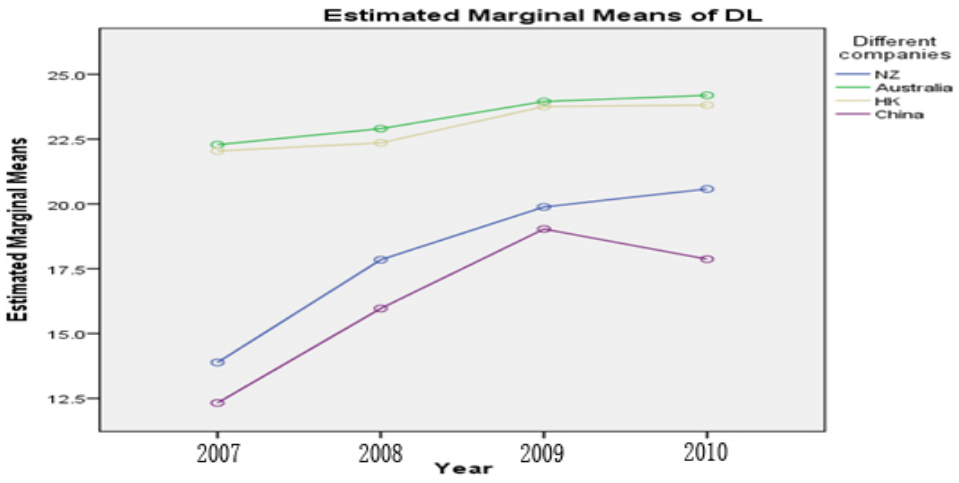

Figure 1. The estimated marginal means of disclosure level

Figure 1 shows the disclosure level for companies in NZ, Australia, HK and China from 2007 to 2010. Where the blue highlight represents NZ companies, the green represents Australian companies, the yellow represents HK companies and the purple represents Chinese companies. It can be seen that the companies in Australia have the highest disclosure level for the four years, followed by HK and NZ. China has the lowest

disclosure level during the four years. The disclosure level for companies in NZ, Australia and HK increases during the four years. The disclosure level for Chinese companies experiences an increase in 2008 and 2009, and then it declines from 2009 to 2010. Overall, the figure clearly shows that the mean disclosure level for companies in NZ, Australia, HK and China under IFRS 8 is higher than under IAS 14R. Moreover, the slow growth of the disclosure level for Australian and HK companies stands in sharp contrast to the steep rise of the disclosure level for NZ companies.

Table 4. Mean forecast errors of different countries

	Different companies	Mean	Std. Deviation	N
Forecast errors NZ	2007	0.254	0.34083	26
	2008	0.2936	0.32516	26
	2009	0.4034	0.54178	26
	2010	0.3611	0.42626	26
Forecast errors Australia	2007	0.3689	0.39097	63
	2008	0.3167	0.32078	63
	2009	0.4977	0.50252	63
	2010	0.2542	0.27496	63
Forecast errors HK	2007	0.3784	0.37757	70
	2008	0.3468	0.34816	70
	2009	0.3586	0.39002	70
	2010	0.3395	0.32136	70
Forecast errors China	2007	0.2498	0.28026	31
	2008	0.2034	0.29734	31
	2009	0.198	0.25544	31
	2010	0.3522	0.41758	31

Table 4 shows the mean forecast errors for financial analysts in NZ, Australia, HK and China from 2007 to 2010. For NZ companies, the mean forecast errors increase from 2007 to 2009; and decrease in 2010. While the mean earnings forecast errors for Australian and HK companies fluctuate during the same period. For companies in China, the analyst forecast errors decrease from 2007 to 2009 though in 2010, the forecast errors increase significantly.

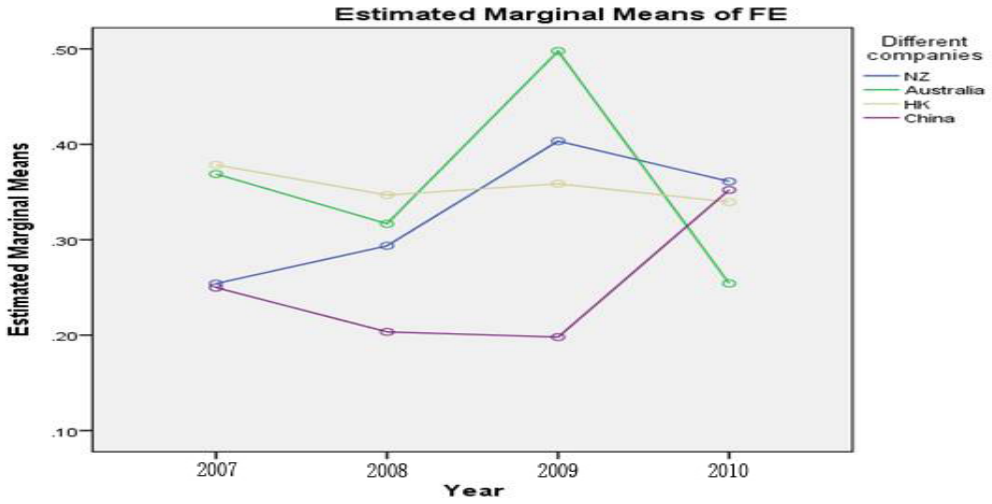

Figure 2. The estimated marginal means of forecast errors

Figure 2 shows the estimated marginal means of forecast errors for companies in NZ, Australia, HK and China. Where the blue highlight represents NZ companies, the green represents Australian companies, the yellow represents HK companies and the purple represents Chinese companies. Australia experiences a dramatic fluctuation from 2007 to 2010. For HK, the earnings forecast errors keep steady during the four years in comparison with other countries. In 2009, the earnings forecast errors for China are significantly lower than for the other countries. In addition, it can be seen that in 2007, the forecast errors of Australia and HK are similar; the forecast errors of NZ and China are similar. In 2010, the forecast errors for NZ are similar to China again.

4.4 Research methodology

The sample companies in NZ, Australia, HK and China will be tested as to whether there is significant difference in the disclosure level and forecasts errors at each time point (2007, 2008, 2009 and 2010). Moreover, the sample companies in NZ, Australia, HK and China will be tested as to whether there is significant difference in the disclosure level and forecast errors before and after the implementation of IFRS 8. Further, the companies will be divided into two groups: companies in common-law countries which are NZ, Australia and HK and companies based on code-law jurisdiction, i.e. companies in China. The test of disclosure level of segment reporting and forecast errors will be conducted based on this.

Repeated measures are commonly used in behavioural experiments and psychological experimentation (Aitken & Cardinal, 2006). Baldwin (1984) employed repeated

measures to test the security analyst forecasts' accuracy before and after adoption of segment data. In this design, subjects will be evaluated on a scale "before" and "after" exposure to multiple treatments. The results of the repeated measures will be identical with the paired t-test if there are only two-years of data and no control variable in this study. In other words, the repeated measure design is an extension of the paired t-test for conditions when researchers are interested in more than two treatments (Rudolf & Michael, 2006). The repeated measures will be used in this study to test whether there is a statistically significant difference between the mean disclosure level (mean financial analyst forecast errors) in 2007, 2008, 2009 and 2010.

To further test the hypotheses, the paired-sample t-test will be used in this study. Lobo et al. (1998) also used this parametric test to compare the security analyst earnings forecasts' accuracy prior to and following disclosure of SFAS 14 segment data. The paired-sample t-test compares the means between two related groups on the same dependent and continuous variable (Zimmerman, 1997). In this study, the disclosure level and analyst forecast errors will be compared before and after the implementation of IFRS 8. Moreover, the comparison will be made between China and other countries; therefore, the paired-sample t-test will be appropriate in this study.

4.5 Chapter summary

Chapter 4 discusses the sample and data collection process and the research methodology adopted in this study. Firstly, the author collected the segment information from companies' annual reports and calculated the disclosure score based on a designed disclosure index. Then the author collected the earnings per share data from Datastream, the errors from the analyst forecasts of earnings per share were calculated by using the absolute value. After that, the research methodology is provided.

