The Value Relevance of IFRS Adoption: Cross-Country Comparisons Based on Harmonisation Histories, Intellectual Capital Disclosures and The Global Financial Crisis

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LIST OF ACRONYMS

AASB	Australian Accounting Standard Board
ACCA	Association of Chartered Accountants
ACRA	Accounting and Corporate Regulatory Authority of Singapore
AIDB	Accountancy Investigation and Discipline Board
AIFRS	Australian Equivalents to International Financial Reporting Standards
APB	Auditing Practice Board
APC	Accounting Practice Committee
ASB	Accounting Standards Board
ASC	Accounting Standards Committee
ASIC	Australian Securities and Investment Commission
ASRB	Accounting Standards Review Board
ASSC	Accounting Standard Steering Committee
ASX	Australian Securities Exchange
CAS	Chinese Accounting Standards
CCAB	Consultative Committee of Accountancy Bodies
CCDG	Council of Corporate Disclosure and Governance
CIMA	Chartered Institute of Management Accountants
CIPFA	Chartered Institute of Public Finance and Accountancy
CLERP	Corporate Law Economic Reform Program
CMBAR	Capital Market Based Accounting Research
ED	Exposure Draft
FRC	Financial Reporting Council
FRRP	Financial Reporting Review Panel

FRS	Financial Reporting Standard
FRSSE	Financial Reporting Standards for Small Enterprises
GAAP	Generally Accepted Accounting Principles
HKEX	Hong Kong Stock Exchange
HKFRS	Hong Kong Financial Reporting Standard
HKICPA	Hong Kong Institute of Certified Public Accountants
HKSA	Hong Kong Society of Accountants
HKSSAP	Hong Kong Statements of Standard Accounting Practice
IAC	Interpretation Agenda Committee
IASB	International Accounting Standard Board
IASC	International Accounting Standard Committee
IASCF	International Accounting Standard Committee Foundation
IAS	International Accounting Standard
ICAEW	Institute of Chartered Accountants of England and Wales
ICAI	Institute of Chartered Accountants of Ireland
ICAS	Institute of Chartered Accountants of Scotland
ICD	Intellectual Capital Disclosure
ICPAS	Institute of Certified Public Accountants of Singapore
IFC	International Financial Corporation
IFRIC	International Financial Reporting Interpretations Committee
IFRS	International Financial Reporting Standards
IMTA	Institute of Municipal Treasurer and Accountants
IOSCO	International Organisation of Securities Commission
ISIAS	Introduction to Statements of International Accounting Standards
JSE	Johannesburg Stock Exchange
KLSE	Kuala Lumpur Stock Exchange

MACPA	Malaysian Association of Certified Public Accountants
MASB	Malaysian Accounting Standards Board
MAS	Malaysian Accounting Standards
MIA	Malaysian Institute of Accountants
MICPA	Malaysian Institute of Certified Public Accountants
MSC	Malaysian Securities Commission
NIA	National Institute of Accountants
PAB	Public Accounting Board
PASB	Public Sector Accounting Standard Board
POB	Professional Oversight Board
RCB	Registry of Companies and Businesses
SAA	Singapore Accountancy Academy
SAICA	South African Institute of Chartered Accountants
SES	Stock Exchange of Singapore
SSAP	Statements of Standard Accounting Practice
UIG	Urgent Issue Group

ABSTRACT

This study provides comparative findings on the impact of adoption of International Financial Reporting Standards (IFRSs) on the value relevance of reported accounting and non-accounting information in a set of six countries with a British accounting heritage but divergent harmonization paths leading up to IFRS adoption. The countries included in the sample are the United Kingdom, Australia, Hong Kong, Singapore, Malaysia and South Africa. The aim of this study is to advance the accounting value relevance literature through a more comprehensive analysis – including multiple models of the value relevance of primary accounting numbers, the addition in these models of textual disclosures about intellectual capital, longer pre- and post-IFRS adoption periods, and a larger cross-section of countries – than prior studies. This aim is achieved through six specific objectives. The first objective is to describe the comparative effects of accounting policy change created by first-time adoption of IFRSs in various elements in the financial statements of listed companies within the chosen countries. The second objective is to compare, for this set of countries, the extent of incremental value-relevance of accounting numbers (i.e. earnings and book value of net assets) produced under different financial reporting regimes, namely, local GAAPs compared to IFRSs. The third objective is to determine the change in relative explanatory power to investors in the share market of reported earnings and book value of net assets under different accounting regimes. The fourth objective is to determine whether the value relevance of earnings and book value of net assets under the IFRS regime is systematically different for companies in non-traditional (new economy) industries compared to companies in traditional (old economy) industries. The fifth objective is to determine the extent to which items of intellectual capital disclosure (ICD), in the text of company annual reports, as mainly voluntary and non-financial disclosures, contribute to the overall value-relevance of accounting numbers provided in corporate reports. The final objective is to identify the extent to which either reported earnings or the book value of net assets under IFRSs become less value relevant to equity investors when there is a rapid economic downturn.

This study is motivated in terms of making a contribution to the financial reporting research literature on value relevance and intellectual capital disclosure, as well as providing findings that can be informative to accounting standards setters. Former studies have investigated the incremental value relevance of IFRSs compared to GAAPs but have not related their findings to the

extent to which different countries have harmonized their GAAPs leading up to the first time adoption of IFRSs. In addition, prior studies have not taken into consideration the different concentrations of industries between 'new economy' sectors that are knowledge intensive and have accumulated high levels of intellectual capital not captured directly in financial statement numbers, and traditional industries that rely less of internally generated intellectual capital. A further gap in the literature is that alternative value relevance models have not been run on the same data or over significant periods of years before and after the year of adoption of IFRSs or during a period of economic turbulence. The findings of this study seek to fill such gaps in the value relevance literature.

The sample for this study consists of 2275 firm-year observations for 325 listed companies, from the six chosen countries, for the period between 2002 and 2008. For individual countries, the sample comprises of large listed companies on local stock exchanges as follows: 63 Australian companies, 58 British companies, 49 Hong Kong companies, 50 Singaporean companies, 55 Malaysian companies and 50 South African companies. Content analysis of the annual reports of the sampled companies is utilised to measure the extent of disclosure of dimensions of intellectual capital capabilities. The approach to financial data analysis is to adopt alternative econometric models as a way of providing corroborative evidence on the strength and direction of the value relevance of accounting numbers under local GAAPs compared to IFRSs.

Results first show from descriptive statistics that a greater number and amount of adjustments were made to the elements of financial statements of Australian and British firms in the year of first-time adoption than to firms in Hong Kong and Singapore. This result implies that IFRS-adoption was a less costly exercise for firms in Hong Kong and Singapore where the national accounting standards setters had chosen a policy of selectively using IASs as the content for their local standards since the early 1990s and mid-1980s respectively, unlike the focus in the UK and Australia on developing their own standards, albeit harmonized to IFRSs.

Turning to results on modeling the value-relevance of earnings per share (EPS) and book value of net assets per share (BVPS) under GAAP and IFRS accounting regimes, the models all drawn on Ohlson's (1995) 'clean surplus' model of the relationship of these accounting numbers to share price. First, results regarding the incremental value relevance of accounting numbers within the

year of adoption of IFRSs indicate that EPS and BVPS produced under IFRSs are not incrementally more value relevant than those produced under local accounting standards, within all six sampled countries. Second, the relative and incremental explanatory powers of EPS and BVPS indicates that after the adoption of IFRSs, except for Australia and Malaysia, the relative explanatory power of EPS is higher than that of BVPS within the other four sampled countries. Lower explanatory power of EPS compared to BVPS in Australia and Malaysia, within the post-adoption period, could be partially explained by the increase in number of firm-year observations reporting loss within the sample. It appears that the IASB's strategy to develop IFRSs that place greater emphasis on the balance sheet for valuing firms at fair value has not been successful in the post-adoption period to date. Third, panel regression results for the 2002-2008 time series surrounding the year of IFRS-adoption; found that EPS and BVPS produced in the 3-years under IFRSs are more value relevant in most countries compared to EPS and BVPS produced in the 3-years under local GAAPs. Fourth, when adding a control variable to the models for the dichotomization of companies into major industry-types (i.e. traditional and new economy), the results gave no significant effect of this control variable on the share price and, therefore, it could be argued that the greater intellectual capital underlying 'new economy' industries does not weaken the value relevance of reported accounting numbers. However, when the value relevance model is extended to include a variable for corporate intellectual capital disclosure (ICD), the direct effect of ICD on share price is found to be significant in the UK and Hong Kong. This result infers that disclosure of intellectual capital information provides relevant signals to investors and securities analysts in those countries. It is noted that the UK has more well established and profitable listed companies in the new economy industries, providing more ICD, than any of the other countries in the sample. Further, an interaction between ICD and EPS as well as BVPS (within the adoption year) is significantly positive in the UK alone. Finally, regarding the change in value relevance of accounting numbers at the height of the global financial crisis in 2008, the evidence in this study reveals a clear division between countries concerning the significance given by the share market to reported EPS and BVPS. Analysts and investors in the UK, Australia and Hong Kong tended to focus more attention on information beyond EPS and BVPS, such as cash flows and broader industry and economy information, thereby reducing the value relevance given separately to EPS and BVPS. However, in Singapore, Malaysia and South Africa the value relevance of EPS and BVPS increased during 2008, inferring that analysis gave even closer attention to key accounting numbers reported by companies.

The results of this study have provided an increased understanding of the level and direction of changes in value relevance of accounting numbers under the IFRS regime compared to alternative countries' local GAAPs which had varied in degree of harmonization with IFRSs. It then provides insight about the issue of whether off-balance sheet company value contained in intellectual capital, particularly in new economy industries, is weakening the value relevance of accounting numbers.

Findings of this study should be of much interest to corporate management, accounting standard setters, investors and others interested in capital market based accounting research. This greater understanding could be translated into improved decision making for these three main financial statement groups.

DECLARATION

I, Alireza Vafaei, declare that:

1- except where due acknowledgement has been made, the work completed is mine alone;
2- the work has not been submitted previously, in whole or in part, to qualify for any other academic award;
3- the content of the thesis is the result of work which has been carried out since the official date of the approved research program;
4- any editorial work, paid or unpaid, carried out by a third party is acknowledged;
5- and relevant ethics procedures and guidelines have been followed.

Singed in the hard copy

Alireza Vafaei
3 September 2010

CHAPTER 1: INTRODUCTION

1.1 Preamble

There is a large and diverse body of empirical research referred to generally as capital market based accounting research (CMBAR). Beaver (2002) divides CMBAR into five research areas, namely, market efficiency, Feltham-Ohlson modelling, value relevance, analysts' behaviour, and discretionary behaviour. This study focuses on the research area of value relevance, which investigates the relationship between a security price-based dependent variable and a set of accounting variables. This area of capital markets-based valuation research relating to changes in accounting policies underlying financial accounting numbers has become a substantial body of literature, especially since the advent of globalisation of international financial markets in European and Asia-Pacific countries leading to an increased need for worldwide comparable accounting standards. There have been various studies that measure the quality of reported earnings and equity numbers in terms of their relationship with a security price-based variable, using one or more econometric models of 'value-relevance' (e.g., Niskanen, Kinnunen and Kasanen, 2000; Holthausen and Watts, 2001; Barth, Beaver & Landsman, 2001; Eccher and Healey, 2003; Bartove, Goldberg and Kim, 2005).

Within this body of research various studies compare the value relevance of accounting information produced under local GAAPs to that of IASs/IFRSs within the pre-or post-IFRSs adoption periods. For instance, within the pre-adoption years, various single-country studies compare the value relevance of accounting numbers produced under local GAAPs to those of IASs (e.g. Auer, 1996 in Swiss; Niskanen, *et al.*, 2000 in Finland; Eccher and Healey, 2003 in China; Bartove et *al.*, 2005 in Germany). Other studies investigate the effect of adoption of IFRSs on the value relevance of accounting information within the post-IFRSs adoption period (e.g. Callao, Jarne and La´ınez ,2007 in Spain; Gjerde, Knivsflå and Sættem, 2008 in Norway; Horton and Serafeim, 2009 in UK; Iatridis and Rouvolis, 2010 in Greece; Paananen and Henghsiu, 2009 in Germany). Only a few studies investigate the influence of adoption of IASs/IFRSs on the value relevance of accounting numbers on a cross country basis (e.g. Barth, Landman and Lang, 2008; Morais and Curto, 2009; Taylor, 2009). Among the studies carried out on a cross country basis, Barth *et al*. (2008)

investigate the value relevance of accounting information over a period of 9 years, from 1994 to 2003, Morais and Curto (2009) investigate the value relevance between 2000 and 2005 and finally Taylor (2009) investigates it in a single year study (i.e. the year of adoption of IFRSs). As a result, up to this date, there is no other cross-country study which comprehensively compares the value relevance of accounting numbers produced under local GAAPs within the pre-IFRSs period to those numbers produced under IFRSs within the post-IFRSs period. Furthermore, except to the study carried out by Taylor (2009), there is no other study which investigates the effect of adoption of IFRSs in a set of countries where the accounting rules and practices in those countries have been historically built from a similar background of institutional and external influences.

Accordingly, the first purpose of this study is to use several alternative econometric models to provide a comprehensive set of findings as to the strength and direction of the value relevance of accounting numbers under local GAAPs compared to IFRSs in a set of countries with British-originated accounting and corporate legal systems and institutions. The value relevance of accounting information is evaluated over a period of seven years covering before, during and after adoption of IFRSs in six Commonwealth Nations or former British Commonwealth countries with different degrees of harmonization of their local accounting standards leading up to the adoption of IFRSs.

A second purpose of this study is to consider the impact of corporate intellectual capital, which is largely outside the financial accounting system, on models of value relevance of earnings and equity numbers. This will first involve an investigation of the effect of adoption of IFRSs on the value relevance of accounting numbers when comparing intangible intensive (or new economy) industries and traditional sectors. An important aspect of value relevance studies is the argument that financial accounting information is of limited value to investors when valuing technology-based companies that invest highly in intangibles. (e.g. Lev & Sougiannis, 1996; Amir and Lev, 1996; Lev and Zarowin, 1999; Aboody and Lev, 1998; Ahmed and Falk, 2006). A second way this study will investigate the impact of intellectual capital on the modelling of the value relevance of accounting numbers is to compute an intellectual capital disclosure (ICD) index which can be added into a model of incremental changes in earnings and equity in the year of adoption of IFRSs. A number of studies argue that disclosure of information about aspects of intellectual capital will have value relevance because it reduces the information asymmetry contained in accounting numbers that do not recognize non-purchased intellectual capital (e.g. Cumby and Conrod, 2001;

Holland, 2003; Bukh, 2003; Bukh, Nielson, Gormsen and Mouritsen, 2005; Wang and Chang, 2005). No prior study has sought to determine the value relevance of intellectual capital disclosures (ICD) by using an established value relevance model.

1.2 Objectives of the study and their significance

The specific objectives of this study, and their significance, are given below:

1. To describe the comparative effects of accounting policy change created by first-time adoption of IFRSs in various elements in the financial statements of listed companies in a set of Commonwealth or former British colony countries.

   This set of countries is chosen because comparisons can be made between countries with similar British-based accounting heritage but different recent histories of accounting standards harmonisation leading to adoption of IFRSs in 2005. Hence, a descriptive comparison of the extent of adjustments from GAAP to IFRS for specific financial statement items will draw out the effects of different countries' harmonization histories on nature and extent of change in accounting numbers caused first-time adoption of IFRSs. The chosen countries are the United Kingdom, Australia, South Africa, Hong Kong, Singapore and Malaysia. Each country's GAAPs and corporate laws originated from British-originated principles-based financial reporting standards and common law systems. But each of the chosen countries has evolved variations in their financial reporting regulation. Prior to adoption of IFRSs in 2005, the approach to accounting standards setting in Singapore, Hong Kong, Malaysia and South Africa has been to selectively use IASs with some modifications as their national accounting standards. In the UK and Australia the approach leading to adoption of IFRSs was to develop their own set of accounting standards and, in the process, justify the harmonization of these standards with IASs.

2. To compare, for this set of countries, the extent of incremental value-relevance of accounting numbers (i.e. earnings and book value of net assets) produced under different financial reporting regimes, namely, local GAAPs compared to IFRSs.

   This comparative analysis will involve the modelling of value-relevance of earnings and book value of net assets for the GAAP regime during the 3 years pre-IFRS compared to the

IFRS regime during the 3-years post-IFRS adoption. Additionally, the analysis will involve the modelling of the differential between GAAP and IFRS earnings and book value of net assets in the year of first-time adoption of IFRSs within each of the sampled countries. The significance of this analysis of incremental value relevance is to provide cross-country evidence as to whether the claims that IFRSs would provide higher quality corporate financial information to investors than local GAAPs did, in fact, eventuate. The extent of benefits achieved through incremental value relevance from adoption of IFRSs was expected to differ for countries that were previously using IASs as the foundation for their local GAAPs (i.e., Singapore, Hong Kong, Malaysia and South Africa) compared to countries that developed their own standards with harmonisation features as the foundation for their local GAAPs (i.e., the UK and Australia).

3. To determine the change in relative explanatory power to investors in the share market of reported earnings and book value of net assets under different accounting regimes. Alternative econometric models will be used to determine whether the explanatory power of earnings is stronger or weaker than the explanatory power of book value of net assets in the GAAP years compared to the IFRS years. The significance of this analysis is to provide evidence of any impact in share markets of the IASB's strategy to develop IFRSs that place greater emphasis on the balance sheet for valuing a firm. IASB has a stated objective of moving accounting recognition and measurement more towards the balance sheet through reducing of off-balance sheet transactions and arrangements, and increasing 'fair value' measurement of assets.

4. To determine whether the value relevance of earnings and book value of net assets under the IFRS regime is systematically different for companies in non-traditional (new economy) industries compared to companies in traditional (old economy) industries.

   An issue raised in the value-relevance literature, where limited evidence has been provided to date, is the argument that the value relevance of accounting information is deteriorating because companies have an increasing amount of intangible assets. This argument is that, within the 'new economy', companies in knowledge-intensive industries experience rapid changes and have complex intangibles that are problematic to account for, thereby making accounting numbers less useful to investors. Such an issue is important to the IASB in aiming to develop and maintain the usefulness of IFRSs to investors. Hence, up-to-date

findings on the value relevance of IFRS-based earnings and book value of net assets for companies in non-traditional industries compared to traditional sector could be of significance to standards setters.

5. To determine the extent to which items of intellectual capital disclosure (ICD), in the text of company annual reports as mainly voluntary and non-financial disclosures, contribute to the overall value-relevance of accounting numbers provided in corporate reports. The inclusion of an intellectual capital disclosure index in the value relevance model can determine the extent of value-relevance of ICD information *per se*, as well as its moderating effect on information about earnings and equity numbers.

   The modelling of the effects on share price of not only key financial indicators (i.e., earnings and book value of net assets), but also textual information about ICD comprising of human, structural and relational capital of the company, is significant to the accounting profession's interest in moving towards a broad-based business reporting framework (ICAA, 2008).

6. To identify the extent to which reported earnings and book value of net assets under IFRSs become less value relevant to equity investors when there is a rapid economic downturn.

   The share market during the period 2006 to 2009 was characterized by boom, the global financial crisis and recovery.

1.3 Motivations for the study

This study is motivated in terms of making a contribution to the financial reporting research literature on value relevance and intellectual capital disclosure, as well as providing findings that can be informative to accounting standards setters.

First, results of prior studies on the value relevance of reported earnings and equity under different accounting regimes in different countries and using different econometric models have not been consistent, and are sometimes contradictory (e.g. Ahmed and Goodwin, 2006; Callao et *al.*, 2007; Iatridis and Rouvolis, 2010). There are gaps in this literature which may contribute to the inconsistent findings. One gap is that several studies have investigated the incremental value

relevance of IFRSs compared to GAAPs, but have not related their findings to the extent to which different countries have harmonized their GAAPs leading up to their first-time adoption of IFRSs. Another gap is that prior studies have not taken into consideration the different concentrations of industries between 'new economy' industries that are knowledge intensive and have accumulated high levels of intellectual capital not captured in financial statement numbers, and traditional industries that rely less of internally generated intellectual capital. A further gap in the literature is that alternative value relevance models have not been run on the same data or over significant periods of years before and after the year of first-time adoption of IFRSs or during a period of economic turbulence. This study seeks to provide findings that fill such gaps in the value relevance literature.

Second findings can be informative to accounting standards setters in considering the future directions for their conceptual framework and IFRSs. Evidence in this study of inconsistencies in the incremental and relative value relevance of accounting numbers under GAAPs and IFRSs across countries could point to the need to allow national standards setters in individual countries more degrees of flexibility in deviating from global reporting standards, provided the deviation can be proven to render greater value relevance to investors in that country's share market. Further, implications for standards setters can arise from evidence that the value relevance of accounting numbers is affected when companies operate in 'new economy' industries, or is supplemented when companies voluntarily disclosing more non-financial information about their intellectual capital. Such evidence points to the need for standards setters, especially the IASB, to broaden their framework beyond financial reporting into broader intellectual capital reporting.

1.4 Scope of the research

The scope of this research study is delimited in terms of the selection of the sampled countries, the choice of models, the methods of measurement of variables, and the sources of secondary data obtained.

With regards to the sampled countries, this study solely concentrates on a sample of countries with British accounting heritage. Consequently, findings of this study may not be generalised to and used in countries with continental accounting backgrounds. Concerning the measurement of value relevance of accounting information, it is measured by utilising an established price model. A return model could have been used as an alternative to the price model. Additionally, earnings per share and book value of net assets per share are the primary independent variables modelled in this study. Net cash flow numbers, which have been included as an independent variable in prior value relevance models, are not used in this study. Cash flow numbers are not included in this study because they are normally not affected by a change in accounting regime. Regarding, measurement of ICD, it should be noted that alternative methods of classification and measurement of such disclosures have previously been applied. This study is selective in the ICD index measurement schemes it chooses to adopt. It only computes a quantity measure for ICD, not a quality measure. Finally, with regards to the source of secondary data used in this study, while objective financial data; it is drawn mainly from the OSIRIS database. Any errors in this secondary data may have gone undetected. Only annual financial data is collected in this study. Evidence is not provided in this study on the value relevance of interim half-yearly or quarterly financial numbers. The inclusion of interim accounting numbers may give a clearer picture of how value relevance changed during the period of the global financial crisis.

1.5 Thesis organisation

This thesis consists of seven chapters. The remaining chapters are organised as follows. Chapter 2, background to the study, contains a review of the concept, importance and history of harmonisation and standardisation of accounting standards, followed by a review of the International Accounting Standards Committee (IASC) and its successor the International Accounting Standards Board (IASB) and their work in developing and achieving the take-up of IASs/IFRSs. This chapter then proceeds to outline the regulatory framework, accounting standard setting and harmonisation of accounting standards within each of the sampled countries. Chapter 3 provides a review of the focal academic literature. This chapter starts with a discussion in relation to the origins of capital market based accounting research (CMBAR) as well as value relevance studies. It then follows by a discussion of factors influencing value relevance of accounting information (e.g. negative earnings and investment in intangibles). Various methods are presented through which value relevance of accounting information is measured Then various studies which investigate the value relevance of accounting information in various countries within the pre-and post-IFRSs adoption periods are compared. Finally, chapter 3 reviews the focal literature regarding disclosure of intellectual capital disclosure (ICD) and its value relevance. Chapter 4, research methodology and variable measurement, starts with a discussion in relation to the nature of data used in this study. Thereafter, the sample selection procedure as well as the models used to measure value relevance of accounting information in this study is explained. Finally, chapter 4 describes the model used to measure intellectual capital information in this study. Chapters 5 and 6 provide a comprehensive analysis and discussion of the empirical results of the study. Chapter 5 provides the findings and discussion relating the value relevance of earnings and book value of net assets in response to objectives 1, 2, 3 and 6 (given above). Chapter 6 provides findings and discussion relating to ICD in answer to objectives 4 and 5 (given above). The final chapter, chapter 7, provides a summary of the study and draws conclusion about its major findings. It then considers the implications for value relevance modelling and financial reporting practice, and lists limitations of the study and suggestions for further research.

CHAPTER 2: BACKGROUND TO RESEARCH

2.1 Introduction

This chapter begins with a review of debates and developments relating to accounting standards during the international harmonization movement. This movement provides the background context to the emergence of the restructured IASB and its 'core standards' which became the vehicle for the IFRS adoption era. The chapter then proceeds to review the accounting standards setting scene leading up to IFRS adoption in each of the respective countries investigated in this study – United Kingdom, Australia, Hong Kong and Singapore, Malaysia and South Africa. Because this study will directly compare these six countries in terms of the value relevance of their accounting numbers reported before, during and after IFRS-adoption, it is important when interpreting these cross-country comparative results to recognize the different harmonization histories of these six countries.

2.2 Concept and history of harmonization

The terms "harmonization" and "standardization" are used rather loosely in accounting practices and literature. However, as stated by Tay and Parker (1990) there are distinct differences between the two. Harmonization can be defined as a process by which accounting moves away from diversity of financial accounting and reporting practice. In other words, it is a state of harmony where all participants in the process cluster around one of the available methods of accounting, or around a limited number of very closely related methods (Tay and Parker, 1990). Saudagaran and Meek (1997, p. 136), also define harmonization as *"a process by which differences in financial reporting practices among countries are reduced with a view to making financial statements more comparable and decision-useful across countries."*

'Standardization' can be defined as the process by which participants agree to follow the same or very similar accounting practices. It includes the clustering associated with harmony, and the reduction in the number of available methods (Tay & Parker, 1990). The end result of this is a state

of ‘uniformity’ from all participants. To achieve a state of ‘uniformity’ within a defined period of time, however, it requires the intervention of a regulator or a mediator.