Following the sample and data collection, and the research methodology, the next chapter will present the findings of the study.

CHAPTER 5

Results and interpretations

The purpose of this chapter is to present and discuss the results of this research. This chapter includes two sections: Section one presents the findings of the segment disclosure. Research question 1 will be answered by testing hypothesis 1: the disclosure level after the implementation of IFRS 8 is higher than before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China. Research question 2 will be answered by testing hypothesis 2: the disclosure level of segment reporting for China post implementation is lower than the disclosure level of segment reporting for the pooled countries (NZ, Australia and HK). Research question 3 will be answered by testing hypothesis 3: the disclosure level of segment reporting for China post implementation is lower than the disclosure level of segment reporting for HK.

Section two presents the findings regarding the errors in the analyst forecasts of earnings per share. This section discusses the last three research questions. Research question 4 will be answered by testing hypothesis 4: the financial analyst forecast errors of earnings per share after the implementation of IFRS 8 is lower than before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China. Research question 5 will be answered to test hypothesis 5: errors in the financial analyst forecasts of earnings per share for China post implementation is higher than the pooled countries (NZ, Australia and HK). Research question 6 will be answered to test hypothesis 6: errors in the financial analyst forecasts of earnings per share for China post implementation is higher than HK.

5.1 Segment disclosure

5.1.1 Has the IFRS 8 resulted in better quality segment disclosure in NZ, Australia, HK and China?

As part of the convergence effort with the US GAAP, the International Accounting Standards Board published IFRS 8, *Operating Segment*. This standard resembles the "through the eyes of management" approach of FASB statement no. 131's disclosures

about segments of an enterprise and related information. The literature shows that the disclosure levels of segment reporting for many companies in different countries were subsequently changed. This study investigated the disclosure level pre and post of the introduction of IFRS 8 in NZ, Australia, HK and China. To answer the first research question, the first hypothesis of the study is that:

Hypothesis 1: The disclosure level after the implementation of IFRS 8 is higher than before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China.

5.1.1.1 The overall disclosure level of segment reporting

To test whether the disclosure level of segment reporting is statistically different at the different time points, the overall sample was used in this analysis.

Table 5: Wilks' Lambda test (Disclosure level of segment reporting in 2007, 2008, 2009 and 2010)

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
	Wilks' Lambda	.860	10.123[b]	3.000	187.000	.000***	.140	30.369	.998

***=significant at the 0.01 level

Firstly, the Wilks' Lambda is used to test whether the disclosure level between 2007, 2008, 2009 and 2010 are significantly different. This test is used to test the Null Hypothesis that the group means are all equal in the Analysis of Variance (Crichton, 2000). It can be seen from table 5 that Wilks' Lambda indicates that there is a statistically significant difference between the mean segmental disclosure level in 2007, 2008, 2009 and 2010, Wilks' Lambda = 0.86, F (3,187) = 10.12, p = .000.

Table 6: Greenhouse-Geisser test (Disclosure level of segment reporting in 2007, 2008, 2009 and 2010)

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
year	Greenhouse-Geisser	1226.453	2.022	606.679	16.273	.000***	.079	32.897	1.000
Error(year)	Greenhouse-Geisser	14244.547	382.079	37.282					

***=significant at the 0.01 level

Moreover, Greenhouse-Geisser indicates that segment disclosure is statistically different at the different time points. F (2.022, 382.079) = 16.273, p=0.000, partial η2 = 0.079, as shown in table 6.

Table 7: Post-hoc analysis (Disclosure level of segment reporting in 2007, 2008, 2009 and 2010)

(I) year		Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
2007	2008	-1.458*	.401	.002**	-2.528	-.388
2008	2009	-1.642*	.469	.003**	-2.893	-.391
2009	2010	.100	.368	1.000	-.882	1.082

**=significant at the 0.05 level

Post-hoc analysis with a Bonferroni adjustment reveals that the disclosure level of segment reporting that is statistically significant increases from 2007 to 2008, (p=0.002), and from 2008 to 2009, (p=0.003), but not from 2009 to 2010 (p=1). The results show that segment disclosure improves significantly from 2007 to 2009. However, it does not improve significantly from 2009 to 2010. It can be see that companies have made efforts to disclose more segment information year by year. Years 2009 and 2010 are both post the implementation of IFRS 8; companies have not changed the segment reporting significantly after the implementation of IFRS 8, as shown in table 7.

Table 8: Paired-Samples Test (Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010) n=190

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010	-2.329	6.943	0.504	-3.323	-1.335	4.624***	189	0.000

***=significant at the 0.01 level

Table 8 shows the results of the Paired-Samples Test. A paired-sample t-test was used to determine whether there was a statistically significant mean difference between the disclosure level of pre and post implementation of the IFRS 8. The paired-samples t-test for the average disclosure level 2007 and 2008 and average disclosure level of 2009 and 2010 indicate that IFRS 8 elicited a statistically significant increase in average disclosure level in 2009 and 2010 compared to the average disclosure level of 2007 and

2008 for companies in NZ, Australia, HK and China. This means the average disclosure level of 2009 and 2010 is higher than the disclosure level of 2007 and 2008. Hence, we can conclude that IFRS 8 has resulted in better quality segment disclosure.

5.1.1.2 The segment disclosure level for companies in each country

Table 9: Wilcoxen signed ranks test (Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010 for companies in NZ)

	Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010
Z	-3.217[b]
Asymp. Sig. (2-tailed)	.001***

***=significant at the 0.01 level

A non-parametric test is used to test the difference in the segment disclosure level before and after the implementation of IFRS 8 for companies in NZ due to the sample size for NZ companies being small (n=26). Wilcoxen signed ranks test for NZ companies (z=-3.217, p=0.001) indicates that IFRS 8 has elicited a statistically significant increase in the average disclosure level for 2009 and 2010 compared to the average disclosure level for 2007 and 2008 for companies in NZ.

Table 10: Paired-Samples Test (Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010 for companies in Australia, HK and China)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Australia	Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010	-1.476	5.908	0.744	-2.964	0.012	-1.983	62	0.052*
HK	Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010	-1.586	6.472	0.774	-3.129	-0.042	-2.05	69	0.044**
China	Average disclosure level 2007 and 2008 - Average disclosure level 2009 and 2010	-4.032	9.977	1.792	-7.692	-0.373	-2.25	30	0.032**

*=significant at the 0.1 level

**=significant at the 0.05 level

Table 10 shows the paired-sample statistics test for Australian companies (mean= -1.476, p=0.052), HK companies (mean= -1.586, p=0.044) and Chinese companies (mean= -4.032, p=0.032) and also indicates that IFRS 8 has elicited a statistically significant increase in the average disclosure levels for 2009 and 2010 compared to the average disclosure level for 2007 and 2008 for companies in Australia, HK and China.

Therefore, we can accept hypothesis 1 and conclude that the disclosure level of the two-year period after the implementation of IFRS 8 is higher than the two-year period before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China. The research question can be answered: IFRS 8 has resulted in better quality segment disclosure for each of the countries, i.e. NZ, Australia, HK and China.

5.1.2 Is the disclosure level of segment reporting of Chinese firms lower than the pooled countries (NZ, Australia and HK) after the implementation of IFRS 8?

Research question 2 will be answered in this part. The comparison of the segment disclosure level was made between China and the pooled countries (NZ, Australia and HK) because they are based on different legal systems. China is a country based on code law, while NZ, Australia and HK are based on common law. The literature shows that the quality of financial statements might be higher in common-law countries than code-law countries. To answer the second research question, the second hypothesis of the study is that:

Hypothesis 2: The disclosure level of segment reporting for China post implementation is lower than the disclosure level of segment reporting for the pooled countries (NZ, Australia and HK).