In the decade of the 1960s serious attempts made to harmonize international accounting practices. Mueller (1965), for instance, provides four reasons why international accounting standards are important. As stated by Mueller (1965), these reasons are: (1) increasing international business and international investments, (2) emergence of international corporations and the need for comparison of accounting information from multinational corporations across countries, (3) furthering accounting research to international accounting research and (4) converting the notion of accounting discipline from a nationalistic one to an international discipline.

The harmonization of accounting standards faced criticisms too. In particular, as stated by Choi and Mueller (1992), as early as 1971, the academic Irving Fantl condemned international standards setting as a solution too simple for a problem too complex and argued that there is an inherent flexibility to accounting as a social science that yields adaptability as a chief value. He identified three barriers to international accounting standardization, which are: - (1) differences in national backgrounds and traditions, (2) differences in the needs of various economic environments and (3) the challenge of standardization to national sovereignty (Choi and Mueller, 1992).

On the other hand, various other studies highlight the importance of harmonization of accounting standards. Table 2.1 provides an annotated review of three studies that advanced arguments about the importance of harmonization of accounting standards.

Table 2.1: Summary of former studies on importance of harmonization of accounting standards

Author(s)	Main finding/arguments
Choi and Levich (1991)	Choi and Levich (1991), investigate the behavioural effects of international accounting diversity among market participants (i.e. institutional investors, corporate issuers, investment underwriters, market regulators) in a sample of 52 corporations across five countries including USA, UK, Germany, Switzerland and Japan. Choi and Levich define accounting diversity as "national differences that exist in accounting measurement, financial disclosure and auditing standards and practices (Choi and Levich, 1991, p.2)". The results of this survey study indicate that accounting differences are important and affect the capital market participants regardless of nationality, size, experience, extent of international activity and the organisational structure. All investors in their sample who attempt to reconcile foreign accounting information as a coping mechanism state that accounting diversity affects their investment decisions. In other words, results indicate that reconciliation is not adequate to eliminate the problem of accounting diversity, Finally, Choi and Levich (1991), conclude that international accounting diversity could be considered as a barrier that influences the pricing of shares and the structure of international portfolios.
Saudagaran and Meek (1997)	Saudagaran and Meek state that differences that exist in accounting practices among countries prevent from efficient flow and usage of capital. It is stated that harmonization improves the comparability of financial statements and therefore makes them easy to use among various countries. Additionally, it is stated that international corporations could also gain various benefits from harmonization e.g. reduction in cost of preparing consolidated financial statements, easier monitoring of subsidiaries, and more relevant and comparable managerial performance reports.
Roberts, Weetman and Gordon (2008)	Roberts et al., state that multinational corporations are the ones which are mostly affected by international accounting differences. If a company is listed on a foreign stock exchange it will have to meet the listing requirements of that stock exchange. It means that even-though, the company is not required to report a full set of financial reports, it needs to report a reconciliation statement to demonstrate the differences between reported net profit and net assets under two different set of accounting systems. Therefore, these multiple reporting requirements could result in additional costs such as costs incurred for additional data collection or auditing. Accordingly, it is argued that the harmonization of accounting standards could benefit international companies in various ways such as reduction of cost of preparation as well as auditing of financial statements, improvement in comparability among companies operating within the same industry both nationally and internationally, improvement in communication with various international users of the financial statements such as investors. From an investor point of view, also, it is argued that harmonization of accounting standards could be beneficial in various ways such as decreasing the cost of acquiring information by reducing the need to understand various accounting systems and reducing the need to adjust the disclosed information to make it more comparable, reducing the probability of making wrong decisions by reducing the risk of misinterpreting different accounting systems.

In summary, the central arguments in Table 2.1 are that the growth of international capital markets and the increase in the number and size of international companies have increased the support and the pressure for harmonization of accounting standards. The central body responsible for harmonization of accounting standards was International Accounting Standard Committee (IASC). Now its successor, i.e. International Accounting Standard Board (IASB), has gone beyond the objective of harmonization to an objective of achieving international adoption. The next section provides an outline of the development of IASC and its successor, IASB.

2.2.1 International Accounting Standard Committee (IASC)

IASC was established in 1973 by the accounting bodies of nine countries i.e. Australia, Canada, France, Japan, Mexico, the Netherlands, the United Kingdom and Ireland (jointly), Germany and the United States (Nobes and Parker, 2008). The objectives of IASC at that time were to formulate and publish accounting standards for use in the presentation of financial statements and to promote their worldwide acceptance, and, to work for the improvement and harmonization of accounting standards and their implementation to corporate financial reporting (Nobes and Parker, 2008).

As of September 1991 the IASC had issued 31 standards and comprised of representatives of 106 professional accounting bodies from 79 countries (Fleming, 1991). Therefore, in order to reach agreement among members, many of the standards issued by IASC were enormously flexible and general (Sutton, 1993). For instance, *"IAS11 Accounting for Construction Contracts"* issued in March 1979, allowed either the percentage-of-completion method or the completed-contract method to be used. Another example would be "*IAS12 Accounting for Income tax"* released in July 1979 which allowed either the deferral or the liability method of tax-effect accounting to be used (Henderson, Peirson and Herbohn, 2008). Additionally, a large number of standards that were already in use in the major member nations – e.g. US and the UK – were included as alternative standards (Sutton, 1993). As a result, national standards could be in almost conformity with an IAS without any actual change in practice or any real improvement in financial statements (Sutton, 1993).

Additionally, another problem faced by IASC was the enforcement of its accounting standards. In fact, IASC had very limited financial resources and staff members to perform its tasks, and in most countries, its constituent professional groups were not standard-setters (Sutton, 1993). As a result, IASC had to rely on its own member bodies to ensure compliance with its standards. However, this was not an efficient mechanism as member bodies only enforced compliance with their national standards. In such conditions, international comparability of accounting practice based on IASs was not feasible (Henderson et *al*., 2008)

However, in the late 1980s, some progress was made in order to improve this situation. In fact, International Organisation of Securities Commission (IOSCO), which is an association of capital market regulators, convinced the IASC to improve its existing standards to decrease the number of options available so that IASs would be acceptable for financial reporting by companies with cross-border securities offerings. If IOSCO was convinced with the amended standards, then it would request its members to accept those standards as replacement to national accounting standards for listing and regulatory purposes. Accordingly, in 1987 the IASC decided to revise its formerly issued accounting standards to eliminate many of the available choices (Henderson, et *al.*, 2008). To do so, in January 1989 the IASC issued Exposure Draft 32 (ED 32), Comparability of financial statements, which was the first stage of the project to eliminate the choices available in its accounting standards (Henderson et *al.*, 2008). ED 32 considered amending 13 standards, eliminating 23 alternative accounting treatments, and specifying 12 benchmark methods[1] where choices remained in IASs (Sutton, 1993). This has since been renamed the improvement project. By eliminating the alternatives some domestic standards, including those in US, were no longer compatible with all IASs (Sutton, 1993). After considering the comments received on ED 32, the IASC issued a statement of Intent on the "Comparability of Financial Statement" in June 1990. The IASC then issued exposure drafts for the revised accounting standards. The revised standards were approved in late 1993 for application from 1 January 1995. Despite the remaining choices in international accounting standards, the improvement project and following exposure drafts resulted in more prescriptive and less flexible accounting standards (Henderson et *al.*, 2008).

[1] When an international standard permits two accounting treatments for the same transaction or event, one is chosen as the benchmark or preferred accounting treatment while the other is allowed as alternative treatment.

Harmonisation moved a step further in 1995 when IOSCO accepted the IASC's work program for the establishment of a core set of international accounting standards. In May 2000, IOSCO recommended its members allow corporations to use international accounting standards for international listing on stock exchanges. As a result national securities commissions around the world allowed reporting entities to use IASs for cross-border listing rather than preparing financial reports consistent with national accounting standards. For instance, foreign companies willing to list on New York Stock Exchange were able to do so by meeting the requirements of IASs rather than US accounting standards (Henderson et *al.*, 2008). Additionally, the European Commission proposed that IASs become compulsory for the consolidated financial statements of all European listed companies by 2005 (Nobes and Parker, 2008).

Finally in March 2001 the IASC was replaced by International Accounting Standard Board (Henderson et *al.*, 2008). The next section provides an outline of the history and the structure of IASB as the international accounting standard setter.

2.2.2 International Accounting Standard Board (IASB)

In 1997 the IASC board made a number of changes to its structure. A number of reasons were behind the changes made such as enabling a larger group of countries and corporations to be members of the board and to increase the level of partnership with national standard-setters to expedite the global harmonization of accounting standards (Nobes and Parker, 2008).

Finally in December 1999, the board voted unanimously to cease its operations, and in May 2000 the member bodies confirmed this. The new board started its activities in April 2001. It is overseen by the International Accounting Standard Committee Foundation (IASCF) (Nobes and Parker, 2008). The objectives of the IASCF, among other things, are to develop a single set of high quality and enforceable international accounting standards, in the public interest, that necessitates transparent and comparable information in financial statements to help users of the financial reports to make economic decisions (Henderson et *al.*, 2008).

The IASB consists of twelve full time and two part time members. The members became employed by the trustees of the IASCF (Henderson et *al.*, 2008). The IASB adopted all the

old IASs and then commenced its activities by focusing on three major strategic directions: (1) establishing new improvement projects, (2) continuing former projects and (3) initiating major reforms. The new improvement projects resulted in amendment of 14 standards and eliminating a number of options (e.g. LIFO in IAS 2). Major reforms deal with various issues such as revenue recognition and lease accounting (Nobes and Parker, 2008).

Additionally, in 2002, IASB established an International Financial Reporting Interpretations Committee (IFRIC) which consists of twelve members appointed by the trustees of the IASCF for thee-year terms (Roberts, Weetman and Gordon, 2008). The responsibility of the IFRIC, among other things, is to interpret the application of IASs and provide advice on financial reporting issues not specifically included in IASs in the context of IASB's framework (Roberts et *al.*, 2008). IFRIC's interpretations need to be approved by IASB before they can be issued (Henderson et *al.*, 2008). Therefore, the main responsibilities of IASB are to develop and issue International Financial Reporting Standards (IFRSs)[2] and approve interpretations developed by IFRIC (Henderson et *al.*, 2008).

With regards to development of IFRSs, the IASB usually establishes an advisory panel which provides advice on technical issues. The IASB, thereafter, may publish a discussion paper for public comments. The discussion paper generally contains a thorough overview of the issue, possible approaches to tackling it, the initial views of the IASB and an invitation to comment. After that, IASB would consider the comments received from the public and then issue an exposure draft of the projected accounting standard for public comment. The exposure draft is the main way through which IASB gains feedback on a planned accounting standard. Subsequent to the revision of the comments received, the IASB will either issue a second exposure draft or, more generally, issue an International Financial Reporting Standard (IFRS) (Henderson et *al.*, 2008).

Additionally, development of an IFRS depends largely on the support of the national accounting standard setters who will subsequently adopt it. The IASB has developed a partnership with the national accounting standard setters. In fact, when the IASB initiates a project, the national standard setters add it to their agenda so that they can actively take part

[2] Following establishment of IASB the accounting standards issued are called International Financial Reporting Standards (IFRSs).

in achieving an international agreement on the planned accounting standard (Henderson et *al.*, 2008).

The next section of this chapter provides an overview with regards to the history of accounting practice within each sampled country up to the adoption of IFRSs.

2.3 History of accounting practices within the sampled countries

2.3.1 Hong Kong

Hong Kong is comprised of the "Island of Hong Kong", the "Kowloon peninsula" and the "New Territories" of mainland of China. Hong Kong Island became a colony of the British Empire in 1842. Thereafter, British Empire took possession of Kowloon in 1860, and finally the New Territories in 1898 (Baydoun, Nishimura and Willet, 1997). Therefore, the type of government established originated from the British colonial model of a Governor who was the symbol of the English Crown and advisory Executive and Legislative councils of 15 and 60 members respectively. Consequently, as a British colony, the development of accounting practice in Hong Kong is significantly influenced by British traditions (Baydoun et *al.*, 1997).

2.3.1.1 Regulatory framework in Hong Kong

With regards to regulatory framework, since 1973, the regulation of accounting in Hong Kong is administered through three different spheres including the "Legal System", "the Hong Kong Stock Exchange" and the "Hong Kong Institute of Certified Public Accountants (HKICPA)" (Baydoun et *al.*, 1997).

Through the stock exchange, regulation is derived from the listing rules. Up to 1986 there were four stock exchanges in Hong Kong and conformity with the listing rules of the exchanges were inadequate. However, after 1986 these four existing stock exchanges were replaced by one unified government-supported stock exchange (Baydoun et *al.*, 1997). As of July 2008, a company planning to be listed on Hong Kong Stock Exchange (HKEX) requires to have a trading record of not less than three financial years. Additionally, to be listed, the company must either have earned a profit attributable to shareholders of at least HK$50

million for three financial years prior to listing or have a market capitalization of at least HK$200 million at the time of listing. Additionally, according to the listing rules a company listed on HKEX requires to publicly release its annual reports not later than 4 months and its half-yearly reports not later than 3 months after the date at which the financial period ends up (HKEX, 2008).

Through the HKICPA, regulation relies upon accounting, auditing and ethical standards. The HKICPA is evolved from the Hong Kong Society of Accountants (HKSA) which was founded in 1973 (HKICPA, 2010). It is the only organisation which is directly concerned with the accountancy profession in Hong Kong and plays a key role among the three channels of accounting regulation in Hong Kong (Baydoun et *al.*, 1997). The HKICPA performs as the accounting profession's disciplinary corporate body. It performs as the advocate of its members in discussion with the Government, carries out educational functions by arranging postgraduate CPA programs and represents the accountancy profession to the general public. The HKICPA is governed by its council, and its members are recognised as "certified public accountants" (Baydoun et *al.*, 1997).

2.3.1.2 Accounting standard setting in Hong Kong

With regards to standard setting, Accounting Standard Committee (ASC) is in charge of the whole accounting standard setting process in Hong Kong. The ASC is one of the first committees of the HKICPA which was established in 1973. The ASC consists of practicing accountants, accountants in industry as well as academics. This makes the process of accounting standard setting in Hong Kong a consultative one (Baydoun et *al.*, 1997). Between 1975 and 1992 the HKICPA issued 15 accounting standards and seven accounting guidelines. The accounting standards were called the Hong Kong Statements of Standard Accounting Practice or HKSSAP (Baydoun et *al.*, 1997). Those 15 HKSSAPs as well as their effective dates are indicated in Table 2.2.

Table 2.2: List of Hong Kong HKSSAPs and their effective dates (source: Baydoun et *al.*, 1997)

Titles	Effective date
SSAP 1 Disclosure of accounting policies	1 July 1975
SSAP 2 Extraordinary items and prior year adjustments	1 January 1977
SSAP 3 Stocks and work in progress	1 January 1977
SSAP 4 superseded by SSAP15	1 January 1978
SSAP 5 Earnings per share	1 January 1978
SSAP 6 Depreciation accounting	1 April 1978
SSAP 7 Group accounts	1 January 1982
SSAP 8 Accounting for contingencies	1 January 1983
SSAP 9 Accounting for post balance sheet events	1 January 1983
SSAP 10 Accounting for the results of associated companies	1 January 1985
SSAP 11 Foreign currency translation	1 January 1985
SSAP 12 Accounting for deferred tax	1 January 1988
SSAP 13 Accounting for investment properties	1 January 1989
SSAP 14 Accounting for leases and hire purchase contract	1 January 1988
SSAP 15 Cash flow statements	31 March 1992

2.3.1.3 Harmonisation of accounting standards in Hong Kong

Hong Kong has been an associate member of IASC since 1975. Since 1983 Hong Kong Society of Accountants started to "HongKongize" International Accounting Standards (IASs) (Camfferman and Zeff, 2007). In other words, SSAPs were largely in harmony with IASs, but with fewer alternatives available in Hong Kong Accounting Standards (Camfferman and Zeff, 2007). Then, since 1993 (i.e. since the initiation of the improvement project by IASC) HKSA laid down the policy to model Hong Kong accounting standards in accordance with IASs (Hong Kong Society of Accountants, 2002). This policy was further reinforced in 1999 by establishment of a harmonization program that resulted in Hong Kong accounting standards becoming very close to fully aligned with the full set of IASs. Table 2.3 provides a comparison between a list of IASs and their corresponding Hong Kong accounting standards as of March 2002.

Table 2.3: HKSSAPs vs. IASs (Source: Hong Kong Society of Accountants, 2002)

IAS No.	Name of statement	SSAP No.
IAS 1	Presentation of financial statement	SSAP 1
IAS 2	Inventories	SSAP 2
IAS 7	Cash flow statements	SSAP 15
IAS 8	Net profit or loss for the period, fundamental errors and changes in accounting policies	SSAP 2
IAS 9	Research and development costs (superseded by IAS 38)	SSAP 16
IAS 10	Events after the balance sheet date	SSAP 9
IAS 11	Construction contracts	SSAP 23
IAS 12	Income taxes	Exposure draft
IAS 13	Withdrawn	N/A
IAS 14	Segment reporting	SSAP 26
IAS 15	Information reflecting the effects of changing prices	On hold
IAS 16	Property, plant and equipment	SSAP 17
IAS 17	Leases	SSAP 14
IAS 18	Revenue	SSAP 18
IAS 19	Employee benefits	SSAP 34
IAS 20	Accounting for government grants and disclosure of government assistance	SSAP 35
IAS 21	The effects of changes in foreign exchange rates	On hold
IAS 22	Business combination	SSAP 30
IAS 23	Borrowing costs	SSAP 19
IAS 24	Related party disclosures	SSAP 20
IAS 25	Accounting for investments (superseded by IAS 39 and IAS 40)	SSAP 13 and 24
IAS 26	Accounting and reporting by retirement benefit plans	2.302 financial statements of retirement schemes
IAS 27	Consolidated financial statements and accounting for investment subsidiaries	SSAP 32
IAS 28	Investment in associates	SSAP 10
IAS 29	Financial reporting hyper-inflationary economics	On hold
IAS 30	Disclosure in the financial statements of banks and similar financial institutions	Hong Kong Monetary Authority Best Practice Guide
IAS 31	Financial reporting of interests in joint ventures	SSAP 21
IAS 32	Financial instruments: disclosure and presentation	Exposure draft
IAS 33	Earnings per share	SSAP 5
IAS 34	Interim financial income	SSAP 25
IAS 35	Discontinuing operations	SSAP 33
IAS 36	Impairment of assets	SSAP 31
IAS 37	Provisions, contingent liabilities and contingent assets	SSAP 28
IAS 38	Intangible assets	SSAP 29
IAS 39	Financial instruments: recognition and measurement	Exposure draft
IAS 40	Investment property	In discussion
IAS 41	Agriculture	Exposure draft

As can be seen in Table 2.3, nearly all Hong Kong accounting standards have been in full conformity with IASs as per March 2002. Finally, Hong Kong Financial Reporting Standards (HKFRS) were fully converged with IFRSs at first of January 2005 (HKICPA, 2006). The convergence evolved from a decision by the Council of the Hong Kong Institute of Certified Public Accountants in 2001 (HKICPA, 2006).

2.3.2 Singapore

Singapore is composed of one main island and about 50 small islets. Singapore achieved internal independence from Britain in 1959. Therefore, accounting in Singapore, since it early development, was heavily influenced by progress in Britain. The first Chamber of Commerce was also established in 1837 by Chinese merchants. However, Singapore Society of Accountants was established in 1963 and its establishment was possibly an indication of the weakening of British impact on Singapore accounting practice.

2.3.2.1 Regulatory framework in Singapore

The accounting practice of the corporations operating in Singapore, as stated by Baydoun et *al.* (1997), is regulated through four various channels including the "Companies Act", the "Institute of Certified Public Accountants of Singapore (ICPAS)", "Singapore Stock Exchange" and finally, as per ACRA (2009), the "Accounting and Corporate Regulatory Authority (ACRA)".

The primary control over financial reporting in Singapore is placed under the Companies Act. The central part of the companies' law in Singapore is drawn from the UK Companies Act. In fact, until 1990 the Companies Act in Singapore was heavily influenced by Indian law which was in turn derived from the British Joint Stock Companies Act 1844 and 1855 (Baydoun et *al.*, 1997). Today the 1990 Companies Act of Singapore requires every corporation to maintain its accounts and other records and also provide a true and fair view of the financial position and performance of the company. The Ninth Schedule of the Act sets out the detail of the financial reporting requirements which relates entirely to disclosure rather than measurement. In fact, the major requirements of the Ninth Schedule relates to adequate

disclosure of various elements of income statement and balance sheet as well as disclosure of directors benefits and interest in the company (Baydoun et *al.*, 1997). Recently a number of amendments have been made to the Singapore Companies Act. The latest one is the Companies Amendment Act 2005 which came into effect on 30 June 2006. The amendments made to take on various changes suggested in the final report of the Company Legislation and Regulatory Framework Committee that was published in 2002 (Janus Corporate Solutions, 2008).

With regards to the Institute of Certified Public Accountants of Singapore (ICPAS), it was founded in 1987 and it is the national accountancy body of Singapore that develops and enhances the reliability, position and interests of the accounting profession (ICPAS, 2009). Prior to 1987 ICPAS was known as the Singapore Society of Accountants founded in 1963 (Baydoun et *al.*, 1997). ICPAS is also responsible for training and professional development of its members through accredited courses organised by the Singapore Accountancy Academy (SAA) (ICPAS, 2009). The SAA was founded in 1985 and its goal is to service and promote the needs of the accountancy profession in Singapore. Currently there are more than 5000 students studying full or part time at the SAA (ICPAS, 2009).

The Accounting and Corporate Regulatory Authority of Singapore (ACRA) is the national regulator of business corporations and public accountants in Singapore. It was established in April 2004 following the merger of the Registry of Companies and Businesses (RCB) and the Public Accounting Board (PAB) of Singapore (ACRA, 2009). Prior to the establishment of ACRA, the PAB was responsible to control the financial reporting practices of corporations operating in Singapore. It was specifically responsible to supervise the registration of practising accountants as well as controlling their professional conducts and ethics in Singapore (Baydoun et *al.*, 1997). Today the ACRA carries out various activities including administration of the "Accounting and Corporate Regulatory Authority Act", the "Accountants Act", the "Business Registration Act", the "Companies Act" and finally the "Partnership Act" of Singapore. ACRA also tries to raise the public awareness regarding new business structures, compliance regulations, corporate governance practice and other issues related to development of business entities and the accountancy profession in Singapore (ACRA, 2009).

The final route through which accounting practices of corporations operating in Singapore is regulated is the Stock Exchange of Singapore (SES). The SES is responsible for the supervision of trading in the market and the performance of its members. The SES requires listed companies to submit interim reports to the Exchange within three months after the end of the first six months of the financial year. In addition, publicly listed companies are required to submit annual financial reports not later than three months after the end of the financial year (Baydoun et *al.*, 1997). To be listed, a company must either have earned cumulative consolidated before tax profit of at least SGD$7.5 million for three years priors to listing (with a before tax profit of at least SGD$1 million in each of those 3 years), or have market capitalization of at least SGD$80 million at the time of listing (KPMG, 2005).

2.3.2.2 Accounting standard setting and harmonisation in Singapore

Initially, the accounting standards in Singapore were issued by the accounting standards Committee of the ICPAS (Baydoun et *al.*, 1997). The process of standard setting in Singapore was quite simple. In fact, since 1977 at the time when Singapore joined the IASC as an associate member, the ICPAS committee commenced to rely heavily on IASC for issuing Singaporean standards (Camfferman and Zeff, 2007). Therefore, the ICPAS committee did not write standards but adjusted IASs to be used nationally where it was required (Baydoun et *al.*, 1997). By 1 January 1987, twenty two of the first twenty four IASC standards were adjusted and approved as national standards in Singapore (Camfferman and Zeff, 2007). According to the IASC's 1988 survey of the use and application of International Accounting Standards (IASs), Singapore reported that it had used twenty four of the twenty five existing IASC standards as the basis for its national requirements (Camfferman and Zeff, 2007). Additionally, as stated by Carlson (1997), as per November 1997 out of 32 standards issued by IASC, 16 standards had been endorsed by Singapore without any adjustments. A list of these standards is displayed in Table 2.4.

Table 2.4: IASs standards adopted by Singapore without any modification as per November 1997 (Source: Carlson, 1997)

Singapore Accounting Standards (SAS) No.	IAS No.	IAS title	Effective date
SAS 1	IAS 1	Disclosure in accounting policies	1977
SAS 2	IAS 2	Valuation of inventories	1977
SAS 4	IAS 4	Depreciation accounting	1977
SAS 5	IAS 5	Information to be disclosed in accounts	1982
SAS 7	IAS 7	Statement of changes in financial position	1979
SAS 8	IAS 8	Unusual items and changes in accounting policies	1981
SAS 9	IAS 9	Accounting for research and development	1981
SAS 10	IAS 10	Contingencies and post balance date events	1981
SAS 13	IAS 13	Presentation of assets and liabilities	1983
SAS 15	IAS 17	Accounting for leases	1985
SAS 16	IAS 18	Revenue recognition	1985
SAS 17	IAS 19	Retirement benefits	1985
SAS 19	IAS 23	Capitalisation of borrowing costs	1986
SAS 20	IAS 21	Accounting for changing exchange rates	1986
SAS 23	IAS 14	Reporting financial information by segment	1987
SAS 24	IAS 26	Accounting and reporting by retirement benefits	1988

In 2003, the accounting standards and financial reporting framework in Singapore went through a number changes. The ICPAS was replaced by the Council of Corporate Disclosure and Governance (CCDG) as the accounting standard setter in Singapore. . The CCDG issued a set of Financial Reporting Standards (FRSs) and Interpretations of FRSs (INT FRSs) that were almost identical to the their IASs counterpart, with the exception of the effective date, which was 1 January 2005 in Singapore. However, as far as accounting standards in Singapore were initially closely aligned to IASs, the changes made to the accounting standards were not substantial (Deloitte, 2003).

Finally, following the endorsement of the Accounting Standards Act in 2007, the Accounting Standards Council (ASC) took over the responsibility of accounting standard setting from the CCDG. In addition to prescribing accounting standards for companies, the ASC also prescribes accounting standards for not for profit organisations (ASC, 2010).

2.3.3 Malaysia

Malaysia is located on the southern borders of the South China Sea. It is made up of two main parts i.e. western peninsula Malaysia and the eastern states of Sarawak and Sabah in northern Borneo (Baydoun et *al.*, 1997). Until its independence in 1957, Malaysia was governed under British law for eighty years. Therefore, the impact of British Accounting Standards on Malaysian accounting structure is extremely persistent. Before independence, the Malaysian economy was heavily reliant on agriculture and it was dominated by British companies (Iskandar and Pourjalali, 2000). However, after gaining independence, the Malaysian economy commenced to grow significantly and by 1987 it was performing strongly in manufacturing and construction sectors (Iskandar and Pourjalali, 2000).

Accounting in Malaysia is administered by the Accountants Act 1967, which is controlled by the Ministry of Finance. This Act resulted in establishment of the Malaysian Institute of Accountants (MIA) which is in charge of regulation and development of accounting profession in Malaysia (Baydoun et *al.*, 1997). In addition, in 1958, one year after the independence, the Malaysian Association of Certified Public Accountants (MACPA) was established in accordance to the Companies Ordinance 1940 – 1946 (Iskandar and Pourjalali, 2000). MACPA commenced its operations with 20 members all trained in UK and it continued to be impacted by British accounting practice, as a large number of its members were chartered accountants from the UK and members of the Institute of Chartered Accountants of England and Wales (ICAEW) (Iskandar and Pourjalali, 2000). The Association changed its name in January 2002 to the Malaysian Institute of Certified Public Accountants (MICPA). MICPA has various responsibilities including promoting the theory and practice of the accountancy profession in Malaysia, training skilled members and protecting the professional independence of accountants (MICPA, 2007)

2.3.3.1 Regulatory framework in Malaysia

Accounting practice in Malaysia is regulated via two different channels including the "Companies Act 1965", and "Kuala Lumpur Stock Exchange".

The Companies Act requires companies to prepare annual audited financial reports in accordance with the Ninth Schedule of the Act (Baydoun et *al.*, 1997). In fact all companies incorporated under the Companies Act must disclose financial information in accordance with minimal disclosure requirements suggested in the Ninth Schedule for income statements and balance sheets (Iskandar and Pourjalali, 2000). The Companies Act follows the British model since it expects published financial statements to indicate a "true and fair" view of the financial position and performance of companies (Baydoun et *al.*, 1997).

The Kuala Lumpur Stock Exchange was established in 1960. Initially the trading used to occur in both Kuala Lumpur and Singapore, however, in 1973, the two exchanges were separated. In 1991 the International Financial Corporation (IFC) ranked the KLSE as the third largest emerging stock market with regards to business turnover after Taiwan and South Korea. The KLSE is principally a self-regulated organisation, but its members are appointed by the Ministry of Finance. Companies planning to be listed on KLSE must follow various requirements set out by both the KLSE and the Malaysian Securities Commission (MSC). Before a company could be listed, the KLSE requires the companies to lodge a complete set of annual reports for three years prior to listing (Baydoun et *al.*, 1997). Additionally, the KLSE requires companies to lodge uninterrupted profit after tax of three to five financial years prior to listing with aggregate of at least RM20 million. Companies must have earned profit after tax of at least RM6 million for the most recent full financial year prior to listing. Alternatively, to be listed, a company must have total market capitalization of at least RM500 million at the time of listing (Bursa Malaysia, 2010). After listing companies are required to prepare audited annual financial reports in accordance with the Ninth Schedule of the Companies Act (Baydoun et *al.*, 1997).

2.3.3.2 Accounting standard setting and harmonisation in Malaysia

Due to existence of two accounting bodies, i.e. MICPA and MIA, the process of standard setting in Malaysia has been to some extent complicated. In fact, the level of mutual work and assistance between these two bodies has changed over time. While each body has its own accounting and auditing standards committee, the process of financial accounting standard setting is carried out by the common working technical committee which was established in cooperation between the MICPA and the MIA. The main source of accounting standards in Malaysia has been the IASs (Carlson, 1997). In fact, since 1975 when Malaysia joined IASC as an associate member, standards issued by the IASC reviewed by MIA and MICPA and were adjusted in accordance with local conditions. In addition, the MIA and MICPA issue Malaysian Accounting Standards (MASs) to include issues which are not included within IASs (Baydoun et *al.*, 1997). As per December 1995, the generally accepted accounting standards in Malaysia consisted of 30 IASs adopted by the MIA and MICPA and the six MASs issued by these two bodies (Baydoun et *al.*, 1997). Similar to Singapore, as per November 1997, out of 32 standards had been issued by IASC, 16 had been adopted by Malaysia without any modification (Carlson, 1997).

In 1997, the process of accounting standard setting changed in Malaysia. The Malaysian Accounting Standards Board (MASB) was founded under the Financial Reporting Act of 1997. Today MASB, which is an independent authority, has responsibility to develop and issue accounting and financial reporting standards that are in harmony with international best practice. The MASB is made up of eight members who are nominated by the Finance Ministry of Malaysia (MASB, 2010). Since its establishment the MASB has further followed the policy of harmonisation of Malaysian accounting standards with IASs (Pacter, 1998). The new accounting standards issued by MASB are called Financial Reporting Standards (FRSs). Since 1998, Malaysia has commenced a gradual schedule to harmonise Malaysian FRSs with IFRSs. In other words, every year, a number of FRSs become applicable in Malaysia. In 2008, MASB announced its plan to bring Malaysia to full harmonization with IFRSs by January 2012 (MASB, 2010).

2.3.4 South Africa

South Africa is located on the southern part of Africa. On the dry land, it has borders with Namibia to the west, Mozambique to the east, Botswana to the north east and Zimbabwe to the north (SothAfrica.info, 2010). South Africa is regarded as the economic powerhouse of Africa, with gross domestic product (GDP) of four times greater than that of its Southern African neighbours and comprising around 25 percent of the entire continent's GDP (Panitchpakdi, 2007).

2.3.4.1 Regulatory framework in South Africa

The regulatory framework in South Africa is governed by the "1973 Companies Act, No. 61" and the "JSE Securities Exchange of South Africa" (Panitchpakdi, 2007).

Similar to other Commonwealth countries, South African corporate structure is in general similar to those of the UK. Initially, South African Company law was largely impacted by the British Companies Act of 1908, and finally, in 1973, the South African Companies Act was adopted (West, 2009). The 1973 Companies Act requires that the financial statement of companies to be in accordance with South African generally accepted accounting practice (GAAP) (Panitchpakdi, 2007). However, the concept of Statements of GAAP was introduced into the Companies Act with the introduction of paragraph 5 into schedule 4 in 1992. It states that, in preparation of financial statements, if the directors of a company notice that there are reasons for departing from any of the accounting concepts in the Statements of GAAP approved by Accounting Practice Board (PAB) of South Africa, they may do so, but details of the departure, and the effects and the reasons for it is required to be disclosed. As a result the Companies Act does not require companies to comply with South African Statements of GAAP. Therefore, no statutory enforcement procedures for Statements of GAAP have been established by the Companies Act (Panitchpakdi, 2007).

The Johannesburg Stock Exchange (JSE) was founded in 1887. The name changed to JSE Securities Exchange of South Africa in November 2000, when it turned into a national exchange and expanded its operations to various financial products (Panitchpakdi, 2007). In 2005, JSE once again considered its corporate characteristics and changed its name to JSE

limited. JSE is among the top 20 largest stock exchanges in the world and provides capital to various large listed companies. Additionally, it has a social responsibility index and supports businesses that invest in socially, economically and environmentally sustainable developments. As of 22 June 2007, the JSE market capitalization was 5,814 billion Rand (Panitchpakdi, 2007). As of October 2000 JSE required listed entities to prepare their annual financial reports in accordance with the South African Companies Act and to comply with either South African statements of GAAP or IASs. The reason for allowing the choice was to help out companies with dual listing on foreign stock exchanges and overseas entities listed on JSE (Panitchpakdi, 2007).

2.3.4.2 Accounting standard setting and harmonisation in South Africa

Standard setting in South Africa is comprised of a two-level procedure. In fact, the "Accounting Practice Board (APB)" approves and issues accounting standards. Subsequently, the "Accounting Practice Committee (APC)" of the South African Institute of Chartered Accountants (SAICA) provides advice to APB with regards to the issued standards. In other words, as an advisory body, the APC develops South African pronouncements of statements of GAAP and interpretations (Panitchpakdi, 2007).

The South African APB consists of 13 members appointed by various organisations including 5 persons nominated by the SAICA, one appointed by the "Independent Regulatory Board for Auditors", two nominated by the "JSE Securities Exchange", one appointed by the "Association of Chamber of Commerce", one appointed by "Die Afrikaanse Handelsinstituut", one appointed by "Federated Chamber of Industries", one appointed by "South African Chamber of Mines", and finally one appointed by the "Steel and Engineering Industries Federation of South Africa" (SAICA, 2008).

The SAICA became an associate member of the IASC in 1974 and joined the IASC board in 1978. In its reply to the IASC's survey in 1979, the SAICA reported that IASC standards were compatible, with only few exceptions, with South African accounting pronouncements. In fact, the SAICA stated that *"in the absence of a codified domestic standard it is considered that codified International Accounting Standards would constitute persuasive evidence of a generally accepted accounting practice unless the preparer could establish*

otherwise on a domestic basis" (Camfferman and Zeff, 2007, p. 175). In response to another survey which was conducted ten years later (i.e. 1988) with regards to the use and application of IASs, South Africa reported that it had used eight of the twenty five existing IASC standards as the basis for its national requirements (Camfferman and Zeff, 2007). In addition, South Africa stated that a majority of the financial statements of the entities listed on JSE Securities Exchange are generally in conformity in all material respects to IASC standards.

By 1993, the South African business community and accountancy profession had come to the conclusion that IASs are sufficiently thorough and inclusive and could take the place of South African standards as a set of suitably high quality standards. As a result, the SAICA Council suggested the APB to adopt IASC standards as generally accepted accounting practice, adjusting them only as necessary to shape them in accordance with South African accounting environment. After accepting the SAICA's recommendation, the APB and APC continued to issue a series of guidelines to facilitate the modification of IASs in accordance with South African environment. Initially, the mining entities were opposed to adhering to IASC standards. However, in 1997 largest South African mining entity, Anglo American Corporation, switched to IASC standards and was shortly followed by the other mining corporations (Camfferman and Zeff, 2007).

Finally in February 2004, the APB decided to issue International Financial Reporting Standards (IFRSs) as South African statements of GAAP without any modification. However, where there is an issue not yet covered by IFRSs and there is a local need for regulation, South Africa will continue to issue its own standards and interpretations (Camfferman and Zeff, 2007). As a result, JSE Securities Exchange required that all listed entities to comply with IFRSs for financial periods commencing on or after 1 January 2005 (Panitchpakdi, 2007).

2.3.5 Australia

Australia is a geographically stable, lowland island continent. Aboriginals have been resident of mainland Australia for at least 40,000 years, and their population was between 300,000 and one million when the first European settlements arrived. In 1788, the first non-Aboriginals arrived in Australia on a significant scale when the British established a colony in Port Jackson in Sydney. Other colonies and settlements developed in Hobart at 1804, Brisbane at 1825, Perth at 1829, Melbourne at 1835 and Adelaide at 1836. By 1900 each Australian state had its own democratic constitution which was regulated by a governor performing on behalf of the British Crown. In 1901 the political system was transferred into the political federation of the Commonwealth of Australia. The present constitution is a federalist system with some North American features. At present, there are three major bodies representing accountants in Australia including "Institute of Certified Practicing Accountants (CPA)", "Institute of Chartered Accountants (CA)", and finally another less influential body, "National Institute of Accountants (NIA)" (Baydoun et *al.*, 1997).

2.3.5.1 Regulatory framework and accounting standard setting in Australia

There are five major bodies concerned with the process of framing, interpreting and enforcing accounting policies and regulations in Australia including "the Australian Securities and Investment Commission (ASIC)", "the Australian Accounting Standard Board (AASB)", "the Interpretation Agenda Committee (IAC)", "the Financial Reporting Council (FRC)" and finally "the Australian Securities Exchange (ASX)" (Deegan, 2007).

The Australian Securities and Investments Commission (ASIC) evolved from the Australian Securities Commission (ASC). The name of the ASC was changed to ASIC in July 1998 to indicate the increased responsibility allocated to the ASC with regards to supervising and regulating different investment products including superannuation, approved deposit accounts and retirement savings accounts. The ASIC is in charge of managing corporations' legislation in Australia. It is independent of state ministers or state parliaments, and reports directly to the Commonwealth parliament and the treasurer (Deegan, 2007).

Additionally, the Corporations Act 2001 (Act) is managed by ASIC. Corporations Act 2001 sets out the responsibilities of company directors with regards to the quality of their conduct as well as financial statement preparation requirements. Additionally, the Act requires directors of public companies, large private companies and organisations with shares listed on the ASX to provide shareholders with a true and fair view of the financial position and performance of the company. For circumstances not addressed by any specific standard the true and fair view requirement works as a general benchmark to help out directors to determine the level of disclosures required. In fact, to meet this requirement the directors need to disclose all material information so that the readers of the financial statements are not misled (Deegan, 2007).

Australian Accounting Standards Board (AASB) is in charge of developing accounting standards. The AASB commenced its operations in January 1991 when it took the place of the Accounting Standards Review Board (ASRB). The AASB is in charge of *making*[3] accounting standards that have the force of law in accordance with section 334 of the Act, and also *formulating*[4] accounting standards to be used by organisations operating within the public and non-profit sectors (i.e. entities which are not administered by the Act). Up to year 2000, Australia had two sets of accounting standards i.e. those applicable to corporations administered by the Act and those exercised by organisations not managed by the Act. The AASB was in charge of issuing the former set of standards and the Public Sector Accounting Standards Board (PSAB) was responsible for issuing the later group of standards. Standards issues by the AASB had the prefix AASB and those ones issued by the PSAB had the prefix AAS. Issuing two sets of accounting standards was of course confusing. As a result and to eliminate this confusion the PSAB was abandoned in 2000 and the AASB took the responsibility for issuing just one set of accounting standards applicable to private, public and non-profit sectors. Therefore, today, the standards issued by AASB are applicable to corporations regulated under the Act and all other forms of entities (Deegan, 2007).

[3] As it is explained by Deegan (2007), when AASB issues standards that have the force of the Act and are to be exercised by corporations administered by the Act, it is called *making* standards.

[4] When AASB issues standards that are to be exercised by non-profit organisations and other corporations not administered by the Act, it is called *formulating* standards (Deegan, 2007).

With regards to the standard setting process, after creation of an accounting standard by AASB, it is up to the Commonwealth parliament to either allow or ban the standard. As a result, before an accounting standard is accepted by the parliament, it is regarded as a pending standard. After the standard is approved by the parliament, according to section 296 of the Act, the directors are required to make sure that the company's financial statements are prepared in accordance with the standard (Deegan, 2007).

The IAC was established in 2006 when it took the place of the Urgent Issue Group (UIG). The UIG was founded in 1995 and initially was administered by the accounting profession. However, in 2000 it came under the supervision of the AASB. The function of the UIG was to provide recommendations and support with regards to urgent financial reporting issues. However, in 2006, the UIG was abandoned due to the growing concern that Australian interpretations may not be in accordance with those prepared at the international level. Today the IAC is responsible for identifying and evaluating various issues for inclusion into the AASB's work schedule. IAC is, too, controlled by the AASB (Deegan, 2007).

Financial Reporting Council (FRC) performs an overseer and advisory body role to the AASB There are 14 members on the FRC board, who are appointed by a number of stakeholders. According to Section 235 of the Australian Securities and Investment Commission Act 2001 (ASIC Act) FRC members are either nominated directly by the treasurer or alternatively the treasurer could designate an organisation to select someone to represent the FRC (Deegan, 2007).

As of 1 April 1987 only one nationally recognised stock exchange operates in Australia which is called the Australian Securities Exchange. In November 1998 the ASX turned into a public company with shares listed on its own exchange. Therefore, while the ASX was earlier largely regarded as a self-regulated body, it is now controlled by the Corporations Act, as well as its own listing rules. The ASX has one set of listing rules applicable to all listed corporations and the rules are recognized as the "Main Board" rules. To be remained listed, all companies listed on ASX must comply with these rules otherwise they might be removed from the board. Additionally, the ASX has a number of disclosure requirements to make sure that the listed entities information is publicized in an effective and appropriate manner (Deegan, 2007).

2.3.5.2 Harmonisation of accounting standards in Australia

As previously mentioned Australia served on the IASC board since the establishment of IASC in 1973. However, since 1976 the Council of Institute of Chartered Accountants and CPA Australia (councils) prescribed a general policy to members to just refer to Australian accounting standards in company annual reports (Camfferman and Zeff, 2007). As a result, compliance with Australian standards is supposed to indicate conformity with IASs. Furthermore, each Australian standard would indicate how it is compared with the corresponding IAS. If an IAS did not comply with an Australian standard and the councils came to the conclusion that IASC standard was not suitable for Australian environment, auditors were expected to disclose a departure from that IASC standard and simultaneously acknowledge compliance with the Australian standards. In IASC 1988 survey of the use and application of its standards, Australia responded that sixteen of the IASC's standards were consistent with Australian practice requirements (Camfferman and Zeff, 2007). Seven IASC standards dealt with topics on which there were no Australian requirements but yet were in agreement with national practice in Australia. Only two IASC standards were not in agreement with Australian practice in areas where there was no national requirement (Camfferman and Zeff, 2007).

Furthermore, in 1996, the AASB and PSAB announced that they would use extant IASs as the source for developing Australian standards. They further stated that they would work with the IASC to distinguish an acceptable approach for eliminating incompatibilities between IASs and Australian accounting standards. However, they emphasized that *"there does not presently exist a single internationally accepted set of accounting standards which, if adopted in Australia, would increase the comparability of the financial reports with those prepared in countries such as the United States of America, the United Kingdom, Canada or New Zealand (Camfferman and Zeff, 2007, p. 433).*

On the other hand, the ASX was concerned that the legal obligation to exercise Australian accounting standards could damage Australian corporations looking for secondary listing in a foreign country. Additionally, the ASX was afraid that the obligation could even deter companies from primary listing in Australia. As a result, in 1996, the ASX moved toward bringing IASs to Australia. As a result the AASB and PSAB commenced a program in August 1996 which its objective was to change Australian accounting standards in a manner

that by the end of 1998 Australian corporations complying with Australian standards would also be performing in accordance with IASC standards (Camfferman and Zeff, 2007).

In September 1999, the federal Treasurer unveiled the first Corporate Law Economic Reform Program (CLERP1). Among other issues, one of the objectives of CLERP1 was to harmonize the Australian standards with those of the IASC. In October 1999, the federal parliament endorsed the CLERP Act 1999 in which the provision with regards to adoption of IASC standards was approved. Finally, the law became effective in January 2000. As a result, Australia, amongst founder member countries of the IASC, turned into one of the first countries whose standard setter was obliged by law to harmonize with IASC standards. Finally, in July 2002, the FRC pronounced that Australia would adopt the IASB's IFRSs by 1 January 2005 (Camfferman and Zeff, 2007).

2.3.6 United Kingdom

The UK consists of the "United Kingdom of England", "Wales", "Scotland" and "Northern Ireland". The "Channel Islands" and the "Isle of Man" have their own treasuries and separate structure of direct taxation. The term "Great Britain" indicates the main land gathering of the British Islands. Great Britain includes England, Scotland and Wales and it is a geographical narrative rather than a political description. The term "British Isles" is also a geographical description, covering England, Wales, Scotland, all of Ireland and numerous islands around the seashores of these countries (Roberts et *al.*, 2008).

The economy has developed by around 2.7 percent on a yearly basis over the period between 1995 and 2005. Similar to other developed countries, 75 percent of the gross domestic product (GDP) is formed by firms operating within the service industry, followed by 14 percent in manufacturing industry and 10 percent in other industry sectors. Agriculture creates only a trivial percentage, around one percent, of the GDP (Roberts et *al.*, 2008).

The UK has an extensive history of professional accounting bodies. The major professional bodies include "the Institute of Chartered Accountants of England and Wales (ICAEW)", "the Institute of Chartered Accountants of Scotland (ICAS)", "Institute of Chartered Accountants of Ireland (ICAI)", "the Association of Chartered Accountants (ACCA)", "the

Chartered Institute of Management Accountants (CIMA)", "the Chartered Institute of Public Finance and Accountancy (CIPFA)". Up to 1990 these professional authorities worked in cooperation with the Accounting Standards Committee (ASC) to develop accounting standards. However, the process was too slow and the ASC was blamed to be largely controlled by the profession and not being able to make decisions with regards to difficult accounting issues. Therefore, in 1990 the Accounting Standards Board (ASB) was established as an independent body and subsequently the professional authorities lost their control over rejecting the development of a standard. Today, the professional bodies still represent to the ASB and make contributions indirectly through the work of their members (Roberts et al., 2008).

2.3.6.1 Regulatory framework in United Kingdom

Since 2004 the Financial Reporting Council (FRC) has been responsible for regulation of the accountancy profession in UK. The FRC is the UK's independent regulator in charge of enhancing assurance and trust in corporate reporting and governance. The FRC is funded jointly by the accountancy profession, and by business and the government. Its members are appointed from financial, business and professional communities at the highest levels. FRC has various responsibilities including developing corporate governance standards, setting, overseeing and imposing accounting and auditing standards, supervision and regulation of auditors, and administration of the regulatory performance of the professional accounting and actuarial authorities. Some of the FRC's responsibilities are supported by constitutional regulations, through company law, while other functions have no statutory underpinning and are supported by various FRC's stakeholders. The FRC has a number of subsidiary boards including "the Accounting Standards Board (ASB)", "the Financial Reporting Review Panel (FRRP)", "the Professional Oversight Board (POB)", "the Auditing Practice Board (APB)", "the Accountancy Investigation and Discipline Board (AIDB)". These separate boards implement their activities independently (Roberts et *al.*, 2008).

The ASB was established in 1990 as an independent standard setting body when it took the place of ASC. As previously mentioned there were a number of criticisms against the ASC with regards to its decision making practice on difficult accounting issues. As a result, within

its first five years after establishment, the ASB was largely involved in resolving various deficiencies existing in UK national standards. Thereafter, since the mid-1990s it commenced cooperation with other national standard setters and the IASB to harmonize its standards with IASC standards. The ASB also developed a separate set of standards for small companies which are called "Financial Reporting Standard for Small Enterprises (FRSSE)" (Roberts et *al.*, 2008). This resulted in establishment of one set of comprehensive accounting standards for companies with turnover less than £2.8 million (Charles, 2002). The advantage of FRSSE is that if small companies choose to follow the FRSSEs then they are not obliged to follow the details of the larger part of full standards (Roberts et *al.*, 2008).

The FRRP is responsible for making sure that the annual reports of public companies and large private companies are prepared in accordance with the requirements of the Companies Act 2006 as well as related accounting standards. Where the account of a company are not prepared in accordance with the requirements of the Act, the legislation gives authority to the courts to order the accounts to be revised and prepared once again, at the cost of the directors who approved the flawed set of accounts. As a result, even though the ASB is an independent private authority, UK accounting standards are supported by constitutional legislations (Roberts et *al.*, 2008).

The POB is another subsidiary of the FRC and its primary objective is to increase the public confidence in the financial and governance stewardship of listed companies. To achieve this objective POB supervise the regulation of auditing and accountancy profession via recognised supervisory bodies (Roberts et *al.*, 2008).

The APB was established in April 2002 when it took the place of a previous APB that had been operating since 1991. The APB is responsible for establishment of high quality auditing standards and increasing the public confidence in auditing process within the UK and Republic of Ireland.

Finally AIDB is an independent disciplinary authority for accountants in UK. It has up to eleven members. AIDB is in charge of operating and administering independent disciplinary schemes dealing with members of various professional accountancy bodies including the Association of Chartered Certified Accountants (ACCA), the Chartered Institute of Management Accountants (CIMA), the Chartered Institute of Public Finance and

Accountancy (CIPFA), the Institute of Chartered Accountants in England and Wales (ICAEW), The Institute of Chartered Accountants of Ireland (ICAI) and the Institute of Chartered Accountants of Scotland (ICAS) (Roberts et *al*., 2008).

2.3.6.2 Accounting standard setting and harmonization in UK

Standard setting in the United Kingdom and Ireland commenced in 1970. In fact, in 1970, the ICAEW founded the Accounting Standards Steering Committee (ASSC) which started to develop Statements of Standard Accounting Practice (SSAPs). Subsequently, the Institute of Chartered Accountants of Scotland (ICAS), Institute of Chartered Accountants of Ireland (ICAI), as well as the Association of Certified Accountants, the Institute of Cost and Management Accountants, and Institute of Municipal Treasurer and Accountants (IMTA), joined the committee, and all six authorities established the Consultative Committee of Accountancy Bodies (CCAB) in 1974 (Camfferman and Zeff, 2007). These were the same six bodies that signed the IASC agreement and constitution in 1973. For SSAPs to be issued formally, they should be approved by the governing councils of these six bodies. Until 1989 there was no statutory obligation for companies to disclose the compliance of their financial statements with the applicable accounting standards. However, the principle legal responsibility of the auditors was to confirm that financial reports would provide a true and fair view of the financial position and performance of the companies (Camfferman and Zeff, 2007).

In December 1974, the ICAEW and other UK and Irish accountancy authorities that had established the CCAB endorsed an "Introduction to Statements of International Accounting Standards (ISIAS)". According to ISIAS if the financial reports of a company did not comply with the IASs the audit report should have either referred to the disclosure of non-compliance in the accounts or would state, in the audit report, the extent to which the accounts were not complied with IASs (Camfferman and Zeff, 2007).