Table 11: Paired-Samples Test (Disclosure level of pooled countries versus disclosure level of China-post implementation)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Disclosure level pooled countries 2009 - Disclosure level China 2009	5.065	7.659	1.376	2.255	7.874	3.682***	30	.001
Pair 1	Disclosure level pooled countries 2010 - Disclosure level China 2010	6.065	8.286	1.488	3.025	9.104	4.075***	30	.000

***=significant at the 0.01 level

There were 159 pooled companies and 31 Chinese companies in the sample. To make a valid comparison, 31 random companies in the pooled countries were selected. According to table 11, the paired-sample statistics of the pooled companies (NZ, Australia and HK) and Chinese companies indicate that there is a statistically significant difference between the disclosure level of 2009 and 2010 for Chinese companies compared to the disclosure level of companies in the pooled countries (p=0.001, p=0.000). To make a valid result, this test was repeated three times with varying 31 random sample companies from the pooled countries and the same result was obtained from these tests. It indicates that the disclosure level of companies in China is significantly lower than the disclosure level in the pooled countries in 2009 and 2010 (post implementation of the IFRS 8).

Therefore, we can accept hypothesis 2 and answer the second research question: the disclosure level of segment reporting of Chinese firms is lower than the pooled countries (NZ, Australia and HK) after the implementation of IFRS 8.

The legal system of China might be one of the reasons why the disclosure level of Chinese firms is lower than the pooled countries after the implementation of IFRS 8. The studies conducted by Shleifer and Vishny (1997) and La Porta et al. (1998) indicated that the investors can be protected by legal systems in two ways. Firstly, the investors are given the right to discipline insiders. Secondly, the legal system can enforce contracts that are designed to limit the benefits of private control of the insiders. Therefore, a strong legal system is very significant to protecting the investors by reducing the opportunities for insiders to conceal their activities. According to Ali and Hwang (2000) and Hung (2001), there are empirical results which indicate that

the quality of accounting information is poorer for companies in countries with weak legal enforcement. In addition, Leuz, Nanda, and Wysocki (2003) indicate that earnings management is more pervasive in countries with weaker legal protection for outside investors. Therefore, the literature indicates that the quality of accounting information is higher in common-law systems than code-law systems (Ball et al., 2000; Ali & Hwang, 2000); the quality of accounting systems is lower in their ability to reflect the underlying economic activities accurately in code-law countries.

NZ, Australia and HK's legal systems are based on common law, while China has a legal system based on code law. When compared with NZ, Australia and HK, there is less developed legal enforcement and investor protection in China. For example, the creditor and shareholder protection is less developed in China than common-law countries (Allen, Qian, & Qian, 2005). In terms of the number of lawyers in mainland China, it is only approximately the same as that of a province in America (Allen et al., 2005).

Although China is developing towards a free market economy, the government of China still maintains significant ownership and control of the listed companies. For now, almost two-thirds of listed firms in mainland China are controlled by central government or local government. The executive appointments of the company can be affected by the government (Bai, Li, Tao, & Wang, 2000). In return, these companies receive the support of government such as business contracts, favourable loans and subsidies. Therefore, the information demands of the outside investors in the capital market are less concerned by these companies and they are expected to serve social and political objectives (Szamosszegi & Kyle, 2011). So, the listed companies in China disclose less segment information than companies in the pooled countries (NZ, Australia and HK).

5.1.3 Is the disclosure level of segment reporting of Chinese firms lower than HK after the implementation of IFRS 8?

Research question 3 will be answered in this part. The comparison of the segment disclosure level was made between China and HK due to the differences in their regulatory systems even though they share a common cultural identity. To answer the third research question, the third hypothesis of the study is that:

Hypothesis 3: The disclosure level of segment reporting for China post implementation is lower than the disclosure level of segment reporting for HK.

There were 70 HK companies and 31 Chinese companies, so to make a valid comparison, 31 random companies were selected from the HK companies.

Table 12: Paired-Samples t-test (Disclosure level of HK versus disclosure level of China-after implementation of IFRS 8)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Disclosure level HK 2009 - Disclosure level China 2009	4.09677	8.07612	1.45051	1.13443	7.05912	2.824***	30	.008
Pair 1	Disclosure level HK 2010 - Disclosure level China 2010	5.09677	9.75484	1.75202	1.51867	8.67488	2.909***	30	.007

***=significant at the 0.01 level

Table 12 indicates that there is a statistically significant difference between the disclosure level of 2009 and 2010 for Chinese companies compared to the disclosure level of companies in HK (p=0.008, p=0.007). To make a valid result, this test was repeated three times with varying 31 random sample companies from the pooled countries and the same result was obtained from these tests. It indicates that the disclosure level of companies in China is significantly lower than the disclosure level in HK in 2009 and 2010 (post implementation of IFRS 8).

Therefore, we can accept hypothesis 3 and answer the third research question: the disclosure level of segment reporting of Chinese firms is lower than HK after the implementation of IFRS 8.

As discussed above, the quality of financial statements is better in common-law systems than code-law systems due to the strong legal enforcement and investor protection in common-law systems (Ball et al., 2000; Ali & Hwang, 2000). Although China and HK share the same culture, their legal systems are different. China's is based on code law; HK's is based on common law. Mainland China has its unique characteristics: central government maintains significant ownership of listed companies. Thus, the information

demand is less in China than HK. Therefore, the listed companies in China disclose less segment information than companies in HK.

5.1.4 Summary of the disclosure level

Overall, the investigation of the segment disclosure practice of sample companies in NZ, Australia, HK and China from 2007 to 2010, suggests that the disclosure of the segmental information of companies in NZ, Australia, HK and China improves after the implementation of IFRS 8. For NZ, Australian, HK and Chinese companies, the total of business and geographic segments disclosed increases after the implementation of IFRS 8. The average items of each segment disclosed also increases for the sample companies. In addition, an increasing number of NZ, Australian, HK and Chinese companies now reconcile segment revenue and profit (loss) to total revenue and profit (loss) of the firm under IFRS 8. Overall, the findings show that the disclosure level of the two-year period after the implementation of IFRS 8 is higher than the two-year period before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China. The findings support the IASB's expectation that the implementation of IFRS 8 would increase the quality of segment reporting. And the disclosure level of Chinese companies is significantly lower than the pooled countries and HK after the implementation of IFRS 8.

5.2 Errors in analyst forecasts of earnings per share

Based on these different compliance levels of segment reporting in different countries, this section will evaluate the analyst forecasts of earnings per share before and after the implementation of the IFRS 8. According to Baldwin (1984), there are several reasons for this. Firstly, the earnings forecasts are a matter of public record. Secondly, the literature indicates that analysts believe this information is very useful for earnings projections. Thirdly, persuasive evidence exists that financial analysts incorporate this information into their forecasts.

5.2.1 Have financial analysts improved the accuracy of their forecasts of earnings per share following the implementation of IFRS 8?

Earlier analysis in this study regarding segment disclosures found that the segment disclosure level increases significantly after the implementation of IFSR 8. The literature indicates that better quality of financial reporting can help the analysts to make better forecasts. Thus it is interesting to test whether the analyst forecasts of earnings per share of the same sample companies improves after the implementation of IFRS 8. To answer the fourth research question, the fourth hypothesis of the study is that:

Hypotheses 4: The financial analyst forecast errors of earnings per share after the implementation of IFRS 8 is lower than before the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China.

5.2.1.1 The overall errors in analyst forecasts of earnings per share

To test whether the financial analyst forecasts of earnings per share is statistically different at the different time points, the overall sample was used in this analysis.

Table 13: Wilks' Lambda test (Financial analyst forecasts of earnings per share in 2007, 2008, 2009 and 2010)

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
time	Wilks' Lambda	.966	2.203[b]	3.000	187.000	.089*	.034	6.608	.553

*=significance at the 0.1 level

Firstly, the Wilks' Lambda was used to test whether errors in the analyst forecasts between 2007, 2008, 2009 and 2010 are significantly different. This is used to test the Null Hypothesis that the group means are all equal in the Analysis of Variance (Crichton, 2000). Wilks's Lambda tests indicate that the null hypnosis should be accepted at the standard 0.05 level of significance, i.e. there is not a significant difference between the mean forecasts errors in 2007, 2008, 2009 and 2010, Wilks' Lambda = 0.966, F (3,187) = 2.203, p =0.089, as shown in table 13.