In 1975, when IAS 1 was issued, the CCAB commenced publishing a preface to each IASC standard when it was disseminated in the UK and Ireland by the CCAB bodies. The preface explained the applicability of the IASC standards in the UK and Ireland. The CCAB then started to advise whether, and to what level, conformity with company law and the SSAPs

would automatically lead to compliance with the IASC standards (Camfferman and Zeff, 2007).

In 1979 it was further reported that the accounting standards developed in UK are not in accordance with those of the IASC. In fact, the IASC had often been to a large extent faster in developing standards on more important issues. By 1985, the IASC had issued standards on seven subjects for which there were no corresponding UK and Irish standards. Those standards include the presentation of current assets and current liabilities (IAS 13), segment reporting (IAS 14), accounting for property, plant and equipment (IAS 16), revenue recognition (IAS 18), accounting for retirement benefits by employers (IAS 19), capitalization of borrowing costs (IAS 23), and related party disclosures (IAS 24) (Camfferman and Zeff, 2007).

In 1986, the position of the CCAB bodies with regards to IASC standards was still significantly similar to what it was in 1975. Until this year the United Kingdom and Ireland had jointly supported the IASC standards. However, it was added *"if, in a rare case, an SSAP and an IASC standard were to differ significantly" the United Kingdom and Irish accounting standard would prevail (Camfferman and Zeff, 2007, p.153).*

In the IASC's 1988 survey of the use and application of its standards, the United Kingdom replied that its national requirements corresponded, in all material issues, to twenty extant IASC standards. However, there were four IASC standards for which there were no national requirements but agreed with UK accounting practice. Just one IASs (i.e. segment reporting) was in disagreement with national requirement and one (i.e. effects of changing prices) in disagreed with the UK practice (Camfferman and Zeff, 2007).

In 1990, as previously mentioned, the FRC and subsequently the ASB were established. Since then, all accounting standards developed by the ASB are called Financial Reporting Standards (FRSs). The ASB also adopted the extant SSAPs of the ASC. These standards stay valid until they are replaced by an FRS (Nobes and Parker, 2008). By 1999 the ASB had a strong local status. In fact, the ASB was considered as one of the leading standard settings in the world both within and outside UK. As a result, in such a situation, the compliance of UK companies with IASC standards was not achievable. In fact, out of 109 UK companies

surveyed in 1999 only three referred at all to IASC standards in their financial statements (Camfferman and Zeff, 2007).

However, since 2002, following the establishment of the IASB, the main responsibility of the ASB has been to harmonize the UK accounting standards with IFRSs (Nobes and Parker, 2008). Finally since 1 January 2005, all UK listed companies, in accordance with European law, are required to adopt IFRSs in their consolidated financial statements (Horton and Serafeim, 2009). Table 2.5 demonstrate the list of FRSs and SSAPs after adoption of IFRSs in UK.

Table 2.5: SSAPs and FRSs, after adoption of IFRSs in UK (Source: Nobes and Parker, 2008)

FRS 1	Cash flow statements
FRS 2	Accounting for subsidiary undertakings
FRS 3	Reporting financial performance
FRS 4	Capital instruments
FRS 5	Reporting the substance of transactions
FRS 6	Acquisitions and mergers
FRS 7	Fair values in acquisition accounting
FRS 8	Related party disclosures
FRS 9	Associates and joint ventures
FRS 10	Goodwill and intangible assets
FRS 11	Impairment of fixed assets and goodwill
FRS 12	Provisions, contingent liabilities and contingent assets
FRS 13	Derivatives and other financial instruments: disclosures
FRS 14	Earnings per share
FRS 15	Tangible fixed assets
FRS 16	Current tax
FRS 17	Retirement benefits
FRS 18	Accounting policies
FRS 19	Deferred tax
FRS 20	Share-based payment
FRS 21	Events after the balance sheet date
FRS 22	Earnings per share
FRS 23	The effects of changes in foreign exchange rates
FRS 24	Financial reporting in hyperinflationary economies
FRS 25	Financial instruments: disclosure and presentation
FRS 26	Financial instruments: measurement
FRS 27	Life assurance
FRS SSE	Financial reporting standard for smaller entities
SSAP 25	Segmental reporting
SSAP 24	Accounting for pension costs
SSAP 20	Foreign currency translation
SSAP 21	Accounting for leases and hire purchase contracts
SSAP 17	Accounting for post balance sheet events
SSAP 15	Accounting for deferred taxation
SSAP 13	Accounting for deferred taxation
SSAP 9	Stocks and long-term contracts
SSAP 5	Accounting for value added tax
SSAP 4	The accounting treatment of government grants

2.4 Chapter Summary

In this chapter, a broad-ranging summary has been given of the development of the corporate regulatory framework and the history of accounting standard setting, with emphasis on the harmonization and standardization of accounting standards. The historical development of the major international bodies responsible for harmonization of accounting standards i.e. International Accounting Standards Committee (IASC) and its successor i.e. International Accounting Standards Board (IASB) was also outlined.

For each of the six countries considered in this study, their regulatory framework and organisations responsible for accounting standard setting and regulation are detailed. Additionally, the history of harmonization of accounting standards in each sample country is explained. All sampled countries (outside the U.K.) have histories in which they were heavily influenced by the British accounting system. They are either former British colonies or current members of the Commonwealth of Nations. All sampled countries have an Anglo-type accounting background. Each country also has an accounting standard setting body which has a different degree of funding support and control from government on the one hand, and from accounting professional associations on the other hand. With regards to the history of international harmonization leading up to IFRS-adoption by all countries in 2005, Malaysia, Singapore and Hong Kong have taken the strategy of basing their local standards on IASs as they become available from the IASC. In comparison, South Africa, Australia and the United Kingdom were also heavily influenced by IASs as they became available, but continued developing their own standards in a way that achieved harmonization with IASs. Existing similarities and differences among these countries in the pace and extent of adoption of IASs as their local GAAPs leading up to 2005, make them an interesting sample to investigate concerning the incremental and relative value-relevance of their reported earnings and net assets due to a change in their accounting regimes.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

Empirical research on the association between capital markets and financial statements is generally referred to as capital market based accounting research (CMBAR). This is a broad field of research that can be categorized into several subfields. Kothari (2001) divides CMBAR into fundamental analysis and valuation, tests of market efficiency, and the role of accounting numbers in contracts and the political process. Beaver (2002) divides the CMBAR into five research areas including market efficiency, Feltham-Ohlson modelling, value relevance, analyst's behaviour, and discretionary behaviour. Beaver (2002) believes that the first two areas (i.e. market efficiency and Feltham-Ohlson modelling) are fundamental platforms that allow researchers to identify the role of accounting in capital markets. Further he argues that the later three research areas (i.e. value relevance, analyst's behaviour, and discretionary behaviour) are applications that consist of some form of accounting structure or individual structure. Value relevance research in fact investigates the relationship between a security price-based dependent variable and a set of accounting variables (Beaver, 2002).

Value-relevance research has two key characteristics. Firstly, this sub-category of research requires a comprehensive and thorough knowledge of accounting institutions, accounting standards, and the specific characteristics of the reported accounting numbers. This knowledge consists of various issues for example the stated objectives of financial reporting, decisive factors and criteria used by standard setters, the foundations of specific accounting standards, and details of how to create accounting numbers under specific accounting standards (Beaver, 2002).

As stated by Beaver (2002), the second feature of value relevance research is the relationship between market value of equity and accounting numbers which could be examined over different time horizons. Research on stock price reactions over short windows of time is typically referred as event studies, while analyses of long-term relationships are called association studies. Event studies typically analyse the security price behaviour centred on

announcement dates. Association studies, however, are not that concerned with timeliness and the time horizon could be from 3-4 months up to several years. In other words, association studies identify "*drivers of value*" that may be reflected in price over an extended time period than what is assumed in event studies (Beaver, 2002). That is why it is stated that the timeliness of accounting information is not a dominant concern in value relevance studies (Beaver, 2002).

Section 2 of this chapter reviews the literature relating to the origins of the CMBAR. It further reviews the literature regarding the conceptual foundations of the value relevance studies. This is then followed by the section reviewing the literature on various methods utilised for measurement of value relevance of accounting information. Section 3.4 then reviews prior studies concerning the effects of reporting losses and investment in intangibles on value relevance of accounting information. This is then followed by the section reviewing the literature on the value relevance of accounting figures over time and after adoption of international financial reporting standards (IFRSs). Section 3.6 then reviews the prior studies concerning disclosure of intellectual capital information and its effect on value relevance of accounting figures. It further reviews prior measurement methods utilised for measurement of intellectual capital information. Finally, section 3.7 provides a chapter summary.

3.2. Origins of the capital market based accounting research (CMBAR) and the value relevance studies

CMBAR originated with the articles of Ball and Brown (1968) and Beaver (1968). Both articles could be seen as being a part of the value relevance literature. The paper by Ball and Brown is an event study where they assess the usefulness of accounting income numbers by examining their information content and timeliness. To do so, Ball and Brown look at the abnormal returns within the months prior and after earnings announcement dates. They conclude that accounting income is an informative number, which captures one half or more of all the information about an individual company which becomes available during a year. According to their results, annual income report, however, is not considered as a very timely medium since most of its content (85 to 90 percent) is captured prior to the earnings announcement date via more prompt media including interim reports. The conclusions of Ball

and Brown are in general supported by another similar study conducted by Beaver (1968) who, also, concludes that the information content of income is significant. Beaver's evidence illustrates a dramatic increase in the trade volume of stocks in the week of earnings announcements. In addition, the degree of the stock price changes in the week of announcements is much larger than the average during the non-reporting period. Both results suggest that earnings announcements lead to a change in investor's probability distribution of future returns, and therefore, the earnings report has information content.

Following the studies conducted by Ball and Brown (1968) as well as Beaver (1968) the idea behind the more recent value relevance research is to study the relationship between market value of equity and accounting variables. This is formally defined in equation 3.2.1 (below).

$$P = \beta_0 + \sum_{i=1}^{n} \beta_i X_i + \varepsilon \qquad \textit{Equation } 3.2.1$$

According to equation 3.2.1, the market value of a company, *P*, is a function of *i* different accounting variables, X_i[5]. *X* does not have to be a measure from the income statement or the balance sheet. It can perfectly be a cash flow measure or even a non-financial measure disclosed in the footnotes or the text of the annual report (Lajili & Zéghal, 2005).

The next section provides a review of various major models used to measure value relevance of accounting information in various studies.

[5] It should be noted that one could look at the percentage of change in the market value of equity as the dependent variable, instead of market value itself. This is, however, noted by R.

3.3 Alternative models of measurement of value relevance of accounting information

Essentially there are two major models used for measurement of value relevance of accounting information namely price and return models (Barth, Beaver and Landsman, 2001) and both models are derived from the Ohlson (1995) linear model. In fact, Ohlson (1995) developed a formal model relating firm value to accounting variables (Vázquez, Valdés and Herrera, 2007). The model underlies the traditional belief that the company value is comprised of two main parts: the net value of the investment made in it (book value) and the present value of the period benefits (Earnings) that together bring the "clean surplus" concept of the shareholder's equity value (Vázquez et *al.*, 2007). In other words, Ohlson (1995) motivates the adoption of the historic price model in value relevance studies, which expresses value as a function of earnings and book values (Vázquez et al., 2007).

In return model, the dependent variable, R_t, reflects information about current and future earnings. The return model regresses the stock returns on earnings and earnings changes deflated by the lagged market capitalization (as equation 3.3.1) (Kothari and Zimmerman, 1995; Ota, 2001).

$P_t/P_{t-1} = \alpha + \beta X_t/P_{t-1} + \varepsilon_t$ *Equation 3.3.1*

Within the price model stock price is expressed as a function of earnings per share or the book value per share under the assumption that the independent variables operate as the primary value indicators and reflect information about expected future cash flows (equation 3.3.2) (Kothari and Zimmerman, 1995).

$P_t = \alpha + \beta X_t + \varepsilon_t$ *Equation 3.3.2*

There are a number of difficulties with both the price and the return models. For instance, difficulties with price models are due to both the size effect and to the estimation method used. As stated by Easton and Sommers (2003), difference in firm size leads to heteroscedasticity in pricing errors. As a result, to make data from different firms comparable, researchers often choose a scaling variable. In fact, the pricing error for a large firm tends to be big and thus, if unscaled, may dominate the estimation results. Estimation

results, however, may depend significantly on the scaling variable used. The second drawback of the price model is the high skewness of the pricing errors, which violates the normality assumption of the least squares method and leads to poor estimates from the linear least square procedures (Ye, 2007). It should be noted that the scaling commonly used as a solution to deal with the heteroscedasticity problem does not resolve the skewness issue (Ye, 2007).

On the other hand, difficulties with the return model are regarded as "accounting recognition lag" and the "transitory earnings" (Ota, 2001). In fact, the return model regresses current returns on earnings in the same period. However, value-relevant events observed by the market in the current period and reflected in current returns may not be recorded in current earnings because of the accounting principles such as reliability, objectivity, and conservatism. This problem is called "accounting recognition lag" (Ota, 2001). Furthermore, current earnings contain a transitory component such as special and extraordinary items. The transitory component of earnings are not expected to perpetuate and therefore will have a weaker association with returns than a permanent component of earnings. This problem is termed "transitory earnings" (Ota, 2001).

Consequently, coefficients from the price model, but not the return model, imply cost of capital estimates that are closer to those observed in the market. Also, the time series of implied cost of capital estimates from the cross-sectional price models more closely estimates "*long-term interest rates plus a risk premium*" than does the similar time series from return models (Kothari and Zimmerman, 1995, p. 157).

Accordingly, researchers are dealing with two imperfect but well-designed models: one that gives more economically sensible earnings response coefficient (price models) and another with "*less severe White (1980) specification problems*" (return models) but more "*biased slope coefficients"* (Kothari and Zimmerman, 1995, p. 157). Since each functional form has its weaknesses, Kothari and Zimmerman (1995) suggest the researchers to be aware of the econometric limitations in designing their experiments. In addition, Ota (2001) does not suggest utilising both models for the same sample since the results might be somewhat confusing. In this study a price model of value relevance is utilised.

3.4 Value relevance of earnings and book value and the influencing factors

The first part of this section investigates various factors influencing the value relevance of earnings and book value per share. This is then followed by a discussion regarding changes in the value relevance of accounting numbers over time in various countries.

Collins, Maydew and Weiss (1997) suggest that a number of factors, including incidence of negative earnings, and increased importance of service and technology based firms that invest in intangibles, contribute to changes in value relevance of earnings and book values over time. The following sub-section reviews the former literature on the above-mentioned factors.

3.4.1 Negative earnings and the value relevance of earnings and book value

Hayn (1995), in a sample consisting of 115,124 firm-year observations, hypothesises that reported losses are perceived by investors as temporary. Hayn argues that losses are expected to be considered transitory since shareholders can always liquidate the firm rather than experiencing indefinite losses. In other words, shareholders have the option of selling their shares at a price equal with the market value of the net assets. Hayn further documents that firms reporting negative earnings have smaller earnings response coefficients than firms reporting positive earnings. Additionally, she finds that when only profitable firm-years are investigated, stock price movements are much more strongly linked to current period earnings.

Basu (1997) argues that earnings response coefficients are "*asymmetrically*" lower for negative earnings changes than positive earnings changes. This is because the capital market adjusts rationally for the effects of "*conservatism*" on reported accounting earnings. Basu defines conservatism as having the tendency of demanding a higher degree of verification to recognise "*good news*" as gains than to recognise "*bad news*" as losses by accountants. Additionally, Basu states that good news earnings is less timely because accountants require more verifiable information before they recognise good news. Good news earnings, however, is more persistent than bad news earnings because the capitalized value of good news is only to some extent reflected in current period earnings, and after verification is also reflected in subsequent financial period earnings (Basu, 1997).

Above-mentioned studies imply that increased occurrence of negative earnings over time could contribute to the transitory decline in the incremental value-relevance of earnings. Additionally, other studies report that sensitivity of equity book value to market value increases as financial health decreases. This means that as firm's financial health deteriorates, book value of equity becomes a relatively more important explanatory variable for stock prices than earnings. Table 3.1 (below) lists several papers that report evidence on decline in value relevance of earnings or shifts to book value when earnings are negative or as firms face financial distress.

Table 3.1: Summary of the empirical studies on the effect of losses on value relevance of earnings and book value

Author(s)	Sample and data	Main arguments and findings
Barth, Beaver and Landsman (1998)	A sample of 396 bankrupt firms identified on the 1994 Compustat database, including research firms, as having delisted because of bankruptcy. Additionally, a larger, pooled sample of firms comprising all non-bankrupt publicly traded firms on Compustat with net income, total assets, and book value of equity greater than $1 million for the years 1988 to 1993.	Using a sample of firms that subsequently file bankruptcy, they find that in the five years preceding bankruptcy, the coefficient on and incremental explanatory power of equity book value increase and the coefficient on and incremental explanatory power of net income decrease. Additionally, using a larger pooled sample of firms which are different with respect to degree of financial health, they find that the coefficient on and incremental explanatory power of equity book value (net income) are higher (lower) for firms classified as being less financially healthy than other firms.
Collins, Pincus and Xie (1999)	Two sample used in this study. Firstly a sample of loss firms that differ regarding the probability of surviving. The sample comprised of 713 surviving firms (between 1975 and 1983) and 618 non-surviving firms (between 1975 and 1991). The second sample consisted of two groups of firms i.e. those ones reporting loss in one single year and the others reporting loss in multiple years. Sample comprised of 1197 single year loss firms and 1649 multiple year loss firms (sample period from 1979 to 1992).	Examining the role of book value of equity in a price-earnings relation, their results indicate that book value serves as a value relevant proxy for expected future normal earnings for loss firms in general, and as a proxy for abandonment option for loss firms most likely to cease operations and liquidate. Consistent with finding of Hayn (1995), further results indicate that the coefficient on earnings is significantly larger for profit firms than for loss firms. This indicates that market regards losses as being transitory.

Author(s)	Sample and data	Main arguments and findings
Burgstahler and Dichev (1997)	The study covers 19 years of data from 1976 to 1994. It ranges from 1208 observations in 1976 to 4144 observations in 1994. The early years had comparatively few firms with negative earnings but the proportion increased significantly beginning in about 1981 and grew to approximately 30 percent for years after 1986. Average earnings as a percentage of book value declined fairly steadily over the sample period.	Their results indicate that earnings provide a measure of how the firm's resources are currently used. Book value, however, provides a measure of the value of the firm's resources, independent of how the resources are currently used. When the ratio earnings/book value is high, the firm is likely to continue its current way of using resources, and earnings are the more important determinant of equity value. When earnings/book value is low, the firm is more likely to exercise the option to adapt its resources to a superior alternative use, and the book value becomes the more important determinant of equity value.
Berger, Ofek and Swary (1996)	A sample of 157 firms covered by the Institutional Brokers Estimate System (IBES) is examined. Sampled firms had forecasts of earnings for at least two years ahead and for five years earnings growth.	They observe that investors use balance sheet information about firms' assets to value their option to abandon the continuing business in exchange for the assets' exit value. Berger et *al*., further argue that as uncertainty about future cash flows is resolved, investors may choose to exercise their option to abandon the firm for its exit value. This abandonment option is similar to owning an insurance policy that compensates if the firm performs below expectations. The option, therefore, has value, and information about the exit value of the firm's assets should affect its market value. They also find that firms with higher probabilities of financial distress have market values that are more sensitive to changes in estimated exit values. Additionally, they find that a dollar's book value of current assets adds more market value than a dollar's book value of non-current assets. Non-inventory current assets, also, create more value than inventory, and land increases the option's value more than other non-current assets.

As previously mentioned the other factor influencing the value relevance of earnings and book value per share, according to Collins et *al*. (1997), is increased importance of service and technology based firms that invest in intangibles. The next section provides a review of the literature with regards to investment in intangibles and its influencing factor on value relevance of book value and earnings per share.

3.4.2 Investment in intangibles and its effect on the value relevance of earnings and book values

Amir and Lev (1996) examine the value-relevance of financial accounting and nonfinancial information within the telecommunication industry. According to Amir and Lev (1996), telecommunications, biotechnology, and software companies as well as other growth sectors invest heavily in intangibles, such as *"research and development (R&D)"*, *"customer-base creation"*, *"franchise"*, and *"brand development"*. However such investments are usually expensed in financial reports right away. Consequently, while substantial market values are created in these industries by production and investment activities, key financial variables including earnings and book value are often negative or enormously depressed and appear unrelated to market values. Amir and Lev (1996) find that, overall on a stand-alone basis, financial information including earnings, book values, and cash flows are irrelevant for the valuation of telecommunication companies. However, when combined with nonfinancial information some of these variables make contribution to the explanation of stock prices. As stated by Amir and Lev (1996) this finding reveals the equilibrium and "*complementarity"* that exists between financial and nonfinancial information. Secondly, Amir and Lev (1996) find that within the telecommunication industry, the value-relevance of nonfinancial information overcomes that of traditional financial indicators. Amir and Lev further argue that their results could be generalised to other science-based high-growth sectors.

Another study by Lev and Zarowin (1999) indicates that the association between capital market values and key financial variables i.e. earnings, cash flows and book values, within the service and technology based companies, has deteriorated. They argue that *"innovative activities"* including large amounts of investments made by technology based companies in intangible assets such as *"R&D", "information technology", "brand"* and *"human*

resources" continuously change businesses' products, operations, economic conditions, and market values. Consequently the system falls short of reflecting enterprise value and performance. As explained by Lev and Zarowin (1999), this is because such investments are usually expensed right away, while the benefits of change are recorded later and are not matched with the previously expensed investments. Therefore, the traditional accounting measurement process of periodically matching costs with revenues is twisted. This further affects the informativeness of financial information (Lev & Zarowin, 1999). Therefore, this is suggested that the traditional focus of accounting researchers on just financial accounting information is excessively *"restrictive"* and may lead to "*unwarranted*" conclusions.

In summary, the above-mentioned discussions argue that the financial accounting information is of limited value to investors when valuing technology-based companies that invest in intangibles. It is argued that the traditional accounting rules only record intangible assets in limited situations i.e. purchased intangibles. Therefore, financial accounting information may not be very useful when assessing the values of companies with large amounts of unrecorded intangibles.

On the other hand another study conducted by Francis and Schipper (1999), makes an investigation to find out whether the high-technology stocks are less value relevant than those of the firms within the traditional industries. Also, they test to find out whether the value relevance of firms within the high technology industry has declined over time compared to those of traditional firms. To do so, Francis and Schipper create two samples of high technology and low technology firms. They divide the industries into high and low technology samples based on whether firms in the industry are likely to have significant unrecorded intangible assets. The high technology sample includes all firms in the computer, electronics, pharmaceuticals and telecommunication industries. Low technology sample includes firms within agricultural, construction, air transportation, railroads and other firms that are less likely to have unrecorded intangible assets. Results of their analysis provides just marginal evidence supporting claims that financial statements of high technology firms have declined over time compared to those firms within the traditional industry. Finally, Francis and Schipper conclude that high technology firms have not experienced a greater decline in value relevance than low technology firms. They state that even though certain types of assets are not incorporated in the current accounting model, which requires expensing and not

capitalization of particular expenditures that result in future economic benefits, *"reported earnings continue to summarize value relevant corporate activities to approximately the same extent for both high-technology and low-technology firms (Francis & Schipper, 1999, p.350)."*

As per above discussions it appears that the results of various studies concerning the value relevance of earnings and book value of assets within high technology industry are mixed. Results of the studies which investigate the effects of investment in intangibles on the value relevance of accounting information could be divided between those conducted on US GAAP and those conducted in Commonwealth Nations and other non-US studies. The second group (i.e. non-US studies) are divided between studies carried out before the adoption of IFRSs and the ones reported within the post adoption period. Table 3.2 lists the results of various studies performed within US GAAP, pre-IFRSs periods and post-IFRSs periods.

Table 3.2: Summary of the empirical studies on the effect of intangible assets on value relevance of accounting information

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Lev & Sougiannis (1996)	This study uses a large sample of publicly listed R&D intensive firms between 1975 and 1991. Firms included in the sample are chosen from various R&D intensive industries including 74 firms from chemicals and pharmaceuticals, 118 machinery and computer hardware firms, 98 firms within electrical and electronics industry, 54 firms within transportation industry, 38 firms from scientific instruments and 412 firms from other R&D intensive industries . Three data bases are used in this study including the 1993 CRSP daily file, the 1993 COMPUSTAT file and the NBER's R&D Master file.	USA	Lev and Sougiannis estimate a relationship between R&D expenditures and subsequent earnings for a large sample of R&D-intensive firms. This estimation allows them to measure firm-specific R&D capitals and its amortization rate. Then, they adjust reported earnings and book values of the sample firms for the R&D capitalization and show that the adjusted values are significantly associated with stock prices and stock returns. They suggest that this indicates the value-relevance of R&D capitalization process to investors. Additionally, they indicate, in an "inter-temporal context", that R&D capital is reliably associated with "subsequent stock returns". They argue that this finding may be due to a systematic mispricing of the shares of R&D intensive firms, or because the R&D capital could be the proxy for an extra-market risk factor. Altogether, with regards to their evidence, they suggest that the association between R&D expenditures and subsequent earnings is both "statistically significant" and "economically meaningful".
Aboody and Lev (1998)	The sample for this study consists of 163 firms listed on the 1995 Compustant Industrial and research files. The firms are classified as computer programming and pre-packaged software companies (SIC codes 7370-7372).	USA	Aboody and Lev find that annually capitalized development costs are positively associated with stock returns and the cumulative software assets reported on the balance sheet are associated with stock prices. Furthermore, software capitalization data are associated with subsequent reported earnings, indicating another dimension of relevance to investors. Additionally, they document a significant association between development costs which are fully expensed by firms and subsequent stock returns. They suggest that it is consistent with a delayed investor reaction to product development of these companies.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Smith, Percy and Richardson (2001)	In order to obtain their sample of Australian capitalizers they searched into the Australian Stock Exchange (ASX). This procedure resulted in identification of 252 firm-year observations for the period of 1992-1997. A similar search procedure resulted in identification of 245 expenser firm year observations in Australia. With regards to Canada, they used a similar search strategy and searched into the Canadian Financial Information Database. This resulted in the identification of 99 firm-year observations for the period of 1991-1997. A similar search procedure resulted in identification of 215 expenser firm-year observations. Smith et *al.*, define a capitalize as "a firm that capitalizes all or part of its R&D expenditures."	Australia and Canada	They find that the "discretionary" capitalization of development costs results in balance sheet and income statement numbers to become more associated with market value compared to those numbers generated by expensing companies. Additionally, they find that firms that capitalize development costs will have a higher valuation coefficient per dollar of capitalized development costs relative to a dollar of expensed research and development costs.
Ahmed and Falk (2006)	Their sample consists of 1172 firm-year observations which include 347 firms. 175 firms within the sample consistently capitalized their R&D and 128 firms consistently expensed the R&D expenditure when incurred. 44 firms capitalized the R&D expenditure in some years and expensed them in others. In years that these firms capitalized their R&D expenditure they have been categorized as capitalizers and within the other years they have been regarded as expensers.	Australia	Ahmed and Falk examine the value relevance of Australian firms' discretionary R&D accounting policy and the relationship between this expenditure and the firm's future economic performance. Their results indicate that "managerial discretionary accounting practice, capitalizing or expensing R&D expenditure, demonstrates greater value relevance than accounting figures that are the product of mandatory R&D expensing (p. 231)." Additionally, they find that managerial discretionary capitalized R&D accounting figures demonstrate greater association with market share prices than managerial discretionary expensed expenditure. Finally they find that R&D capitalized expenditure is positively and significantly associated with the firm's future earnings.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Oswald (2008)	A sample consisting of 3229 UK firm-year observations over the period 1996–2004 is used for this study.	UK	Results of this study indicate that the decision to capitalize R&D expenditures is influenced by various factors including earnings variability (firms with higher earnings variability are more likely to capitalize R&D expenditures), earnings sign (loss making firms are more likely to capitalize), firm size (smaller firms are more likely to capitalize), R&D intensity (firms with lower R&D intensity are more expected to capitalize), leverage (highly levered firms are more likely to capitalize), the steady-state status of the firm's R&D program (firms not in steady-state are more likely to capitalize) and R&D program success (after excluding mandatory expensers, those firms with lower R&D success are more likely to capitalize). Additionally, Osward conclude that the value relevance of Expensers' financial information is not substantially lower than that of the value relevance of financial information reported by capitalizer firms.

The literature reviewed above is obviously related to the US GAAP and the pre-IFRSs adoption period in various countries including UK and Australia. However, after adoption of IFRSs the approach taken towards treatment of intangible assets has changed. Under international accounting standards (IAS 38) no intangible asset arising from the research phase of an internal project could be recognised. Expenditures on the research phase of an internal project should be recognised as expense when it is incurred. An intangible asset arising from the development phase of an internal project should be recognised on the balance sheet only if it satisfies criteria related to the asset's completion, technical feasibility, usefulness or saleability (IFRS foundation, 2010). Additionally, specific internally generated identifiable intangibles that could previously be reported as assets under local GAAPs balance sheets (specifically in Australia[6]) are not permitted to be recognised as assets in the balance sheet any further. Those identifiable intangible assets that are reported as assets must be tested for impairment and written down if their value is impaired. According to IAS 38, capitalised identifiable intangible assets with a finite useful life are to be amortised systematically over their expected useful life (IFRS foundation, 2010). If capitalised intangible assets are deemed to have an indefinite life, relevant events and circumstances must be assessed each period to support the continued assumption of an indefinite life. According to IAS 38 (intangible assets) while identifiable intangibles are recognised initially at cost, a firm may subsequently elect to measure a class of intangible assets using a cost or a revaluation model. However, the revaluation model is only an option if fair values can be determined by reference to an active and liquid market. Furthermore, under IAS 3 (business combinations) goodwill must be tested for impairment at least annually and reported at its acquired cost less any accumulated impairment loss (IFRS foundation, 2010).

The introduction of IASs which restrict managements' identifiable intangible asset recognition and revaluation choices could arguably decrease information flows to the market and consequently reduce the value relevance of intangible asset reporting. In fact, Wyatt (2005) states that identifiable intangible assets are highly valued by investors and restricting the option to record intangible assets would be likely to reduce the quality of the balance sheet and investors' *"information set"*. Furthermore, another study conducted by Matolcsy

[6] As stated by Alfredson (2001), according to financial reporting standard 10 (Goodwill and Intangible Assets) issued by Accounting Standards Board of United Kingdom in December 1997, internally developed identifiable intangible assets could be capitalised in the balance sheet only if it has a readily ascertainable market value

and Wyatt (2006), within the Australian generally accepted accounting principles (AGAAP) setting, where capitalization of intangible assets used to be routine, examine whether firms that capitalize a higher proportion of their intangible assets have *"higher analyst following"*, *"lower dispersion of analysts' earnings forecasts"* and more *"accurate earnings forecasts"* compared to other firms. Their findings are consistent with their assumptions. In fact they find that capitalization of intangible assets is associated with higher analyst following and lower earnings forecast error for firms with a stock of intangible assets. Additionally their tests suggest a weaker association between capitalization and lower earnings forecast dispersion. They argue that adoption of IAS 38 (intangible assets) could reduce the usefulness of financial statements.

Apart from the arguments made within former studies, just one study, within an Australian context, empirically investigates the influence of adoption of IFRS on value relevance of intangible assets. This is the study by Chalmers, Clinch and Godfrey (2008) who compare the relationship between share prices and intangible assets, measured under Australian equivalent to international financial reporting standards (AIFRS), with the association between share prices and the same intangible assets measured under AGAAP. To do this they use a sample of 599 publicly listed Australian firms, *"each of which disclosed a non-zero balance under AGAAP or AIFRS for either identifiable intangibles or goodwill (Chalmers et al, 2008, p.240)."* Chalmers et *al.* (2008) firstly compare the relationship between share prices and capitalised intangible assets measured under AIFRS for the comparative year in the first year of AIFRS adoption, and secondly they investigate the association between share prices with the same intangible assets measured in the prior year's AGAAP financial report. They state that this allows them to investigate the extent to which different accounting regimes have information content for investors with respect to the same underlying economic intangible assets. Their results indicate that only for goodwill, AIFRS measured intangibles reflect useful information to investors beyond that provided by AGAAP. In other words, compared to AIFRS, AGAAP measures of goodwill are not incrementally useful to investors. However, with regards to aggregated identifiable intangible assets they find that AGAAP amounts communicate incremental information beyond the equivalent measures under AIFRS. They further divide intangible assets into their components and find that AGAAP amounts of patents, licences, R&D and software are more incrementally value relevant compared to their AIFRS counterparts.

In summary, although the results of various studies are to some extent mixed, it appears that capitalized intangible assets are highly valued by investors. Adoption of IFRSs, on the other hand, has further restricted intangible capitalization. Furthermore, up to this date, no other study has investigated the potential influence of adoption of IFRSs on the high technology based companies. Therefore, in this study, following Francis and Schipper (1999), firms are divided into high technology and low technology industries to investigate the potential impact of adoption of IFRSs on the intangible intensive high technology based companies.

Apart from the factors that influence the value relevance of accounting information, there has been extensive debate and findings with regards to value relevance of accounting information under different accounting regulatory regimes. This literature could be divided into three major groups i.e. studies investigating the value relevance of accounting information within local GAAPs of various countries, studies exploring the value relevance of accounting information at the time of adoption of IFRSs and finally studies which investigate the value relevance of accounting information within the post-IFRSs period. The next section provides a discussion with regards to value relevance of accounting information within these three areas.

3.5 Changes in value relevance of accounting information in various countries over time

As previously mentioned studies which investigate the value relevance of accounting information could be divided into three major groups i.e. those studies that investigate the value relevance of accounting information within local GAAPs of various countries, studies that investigate the value relevance of accounting information within the time of adoption of IFRSs in various countries except US and finally studies related to the post-IFRSs adoption period. The next section provides a review with regards to the value relevance of accounting information within local GAAPs of various countries.

3.5.1 Value relevance studies related to local GAAPs of various countries

This section reviews the literature related to various studies investigating the value relevance of accounting information within the local GAAPs environments of US as well as other countries. Results of former studies are different. While some studies indicate a slight increase in value relevance over time, others document a decline in value relevance of accounting information. For instance, Collins et *al.* (1997) investigate systematic changes in the value-relevance of earnings and book values over a period of 41 years (from 1953 to 1993). They estimate yearly cross-sectional regressions and use R^2 to measure value relevance. They, also, decompose the combined explanatory power of earnings and book values into three components including the incremental explanatory power of earnings, the incremental explanatory power of book values and the explanatory power common to both earnings and book values. Common explanatory power, according to Collins et *al.*, to some extent, considers that book values and earnings act as *"substitutes"* for each other in explaining prices, while also complementing each other. They firstly find that the combined value-relevance of earnings and book values has not declined over time. In fact, according to their results value relevance appears to have increased moderately. However, they find that the value relevance of *"bottom line"* earnings alone has decreased over time. They indicate that this decline has been replaced by an increased value relevance of book values. They argue that the shift in value relevance from earnings to book value could be partially explained by increasing frequency of intangible-intensive firms, negative earnings and magnitude of one-time items.

Francis and Schipper (1999), in another study, investigate the value relevance of accounting information in broad samples of exchange-listed and NASDAQ firms, over the period 1952-1994. Francis and Schipper measure value relevance in two ways. Firstly, they implement a measure of relevance which is based on market-adjusted returns and their second measure is based on explanatory power of accounting information. Based on both models, they find evidence supporting a decline in value relevance of earnings. However, with regards to book value their tests provide no evidence of a decline in value relevance of balance sheet or book value of assets.

In general results of various studies investigating the value relevance of accounting information over time are mixed. In this section an attempt is made to review the literature related to various countries. Firstly, studies which investigate the relevance of accounting information within local GAAPs of single countries, except USA, are reviewed. Table 3.3 reviews the studies which investigate the value relevance over time within China and Australia before adoption of IFRSs. In fact, not many studies investigate the value relevance of accounting information on a single country basis within the pre-adoption period.

Table 3.3: Summary of the prior studies on value relevance of local accounting standards in China and Australia

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Haw, Qi and Wu (1999)	The sample for this study consists of 1158 firm year observations (699 firm-year observations for A-shares listed firms on the Shanghai Stock Exchange and 459 firm-year observations for A-shares listed firms on the Shenzhen Stock Exchange) over the period 1994-1997. annual financial statements and stock price information for each year are collected from the "Taiwan Economic Journal (TEJ) database". Annual earnings announcement dates are collected from two major Chinese financial newspapers i.e. "Shanghai Securities Daily" and "Shenzhen Securities Times".	People Republic of China	This paper investigates the value relevance of earnings prepared under the People's Republic of China accounting standards (PRC-GAAP) by examining the long-window association between market-adjusted annual returns and earnings changes as well as the short-window market reaction to the annual earnings announcement. Based on the A-shares of listed Chinese firms which are available only to domestic investors, this study reports a significant association between the market adjusted annual returns and the change of earnings. Additionally, a significant market reaction to the announcement of annual earnings is observed. Overall, results suggest that earnings measured under PRC-GAAP provide useful information for investors to value A-shares of listed Chinese firms.
Goodwin and Ahmed (2006)	The sample of this study comprises of 12,918 firm-year observations over 25 years from 1975 to 1999. The firms within the sample are classified as "capitalizers" if they recognize intangible assets (excluding goodwill). Share price data are hand collected from the Australian Graduate School of Management (AGSM) prices and price relative database and annual (raw) returns calculated for all firms that have usable data for each month. Earnings and other accounting data are obtained from the: (1) AGSM's CRIF database, AGSM annual report file and Australian Stock Exchange (ASX) Findata database.	Australia	This paper reports evidence on the longitudinal returns–earnings and price–earnings–book value relations for a representative sample of Australian firms over the 25-year period 1975-1999. Yearly cross-sectional regressions are estimated for each year from 1975 to 1999. Value relevance of earnings is measured by explanatory power of ordinary least squares (OLS) regression model and by earnings coefficients over this 25 year period. Their results provide evidence supporting a decline in earnings value relevance. Further investigations indicate that earnings value relevance has declined for firms which do not recognize intangible assets (i.e. "non-capitalizers"), and there is weak evidence of decline for firms which recognize intangible assets (i.e."capitalizers"). The other important finding of this study is that over-time the gap between the value relevance of capitalizer firms and non-capitalizer ones increases. They suggest that this is due to Australia's relatively unregulated reporting regime for intangibles.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Brimble and Hodgson (2007)	A sample of firms listed on Datastream, Connect4 and AGSM is used in this study. The dataset is generated by starting with 42 firms listed in 1974 that survived until 2001 and each year adding firms as they became available and survived. In this way, the yearly firm samples range from 42 firms in 1973 to 255 firms in 2001, after peaking at 270 in 1999. Firms used in this study are chosen from various industries including manufacturing, leisure, media, medical and pharmaceuticals, mining, oil and gas, building, retail, services and other industries.	Australia	This study investigates whether the value relevance of financial accounting information has declined in Australia over a period of 28 years (1973 – 2001). By using a nonlinear regression model (which adjusts for transitory items) as well as controlling for share price inefficiencies they find that, except for smaller firms in the sample amongst which the value relevance of accounting earnings has declined, the value relevance of accounting earnings has not declined for the rest of sample. They also find that book values do not have as high a predictive power as earnings. Brimble and Hodgson, further, argue that the nature of the association between accounting information and share prices has changed in such a way that a linear model does not fully abstract this association.

Apart from single country studies, other studies investigate the value relevance of accounting information on a cross-country basis within the pre-adoption IFRSs period. For instance, Ali and Hwang (2000) investigate the value relevance of accounting information in a sample of manufacturing firms from 16 countries over the period of 1986-95. The countries within the sample are divided between "continental" ones and "British-American" countries. The source of GAAP in British-American countries is government as well as private sectors, while, the source of GAAP in Continental countries is just the government. Australia, Canada, Hong Kong, Ireland, Netherlands, Singapore and United Kingdom are categorized as having a British-American accounting cluster. On the other hand Belgium, Denmark, France, Germany, Italy, Japan, Norway, Sweden and Switzerland are classified as countries with a continental accounting cluster. In this study value relevance is specified primarily in terms of explanatory power of accounting variables (earnings and book value of equity) for security returns. Their results indicate that value relevance of financial reports is lower for countries where accounting practices follow the continental model as opposed to the British-American model. They state that in continental countries private sector bodies are not involved in the standard setting process and tax rules have greater influences on financial accounting measurements, and spending on auditing services is relatively low. Ali and Hwang state that these findings are consistent with the premise that *"government standard setters establish financial accounting rules whose primary purpose is to satisfy regulatory needs such as computing income taxes or demonstrating compliance with the national government policies and macroeconomic plans (Ali and Hwang, 2000, p.2)."* They further state that their findings indicate that the resources committed to auditing in British-American countries reveal the importance or the level of demand for financial accounting. Table 3.4 lists other studies which investigate the value relevance of accounting information across various countries.

Table 3.4: Summary of cross-country studies on value relevance of accounting information over time

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Alford, Jones, Leftwich and Zmijewski (1993)	A sample of non-U.S. firms is selected from the intersection of the "Global Vantage Industrial /Commercial and Issue Files" which is an international version of the annual "Compustat" data base. The sample of non-U.S. firms consists of 2878 observations (which includes at least 100 firm year observations for each country). To increase the homogeneity of the sample it is restricted to just industrial firms (SIG codes 2000-3999 or 5000- 5999). To generate a matched sample for the non-U.S. sample, a U.S. sample is selected in the same year and the same industry group.	Australia, Belgium, Canada, Denmark, France, Germany, Hong Kong, Ireland, Italy, Japan, Netherlands, Norway, Singapore, South Africa, Sweden, Switzerland and United Kingdom.	This study compares the information content and timeliness of accounting earnings in 17 countries using the United States as a benchmark. Countries within the sample are classified in accordance with the level of alignment of financial and tax accounting in each country. In eight countries (i.e. Belgium, France, Germany, Italy, Japan, Norway, Sweden, and Switzerland) there is a high level of alignment between financial and tax accounting. The alignment level is lower for the rest of the sampled countries. Two types of analyses are performed in this study. The first examines an investment strategy based on the rank of unexpected earnings, similar to the approach in Ball and Brown (1968). The second one estimates "a regression model of 15-month stock returns on the contemporaneous level and change in earnings." Results of this study indicate significant differences in the timeliness and information content of accounting earnings across the sampled countries. According to their results, annual accounting earnings from Australia, France, the Netherlands, and the United Kingdom are more informative or more timely than U.S. accounting earnings. The results for Belgium, Canada, Hong Kong, Ireland, Japan, Norway, South Africa, and Switzerland are inconclusive. In contrast, annual accounting earnings from Denmark, Germany, Italy, Singapore, and Sweden reflect less timely or less value-relevant information than U.S. accounting earnings.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
King and Langi (1998)	The sample of this study comprised of publicly traded firms in Germany, Norway and the United Kingdom across the period 1982 through 1996. The share prices and accounting data for this study are collected from the "Worldscope Global Researcher" as well as data maintained by the Institute of Business Economics at the Norwegian School of Management.	United Kingdom, Germany and Norway	This study investigates the value relevance of accounting information across three European countries. Additionally, systematic differences in the incremental and relative value relevance of book values and earnings per share (EPS) across the countries are investigated. In this study accounting practices in the sampled countries are classified based on conservatism. German accounting is considered as conservative and more tax and lender focused rather than an investor informative one. Accounting in the United Kingdom is regarded to be less conservative and primarily focused on equity investors, and more concerned with reflecting market values. Accounting in Norway is regarded to be closer to a US/UK/Dutch investor-oriented model. In total, accounting in both the UK and Norway is considered to be much more transparent and less conservative than German accounting. Results indicate that accounting book value and earnings per share are significantly related to current stock prices across all three countries. German accounting numbers have the lowest relation with stock prices (R^2 = 40%) and UK accounting numbers the highest (R^2 = 70%), while Norwegian accounting numbers are in between (R^2 = 60%). Additionally, the incremental and relative explanatory power of book value and earnings per share differs across time and across countries. Book values explain more than earnings in Germany and Norway, but less in the UK.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Graham and King (2000)	Their sample comprised of 3,655 firm year observations across the period from 1987 to 1996. The stock prices and accounting data for this study are collected from the "Worldscope Global Researcher".	Indonesia, South Korea, Malaysia, the Philippines, Taiwan, and Thailand	This study examines the association between stock prices and accounting earnings and book values in six Asian countries. The analysis is based on a residual earnings model that expresses the value of the firm in terms of book value (BVPS) and residual income (REPS). The relationship between share prices and accounting numbers are examined based on two dimensions i.e. the model based on which the accounting systems are based and secondly the type of standard setting bodies in each country. According to Graham and King, IASs are the primary basis for accounting standards in Indonesia, Malaysia, and Thailand (although Thailand has also been influenced by US GAAP). US GAAP, on the other hand, is the primary basis in the Philippines and Taiwan (although Philippine GAAP is secondarily based on tax law). Korean accounting standards are, however, based on Korean tax law. Graham and King anticipate that different accounting models in these countries may lead to differences in the value relevance of the accounting numbers. They specifically expect that accounting numbers to be less value relevant in Korea as the Korean accounting standards are based on tax law. They state that tax law is more "susceptible" to political influences than other accounting bases and to some extent such political influences may result in accounting information to be less informative. Additionally, except Korea and Taiwan, standard setting bodies in all other sampled countries are independent of the government. Therefore, they expect the standard setting in these two countries to be influenced by political issues. Consequently, they expect lower value relevance in these two countries (i.e. Korea and Taiwan). Except for South Korea, their results are to some extent consistent with their expectations. Their results indicate that the explanatory power for Taiwan and Malaysia is relatively low while that for Korea and the Philippines is relatively high. These differences are generally consistent with differences in accounting practices. However, since Korean accounting practice is strongly influenced by tax law such high association is against their expectations. With respect to the incremental and relative explanatory power of BVPS and REPS, they find BVPS to have high explanatory power in the Philippines and Korea but little in Taiwan. In all six countries REPS has less explanatory power than BVPS in most years. In total their evidence suggests that accounting practice affects valuation in these countries (with Korea as exception).

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Davis-Friday, Eng and Liu (2006)	The sample consists of firms from Indonesia, Korea, Malaysia, and Thailand for which all required data are available. The market value of equity, book value of equity, and net income data are obtained from "Datastream Research Service". The sample covers two years of observation i.e. 1996 and 1997. The sample comprises of 1035 firm year observations.	Indonesia, South Korea, Malaysia and Thailand	This paper investigates the value relevance of earnings and book value in four Asian countries over the period surrounding the Asian financial crisis. Particularly, this study investigates the effect of the economic environment on the value relevance of book value and earnings. Additionally, the effects of corporate-governance mechanisms and the type of accounting system together with the economic environment on the value relevance of accounting numbers is investigated. Results of this study indicate that the value relevance of earnings in Indonesia and Thailand significantly reduced during the Asian financial crisis while the value relevance of book value increased. In Malaysia, the value relevance of both earnings and book value decreased during the crisis. In Korea, neither book value nor earnings was significantly affected by the crisis. Additionally, their results reveal that the level of strength of corporate-governance mechanisms has an impact on the extent of changes in the value relevance of book values, but not earnings. Particularly, the value relevance of book value decreases when corporate governance is weak.

In summary, as discussed above, based on the single country studies it appears that the value relevance of accounting information, specifically reported earnings, is decreasing over time in various countries (e.g. United States and Australia). With regards to cross-country studies, it appears that the value relevance in countries with British-American accounting background (e.g. UK, Australia, Hong Kong, and Singapore) is higher than countries with a continental accounting background (e.g. Belgium, Germany, and France). Value relevance in countries with British-American accounting background seems to be higher due to existence of independent standard setting bodies which are not influenced by political issues. Additionally, it could be concluded that value relevance is higher in countries where IASs are the primary basis for accounting standards (e.g. Malaysia and Indonesia). Next section reviews former studies which investigate the impact of harmonization of accounting standards on value relevance of accounting information.

3.5.2 Value relevance and harmonization of accounting standards

Arguably, as a result of the increasing public demand for improving the relevance and reliability of corporate disclosure in various countries, it has become widely accepted that local GAAPs in various countries should be overhauled and internationally accepted accounting standards and practices to be adopted. In fact, the growing globalization of capital markets and the subsequent need of international corporations to access to more developed capital markets in the world have placed enormous pressure to support the use of just one set of accounting standards internationally. As a result, as stated by Zorio (2009), the International Organization of Securities Commissions (IOSCO) encouraged its members to allow the international companies to exercise the standards issued by the International Accounting Standards Committee (IASC, now renamed as Board i.e. IASB), for cross-border offerings and listings, in a Resolution issued in year 2000.

To investigate the impact of harmonization of accounting standards, various studies compare the value relevance of IASs and local accounting standards within the pre-IFRSs adoption period. For instance, Lin and Chen (2005), investigate the incremental value relevance of the reconciliation of accounts from the Chinese Accounting Standards (CAS) to that of IASs by

those Chinese listed corporations that have simultaneously issued A-shares and B-shares. In essence, the stock market in China is segmented. There is one market for A-shares, which are traded among local investors and another for B-shares, which are issued exclusively to foreign investors. The market is segregated to reflect the intention of the government to have a more standardized market as well as attracting more foreign investors. Companies issuing A-shares must prepare their financial statements based on CAS. On the other hand, B-share companies should prepare their financial statements following IAS and be audited by the Big 4 international auditing firms. In fact, those companies issuing both A-shares and B-shares are allowed to release their primary financial statements based on CAS and, at the same time, the reconciled key accounting figures from CAS to IAS. Regressions are conducted to test the association of accounting numbers (earnings and book values of owners' equity) and market variables (price levels and stock returns) for those Chinese listed companies that issued both A-shares and B-shares during 1995–2000. The results indicate that earnings and book values of owners' equity determined under CAS are more relevant for the purpose of determining the prices of A- and B-shares. The CAS-based earnings changes were reflected in stock returns in the B-share market, while the CAS-based earnings were closely associated with stock returns in the A-share market. Nevertheless, the study finds that the reconciliation of earnings and book values from CAS to IAS is partially value-relevant, mainly to stock prices in the B-share market, while the earnings reconciliation is generally not value-added to stock returns in either the A- or the B-share market. Finally, results of this study imply that accounting numbers based on local accounting standards, in contrast to IAS, are more value-relevant in the Chinese stock market.

Another study conducted by You and Lou (2009) investigates the value-relevance of accounting information based on CAS and IAS from the perspective of relative information content and incremental information content, and tends to focus on the effect of accounting internationalization process in China. This study covers an 8-year period between 1996 and 2003. Two sets of earnings based on CAS and IAS for those listed companies which issued A-shares and B-shares are searched from their A-share annual financial reports and finally yielded 430 observations. Overall, based on financial reports of AB-share listed companies in China over the period 1996 to 2003, the results indicate that unexpected earnings reported under IAS have more information content to A-share investors than those under CAS. However, the relative value-relevance of IAS is weakened through accounting

internationalization process in China. Additionally, as stated by Jiaxing and Shengqiang (2009) the incremental value-relevance of IAS is also weakened through the accounting harmonization process. Table 3.5 lists other studies which investigate the value relevance of accounting information across various countries within the period of harmonization of accounting standards.