Table 14: Greenhouse-Geisser test (Financial analyst forecasts of earnings per share in 2007, 2008, 2009 and 2010)

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Year	Greenhouse-Geisser	.693	2.700	.257	2.438	.070*	.013	6.582	.575
Error(year)	Greenhouse-Geisser	53.752	510.244	.105					

*=significance at the 0.1 level

Moreover, Greenhouse-Geisser indicates that forecast errors are not statistically different at the different time points $F(2.7, 510.244) = 2.438$, $p = 0.07$, partial $\eta 2 = 0.013$, as shown in table 14.

Table 15: Post-hoc analysis (Financial analyst forecasts of earnings per share in 2007, 2008, 2009 and 2010)

(I) year		Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
2007	2008	.031	.029	1.000	-.047	.109
2008	2009	-.078	.033	.118	-.167	.010
2009	2010	.068	.031	.165	-.014	.150

Post-hoc analysis with a Bonferroni adjustment reveals that forecast errors are not statistically significantly different from 2007 to 2008, 2008 to 2009 and 2009 to 2010 ($p > .05$). This means that although the disclosure level changed from 2007 to 2010, it did not generate any effect on the analyst forecast errors, as shown in table 15.

Table 16: Paired-Samples Test (Average forecast accuracy 2007 and 2008 -Average forecast accuracy 2009 and 2010)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Forecast accuracy 2007 and 2008 - Forecast accuracy 2009 and 2010	-0.02847	0.33553	0.02434	-0.07649	0.01954	1.17	189	0.244

According to table 16, a paired-sample t-test was used to determine whether there is a statistically significant mean difference between the forecast errors of pre and post implementation of the IFRS 8. The paired samples t-test for the average forecast errors of 2007 and 2008 and average forecast errors of 2009 and 2010 indicate that IFRS 8 elicited a not statistically significant difference in average forecast errors for 2009 and 2010 compared to the average forecast errors for 2007 and 2008 for companies.

(p>0.05). Hence, we can conclude that IFRS 8 has not resulted in greater accuracy in the financial analyst forecasts of earnings per share.

5.2.1.2 Errors in the analyst forecasts for companies in each country

Table 17: Wilcoxon Signed Ranks Test (Average forecast errors 2007 and 2008 -Average forecast errors 2009 and 2010 NZ)

	Average forecast errors 2007 and 2008 - Average forecast errors 2009 and 2010
Z	-.754[b]
Asymp. Sig. (2-tailed)	.451

As shown in table 17, a non-parametric test is used to test the difference between the errors in the financial analyst forecasts of earnings per share before and after the implementation of IFRS 8 for companies in NZ due to the sample size for NZ companies being small (n=26). Wilcoxen signed ranks test of NZ companies (z=-0.754, p=0.451) indicate that IFRS 8 has elicited a not statistically significant difference in the average forecast errors for 2009 and 2010 and the average forecast errors for 2007 and 2008.

Table 18: Paired-Samples Test (Average forecast errors 2007 and 2008 -Average forecast errors 2009 and 2010)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Australia	Average forecast errors 2007 and 2008 - Average forecast errors 2009 and 2010	-.03230	.40864	.05148	-.13522	.07061	-.627	62	.533
HK	Average forecast errors 2007 and 2008 - Average forecast errors 2009 and 2010	.01393	.25735	.03076	-.04744	.07529	.453	69	.652
China	Average forecast errors 2007 and 2008 - Average forecast errors 2009 and 2010	-.04903	.29400	.05280	-.15687	.05881	-.929	30	.361

As shown in table 18, the paired-sample statistics test for Australian companies, HK companies and Chinese companies indicates that IFRS 8 has elicited a not statistically significant difference in average forecast errors for 2009 and 2010 compared to the average forecast errors for 2007 and 2008.

Therefore, we can reject hypothesis 4 and answer research question 4: there is no difference in the accuracy of analyst earnings per share forecasts between the two-year period before the implementation of IFRS 8 and the two-year period after the implementation of IFRS 8 for each of the countries, i.e. NZ, Australia, HK and China. The financial analysts have not been able to improve the accuracy of their forecasts of earnings per share following the implementation of IFRS 8.

According to the Financial Accounting Policy Committee (1992), there is a general agreement among financial analysts that segment information is significant to their work. The literature shows that the security valuation can be enhanced by segment disclosures (Tse, 1989). However, different results are found in this study. Although the segment disclosure has improved before and after the implementation of IFRS 8, there is no significant impact on analyst forecast errors. It indicates that the adoption of IFRS 8 may not have provided more value-relevant information in financial statements for the financial analysts. One possible reason is that segment information has helped the financial analysts to make forecasts, but the financial analysts have accessed this information through other channels rather than through segment reporting.

5.2.2 Whether financial analysts in the pooled countries (NZ, Australia and HK) make better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8?

Research question 5 will be answered in this part. The literature shows that the analyst forecast errors and the quality of financial statements are related closely. Chang, Khanna and Palepu (2000) indicated that there is a negative relationship between forecast errors, dispersions and legal origin and the quality of variables of financial disclosure. They state that countries with better legal protection mechanisms for outside investors lead to better quality financial statements so that the forecast performance of analysts is improved.

The results of the segment disclosure show that the disclosure level of segment reporting for Chinese companies is significantly lower than the pooled countries after the implementation of IFRS 8. Thus, this study expected that the forecast errors of Chinese firms would be higher than the pooled countries (NZ, Australia and HK) over

the same period. To answer the fifth research question, the fifth hypothesis of the study is that:

Hypothesis 5: The financial analyst forecast errors of earnings per share for China post implementation is higher than the pooled countries (NZ, Australia and HK).

Table 19: Paired-Samples Test (Average forecast errors for pooled countries -Average forecast errors of China)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Forecast errors pooled countries 2009 - Forecast errors China 2009	.21776	.47656	.08559	.04296	.39257	2.544**	30	.016
Pair 1	Forecast errors pooled countries 2010 - Forecast errors China 2010	.02486	.61157	.10984	-.19946	.24919	.226	30	.822

**=significant at the 0.05 level

There were 159 pooled companies and 31 Chinese companies, so to make a valid comparison, 31 random companies were selected from the companies in the pooled countries. According to table 19, the paired-sample statistics for pooled companies (NZ, Australia and HK) and Chinese companies indicate that there is a statistically significant difference between the average forecast errors for 2009 for Chinese companies compared to the average forecast errors for 2009 for companies in pooled countries (p=0.016). This means that the forecast errors for China are significantly lower than the forecast errors in pooled countries in 2009. In terms of the forecast errors in 2010, the table shows that there is a not statistically significant difference in average forecast errors in 2010 for Chinese companies compared to the average forecast errors in 2010 for companies in the pooled countries (p=0.822). To make a valid result, this test was repeated three times with varying 31 random sample companies from the pooled countries and the same result was obtained from these tests.

Therefore, we can reject the hypothesis and conclude that the financial analysts in the pooled countries (NZ, Australia and HK) have not made better earnings per share

forecasts than financial analysts in China after the implementation of IFRS 8. Specifically, in 2009, the analyst forecast errors for China were significantly lower than the analyst forecast errors for the pooled sample companies of common-law countries, i.e. NZ, Australia and HK. In 2010, the analyst forecast errors for China are not significantly different from the analyst forecast errors for the pooled sample companies of common-law countries, i.e. NZ, Australia and HK.