Table 3.5: Summary of the prior empirical studies on the value relevance of accounting information within the period of harmonization of accounting standards

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Auer (1996)	The sample consists of 20 Swiss quoted non-financial companies which have changed their accounting standard from the Swiss GAAP to IAS and 15 companies switched to EC-Directives within the period 1985-1993. In total, sample comprises of 247 earnings announcements.	Switzerland	This study investigates the information content of earnings announcements (i.e. abnormal returns resulting from unexpected earnings) for a sample of Swiss listed companies which changed their accounting standards from Swiss GAAP to either continental-Europe-oriented accounting standards (EC-Directives) or IAS. Results of the study suggest that IAS-based earnings announcements indicate significantly higher information content than earnings announcements based on the Swiss GAAP. It is therefore concluded that switch from Swiss GAAP to IAS has increased the information content of financial statements for investors. However, results of comparing IAS-based and EC-Directives-based earnings announcements indicate that IAS-based earnings do not possess significantly higher information content than EC-Directives-based earnings.
Niskanen, Kinnunen and Kasanen (2000)	Sample of this study consists of 18 firms (97 observations) listed on Helsinki Stock Exchange that had dual (LAS and IAS) earnings disclosure and both restricted and unrestricted shares over the period 1984-1992.	Finland	In this study, the value relevance of Local Accounting Standards (LAS) earnings and their reconciliations to the IAS is investigated. The empirical evidence is from firms that had both restricted shares (available only to local investors) and unrestricted shares (available to both foreign and domestic investors) listed on Helsinki Stock Exchange during 1984-1992. This comparison is made to distinguish between foreign and domestic investors' perceptions of the value relevance of earnings information. Results of the study indicate that LAS earnings are value relevant to both domestic and foreign investors. However, after controlling for LAS earnings, the aggregate reconciliation of LAS earnings to IAS does not provide significant value relevance to either investor groups. Further investigations of the individual reconciling items imply that adjustments relating to untaxed reserves and consolidation differences have significant value relevance to both domestic and foreign investors. Altogether, findings of this study suggest little difference between the value relevance of LAS earnings and their reconciliations to IAS to either investor groups.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Eccher and Healey (2003)	The sample for this study contains accounting data and stock returns for 83 firms listed on PRC stock Exchange which had both PRC and IAS accounting data and stock returns for A and/or B shares available between 1993 and 1997.	People Republic of China	This paper investigates the usefulness of IASs in People's Republic of China (PRC). Two measures of usefulness of accounting information are examined in this study. The first one is the relevance of earnings and accruals for predicting future cash flows, and the second one is their relations to contemporaneous share price changes. Results of this study indicate that the accounting information produced under IAS is not more useful than those prepared under Chinese accounting standards. In essence, there is no difference in the explanatory power of IAS and Chinese accruals for future cash flows. Additionally, for stocks that can only be owned by international investors, IAS and PRC earnings and accruals have a similar relationship with annual stock returns. Finally, for stocks that can be owned only by domestic investors, PRC earnings have a higher relation with annual stock returns than IAS earnings. It is argued that the reason behind failure of IAS data to dominate PRC is the lack of efficient controls and infrastructure in China to supervise the additional reporting judgment available to managers under IAS.
Bartove, Goldberg and Kim (2005)	The sample for this study consists of 417 firms (915 firm-year observations) listed on Frankfurt Stock Exchange and Neur Markt over three years period (1998 – 2000).	Germany	This study compares the value relevance of earnings produced under three accounting regimes i.e. German GAAP, U.S. GAAP, and IAS, by considering the association of stock returns and reported earnings as a measure of quality of accounting standards. Results provide evidence that earnings based on U.S. GAAP and IAS are more value relevant than earnings based on German standards.
Hung and Subramanyam (2007)	The sample for this study consists of 80 German industrial firms listed on "Compustat" and adopted IAS for the first time during 1998–2002.	Germany	This study investigates the effects of IAS adoption on the value relevance of book values and net income in a sample of German firms adopting IAS for the first time during 1998-2002. Value relevance is measured in terms of the ability of accounting numbers to explain contemporaneous share prices. Results of the study indicate that total assets and book value of equity, as well as variability of book value and income, are considerably higher under IAS than under German GAAP (HGB). In addition, in contrast to Bartov et *al.*(2005), results indicate that book value and income are not incrementally more value relevant under IAS compared to HGB.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Barth, Landsman and Lang (2008)	The sample for this study comprises of 1896 firm-year observations for 327 firms that adopted IAS between 1994 and 2003 and for which DataStream data are available.	The sample comprised of 21 countries including Australia (2*), Austria (111), Belgium (23), China (430), Czech Republic (8), Denmark (28), Finland (37), Germany (340), Greece (12), Hong Kong (53), Hungary (59), Poland (4), Portugal (6), Russian Federation (2), Singapore (27), South Africa (66), Spain (3), Sweden (3), Switzerland (594), Turkey (84), and United Kingdom (4). * Numbers in each bracket indicate the number of firm-year observations within each sampled country.	This study investigates whether application of International Accounting Standards (IAS) is associated with higher accounting quality than application of non-U.S. local accounting standards. Specifically, it is investigated whether accounting amounts of firms that apply IAS exhibit less earnings management, more timely loss recognition, and higher value relevance than accounting amounts of firms that apply domestic standards. The metrics for earnings management are based on the variance of the change in net income, the ratio of the variance of the change in net income to the variance of the change in cash flows, the correlation between accruals and cash flows, and the frequency of small positive net income. A higher variance of the change in net income, higher ratio of the variances of the change in net income and change in cash flows, less negative correlation between accruals and cash flows, and lower frequency of small positive net income is interpreted as evidence of less earnings management. Earnings that show lower signs of earnings management are interpreted as being of higher quality. The metric for timely loss recognition in this study is the frequency of large negative net income. In essence, higher frequency of negative net income is taken as evidence of more timely loss recognition. Earnings that exhibit losses on a more timely basis are interpreted as being of higher quality. The metrics for value relevance are the explanatory powers of net income and equity book value for prices, and stock return for earnings. Higher explanatory power is regarded as evidence of more value relevance. Accounting numbers that are more value relevant are interpreted as being of higher quality. Accounting quality metrics are measured for a matched sample of firms applying IAS to those applying non-U.S. domestic standards in each country. Results indicate that firms applying IAS generally reveal less earnings management, more timely loss recognition, and more value relevance of accounting numbers than do firms not applying IAS. Specifically, firms applying IAS have a higher variance of the change in net income, less negative correlation between accruals and cash flows, higher frequency of large negative net income, and higher value relevance of net income and equity book value for share prices, with each of these differences being significant.

Table 3.5 indicates that results of former studies comparing the value relevance of local GAAPs with those of IASs are mixed. In addition, most of the former studies are performed on a single country basis and countries with continental accounting backgrounds. There are no studies providing evidence on a set of countries with Anglo-American accounting background. The next section provides a literature review with regards to mandatory adoption of IFRSs in various countries.

3.5.3 Value relevance and mandatory adoption of IFRSs in various countries

This section provides evidence on the value relevance of accounting information within the year of adoption of IFRSs in various countries. Various studies compare the value relevance of accounting information reported under local GAAPs and those reported under IFRSs within the year of adoption of IFRSs. For instance, Ahmed and Goodwin (2006) investigate the effect of AIFRSs on 1378 listed Australian firms over 2004 and 2005. This study uses the reconciliations provided in the notes to financial statements to measure the effects of AIFRS on Australian listed firms. Additionally, this study examines the accounting quality of AIFRS earnings and book values compared to earnings and book values prepared under AGAAP (the metric for measurement of accounting quality is value relevance). Results of this study indicate that AIFRS adjustments increase mean and median earnings and decrease mean and median equity. Additionally, results do not provide evidence supporting AIFRS earnings and book value as being more value relevant than those of AGAAP. Table 3.6 lists other studies providing evidence on the effects of IFRSs in other countries during the year of IFRSs adoption.

Table 3.6: Summary of the prior empirical studies on the effect of adoption of IFRSs on value relevance of accounting information across various countries

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Callao, Jarne and La´ınez (2007)	The sample for this study consists of 26 IBEX 35 firms listed on Bolsa de Madrid. This study is based on the 6-monthly information reported by these firms in the first half of 2004 and 2005. The information relating to the first half of 2004 is prepared under Spanish accounting standards. The comparative numbers and the restatements of the 2004 closing balance sheet figures to IFRS are obtained from the 2005 interim reports.	Spain	This study investigates the effects of IFRS on the comparability and relevance of financial reporting in Spain. With regards to comparability, this study tries to find whether the financial statements of Spanish firms are comparable when some firms apply IFRS and others apply local standards. For this purpose, the quantitative impact of the IFRS on recognition and valuation on financial numbers and ratios is measured. The effect of IFRS should be significant, if the accounting figures prepared under IFRS contain criteria that are clearly different from those prepared under Spanish accounting standards. With regards to relevance an investigation is made to find out whether IFRS makes financial reporting more relevant for decision making in the capital markets than Spanish accounting standards. To do so, the effect on the gap between firms' book and market values is analysed. It is stated that the adoption of IFRS should narrow the gap between a firm's book and market value. With regards to comparability, results indicate that the economic and financial positions of Spanish firms, reflected in line with IFRS, are considerably different from the image presented by local accounting standards. Overall, it is concluded that the comparability of the local accounting standards is worsened and is adversely affected when both IFRS and local accounting standards are applied at the same time in Spain. With regards to relevance, results indicate that there has been no improvement in the relevance of financial reporting to capital markets in Spain. This is because the gap between book and market value is wider when IFRS is applied.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Gjerde, Knivsflå and Sættem (2008)	The sample for this study consists of 145 firms listed on Oslo Stock Exchange. The firms reported financial statement in accordance to NGAAP in 2004 and restated those reports when adopted IFRS in 2005.	Norway	In this study an investigation is made to find out whether the association between IFRS accounting numbers and stock market values is stronger than those reported under Norwegian GAAP (NGAAP). Results of the study provide little evidence of increased value relevance after adoption of IFRS when comparing and evaluating two regimes separately. In contrast, when changes in the accounting numbers from NGAAP to IFRS are examined, the results indicate that reconcilement adjustments to IFRS are marginally value relevant, which is due to increased relevance of the balance sheet and the normalized net income. Further investigations indicate that increased value relevance of the net income is due to different reporting patterns of intangible assets. In fact, more intangible assets are capitalized under IFRS compared to NGAAP. Therefore, capitalization of intangible assets results in higher value relevance of IFRS accounting figures compared to NGAAP numbers under which intangible assets are expensed.
Horton and Serafeim (2009)	The sample of this event study consists of 297 firms listed on London Stock Exchange and announced their IFRS reconciliation documents separately from any other news.	United Kingdom	In this study an investigation is made to find the market reaction to, and the value-relevance of, information contained in the mandatory transitional reconciliation disclosure documents required by IFRS compared to the accounting information disclosed under the UK GAAP in a sample of firms listed on London Stock Exchange. Results of this event study indicate that the market reacts negatively to firms disclosing lower earnings under IFRS relative to UK GAAP. Additionally, with regards to value relevance, results indicate that reconciliation adjustments in respect of earnings (but not in respect of owners' equity) are value relevant. Finally, it is concluded that IFRS appears to reveal timely value relevant information.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Morais and Curto (2009)	The sample for this study consists of 29032 company year observations for 6977 European-listed corporations from 14 countries over the period of 2000-2005. Earnings, book value and market price of shares are collected from "Worldscope Database". The sample period is divided between two major periods including the period during which companies within the sample followed local accounting standards or some followed IASs on a voluntarily basis (2000-2004) and the period during which companies followed IASs on a mandatorily basis (2005).	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom	In this study an investigation is made to find if the value relevance of European-listed companies improved after the mandatory adoption of IASs. Additionally, this study examines if the value relevance of accounting information under IASs is shaped by specific characteristics of each sampled country in which companies are operating. Results of the study indicate that explanatory power of earnings and book value per share, for all companies in the sample, are higher during the period companies followed IASs mandatorily than the one they followed local accounting standards Additionally, results indicate that value relevance of accounting information during the period companies followed IASs on a voluntarily basis is lower than the time they followed IASs on mandatorily basis. With regards to value relevance across various countries, results indicate that value relevance of accounting information in countries where accounting and tax are separated clearly is higher than those countries where tax and accounting are closely related.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Iatridis and Rouvolis (2010)	The sample for this study consists of 254 firms listed on Athens Stock Exchange. Accounting and financial data are collected from DataStream. The study period is classified as the year of adoption (2005), pre-adoption period (2004) and the post-adoption period (2006).	Greece	This study investigates the influence of the adoption of IFRS on the financial performance of firms listed on the Athens Stock Exchange. Additionally, this study identifies the financial characteristics of the companies that voluntarily followed IFRS before the mandated adoption date. Finally, this study seeks to find whether adoption of IFRS diminished the level of earnings management and improved the value relevance of the accounting information reported under IFRS. Regarding the financial performance, results of the study indicate that the effect of adoption of IFRS within 2005 (the official adoption period in Greece) has been unfavourable in terms of profitability and liquidity. However, firms reported better financial performance figures in 2006. It is argued that unfamiliarity with requirements of IFRS within the year of adoption could be the underlying reason behind this finding. With respect to the firms that followed IFRS voluntarily before the actual adoption date, results indicate that larger firms and firms with stronger debt and equity financing needs are the ones which followed IFRS voluntarily. It is argued that providing evidence of credibility to lenders and investors could be one of the reasons behind voluntarily following IFRS. With regards to earnings management, results indicate some signs of earnings management within the official adoption period. However, the level of earnings management is reduced within the subsequent period (2006). It is argued that high transition costs of IFRS could be the underlying reason behind earnings management within the adoption period. With regards to value relevance, it is increased within the second year after adoption of IFRS but not within the official adoption period.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Paananen and Henghsiu (2009)	The sample comprises of all industrial German listed companies found in the "Datastream database" over the period 2000 and 2002, 2003 and 2004, and 2005 and 2006. Sampled firms are reported under IAS and/or IFRS as their primary accounting standards.	Germany	This study investigates and measures the changes in the quality of accounting figures by using a sample of German firms which followed IASs during 2000-2002, and IFRS on a voluntarily basis during 2003-2004, and reported under IFRS on a mandatorily basis during 2005-2006. Three different metrics including earnings smoothing, timely loss recognition and value relevance are used as indicators of accounting quality. Results indicate that earnings and book value of equity are becoming less value relevant during the period when firms followed IFRS on a mandatorily basis compared to the period when they reported under IAS and IFRS (on a voluntary basis). In addition, findings on earnings smoothing and timely loss recognition supports the results with respect to the value relevance of accounting figures. Overall, results indicate that the quality of accounting numbers has improved between the IAS and the IFRS voluntary period, however, it has declined within the IFRS mandatory period.
Taylor (2009)	The sample consists of 150 randomly selected firms listed on three Stock Exchanges (i.e. London, Hong Kong and Singapore) for the year of adoption of IFRSs (2005).	Hong Kong, Singapore and the United Kingdom	This study investigates whether the quality of accounting figures (earnings per share and book value of equity) has improved as a result of adoption of IFRSs in UK, Hong Kong and Singapore. The metric for measurement of accounting quality is value relevance of accounting numbers. Additionally, this study measures the extent of adjustments and the costs incurred by financial statement preparers for transition from local accounting standards to IFRSs within the sampled countries. With regards to value relevance, results indicate no improvement in the value relevance of accounting figures as a result of adoption of IFRSs within the sampled countries. Additionally, results indicate that the extent of adjustments made and the costs of transition incurred in UK for first-time adoption of IFRSs are greater than the adjustments made and the costs incurred in Hong Kong and Singapore.

Author(s)	Sample and data	Country(ies) of the study	Main arguments and findings
Devalle, Onali and Magarini (2010)	A sample of 3721 companies listed on five European stock markets for the period 2002-2007 is used in this study.	Germany, Spain, France, Italy and United Kingdom	This study investigates whether the quality of accounting figures has improved as a consequence of adoption of IFRSs within five European Stock Exchanges including Frankfurt, Madrid, Paris, Milan and London Stock Exchange. Three different metrics including value relevance, earnings smoothing and timely loss recognition are used to measure the quality of accounting figures. Regression of share price on book value and earnings per share, for all sampled companies, indicates that adoption of IFRSs has improved the value relevance of earnings per share. However, (except for United Kingdom) value relevance of book value per share has decreased after adoption of IFRSs within the sampled companies. Concerning earnings smoothing and timely loss recognition, results do not indicate an improvement in the quality of accounting figures as a consequence of adoption of IFRSs.

As discussed above, it is obvious that the results of various studies investigating the effects of adoption of IFRSs on the quality of accounting figures are mixed and conflicting. Additionally, most of the former studies are carried out on single-country basis or in countries with continental accounting backgrounds. Except the study carried out by Devalle, Onali and Magarini (2010), other studies are performed over a single period or a two-year period. There is no other study which investigates the value relevance of accounting information in a set of countries with an Anglo-American accounting background over a longer period of time, which investigates the pre-and post-IFRSs adoption periods comprehensively.

Apart from studies which investigate the value relevance of accounting information there is a body of literature (see: Cumby and Conrod, 2001; Holland, 2003; Bukh, 2003) which argues that financial statements which are primarily prepared based on the tangible assets of corporations are, to some extent, losing their value relevance. Additionally, it is argued that the reduction in value relevance of accounting figures in knowledge intensive and innovative corporations (as discussed in Amir and Lev, 1996; Lev and Zarowin, 1999; Ahmed and Falk, 2006) could be due to the existence of value creating intellectual capital resources which are reported off the balance sheet (Holland, 2003). In the next section an attempt is made to review the literature concentrating on the value creating aspects of intellectual capital resources.

3.6 Intellectual capital disclosure and the value relevance of accounting figures

Disclosure of information on intangibles and intellectual capital resources has become increasingly important within the recent years. Eustace (2001) divides the corporate assets into three different categories including “conventional tangible assets”, “Intangible goods” and “intangible competences”. Conventional tangible assets, as the name says, are divided into physical assets (e.g. property, plant and equipment) and financial ones (e.g. cash and cash equivalents, receivables, investment and etc). Intangible goods are divided into two main sub-categories including “intangible commodities” and “intellectual property”. Examples of intangible commodities, as stated by Eustace (2001), could be publishing rights,

reproduction rights and other long-term royalty annuities. The shared feature of all these intangibles is that they could be generally traded. Intellectual property, on the other hand, includes assets which are developed from the legal system of the business. Examples include patents, copyrights, proprietary technology, brand and trademarks. As stated by Eustace (2001), intangible competences are only valued by successful companies and it is extremely difficult to separate them from the organisational framework. Examples of intangible competences could be customer satisfaction, staff productivity, staff expertise and so on. As stated by Eustace (2001), the total value of a firm is the sum of documented conventional tangible assets, recognised intangibles and non-recognised competencies.

Mouritsen (2003), too, argues that the conservative type of accounting, which is based on conventional accounting system and results in documentation of various elements of financial statements such as expenses, liabilities, assets, or capital, is not capable of filling the large gap between market value and the book value of the firm. In other words, as stated by Mouritsen (2003), conventional accounting system is unable to provide a realistic account for the value of the resources that are heavily based on intangibles such as knowledge systems, human competencies, and relationships with customers and suppliers. In addition (as stated by Lev and Sougiannis, 1996, and Amir and Lev, 1996) financial reporting, which mainly assess the tangible assets of corporations, is to some extent losing value relevance specifically in industrial sectors that are dominated by knowledge intensive and innovative organisations. Finally, as stated by Nielson, Bukh, Mouritsen, Johansen and Gormsen (2006), in the world of increasing technological development where intangible assets are becoming more important, firm performance is better indicated if non-financial information is also reported. A number of other studies provide discussion with regards to the increasing importance of intellectual capital disclosures. Table 3.7 reviews some recent literatures which focus on the increasing importance of disclosure of intellectual capital information.

Table 3.7: Summary of prior studies on the increasing importance of disclosure of intellectual capital information

Author(s)	Main arguments/findings
Cumby and Conrod (2001)	This study investigates various performance measures considered to be value relevant by the Canadian biotechnology industry. The sample for this study consists of 19 biotechnology companies listed on Toronto Stock Exchange (TSE) in 1999. Except financial statements, all other information released to public via annual reports, prospectuses, corporate web pages and press releases investigated over one financial year. Performance measures are classified into five different categories including financial (e.g. information related to the firm performance stated in financial terms), market (e.g. measures of customer satisfaction), science (e.g. milestones on product development such as completion of various phases of research), employee (e.g. metrics related to quantity or quality of employees) and alliance (e.g. information related to management expertise and strength) performance measures. Results indicate that biotechnology companies provide information related to various areas such as product development milestones, science and alliances performance measures. It is argued that in the new economy financial reports are of limited use in forecasting shareholder value. It is further stated that as the size and scope of intangible assets continue to grow, an improved system of disclosure would help the corporations to reduce the information asymmetry between managers and external stakeholders and therefore to reduce the cost of capital. Finally it is concluded that intellectual capital information are highly value relevant for knowledge-based industries.
Holland (2003)	It is argued that the knowledge-intensive changes in corporate value creation procedures have increased the information asymmetry between corporate users and the managers. This is due to difficulty of categorising and measuring the costs of intangible information as well as the benefits that could be assigned to them. Consequently, this has made the valuation of intangibles problematic. Despite these problems, many companies and managers try to decrease the information asymmetry by disclosing intellectual capital information. It is further stated that since 1990 onwards fund managers pay more attention to qualitative information on corporate intangibles such as "top management quality" or "brand management skills". This is because they found out how intangibles such as the qualities of certain key executives and changes in top management could influence the stock prices. Therefore, fund managers have extended their view of the range of intangibles they now believe that could affect the stock prices.

Author(s)	Main arguments/findings
Bukh (2003)	This study reports on 57 Danish firms that went public over the period 1990 to 1999. Study of the level of disclosure of intellectual capital information (e.g. information on number of patents, results of research regarding staff satisfaction and etc) released in the prospectuses of these companies indicate that the level of intellectual capital information disclosed has increased significantly over this period. It is further stated that the most recent prospectuses is mainly issued by companies within IT, biotechnology and R&D industries. It is argued that results of this study indicate that companies with major intangible values, such as highly educated staff members, R&D and patents, release intellectual capital information to decrease the information gap that exist between market players. It is further stated that the increase in disclosure of intellectual capital information play a significant role in reduction of uncertainty which will lead to a more accurate valuation of company.
Bukh, Nielson, Gormsen, Mouritsen (2005)	This study investigates the level of changes in disclosure of voluntary intellectual capital information released in the IPO prospectuses of a sample of Danish firms over the period 1990-2001. Additionally, this study tries to indicate the factors that could explain the level of disclosure in the prospectuses. The firms within the sample are divided into high technology and low technology firms. Using a content analysis, results indicate that the total level of disclosure of intellectual capital information over this period has increased. Additionally, further results indicate that the level of disclosure of information by firms within the high tech sector is twice higher than those within the low tech sector. It is argued that companies relying largely on intangible assets for value creation have to disclose more nonfinancial information to reduce information asymmetry between management and external parties.
Wang and Chang (2005)	This study investigates the association between intellectual capital disclosure and firm performance. Various metrics are used as indicators of firm performance including “return on assets”, “return on equity” and “year-end market value”. Sample for this study consists of all IT firms listed on Taiwan stock Exchange over the period 1997-2001. By adopting a partial least square model, results indicate that disclosure of intellectual capital directly affect the firm performance indicators. It is argued that within the IT industry, where intangible assets are more important than the tangible ones, disclosure of intellectual capital information can be seen as a significant value driver which improves the competitive advantages of the businesses.

In summary, it could be argued that conventional accounting systems, specifically within the new economy sector, are of limited use in predicting shareholder value. Therefore, disclosure of non-financial intellectual capital information, specifically within the industries which are heavily relied on intangible assets, improves the information asymmetry and is value relevant.

Apart from the literature dealing with the importance of disclosure of intellectual capital information, several studies suggest various measurement approaches for measurement of intellectual capital (IC) information. The next section reviews prior studies focusing on various IC measurement models.

3.6.1 Models used to measure intellectual capital

A variety of models are used for measurement of IC information and this section reviews the literature regarding the measurement of this information.

As stated by Bontis (2001), Skandia is considered to be the first large company that started modelling and measurement of knowledge assets. Skandia first developed its IC report internally in 1985 and became the first company to issue an IC supplement in addition to its traditional financial report to shareholders in 1994 (Bontis, 2001). According to Bontis (2001), Skandia has developed an IC reporting model which is called "*Navigator*" and is focused on five areas including financial, customer, process, renewal and development, and finally human capital. This classification tries to recognize roots of a company value by measuring hidden factors that underlie the visible assets of the corporation. As stated by Bontis (2001), according to Skandia, these hidden factors are made up of human capital and structural capital. When human and structural capitals are added together the result will be intellectual capital. The definition of human, structural and intellectual capital in Skandia, is further stated in Bontis (2001, p. 45) as below:

"Human Capital is defined as the combined knowledge, skill, innovativeness, and ability of the company's individual employees to meet the task at hand. It also includes the company's values, culture, and philosophy. Human capital cannot be owned by the company."

"Structural Capital is the hardware, software, databases, organizational structure, patents, trademarks, and everything else of organizational capability that supports those employees' productivity - in other words, everything that gets left behind at the office when employees go home. Structural capital also provides customer capital, the relationships developed with key customers. Unlike human capital, structural capital can be owned and thereby traded."

"Intellectual Capital equals the sum of human and structural capital. Intellectual capital encompasses the applied experience, organizational technology, customer relationships and professional skills that provide Skandia with a competitive advantage in the market."

Overall, Skandia's "value sketch" consists of both financial and non-financial information combined to estimate the company's market value as indicated in figure 3.1.