According to the findings of the disclosure level, the disclosure level of Chinese companies is significantly lower than companies in NZ, Australia and HK after the implementation of IFRS 8. Moreover in our sample, 29 out of 60 Chinese companies were deleted from the analysis because these companies did not disclose the segment reporting from 2007 to 2010. It can be seen that Chinese companies have been reluctant to disclose the segment information. These results are also consistent with a survey conducted by Qu (2013) which found that a significant percentage (84% of companies in 2007 and 85% of companies in 2009 and 2010 of 701 Shanghai Stock Exchange companies) did not disclose any segment data, indicating that most Chinese companies were hesitant to disclose segment information. The managers can utilize their discretion under the Chinese standard to make the decision about whether or not to disclose the segment information (Chen, 2013).

Despite the poorer disclosure practices of Chinese firms, the forecast errors of Chinese companies are not significantly higher than the pooled countries (NZ, Australia and HK). On the contrary, the forecast errors of Chinese companies are significantly lower than the pooled countries in 2009. Compared with NZ, Australia and HK, Chinese analysts are likely to have private access to information (Chen, Gul & Su, 1999). They may have obtained the segment information before the disclosure of segment information from management or other sources. The results show that the information from other sources has helped the Chinese analysts to forecast earnings per share. Even the forecast errors of Chinese companies are lower than the pooled countries (NZ, Australia and HK) in 2009.

5.2.3 Whether financial analysts in HK make better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8?

Research question 6 will be answered in this part. The comparison of errors in analyst forecasts has been made between China and HK due to their differences in regulatory systems although they share a common cultural identity. To answer the last research question, the sixth hypothesis of the study is that:

Hypothesis 6: Errors in the financial analyst forecasts of earnings per share for China post implementation is higher than in HK.

Table 20: Paired-Samples Test (Average forecast errors for HK -Average forecast accuracy of China)

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Forecast errors HK 2009 - Forecast errors China 2009	.24058	.53523	.09613	.04425	.43690	2.503**	30	.018
Pair 1	Forecast errors HK 2010 - Forecast errors China 2010	.04041	.53388	.09589	-.15542	.23624	.421	30	.676

**=significant at the 0.05 level

According to table 20, the paired-sample statistics of HK and Chinese companies indicate that there is a statistically significant difference between the average forecast errors in 2009 for Chinese companies compared to the average forecast errors in 2009 for companies in HK (p=0.018). This means that the forecast errors for China are significantly lower than the forecast errors in HK in 2009. In terms of the forecast errors in 2010, the table shows that there is no statistically significant difference in average forecast errors in 2010 for Chinese companies compared to the average forecast errors in 2010 for companies in HK (p=0.676). To make a valid result, this test was repeated three times with varying 31 random sample companies from the pooled countries and the same result was obtained from these tests.

Therefore, we can reject the hypothesis and conclude that the financial analysts in HK have not made better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8. Specifically, in 2009, analyst forecast errors for China

are significantly lower than the analyst forecast errors for HK. In 2010, the analyst forecast errors for China are not significantly different from the analyst forecast errors for HK.

As discussed above, mainland China and HK share the same culture, but their legal systems and financial institutional factors are quite different. Although the disclosure level of Chinese firms is significantly lower than for HK firms, it seems that the high level of segment information for companies in HK does not provide more useful information which can help to improve the forecasts' accuracy. A possible reason is that financial analysts in China may have obtained the segment information before the disclosure of segment information from management or other sources.

5.2.4 Summary of the analyst forecast errors

Overall, after the investigation of the earnings forecast errors of companies in NZ, Australia, HK and China, the results show that the forecast errors are not significantly different before and after the implementation of the IFRS 8; the financial analysts' forecast errors of Chinese companies were not significantly higher when countries are pooled together (NZ, Australia and HK, i.e. common-law countries) and compared with HK separately after the implementation of the IFRS 8. Interestingly, the forecast errors for Chinese companies are significantly lower than the pooled countries and HK in 2009.

The results show that the introduction of IFRS 8 has not improved analyst forecasts of earnings per share for companies in NZ, Australia, HK and China, though the introduction of IFRS 8 has improved the disclosure level of segment reporting. This means that IFRS 8 has not been generally useful for equity analysis for these sample companies. Two reasons help to explain why analyst forecasts of earnings per share have not improved after the introduction of IFRS 8. Firstly, the tests which were used in this study cannot guarantee that the results are uncontaminated by confounding factors. Secondly, the analysts already have access to the segment information through other channels before the disclosure of the segment reporting in financial statements. Moreover, higher levels of segment information in the pooled countries (NZ, Australia and HK) and HK have not led to more accurate analyst forecasts of earnings per share

when compared with China. One possible reason is that financial analysts in China can get superior information from management or other sources.

5.3 Further insight

To better understand the research question with regard to segment disclosure, this section will analyze the segment disclosure practices of companies in detail.

Under IAS 14R, companies were required to disclose the external and internal revenue, profit, assets and liabilities, the basis of inter-segment pricing, capital expenditure, the profit of joint ventures, depreciation and amortisation, other non-cash expenses, and a reconciliation of primary segment items to consolidated accounts. Moreover, for secondary segments, it required the disclosure of external revenue, assets and capital expenditure. According to IASC (1997), companies also needed to disclose the type of products or services provided by operating segment and the composition of the geographical segments. Under IFRS 8, companies are required to disclose the basis of measurement for profit, assets and liabilities if these items are regularly reviewed by the CODM. Companies are also required to disclose reconciliations to the consolidated accounts. In addition, IFRS 8 requires companies to disclose external and internal revenue, interest revenue and expenses, profits of associates and joint ventures, depreciation and amortisation, income tax expense and other non-cash expenses if these items are regularly reviewed by the COMD. IFRS 8 also requires entity-wide disclosures for operating and geographical segments, and the information for major clients. Under the new standard, the entity-wide disclosure is required if it is available and if it is considered to be material.

It can be seen from the new standard that the companies' COMD plays an important role in making decisions to disclose the segmental information for a particular financial year (Ettredge, Richardson, & Scholz, 2002). The following paragraph will explain in detail why segment disclosure improved after the implementation of IFSR 8.

5.3.1 The number of business segments

To evaluate the segment disclosure level before and after the implementation of IFRS 8, the number of business segments disclosed for each of the companies from 2007 to

2010 was calculated. See **Appendix 2.** Table 21 shows the mean number of business segments disclosed.

Table 21: The number of business segments disclosed

		2007	2008	2009	2010
Overall					
Total of segments		465	505	521	545
Mean		2.45	2.66	2.74	2.87
Total companies		190	190	190	190
NZ					
Total of segments		35	49	53	55
Mean		1.35	1.88	2.04	2.12
Total companies		26	26	26	26
Aus					
Total of segments		171	180	180	204
Mean		2.71	2.86	2.86	3.24
Total companies		63	63	63	63
HK					
Total of segments		195	199	214	218
Mean		2.79	2.84	3.06	3.11
Total		70	70	70	70
China					
Total of segments		62	76	75	68
Mean		2	2.45	2.42	2.19
Total companies		31	31	31	31

Appendix 2 shows that for the 190 companies in NZ, Australia, HK and China, the total number of business segments disclosed increases after the implementation of IFRS 8. Specifically, 545 business segments are disclosed in 2010 compared to 521 in 2009, 505 in 2008 and 465 in 2007. The mean number also increases from 2007 to 2010. The mean number of business segments disclosed is 2.45 in 2007, 2.66 in 2008, 2.74 in 2009 and 2.87 in 2010. This finding is similar to the result from Crawford et al. (2012); Nichols et al. (2012); Pisano and Landriana (2012); Mardina et al. (2012); Kang and Gray (2013) and He et al. (2012). Their study indicated that the introduction of IFRS 8 was associated with an increase in the number of operating segments.

Specifically, for NZ, Australian and HK companies, the total business segments disclosed increases gradually from 2007 to 2010. The mean number of business segments disclosed also increases from 2007 to 2010 for companies in NZ, Australia

and HK. Although the number of business segments disclosed for Chinese companies in 2009 and 2010 is lower than in 2008, the overall disclosure level of Chinese companies after the implementation of IFRS 8 is still higher than before the implementation of IFRS 8. Hence, it can be seen that the number of business segments disclosed for companies under IFRS 8 is more than that under IAS 14R in NZ, Australia, HK and China.

5.3.2 The number of geographic segments

To evaluate the segment disclosure level before and after the implementation of IFRS 8, the number of geographic segments disclosed for each of the companies from 2007 to 2010 was calculated. See **Appendix 3.** Table 22 shows the mean number of geographic segments disclosed.

Table 22: The number of geographic segments disclosed

	2007	2008	2009	2010
Overall				
Total segments	366	378	379	351
Mean	1.93	1.99	1.99	1.85
Total companies	190	190	190	190
NZ				
Total segments	37	44	50	51
Mean	1.42	1.69	1.92	1.96
Total companies	26	26	26	26
Aus				
Total segments	125	129	136	142
Mean	1.98	2.05	2.16	2.25
Total companies	63	63	63	63
HK				
Total segments	150	145	143	127
Mean	2.14	2.07	2.04	1.81
Total companies	70	70	70	70
China				
Total segments	54	60	50	34
Mean	1.74	1.94	1.61	1.1
Total companies	31	31	31	31

The geographical segmental information is not mandated under IFRS 8. Although the requirement to supply geographical information is relaxed, it can be seen from **Appendix 3** that the number of geographical segments disclosed by NZ and Australia increases steadily from 2007 to 2010. Table 22 shows that the mean number of geographical segments disclosed for NZ (Australia) was 1.42 (1.98) in 2007, 1.69 (2.05) in 2008, 1.92 (2.16) in 2009 and 1.96 (2.25) in 2010. This means that the mean number for NZ and Australian companies increases during the four years. In addition, the number of companies that didn't disclose the geographical segments decreases for both NZ and Australian companies during this period. It can be seen that the requirements to provide entity-wide geographic disclosures under IFRS 8 may have resulted in an increase in the geographic information supplied by companies in NZ and Australia, though it is not explicitly mandated under IFRS 8. This result is consistent with the findings of Crawford et al. (2012); Nichols et al. (2012); He et al. (2012); Mardini et al. (2012) and Weissenberger and Franzen (2012).

However, the total geographical segments disclosed for HK and Chinese companies under IFRS 8 is lower that under IAS 14R. The mean number follows the same pattern. Moreover, the companies that didn't disclose the geographical information in HK and China increases during the test period.

5.3.3 The number of items of each segment disclosed

To evaluate the segment disclosure level before and after the implementation of IFRS 8, the number of items of each segment disclosed for each of the companies from 2007 to 2010 was calculated. See **Appendix 4** for detailed information.

Table 23: Mean items of each segment disclosed

	Year		Mean segmental items disclosed
	2007	%	3.1
	2008	%	4
	2009	%	4.7
NZ	**2010**	%	5
	2007	%	5.9
	2008	%	5.9
	2009	%	6
Australia	**2010**	%	6
	2007	%	6
	2008	%	6.1
	2009	%	6.1
HK	**2010**	%	6.2
	2007	%	2.8
	2008	%	3.8
	2009	%	4.4
China	**2010**	%	4.2
	2007	%	5.1
	2008	%	5.4
	2009	%	5.4
Total	**2010**	%	5.5

Table 23 shows that the there is an increase in the mean items reported for each segment for NZ, Australia, HK and China after the implementation of IFRS 8. This increase is spread across a wide variety of segment items. This result is consistent with the study by Mardini et al. (2012) which indicated a significant increase in the number of items disclosed per operating segment under IFRS 8.

First, the introduction of IFRS 8 has led to an increase in the disclosure of segment revenue to external customers for companies in NZ, Australia, HK and China. Moreover, for the item of segment revenue-intersegment transactions, more companies in NZ, Australia and China have provided this information. In addition, there is an increase in the disclosure of interest revenue, interest expense, and income tax expenses for companies in NZ, Australia, HK and China. It is not surprising because IFRS 8 is less prescriptive about the items that firms needed to disclose; instead, the information made

available to the CODM has to be supplied under the management approach. With regards to the assets and liabilities, companies in NZ, HK and China have disclosed more information after the implementation of IFRS 8. However, the number of Australian companies disclosing liabilities and asset by segment has declined after the implementation of the IFRS 8. Crawford et al. (2012) and Nichols et al. (2012) expressed the same concern in their research. This change may reflect that this information became optional after the adoption of IFRS 8. This change also reflects the practical difficulty of identifying liabilities for each segment.

5.3.4 The number of reconciled items

To evaluate the segment disclosure level before and after the implementation of IFRS 8, the number of reconciling items for each of the companies from 2007 to 2010 was calculated. See **Appendix 5.**

The overall results show that the number of companies that reconcile revenue, profit, assets and liabilities to total amount after the implementation of IFRS 8 is more than under IAS 14R. More specifically, the statistics indicate that an increasing number of NZ, Australian, HK and Chinese companies now reconcile segment revenue and profit (loss) to total revenue and profit (loss) of the firm after the implementation of IFRS 8. The reconciled assets and liabilities for companies in NZ, HK and China increase after the implementation of the IFRS 8. While the reconciled assets and liabilities decrease for companies in Australia under IFRS 8.

5.4 Chapter summary

This chapter provides the findings of this research. Firstly, it suggests that the disclosure of segmental information of companies in NZ, Australia, HK and China has improved after the implementation of IFRS 8. The findings support the IASB's expectation that the implementation of IFRS 8 would increase the quality of segment reporting. And the disclosure level of Chinese companies is significantly lower than the pooled countries and HK after the implementation of IFRS 8.

Secondly, it shows that forecast errors are not significantly different before and after the implementation of the IFRS 8 in NZ, Australia, HK and China; the financial analysts' forecast errors of Chinese companies were not significantly higher when countries are pooled together (NZ, Australia and HK, i.e. common-law countries) and compared with HK separately after the implementation of the IFRS 8 even though one would expect that the lower disclosure level in China would result in higher forecast errors. Interestingly, the forecast errors of Chinese companies are significantly lower than the pooled countries and HK in 2009.

CHAPTER 6

Conclusions, limitations and implications

6.1 Summary

Overall, the results have attempted to answer the six questions discussed at the start of this report:

a. Has the IFRS 8 resulted in better quality segment disclosure in NZ, Australia, HK and China?

b. Is the disclosure level of segment reporting of Chinese firms lower than the pooled countries (NZ, Australia and HK) after the implementation of IFRS 8?

c. Is the disclosure level of segment reporting of Chinese firms lower than HK after the implementation of IFRS 8?

d. Have financial analysts improved the accuracy of their forecasts of earnings per share following the implementation of IFRS 8?

e. Have financial analysts in the pooled countries (NZ, Australia and HK) made better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8?

f. Have financial analysts in HK made better earnings per share forecasts than financial analysts in China after the implementation of IFRS 8?

To answer the first research question the disclosure level of these sample companies was examined. Under IFRS 8, entities are now required to disclose segmental information, which is consistent with how management views the entity, based on its internal reports. The new definition of segments employed with the implementation of IFRS 8 has resulted in several improvements in the level of segmental disclosures for the sample companies in the study. The analysis of the financial statements for a sample of 190 companies before and after the introduction of IFRS 8, suggests that the disclosure of the segmental information has increased after the implementation of IFRS

for NZ, Australia, HK and China. The findings support the IASB's expectation that the implementation of IFRS 8 would increase reporting quality. For example, the number of reported business segments increases after the introduction of IFRS 8. Although the reporting requirements for geographic disclosure are less onerous under the new standard; for NZ, Australia, HK and China, the total of geographic segments disclosed increases after the implementation of IFRS 8. Also, the findings show that more items are disclosed after the implementation of IFRS 8, such as interest revenue, interest expense, and income tax expense. In addition, an increasing number of NZ, Australian, HK and Chinese companies are reconciling segment revenue and profit (loss) to total revenue and profit (loss) of the firm under IFRS 8.