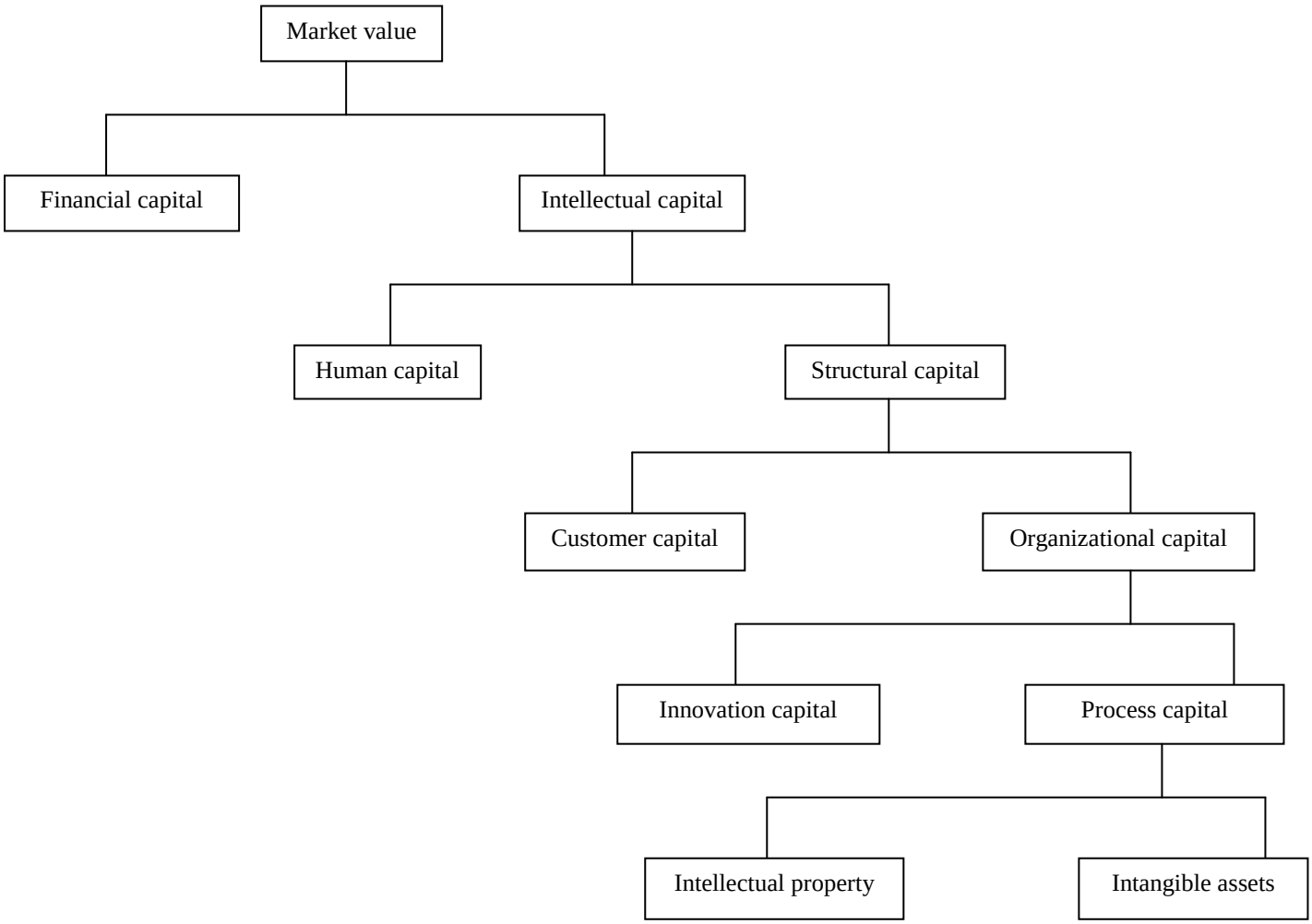


Figure 3.1: Skandia's value sketch (source: Bontis, 2001, p.45)

As stated by Bontis (2001), Skandia's IC report consists of 112 metrics to measure five areas of focus (i.e. financial, customer, process, renewal and development, and human capital) to finally form the "Navigator" model.

These 112 indices consist of use of direct counts, dollar amounts, percentages and finally survey results. Direct counts are compared with each other to make ratios or to be converted into dollar amounts (Bontis, 2001). This will result in only two types of measurement i.e. monetary and percentage measurements. Monetary measures are pooled together using a pre-determined weighting to make an overall IC value (*C*) for the corporation (Bontis, 2001). Percentages are also combined to make the *"coefficient of IC efficiency (i) that captures the organization's "velocity, position, and direction (Bontis, 2001, p. 46)*.

Finally, an organisation's IC will be a multiplicative function of the two sums i.e. *C* and *i* (indicated in equation 3.6.1).

Organizational intellectual capital = *iC* *Equation 3.6.1*

A sample of IC indices used in Skandia is indicated in Table 3.8.

Table 3.8: Sample of Skandia IC indices (source: Bontis, 2001, p. 46)

Financial focus	▪ Revenues from new customers/total revenue ($) ▪ Profits resulting from new business operations ($)
Customer focus	▪ Number of days spent visiting customers (#) ▪ Percentage of customers gained versus lost (%)
Process focus	▪ IT capacity (#) ▪ Processing time (#)
Renewal and development focus	▪ Satisfied employee index (#) ▪ Average age of patents (#)
Human focus	▪ Managers with advanced degrees (%) ▪ Leadership index (%)

The second model suggested for measurement of intellectual capital is proposed by Sveiby (1997). This model is called *"intangible asset monitor"*. Sveiby suggests a theoretical structure based on three clusters of intangible assets including external structure, internal structure, and individual competence. These three categories of intangible assets are further explained by Guthrie and Petty (2000, pp. 243 & 244) as below.

> *"Internal structure consists of such items as patents, concepts, models research and development, and computer and administrative systems. These are usually created by the employees or are brought in."*

"External structure consists of relationships with customers and suppliers, brand names, trademarks and reputation. Some of these can be considered to be proprietary, but only in a temporal sense and, even then, not with any degree of confidence. For instance, a company has some influence over the value of its customer relationships; however, reputation and relationships can change over time and a company cannot control the behaviour of customers or suppliers if they are not compliant."

"Employee competence refers to the individual's education, skills, training, values, experiences, and so forth. The non-revenue generators are called support staff. From a value-based perspective they should be measured and placed on the balance-sheet, as one cannot envisage an organisation without employees. Employee competence requires the capacity to create both tangible and intangible assets in a wide variety of situations. In knowledge organisations there is little "machinery" other than the employees."

While internal structure has historically been part of the traditional accounting measurement, the two other categories of intangible assets are not (Bontis, 2001). According to Sveiby's framework, both non-financial measures, which used to measure intangible assets, and financial measures should be combined to explain the financial success and shareholder value (Bontis, 2001).

To measure these three classes of intangible assets Sveiby (1997) identifies three measurement indicators including "growth and renewal", "efficiency" and "stability". Then Sveiby identifies a number of variables indicative of each indicator. The whole picture of intangible asset monitor recommended by Sveiby (1997) is illustrated in Table 3.9.

Table 3.9: Measurement of intangibles as per intangible asset monitor (source: Bontis, 2001)

	Competence intangibles	**Internal structure intangibles**	**External structure intangibles**
Growth/ renewal	- Number of years in the profession - Education level - Training and education costs	- investment in the internal structure - customers contributing to internal structure	- profitability per customer - organic growth
Efficiency	- Proportion of professionals in the company - Value-added per professional	- proportion of support staff - sales per support person	- the satisfied customer index - sales per customer
Stability	- average age - professional turnover rate	- age of organization - support staff turnover	- devoted customers ratio - frequency of repeat orders

Sveiby (1997) suggests that, to measure intangible assets, managers need to select only one or two variables indicative of each indicator. Therefore, the intangible asset monitor would be *"a presentation format that displays a number of relevant indicators in a simple fashion (Sveiby, 1997, p. 197)."*

The other measurement approach used in academic papers for measurement of intellectual capital information is designed by Guthrie and Petty (2000). Guthrie and Petty use content analysis for examining corporate annual reports to provide an overview of intellectual capital reporting practices. The content analysis used involves reading the annual reports of companies and coding the information contained in them in line with a selected framework of intellectual capital indicators. The framework used for analysis is based on the intangible asset monitor approach suggested by Sveiby (1997). In fact, following Sveiby (1997), intellectual capital information is divided into three different classes including internal structures, external structures and employee competence. Additionally, a number of variables are assigned to each class of intangible assets. As stated by Guthrie and Petty (2000), the variables are selected in accordance with a number of professional announcements on intellectual capital information such as the ones made by International Federation of Accountants. A sample of the framework suggested by Guthrie and Petty (2000) is illustrated in Table 3.10.

Table 3.10: Intellectual capital measurement framework sample
(Source: Guthrie and Petty, 2000, p. 246)

Internal capital	External capital	Employee competence
Intellectual property	Brands	Know-how
Patents	Customers	Education
Copyright	Customer loyalty	Vocational qualification
Trademarks	Company names	Work-related knowledge
Financial relations	Distribution channels	Work-related competencies
Networking systems	Franchising agreements	Entrepreneurial spirit
Information systems	Licensing agreements	

Based on this framework a researcher reads the annual reports and records various information related to each variable. The recorded information relates to location, quantity and nature of the information released by the company. Therefore, the results represent a template of information representing the frequency of the intellectual capital information disclosed by the company.

The final model discussed in this section is the one suggested by Bontis (2003). Similar to Guthrie and Petty (2000), Bontis conducts a content analysis to measure the level of disclosure of intellectual capital information within the annual reports of various companies. The framework suggested by Bontis is made up of 38 search terms collected by researchers in the World Congress on intellectual capital. Brüggen, Verguwen and Dao (2009), too, use the modified methodology used by Bontis (2003). In fact, Brüggen et *al.* (2009, p. 238) classify the same search terms into four categories as below:

> *"Human capital: the tacit knowledge embedded in the minds of employees."*
>
> *"Structural capital: the organizational routines of the business."*
>
> *"Relational capital: the knowledge embedded in the relationships established with outside environment."*
>
> *"General terms: comprised of general terms related to field of intellectual capital."*

Table 3.11 illustrates the modified Bontis model used by Brüggen et *al.* (2009).

Table 3.11: Intellectual capital related terms (source: Brüggen et *al.*, 2009)

General terms	Human capital	Structural capital	Relational capital
Economic value added	Employee expertise	Structural capital	Relational capital
Intellectual capital	Employee know-how	Intellectual property	Supplier knowledge
Intellectual resources	Employee knowledge	Cultural diversity	Customer knowledge
Intellectual asset	Employee productivity	Organizational culture	Customer capital
Knowledge asset	Employee skill	Corporate learning	Company reputation
Knowledge stock	Employee value	Organizational learning	
Intellectual material	Human capital	Corporate university	
Intellectual capital	Human asset	Knowledge sharing	
Business knowledge	Human value	Management quality	
Competitive intelligence	Expert team	Knowledge management	
		Information system	
		Expert network	

To measure the level of disclosure of IC information, similar to Guthrie and Petty, the frequency of the IC related terms is counted. Then, disclosure frequencies of various IC related terms are aggregated to determine the quantity of IC disclosure (Brüggen et *al.*, 2009).

In summary, various studies investigate the level of disclosure of IC information within the annual reports and various methodologies are used. Results of the former studies indicate that the level of disclosure of IC information is relatively higher within the high-tech sector compared to the traditional one. It is extensively argued that disclosure of non-financial intellectual capital information is important to wealth creation and is value relevant. However, none of the former studies investigate the value-relevance of intellectual capital information by using a traditional value-relevance model. In this study an attempt is made to investigate the value relevance of intellectual capital information and its moderating effects on value relevance of accounting numbers by utilising a traditional value relevance model.

3.7 Chapter summary

This chapter has presented a wide review of the literature with regards to the origins of the capital market based accounting research and value relevance studies, alternative models used for measurement of value relevance of accounting information, factors affecting the value relevance of accounting information, changes in value relevance of accounting information across various countries over time and finally importance of disclosure of intellectual capital information to wealth creation and its value relevance.

Essentially there are two major models used for measurement of value relevance of accounting information namely price and return models. This chapter provided an overview with regards to various characteristics and advantages of both models. Former literature does not recommend utilising both models for the same sample as it is argued that results might be somewhat confusing. As a result, this study utilises a price model of regression analysis.

Various factors could influence the value relevance of accounting information such as negative earnings and investment in intangibles. Former studies, indicate that increased occurrence of negative earnings and financial distress over time could contribute to the transitory decline in incremental value relevance of earnings. In addition, other studies indicate that as firms' financial health deteriorates book value of equity becomes a relatively more important explanatory variable for stock prices than earnings. However, no former study investigate the changes in value relevance of accounting information within the global economic downturn occurred in 2008. This study tries to fill in the literature gap by investigating the changes in value relevance of earnings and book value of equity within the global financial crisis. Results of the former studies, with regards to investment in intangibles and its effects on value relevance, indicate that value relevance of accounting information within the high tech sector which is heavily relied on intangible assets has relatively declined over time. Other studies, too, indicate that capitalised intangibles are highly valued by investors. However, no former study investigates the effect of adoption of IFRSs on value relevance of accounting information within the high tech sector. As a result, in this study industries within the sample are divided into high tech and traditional sectors to investigate and discover how the adoption of IFRSs could changes the value relevance of accounting information within the intangible intensive high technology based companies.

Results of the former studies concerning changes in value relevance of accounting information over time are mixed and inconclusive. In fact former studies could be classified into single country studies as well as cross-country ones. Also, studies could be divided between those investigating the value relevance of accounting information within the local GAAPs of various countries and those which compare the local GAAPs with IFRSs. Overall, no former study comprehensively investigates the effect of adoption of IFRSs on value relevance of accounting information in a set of Commonwealth and former British colony countries, having relatively similar harmonisation histories.

Finally, there is a body of literature which argues that disclosure of non-financial intellectual capital information is important to the wealth creation, decreases information asymmetry amongst the market players and is value relevant. Various measurement models are used to measure the level of disclosure of intellectual capital information. However, no former study empirically investigates the value relevance of intellectual capital information and its moderating effects on value relevance of accounting figures.

This study makes an attempt to address the above-mentioned gaps in the literature.

CHAPTER 4: RESEARCH METHODOLOGY AND VARIABLE MEASUREMENT

4.1 Introduction

This chapter first describes the sampling techniques and data collection that form part of the research methodology. The second part of the chapter explains the model development and approaches to variable measurement.

The structure of this chapter is organised as follows. Section 2 provides an outline of differences between quantitative and qualitative approaches to research and defines the type of research approach used in this study. Section 3 provides an explanation of the characteristics of the data used in this study and the strengths and weaknesses of this type of data. Section 4 describes the sampling technique and data collection method used within the sampled countries. Sections 5 and 6 develop the empirical models used in this study to test the research questions, including the definitions of the variables in these models. Finally section 7 explains the method used for measurement of intellectual capital disclosures in this study.

4.2 Quantitative versus qualitative research

This study is based on structuralist, positivist epistemological perspective that applies quantitative research methods. An outline of differences between quantitative and qualitative research methods is provided in order to give recognition to the fact that this study has limitations from not providing qualitative or mixed methods approaches in its data analysis.

According to Greener (2008, p. 17) *"a quantitative approach to research is likely to be associated with a deductive approach to testing the theory, often using number or fact and therefore a positivist or natural science model, and an objectivist view of the objects studied."* On the other hand, a *"qualitative approach to research is likely to be associated with an inductive approach to testing theory, often using an interpretive model allowing the*

existence of multiple subjective perspectives and constructing knowledge rather than seeking to "find" it in "reality"(Greener, 2008, p.17)."

This quote indicates that a quantitative approach uses deductive reasoning based on theory from which research questions are generated and then tested through systematic collection and measurement of objective data. On the other hand, a qualitative approach uses inductive reasoning to look at data within institutions and other contexts where phenomena are taken as largely socially constructed and, from which, grounded theories are developed.

Objectivism, as stated by Greener (2008), is based on the notion that business and social entities have an existence which is independent from the people who live or work in such entities. This perspective allows a quantitative hypo-theoretic empirical research approach. It usually encourages the methods of experimentation, surveys or extraction from secondary databases in order to confirm or refute hypotheses based on systematic analysis of objective data. In contrast, the constructivist approach is based on the notion that business and social entities are constructed in the minds of those who are associated with such entities (e.g. for business entities it would be in the minds of managers, customers, suppliers, contractors or government and professional bodies) and therefore has no separate reality (Greener, 2008). This perspective allows a qualitative interpretive empirical research approach. It encourages case-based iterative multiple-methods research.

The method adopted in this study is restricted to the systematic extraction of secondary data from databases of corporate and financial market data across six countries and seven years. From this quantifiable data, this study constructs proxy measures of concepts such as the value-relevance of particular accounting numbers to decision-makers in share markets, and the extent of information content on a firm's intellectual capital supplied to decision-makers in the share market. In choosing this research approach, this study cannot take into account the view that concepts such as value-relevance and information content may not exist as an independent reality in a marketplace, separate from the mind of any individual investor. The specific contextual factors at any point in time in any country setting that can cause rational or irrational behaviour by individual investors is not feasible to address in this study.

4.3 Nature of data used in this study

A vital issue in positivist business research studies is the extent to which a researcher is separated from the phenomenon under examination. In essence, a positivism researcher is usually one step away from the phenomenon under investigation because of examining it from the outside. However, investigation and scrutiny of phenomena will require some degree of analysis and manipulation (Blaikie, 2006). Data collected by researchers, particularly secondary data, has already been developed and processed and, therefore, there is no such thing as pure data. Secondary data has already been collected by someone else which means the researcher is more than one step separated from the phenomena. In essence, the concept of detachment from the investigated event or phenomena can be determined by whether a study relies on primary, secondary or tertiary data (Blaikie, 2006). Tertiary data could be the type of data produced by an analyst of secondary data (e.g., a financial database provides certain financial forecasts that have been computed from the secondary data published in company annual reports and published government economic statistics).

Secondary data is collected by others and archived in various forms. In fact, it could be archived as government reports, industry studies, company reports, data sets or even books and journals (Blaikie, 2006). In such cases, usually the objective of assembling such data is different from that of the users of the data. Secondary data usually provides reasonably fast and cost-effective solutions for various problems (Blaikie, 2006). Additionally, secondary data can be collected over time and therefore, utilising such data allows the conducting of longitudinal research studies, something which is more difficult by using primary data due to cost and time restrictions (Greener, 2008).

Apart from the above-mentioned advantages, secondary data has also a number of disadvantages. Firstly, due to the fact that secondary data has already been collected by someone else, there is likelihood that those data were collected with different purposes in mind (Blaikie, 2006). Collection of data may also have been based on assumptions that are incompatible with those of a subsequent researcher. Hence, it is likely that not all the aspects of interest to the incumbent researcher may have been included. Thirdly, the collected data may have been coded in an inconvenient format (Blaikie, 2006). Fourthly, because secondary data are collected by others it may be difficult to determine or estimate the quality of the secondary data. The final disadvantage relates to the fact the secondary data might be old and

not timely for some research studies. In fact, there is always a time lag between collection, reporting and finally recording of the data in archives. However, this time delay may not cause problems for historical-comparative research or testing of broad-based theories (Blaikie, 2006).

4.4 Sample selection

The sample for this study consists of 2240 firm year observations for 320 publicly listed companies, from Australia, the United Kingdom, Hong Kong, Singapore, Malaysia and South Africa, for the period between 2002 and 2008. In fact, the sample comprises of 63 Australian listed companies, 58 British firms, 49 companies from Hong Kong, 50 Singaporean firms, 50 companies from Malaysia and finally 50 companies from South Africa. The database from which accounting information of sampled countries is extracted is called OSIRIS, which is comprehensive database containing financial information on over 55,000 companies around the world (OSIRIS, 2006). OSIRIS contains pre-calculated data which is used in the measures of three variables in this study. These variables are earnings per share, book value per share and the share price. OSIRIS also contains the full financial statements of the sampled companies in each country.

Sampling starts with the top 100 largest listed companies in each country (in a descending order) that have uninterrupted available data between 2002 and 2008. This means that companies listed later than 2002 are automatically excluded due to having less than seven years of data. Additionally, observations for suspended or delisted firms and firms with missing book value, earnings per share or market value are excluded. Furthermore, any company listed on two sampled countries' stock exchanges at the same time are excluded from this study.

Some stratified sampling has been undertaken in order to achieve an approximate balance of industry-types. Following Francis and Schipper (1999), the companies in the sample are divided between traditional and non-traditional industries. This is done to test if the value

relevance of accounting information within the high technology sector is different from that of firms operating within the traditional industries[7].

With regards to the year of adoption of IFRSs, data is extracted from the IFRS/GAAP reconciliation statements contained in the footnotes to the financial statements within the year of first time adoption of IFRSs. Such data is used to determine the incremental value relevance of adjustments from GAAPs to IFRSs. The year of adoption of IFRSs is 2005 within each of the sampled countries. Therefore, firms that were late adopters of IFRSs (i.e. in 2006 or 2007 which was after the official adoption period in their country) are excluded from this study. Additionally, early adopter firms (i.e. firms adopted IFRSs within 2002 or 2003) are excluded from this study. Those firms with no reconciliation statements in their footnotes are also excluded from this study.

Following Graham and King (2000) and Dahmash, Durand and Watson (2009), financial institutions including insurance, banks, and other miscellaneous financial firms, as well as mining firms are excluded. As stated by Graham and King (2000) and Dahmash et *al*. (2009), accounting practices for these firms are so different that their valuation parameters are likely to be significantly different from those for industrial companies. The structure of their assets and liabilities makes the inclusion of such companies in analyses of this study problematic. In fact, important mining exploration information regarding the value of assets of the mining companies might not be released in annual reports.

By following the sampling procedure outlined above, a sample of 176 new economy companies and 149 firms operating within the traditional sector was obtained. Within the new economy industries, the sample consists of 33 British firms, 38 Australian firms, 25 firms from Hong Kong, 25 firms from Singapore, 25 Malaysian firms and 25 South African firms. For the traditional industries sector, the sample consists of 25 companies in each sampled country, except for Hong Kong with 24 companies. Generally, the sample represents larger listed companies across countries with British accounting heritage.

[7] It should be noted that, with regards to the firms operating within the non-traditional (i.e. new economy) sector the sampling was extended beyond the top 100 largest firms due to lack of uninterrupted data. Additionally, many companies operating within the non-traditional sector are younger companies which started operations just after 2003.

The list of industries chosen in the sample is indicated in Table 4.1. Following Francis and Schipper (1999), industries are selected based on whether firms in the industry are likely to have important unrecorded intangible assets or not.

Table 4.1: Industries included in traditional and non-traditional sectors -based on three digits SIC code (Source: Francis and Schipper, 1999)

Traditional Industries		**Non-traditional Industries**	
020	Agricultural products—livestock	283	Drugs
160	Heavy construction, excl. building	357	Computer and office equipment
170	Construction—special trade	360	Electrical machinery and equipment, excluding computers
202	Dairy products	361	Electrical transmissions and distribution equipment
220	Textile mill products	362	Electrical industrial apparatus
240	Lumber and wood products, excluding furniture	363	Household appliances
260	Paper and allied products	364	Electrical lighting arid wiring equipment
300	Rubber and miscellaneous plastics products	365	Household audio, video equipment, audio receiving
307	Miscellaneous plastics products	366	Communication equipment
324	Cement hydraulic	367	Electronic components, semiconductors
331	Blast furnaces and steel works	368	Computer hardware
356	General industrial machinery and equipment	481	Telephone communications
371	Motor vehicles and motor vehicle equipment	737	Computer programming, software, data processing
399	Miscellaneous manufacturing industries	873	Research, development, testing services
401	Railroads		
421	Trucking, land/sea courier		
440	Water transportation		
451	Air transportation, air courier		
541	Grocery stores		

In fact, the actual industry breakdown within the sampled countries in this study is given in Tables 4.2 and 4.3.

Table 4.2: Number of companies within various sectors of the new economy industry in each sampled country

Country	SIC Code (new economy sector)								
	283	**368**	**737**	**481**	**363**	**367**	**363**	**360**	**365**
UK	10	3	15	5	-	-	-	-	
Australia	12	2	13	9	-	-	-	-	2
Hong Kong	2	6	6	4	6	-	1	-	-
Singapore	-	23	-	-	-	2	-	-	-
Malaysia	4	7	6	-	6	-	1	1	-
South Africa	3	3	8	2	5	-	2	1	1

Table 4.3: Number of companies within various sectors of the traditional industry in each sampled country

Country	SIC Code (traditional sector)												
	020	**356**	**160**	**371**	**245**	**451**	**541**	**260**	**421**	**401**	**220**	**440**	**170**
UK	-	5	8	-	-	5	4	-	3	-	-	-	-
Australia	4	3	10	1	1	4	1	1	-	-	-	-	-
Hong Kong	-	6	3	2	-	2	2	1	1	1	5	1	
Singapore	3	12	8	-	-	-	-	-	-	-	-	-	2
Malaysia	-	2	-	4	-	4	-	-	2	-	-	-	13
South Africa	3	4	3	4	-	-	11	-	-	-	-	-	-

4.5 Incremental value relevance within the year of adoption of IFRSs

This study tests the value-relevance of reported earnings and equity over the sampled years and countries through the use of set of alternative models.

The first model, based on Ahmed and Goodwin (2006) is shown as equation 4.1. This model is used to compare the incremental value relevance of earnings and book value of equity reported under IFRSs to those prepared under local generally accepted accounting principles (GAAPs) during the year of adoption of IFRSs. It is important to note that the term incremental is used here to designate whether the accounting information prepared under IFRSs are more value relevant compared to those reported under local GAAPs during the same period.

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 EPSDIF_{it} + \alpha_4 BVPSDIF_{it} + IND_i + \varepsilon_{it} \qquad \textit{Equation 4.1}$$

P_{it} = Market value of a firm's equity on the balance sheet date scaled by the number of shares at the end of year t

EPS_{it} = Firm's net profit (loss) for year t scaled by the number of ordinary shares at the end of year t

$BVPS_{it}$ = The book value of equity at the end of year t scaled by the number of ordinary shares

$EPSDIF_{it}$ = Net profit (loss) under GAAP for year t less IFRS earnings for year t scaled by the number of ordinary shares at the end of year t

$BVPSDIF_{it}$ = The book value of equity under GAAP at the end of year t less the book value of equity under IFRS at the end of year t scaled by the number of ordinary shares at the end of year t

IND_t = Dummy variable stands for the industry sector

The variables are scaled by the number of ordinary shares outstanding to alleviate problems of scale associated with price-level models (Easton, Sommers, Akbar and Stark, 2003). The significance of the variables $EPSDIF_{it}$ and $BVPSDIF_{it}$, respectively, provides the incremental value relevance of IFRSs over GAAPs within the sampled countries. Additionally, industry sector is used as a control variable in the analysis to investigate the effect of industry sector (a binary variable) on value relevance of accounting information.