Another conclusion that emerges from the analysis is that there are some differences in the IFRS 8 reporting practices of NZ, Australian, HK and Chinese companies, with the Chinese typically providing less segmental disclosures during the four years. Australian companies have the highest disclosure level, followed by HK and NZ. The disclosure level of Chinese firms is significantly lower than the other countries after the implementation of IFRS 8.

This study also expected that disclosure level of segment information is negatively related to the earnings forecast errors. However, it is not found in this study. Although the disclosure level increased for companies in all the countries after the implementation of IFRS 8, the forecast errors did not decrease under IFRS 8. There is no significant difference in the forecast errors before and after the implementation of IFSR 8.

This study also tests the analyst forecasts' accuracy across legal origins (common law versus code law) from 2007 to 2010. Common-law countries typically have higher-quality financial reporting systems and stronger investor protection laws. In code-law countries, the demand for earnings information is reduced because of weaker investor protection laws and lower-quality financial reporting. The study expected the earnings forecasts to be more accurate in common-law countries than in code-law countries. However, the findings contradict the expectations. NZ, Australia and HK are all using the common-law system, only China is a code-law country. Surprisingly, the forecast errors of Chinese companies are significantly lower than the pooled countries and HK

in 2009. In 2010, there is no significant difference between the forecast errors of China and other countries.

Previous research indicates that investor protection and the legal system are weak in the Chinese context; the litigation risk is low in China (Haw, Qi, & Wu, 2001). In addition, the China Securities Regulatory Commission (CSRC) is in charge of the enforcement of the disclosure of financial information in China. However, Walter and Howie (2006) indicate that the CSRC lacks the necessary power and independence in enforcing such disclosures. In combination, these factors lead to the lower disclosure level of segment reporting in China. Although Chinese companies have lower disclosure levels, their financial analyst forecasts performed better than the pooled countries and HK in 2009. One possible reason is that the analysts in China can get the segment information from other sources. Compared with NZ, Australia and HK, Chinese analysts are likely to have private access to information (Chen et al., 2001). They may have obtained the segment information before the disclosure of segment information from management or other sources. Wang and Ahammad (2012) found that the financial analysts in China use both public and private available information to mutually verify the truthfulness of each source. Their research also found that visits and meetings with company management are regarded as a “useful” to “extremely useful” source to gather private level information providing price sensitive information. The content of the meetings significantly depends on the relationship or “guanxi” between the financial analysts and the company. Hence, it can be seen that in the Chinese context, private available information offers a more efficient channel for financial analysts to gain “first-hand” understanding about companies' future development.

6.2 Limitations of the study

There are some limitations in this study that should be taken into consideration when interpreting the results. Firstly, the study is focused on listed non-financial companies, thus, without further research, the conclusions of the study cannot be generalized to non-listed and finance companies. Secondly, this study only looks at the impact of the IFRS 8 before and two years after the implementation of the new standard. Subsequent years’ analysis of data is needed before any trend in the findings can be confirmed. Moreover, the findings may be subject to first-time adoption bias;

companies may not have been willing to change their segment disclosures for the 2009 and 2010 reporting period. In addition, this study did not consider management change. Adopting the IFRS 8 management approach has the potential to impact the comparability of segment reporting because internal management structures vary between entities and over time, as companies modify internal management practices. Nevertheless, although there are some limitations existing in the current study, the paper still provides some interesting insights upon which others can build.

6.3 Future research

There are some possible avenues for future research. First, the level of competitive disadvantage derived from segmental information published under IFRS 8 could be examined. Second, the researcher can conduct a longitudinal study of compliance with the new standard of segmental reporting. It could help to examine whether the disclosure trends identified in this study continue into the future. In addition, this study examines the practice of adoption of IFRS 8 in the Oceanic region and two large economies in Asia. Additional work is necessary to examine the impacts of the implementation of IFRS 8 in other jurisdictions, particularly developing economies. Future research also needs to address whether IFRS 8 enables investors to see through managements' eyes (IASB, 2013a). Overall, the issues raised by this study and the limitations that have emerged from the study suggest that a continued review of the standard on segmental reporting (IFRS 8) would be worthwhile.

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Appendix 1

The segment disclosure index

		2007	2008	2009	2010
	Does the company report segmental information?				
	How many segments have been reported?				
	GENERAL INFORMATION				
	Has the company reported more than the limit specified in IFRS at 10 segments?				
	Has the company aggregated operating segments for reporting purposes				
	• If yes, is there information on the types of products/ services each segment derives?				
	Which of the following bases have been used in the determination of number of segments				
	• Product & Services				
	• Geographical areas				
	• Regulatory environment				
	• Combination of factors				
	If the segmentation is based on Product & Services;				
	• Has revenue from external customers identified clearly?				
	• If No, is an explanation provided for non-disclosure?				
	• Does that explanation involve "non-availability of information"?				
	• Does that explanation involve "cost to develop it would be excessive"?				
	If the segmentation is based on Geographical areas;				
	• Is revenue from external customers clearly categorised into: (i) those from country of domicile (in total) or (ii) those from foreign countries (in total) or (iii) both				
	• Is there any disclosure on the materiality of one foreign country in the above?				
	• Are non-current assets (other than financial instruments, deferred taxes and rights arising under insurance contracts) being categorised into: (i) those from country of domicile (in total) or (ii) those from foreign countries (in total) or (iii) both?				
	• Is there any disclosure on the materiality of one foreign country in the above?				
	In each of the reportable segments:				
	• Is a measure of attributable profit or loss identified?				
	• Is a measure of attributable total assets identified?				
	• Are additions to non-current assets (if applicable) separately identified?				
	• Is a measure of attributable total liabilities identified?				
	• Are amounts of investments in associate companies and/or joint ventures separately identified?				
	QUANTITATIVE THRESHOLDS				
	For each of the segments reported:				
	• Is the segment revenue > 10% of total revenue of all reported segments?				
	• If NO, what proportion (%) of segments falls below the threshold?				
	• Is there an explanation provided for the deviation?				
	• Is the segment profit in absolute value > 10% of total profits (absolute value) of all reported segments?				
	• If NO, what proportion (%) of segments falls below the threshold?				
	• Is there an explanation provided for the deviation?				
	• Is the segment losses in absolute value > 10% of total losses (absolute value) of all reported segments?				
	• If NO, what proportion (%) of segments falls below the threshold?				
	• Is there an explanation provided for the deviation?				
	• Is the segment assets > 10% of total losses (absolute value) of all reported segments?				
	• If NO, what proportion (%) of segments falls below the threshold?				
	• Is there an explanation provided for the deviation?				
	Is the total revenue reported by all segments > 75% of total revenue of the firm (para 15)?				
	If No, is an explanation provided for non-disclosure?				
	• Does that explanation involve "non-availability of information"?				

	• Does that explanation involve "cost to develop it would be excessive"				
	RECONCILIATION				
	• Is there evidence of an attempt to reconcile the ∑segment revenue to total revenue of the firm?				
	• Is there evidence of an attempt to reconcile the ∑segment profit before tax (PBT) to total PBT of the firm? **OR** • ∑segment profit after tax (PAT) to total PAT of the firm?				
	• Is there evidence of an attempt to reconcile the ∑segment assets to total assets of the firm?				
	• Is there evidence of an attempt to reconcile the ∑segment liabilities to total liabilities of the firm?				
	• Is there evidence of an attempt to reconcile the ∑segment **other material items** to total other material items of the firm?				
	Has there been a restatement of previously reported items?				
	• If so, has adequate explanation been given to each of the items?				
	INFORMATION ABOUT PROFIT OR LOSS, ASSETS AND LIABILITIES				
	Does the segmented information include the following:				
	• Revenue from external customers				
	• Revenues from transactions with other operating segments of the same entity				
	• Interest revenue				
	• Interest expenses				
	• Depreciation and amortisation				
	• Material items of income and expense disclosed in accordance with paragraph 97 of IAS 1(presentation of financial statements)				
	• The entity's interest in the profit or loss of associates and joint ventures accounted for by equity method				
	• Income tax expense or income				
	• Material non-cash items other than depreciation and amortisation?				
	INFORMATION ABOUT MAJOR CUSTOMERS (PARA 34)				
	Is revenue from a single external customer 10% or more of the total revenue?				
	Is there any disclosure to this effect, such as; - Who is the customer? - Where does the customer belong to?				

Appendix 2

The number of business segment disclosed

Overall	No. Of business segments	2007	2008	2009	2010
Total of segments		465	505	521	545
Mean		2.45	2.66	2.74	2.87
	0	56	49	44	42
	2	44	46	44	44
	3	34	34	40	37
	4	28	30	28	29
	5	17	17	20	18
	6	4	4	6	11
	7	5	4	2	3
	8	1	2	3	1
	9	1	3	3	5
	10	0	1	0	0
	Total companies	190	190	190	190
NZ					
Total of segments		35	49	53	55
Mean		1.35	1.88	2.04	2.12
	0	14	10	9	8
	2	7	7	7	6
	3	1	4	5	8
	4	2	2	2	2
	5	2	3	2	1
	6	0	0	1	1
	Total companies	26	26	26	26
Australia					
Total of segments		171	180	180	204
Mean		2.71	2.86	2.86	3.24
	0	17	16	16	15
	2	14	16	12	12
	3	10	10	14	10
	4	10	10	9	8
	5	6	5	7	6
	6	2	0	0	5
	7	2	0	0	2
	8	1	2	2	1
	9	1	3	3	4
	10	0	1	0	0
	Total companies	63	63	63	63
HK					
Total of segments		195	199	214	218
Mean		2.79	2.84	3.06	3.11
	0	12	12	10	8
	2	19	19	17	18
	3	17	15	16	16
	4	10	12	13	15
	5	8	6	7	7
	6	2	4	5	5
	7	2	2	1	0
	8	0	0	1	0
	9	0	0	0	1
	Total companies	70	70	70	70
China					
Total of segments		62	76	75	68
Mean		2.00	2.45	2.42	2.19
	0	13	11	9	11
	2	4	4	8	8
	3	6	5	4	3
	4	6	6	5	4
	5	1	3	4	4
	6	0	0	0	0
	7	1	2	1	1
	Total companies	31	31	31	31

Appendix 3

The number of geographical segments disclosed

Overall	No. of geographical segments	2007	2008	2009	2010
Total of segments		366	378	379	351
Mean		1.93	1.99	1.99	1.85
	0	80	78	82	88
	2	42	44	39	31
	3	30	32	29	29
	4	16	11	16	20
	5	14	14	12	6
	6	5	5	6	6
	7	1	3	2	5
	8	0	1	1	0
	9	1	1	1	0
	10	0	0	0	1
	11	0	0	1	1
	12	1	1	1	0
	Total companies	190	190	190	190
NZ					
Total of segments		37	44	50	51
Mean		1.42	1.69	1.92	1.96
	0	15	14	12	11
	2	4	4	6	5
	3	2	1	0	1
	4	3	3	3	4
	5	1	3	4	2
	6	1	1	1	3
	Total companies	26	26	26	26
Aus					
Total of segments		125	129	136	142
Mean		1.98	2.05	2.16	2.25
	0	26	24	22	21
	2	14	16	15	14
	3	9	12	13	13
	4	6	4	7	10
	5	5	2	2	1
	6	2	2	2	1
	7	0	2	0	2
	8	0	0	1	0
	9	1	1	1	0
	10	0	0	0	1
	Total companies	63	63	63	63
HK					
Total of segments		150	145	143	127
Mean		2.14	2.07	2.04	1.81
	0	24	26	32	37
	2	16	15	10	8
	3	15	15	12	11
	4	6	4	5	5
	5	6	7	6	4
	6	2	2	2	1
	7	1	1	2	3
	8	0	0	0	0
	9	0	0	0	0
	10	0	0	0	0
	11	0	0	1	1
	Total companies	70	70	70	70
China					
Total of segments		54	60	50	34
Mean		1.74	1.94	1.61	1.1
	0	15	14	16	19
	2	8	9	8	6
	3	4	4	4	4

	4	1	0	1	1
	5	2	2	0	0
	6	0	0	1	1
	7	0	0	0	0
	8	0	1	0	0
	9	0	0	0	0
	10	0	0	0	0
	11	0	0	0	0
	12	1	1	1	0
	Total companies	31	31	31	31

Appendix 4

The number of items disclosed for each segment

	NZ				Australia				HK				China				Total			
Year	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010	2007	2008	2009	2010
Items	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Segment revenue to external customers	34	47	58	69	62	62	63	70	49	52	53	55	43	54	64	64	50	55	58	63
Segment revenue-intersegment transactions	27	31	47	54	46	46	46	47	36	38	37	37	43	54	64	62	39	42	45	47
Segment result	65	73	81	96	88	91	91	92	86	88	95	96	54	74	77	77	78	84	88	91
Assets	65	81	89	78	89	91	88	79	87	88	93	96	43	62	68	62	77	83	86	82
Additions to non-current assets	0	7	4	7	2	6	6	12	26	27	38	46	0	0	0	4	10	14	17	22
Liabilities	34	62	69	58	86	88	85	68	87	88	91	95	43	62	68	62	72	79	82	76
Depreciation and amortisation	47	65	73	85	79	77	80	85	85	86	85	86	35	45	62	48	70	73	78	79
non-cash expenses	0	0	0	0	39	38	30	19	15	11	9	6	10	10	14	14	20	19	15	10
share of profits of associates & joint ventures	7	11	16	20	46	44	44	39	58	60	50	49	4	6	6	14	39	40	36	36
Investments in associates & joint ventures	16	20	20	23	44	39	44	33	59	55	43	40	4	6	6	10	39	37	35	31
Material items of income and expense	0	0	0	0	15	12	12	15	9	9	6	7	10	10	15	15	10	9	9	10
Interest revenue	16	23	31	42	12	14	11	26	10	12	18	25	0	0	6	15	10	12	16	26
Interest expense	16	20	31	38	11	11	12	24	12	15	18	20	0	0	6	15	10	11	16	24
Income tax expenses	11	23	31	34	6	8	9	9	10	10	12	18	10	10	14	23	9	11	14	19
Mean segmental items disclosed	**3.1**	**4**	**4.7**	**5**	**5.9**	**5.9**	**6**	**6**	**6**	**6.1**	**6.1**	**6.2**	**2.8**	**3.8**	**4.4**	**4.2**	**5.1**	**5.4**	**5.4**	**5.5**

Appendix 5

Percentage of companies providing reconciliation information

Countries	Year	Reconciliation	Is there evidence of an attempt to reconcile the ∑segment revenue to total revenue of the firm?	Is there evidence of an attempt to reconcile the ∑segment profit or loss to the entity profit or loss	Is there evidence of an attempt to reconcile the ∑segment assets to total assets of the firm?	Is there evidence of an attempt to reconcile the ∑segment liabilities to total liabilities of the firm?	Is there evidence of an attempt to reconcile the ∑segment other material items to total other material items of the firm?
	2007	%	69	65	65	34	11
	2008	%	85	73	81	65	11
	2009	%	96	81	89	69	11
NZ	2010	%	96	96	78	58	11
	2007	%	91	88	89	86	6
	2008	%	92	91	91	88	6
	2009	%	92	91	88	85	6
Australia	2010	%	98	92	79	68	6
	2007	%	88	86	87	87	5
	2008	%	90	88	88	88	6
	2009	%	97	95	93	91	6
HK	2010	%	97	96	96	95	6
	2007	%	77	54	43	43	6
	2008	%	91	74	62	62	8
	2009	%	91	77	68	68	8
China	2010	%	81	77	62	62	6
	2007	%	84	78	77	72	7
	2008	%	89	84	83	79	7
	2009	%	94	88	86	82	7
Total	2010	%	96	91	82	76	7