4.6 Value relevance of accounting information within the pre-and post-adoption periods

To compare the value relevance of accounting information after adoption of IFRSs with those of the pre-adoption period, two different models are used in this study. Firstly, following Collins *et al.* (1997) and Biddle *et al.* (1995) the incremental as well as relative explanatory-power of earnings per share and book value of equity within the pre-and post-adoption periods is specified by utilising Equations 4.2, 4.3 and 4.4.

$$P_{it} = b_0 + b_1 BVPS_{it} + b_2 EPS_{it} + e_{it} \qquad \textit{Equation } 4.2$$

Where R^2 *is referred to as* $R^2_{b,e}$

$$P_{it} = c_0 + c_1 BVPS_{it} + e_{it} \qquad \textit{Equation } 4.3$$

Where R^2 *is referred to as* R^2_b

$$P_{it} = d_0 + d_1 EPS_{it} + e_{it} \qquad \textit{Equation } 4.4$$

Where R^2 *is referred to as* R^2_e

According to Biddle et al. (1995, p.17), *"relative comparisons ask which measure has greater information content, and apply when making mutually exclusive choices among alternatives, or when rankings by information content is desired (e.g. when comparing alternative disclosures)"*.The procedure of assessing the relative explanatory power of book value and earnings per share is equivalent to comparing the explanatory power of single regressions in equations 4.2, 4.3 and 4.4. In other words, adjusted R-squares in equations 4.2, 4.3 and 4.4 (R^2_b , R^2_e and $R^2_{b,e}$) need to be compared in order to find out whether book value or earnings per share has greater relative explanatory powers (Biddle et al., 1995). Measurement of relative explanatory power of book value and earnings per share could

address the question of whether book value or earnings per share has greater explanatory power for each country, within each financial era (i.e. pre-and post-adoption periods).

However, it should be noted that no direct test of comparative and incremental[8] value relevance could be made, at this stage, to investigate the overall influence of adoption of IFRSs on the value relevance of accounting numbers. This is due to the fact that the tests utilized within this section (i.e. equations 4.2, 4.3 and 4.4) are just designed to compare the relative value relevance of earnings over book value and vice versa within the pre-and post-adoption periods.

The additional sets of tests relate to measurement of incremental[9] explanatory power of book value over earnings per share and vice versa. Like Collins *et al.* (1997) and Graham and King (2000), the results of regression equations 4.2, 4.3 and 4.4 are compared to address the question of incremental explanatory powers. The tests compare the incremental explanatory power of book value over earnings and vice versa. The incremental explanatory power of the book value and earnings per share are defined in terms of differences in the coefficient of determination (R^2) (Theil, 1971)[10]. These differences are sometimes called the *semi-partial coefficient of determination* (Cohen & Cohen, 1975, pp. 79 – 84)[11]. Additionally, according to Biddle et al. (1995, p. 17) "*Incremental comparisons ask whether one accounting measure provides information content beyond that provided by another, and apply when one measure is viewed as given and an assessment is desired regarding the incremental contribution of the other (e.g., a supplemental disclosure).*" In fact, R^2 statistics are defined from equations 4.2, 4.3 and 4.4 as R^2_b (explanatory power of book-value), R^2_e (explanatory power of earnings per share) and $R^2_{b,e}$ (explanatory power of book value and earnings per share), respectively. Consequently, the incremental explanatory powers are defined within equations 4.5, 4.6 and 4.7.

[8] Once again the term incremental here refers to value relevance of accounting information reported under IFRSs compared to those prepared under local GAAPs.
[9] This should be, once again, noted that the term "incremental" used in section 4.4 does have a different meaning from the one used in section 4.3. Here, the incremental term used indicates the incremental explanatory power of book value per share compared to earnings per share. However, in section 4.3 the term relates to incremental explanatory power of IFRSs reported earnings and equity numbers compared to those reported under GAAP.
[10] As cited in Graham & King (2000)
[11] Ibid

$R^2_{b|e} = R^2_{b,e} - R^2_e$ *Equation 4.5*

$R^2_{b|e}$ (in equation 4.5) represents the incremental explanatory power of book value which is equal to the total explanatory power of book value and earnings per share less the explanatory power of earnings per share alone (Collins *et al.,* 1997; Graham & King, 2000).

$R^2_{e|b} = R^2_{b,e} - R^2_b$ *Equation 4.6*

$R^2_{e|b}$ (in equation 4.6) corresponds to the incremental explanatory power of earnings per share which is equal to the total explanatory power of book value and earnings per share less the explanatory power of book value alone (Collins et *al.,* 1997; Graham and King, 2000).

$R^2_{comm} = R^2_{b,e} - R^2_{b|e} - R^2_{e|b}$ *Equation 4.7*

R^2_{comm} (in equation 4.7) stands for the explanatory power common to book value and earnings per share and is equal to the total explanatory power of book value and earnings per share less the incremental explanatory power of book value and the incremental explanatory power of earnings per share (Collins *et al.,* 1997; Graham & King, 2000). With regards to R^2_{comm}, it should be noted that, as cited by Graham and King (2000), Theil (1971, pp. 167-171) states that *"where the independent variables in equation 4.7 are not orthogonal, the sign of the difference between $R^2_{b,e}$ and the sum of the incremental R^2s ($R^2_{b|e}$ + $R^2_{e|b}$) is not determined."* This means that R^2_{comm} may be either positive or negative (Garaham and King, 2000).

In general, the modelling of variables used in this study is concerned with the issue of the association between the market value of each company and its reported accounting numbers under different accounting regimes. Obviously, book values and earnings are not observable until some weeks after the end of the financial year. Accordingly, this raises the question of the timing of the market value measures to be associated with the accounting variables (i.e. book value of equity and earnings per share). According to Barth et *al.* (1996), choice of contemporaneous versus lagged market value is a trade-off. The advantage to using a lagged market value is that it may reasonably reflect the accounting results since adequate time has passed for these results to be public information (Graham and King, 2000). However, lagged market values will include effects of information and events which occurred after the end of the financial year too (Graham & King, 2000). In fact, some single country studies such as

Collins et *al.* (1997) examined associations between market values and accounting numbers for US firms taking market values three months after the end of the financial year to investigate changes in the value relevance of earnings and book values over time. However, as stated by Graham and King (2000), utilising lagged market values in a cross-country analysis is problematic. This is due to the fact that the time lag between fiscal year-ends and report dates can vary largely in different countries in the sample (Graham and King, 2000). As a result, following Graham and King (2000), this study examines the association between book value and earnings per share for a fiscal year and market values taken at the end of the same fiscal year. In other words, market values utilised in this study are the ones reported at the balance sheet date.

The second set of analysis used in this study provides a more direct test of the incremental value-relevance arising from change of accounting regimes from GAAP to IFRS over a series of years. This model relies on a panel regression and involves an econometric model specified in equation 4.8.

$$P_{it} = \beta_0 + \delta_0 PREPOST + \beta_1 BVPS_{it} + \delta_1 PREPOST.BVPS_{it} + \beta_2 EPS_{it} + \delta_2 PREPOST.EPS_{it} + a_i + e_{it} \qquad \textit{Equation 4.8}$$

In equation 4.8 the variable $PREPOST$ is a dummy variable which stands for pre- and post-IFRSs adoption periods. The GAAP-period of 2002 to 2004 is regarded as 0 and the IFRS-period of 2006 to 2008 is regarded 1. Additionally, a_i represents the unobserved time-invariant effect and e_{it} is the idiosyncratic error or time-varying error. In this model, the adoption of IFRSs is the significant time variant variable that affects all companies and changes between time periods, and is an observed variable. The period dummy variable, PREPOST, is interacted with the independent variables (i.e. EPS and BVPS) to enable the identification of whether the effects of the independent variables on the dependent variable (market value) have changed from the GAAP to the IFRS standards regime. All unobserved variables that are time variant are assumed to be statistically insignificant and not correlated with the independent variables of interest and will be captured by the idiosyncratic error or time-varying error e_{it}. Thus, the multiple regression analysis in equation 4.8 will control for omitted variable bias due to cross-sectional effects by removing a_i from the regression model.

4.7 Value relevance of accounting information and the moderating effects of intellectual capital (IC) disclosure

As discussed in chapter three of this study, various studies (e.g. Amir and Lev, 1996; Mouritsen, 2003; Nielson et *al.*, 2006) argue that conventional accounting systems are not capable of filling the gap between market value and book value of the firms. In fact, as stated by Mouritsen (2003), conventional accounting system is unable to provide a realistic explanation for the value of the resources that are heavily based on intangibles such as knowledge systems, human competencies, and relationships with customers and suppliers. Other studies (e.g. Wang and Chang, 2005) indicate that disclosure of IC information directly affects the firm performance. As a result, this study makes an attempt to determine the extent to which items of intellectual capital disclosure (ICD) contribute to the overall value-relevance of information provided in corporate annual reports. In this study, the extent of value-relevance of ICD information as well as its moderating effect on information about earnings and equity numbers is compared across four sampled countries (i.e. England, Hong Kong, Australia and Singapore) within the first year of adoption of IFRSs. Malaysia and South Africa are excluded from the analysis because the extent of voluntary IC disclosure by companies in these countries is very low.

The analysis is conducted across traditional and non-traditional (new economy) sectors and seeks to clarify, not only whether IFRSs do produce higher quality accounting information compared to the previous GAAPs, but whether the extent and quality of reporting about aspects of intellectual capital has value-relevance in its own right, or moderates the extent to which earnings or equity numbers attain their value relevance. Given that disclosure of intellectual capital information in annual reports could be an important determinant of firms' market valuation; it is inserted as an extension to the incremental value relevance model (i.e. equation 4.1). Therefore, equation 4.9 is utilised to identify the value relevance of ICD in this study.

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 EPSDIF_{it} + \alpha_4 BVPSDIF_{it} + ICD_{it} + \varepsilon_{it} \qquad \textit{Equation 4.9}$$

As mentioned before, company specific information on intellectual capital may have a moderating effect on the relationship between reported accounting numbers and share price. In other words, if the level of disclosure of IC information is high, then capital market players can more clearly determine the extent to which reported accounting numbers represent firm value, relative to off-balance sheet value. Therefore, the moderating effects of the quality of ICD on the extent of incremental value relevance of earnings and equity (i.e., on relationship between EPSDIF and P, and BVPSDIF and P, respectively), can be tested by extending equation 4.9 and producing equation 4.10 as below.

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 ICD_{it} + \alpha_4 (EPSDIF \times ICD)_{it} + \alpha_5 (BVPSDIF \times ICD)_{it} + \varepsilon_{it} \qquad \textit{Equation 4.10}$$

4.7.1 Measurement of intellectual capital information

Following former studies (e.g. Guthrie and Petty, 2000; Bontis, 2003; and Brüggen et *al.*, 2009) content analysis is utilised to measure intellectual capital information. In this study a classification scheme is structured for measurement of intellectual capital information. In fact, similar to Brüggen et *al.*, 2009, IC related terms are divided into four categories including general terms, intellectual, human and relational capital. Table 4.4 shows the relevant terms of ICD used by Brüggen et *al.* (2009) as adopted in this study.

Table 4.4: Common terminology used under categories of the concept of intellectual capital

General terms	**Human capital**	**Structural capital**	**Relational capital**
Economic value added	Employee expertise	Structural capital	Relational capital
Intellectual capital	Employee know-how	Intellectual property	Supplier knowledge
Intellectual resources	Employee knowledge	Cultural diversity	Customer knowledge
Intellectual asset	Employee productivity	Organizational culture	Customer capital
Knowledge asset	Employee skill	Corporate learning	Company reputation
Knowledge stock	Employee value	Organizational learning	
Intellectual material	Human capital	Corporate university	
Intellectual capital	Human asset	Knowledge sharing	
Business knowledge	Human value	Management quality	
Competitive intelligence	Expert team	Knowledge management	
		Information system	
		Expert network	

By investigating the text of sampled companies' annual reports, disclosure frequency of the IC related terms is indicated. Finally, the disclosure frequencies of various IC related terms are aggregated to determine the level and quantity of IC disclosure. Therefore, results of the content analysis used in this study represent a matrix of information identifying the incidence of intellectual capital reporting across sampled companies.

4.8 Chapter summary

This chapter has discussed the method of data analysis, the sample selection and the research methodology used in this study. In addition, the method of content analysis used to measure the level of disclosure of intellectual capital information is explained. The method of data analysis used in this study is restricted to the systematic extraction of secondary data from databases of corporate and financial market data across six countries and seven years. The sample for this study consists of 2275 firm year observations for 325 listed companies from Australia, the United Kingdom, Hong Kong, Singapore, Malaysia and South Africa for the period between 2002 and 2008. Some stratified sampling has been undertaken in order to achieve an approximate balance of industry types. In fact, following former studies (see: Francis and Schipper, 1999) the companies in the sample are divided into traditional and non-traditional ones. The list of industries chosen in the sample is illustrated within the chapter (see Table 4.1).

Based on the preceding chapter, the empirical models for this study are developed. Panel regressions as well as ordinary least squares (OLS) are utilised to measure the value relevance of accounting figures. Dependent, independent and control variables (industry type is chosen as the control variable) are explained. The dependent variable in this study is the market value of the firms at the balance sheet date which is obtained from the OSIRIS database. The major independent variables are earnings per share (EPS) and book value per share (BVPS) which are also obtained from the OSIRIS. This study, also, measures the value relevance of intellectual capital information by using a traditional value relevance model. As a result, the other independent variable utilised in this study would be the level of disclosure of intellectual capital information (ICD). The chapter provides detailed explanation concerning the content analysis method utilised to measure ICD items.

Data analysis, test of research questions and discussion of the results will be provided in the next chapter.

CHAPTER 5: RESULTS AND DISCUSSION FOR THE VALUE RELEVANCE OF EARNINGS AND BOOK VALUE OF EQUITY ACROSS SAMPLED COUNTRIES

5.1 Introduction

This chapter provides the data analysis and empirical findings for testing of the research questions concerning the value relevance of reported earnings and book value of equity. The company and market data covers 7 years (3 years pre- and 3 years post-IFRS adoption, together with the year of adoption). It also covers 6 countries that have different histories of harmonization with IFRSs, in order to provide evidence of the incremental and relative value relevance of accounting numbers when converting to IFRSs from different GAAP accounting systems. To provide a comprehensive analysis of the effects of adoption of IFRSs on the value relevance of these key accounting numbers, several alternative modelling approaches are undertaken.

The first modelling approach is the year-of-adoption incremental value relevance model based on data from companies' IFRS-GAAP reconciliation statements published for the year of first-time adoption. This model is drawn from Ahmed and Goodwin (2006) study as follows:

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 EPSDIF_{it} + \alpha_4 BVPSDIF_{it} + IND_i + \varepsilon_{it} \qquad \textit{Equation 5.1}$$

The significance of the variables $EPSDIF_{it}$ and $BVPSDIF_{it}$, respectively, provides the incremental value relevance of IFRSs over GAAPs within the sampled countries. Additionally, industry type is used as a control variable within the analysis. Companies within the sample are divided between traditional and high tech (new economy) industries.

The second approach is the relative[12] explanatory-power modelling of value relevance of earnings and book value of equity based on Collins et *al.*'s (1997) approach, specified formerly within the research design and methodology chapter, as follows:

$$P_{it} = b_0 + b_1 BVPS_{it} + b_2 EPS_{it} + e_{it}$$ *Equation* 5.2

Where R^2 *is referred to as* $R^2_{b,e}$

$$P_{it} = c_0 + c_1 BVPS_{it} + e_{it}$$ *Equation* 5.3

Where R^2 *is referred to as* R^2_b

$$P_{it} = d_0 + d_1 EPS_{it} + e_{it}$$ *Equation* 5.4

Where R^2 *is referred to as* R^2_e

This modelling approach is applied to a comparison of the average explanatory power of data for the 3-year pre-IFRS adoption period and the 3-year post-IFRS adoption period. A graphical presentation of the trends in these R^2 computations over the 7-year period (2002 to 2008) is also provided.

The third approach is a panel regression analysis which simultaneously assesses the time-series and cross-sectional properties in the data. The panel regression model takes into account the pre- and post-IFRSs periods by including a dummy variable (PREPOST). It also provides a Wald test of whether EPS and BVPS, respectively, have changed significantly between the pre- and post-IFRSs periods for each country. The panel regression model uses the following specification:

$$P_{it} = \beta_0 + \delta_0 PREPOST + \beta_1 BVPS_{it} + \delta_1 PREPOST.BVPS_{it} + \beta_2 EPS_{it} + \delta_2 PREPOSTEPS_{it} + IND_i + a_i + e_{it}$$

Equation 5.5

In this model, too, industry type is used as a control variable.

[12] In general, when comparing the explanatory power of different accounting measures, it is important to distinguish between incremental and relative information content. This issue is well illustrated by Biddle et *al.* (1995) who offer the following definition of the difference:

> "*Incremental comparisons ask whether one accounting measure provides information content beyond that provided by another, and apply when one measure is viewed as given and an assessment is desired regarding the incremental contribution of the other (e.g., a supplemental disclosure). Relative comparisons ask which measure has greater information content, and apply when making mutually exclusive choices among alternatives, or when rankings by information content is desired (e.g. when comparing alternative disclosures) (Biddle, et al., 1995, p. 17).*

5.2 Incremental value relevance of earnings and book-value during the adoption year

In this section, regression results are given for Equation 5.1. A control variable, industry-type (IND), is included in this model. The reason for including this control variable is to find out how adoption of IFRSs has changed the value relevance of accounting figures within the new economy compared to traditional industries. In addition, some standards underlying the determination of EPS and BVPS are either industry-specific standards (e.g., AASB111 Construction Contracts, AASB141 Agriculture) or open greater opportunity for accounting policy choice in particular industries (e.g. AASB117 Leases in the transport industry, AASB138 Intangible Assets in high-tech industries). Each of the six countries is analysed in turn in this section. A discussion that compares the results across the six countries is provided at the end of this section.

As shown in Tables 5.1 to 5.4 below, the explanatory power of each regression analysis is found to be high. Adjusted R^2 is above 0.787 in each country except Australia, in fact the lowest level of Adj. R^2 belongs to the companies within the Australian sample (i.e. 0.537). Further, the test for multicollinearity amongst the independent variables, based on the VIF statistic, is found to be within the acceptable level of below 10, indicating that the results for all six countries are not violated by the presence of high multicollinearity. Finally, in each of Tables 5.1 to 5.4 the control variable, IND, is found to be non-significant in the regression results and therefore, does not have a confounding effect.

5.2.1 United Kingdom

Table 5.1 indicates results of the regression analysis utilised for testing the incremental value relevance of earnings and book value of net assets of IFRSs to local GAAP during the adoption year in the UK.

Table 5.1:
Test of incremental value relevance of earnings and equity in the year of IFRS-adoption in the UK

UK (n=58)				
Model Summary: R=0.914, R-Square=0.835, Adjusted R-Square=0.820, F=52.771, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		1.498	.140	
EPS	.587	4.184	.000	6.226
BVPS	.364	2.628	.011	6.070
EPSDIF	.003	.046	.963	1.039
BVPSDIF	.070	1.211	.231	1.061
INDType	.079	1.323	.192	1.133

Results in Table 5.1 indicate that the conversion from local GAAPs to IFRSs did not incrementally contribute to the value-relevance of reported earnings (ESPDIF) or book value of net assets (BVPSDIF) in the UK. Results indicate that, despite the considerable adjustments made from local GAAPs to IFRSs in the UK, the market did not treat the summary information about this adjustment, as given in EPSDIF and BVPSDIF, as having significant information content.

5.2.2 Australia

As indicated in Table 5.2, coefficients on EPSDIF and BVPSDIF are not significant for the Australian sample. (Sig. is equal to 0.874 for EPSDIF and 0.950 for BVPSDIF). Hence, similar to the UK, results of regression analysis in testing the comparative value relevance of earnings and book value of net assets of IFRSs to local GAAPs, during the year of adoption of IFRSs in Australia, does not have incremental value relevance.

Table 5.2:
Test of incremental value relevance of earnings and equity in the year of IFRS-adoption in Australia

Australia (N=63)				
Model Summary: R=0.754, R-Square=0.569, Adjusted R-Square=0.531, F=15.062, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		1.861	.068	
EPS	.024	.243	.809	1.308
BVPS	.716	6.631	.000	1.544
EPSDIF	.019	.159	.874	1.810
BVPSDIF	.007	.063	.950	1.800
INDType	.055	.552	.583	1.313

5.2.3 Hong Kong

Table 5.3 depicts results of the regression analysis used for testing the incremental value relevance of earnings and book value of net assets of IFRSs to local GAAPs during the adoption year in Hong Kong.

Table 5.3:
Test of incremental value relevance of earnings and equity in the year of IFRS-adoption in Hong Kong

Hong Kong (N=49)				
Model Summary: R=0.937, R-Square=0.879, Adjusted R-Square=0.864, F=58.042, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		-0.840	0.406	
EPS	0.741	6.340	0.000	4.508
BVPS	0.259	2.048	0.047	4.290
EPSDIF	0.080	0.462	0.647	5.810
BVPSDIF	0.190	1.083	0.285	4.800
INDType	0.090	1.603	0.117	1.046

Results indicate that, similar to UK and Australia, the transition from local GAAPs to IFRSs did not incrementally improve the value-relevance of reported earnings or book value of net assets in Hong Kong (sig. is 0.647 for EPSDIF and 0.285 for BVPSDIF).

5.2.4 Singapore

Table 5.4 indicates results of the regression analysis used for testing the incremental value relevance of earnings and book value of net assets of IFRS to local GAAP during the adoption year in Singapore.

Table 5.4:
Test of incremental value relevance of earnings and equity in the year of IFRS-adoption in Singapore

Singapore (N=50)				
Model Summary: R=0.901, R-Square=0.812, Adjusted R-Square=0.792, F=41.402, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		-1.149	.256	
EPS	.218	1.858	.069	3.497
BVPS	.715	6.086	.000	3.517
EPSDIF	.014	.216	.830	1.114
BVPSDIF	.014	.224	.824	1.057
INDType	.100	1.507	.138	1.115

The conclusion from the Singapore sample is consistent with the other three countries. For Singapore, regression coefficients for EPSDIF and BVPSDIF are 0.830 and 0.824 respectively.

5.2.5 Summary

This section presents the results of the data analysis on cross-sectional data for four countries separately. The other two Commonwealth of Nations countries considered in this study, Malaysia and South Africa, had insufficient company reconciliation disclosures in the year of IFRSs adoption to be included in this analysis. The results indicate that reported differences between GAAP and IFRS earnings and equities are not incrementally more value relevant in any of the four sampled countries. With regards to Australia and UK, it could be inferred from findings that security analysts in these countries may have relied more on GAAP numbers and not given high credence to the IFRSs adjustments reported in the year of adoption. This could be due the large gap between local accounting standards and IFRSs within these two sampled countries and unfamiliarity of the market with IFRSs.

In relation to lack of incremental value relevance of EPSDIF and BVPSDIF in Hong Kong, as it was mentioned in chapter two, the Hong Kong institute of certified public accountants (HKICPA) has been pursuing the policy of aligning its standards with international accounting standards (IASs) since 1993. Likewise, the Singapore institute of CPAs had been using IASs as the foundation for its local GAAPs for over a decade before the year of IFRS adoption. Therefore, a limited range of adjustments should exist between both Hong Kong's and Singapore's local GAAP and IFRSs. This should have resulted in less substantive adjustments than was experienced in the UK and Australia. If so, adjustments viewed as not substantial by analysts and investors. Therefore, it could explain their lack of incrementally value relevance to the market in Hong Kong and Singapore. To further investigate these arguments, the next section analyses the level and dollar amounts of adjustments made to various elements of financial statements within the sampled countries. This is followed by brief summary comparing differences between the levels of adjustments made in each country.

5.2.5.1 Level and dollar amounts of reconciliation of different elements of financial statements in Australia

This section provides a descriptive analysis of the level of adjustments made to various elements of financial statements in UK, Australia, Singapore and Hong Kong. The first set of descriptive statistics is provided for Australia. This is followed by descriptive analyses for the UK, Singapore and Hong Kong, respectively.

Tables 5.5 to 5.8 indicate the level and dollar amounts of reconciliation of different elements of financial statements in Australia. Table 5.5 indicates that out of 63 publicly listed Australian firms in sample 30 firms have adjusted their revenue". The revenue for the firms in the sample has decreased by an average of AUD$105,924,000. The other elements of income statement which are highly adjusted are "depreciation expense" and "selling, general and administrative expenses". Depreciation expense has decreased by an average of AUD$210,661,000 and administrative expenses increased on average by AUD$6,395,000. Income tax expense is another item of the income statement which is adjusted by 34 firms in the sample. Firms adjusting this element of financial statements have decreased their income tax expense amount on average by AUD$98,412,000.

With regards to the asset items, Table 5.6 indicates that 41 firms within the Australian sample have adjusted their intangible assets as a result of adoption of IFRSs. Table 5.6 indicates that the adjusting firms have increased their "intangible assets" on average by AUD$275,598,000. Additionally, 29 firms adjusted their "property, plant and equipment". These firms decreased their property, plant and equipment as the result of adoption of IFRSs by AUD$146,258,000.

Results for liability items in Table 5.7 reveal that 30 Australian firms adjusted and increased their "deferred tax liability" by an average of AUD$320,642,000. "Provision for liability" is the second item adjusted by firms within the Australian sample. Totally, out of 63 firms in the sample, 27 firms have decreased their "provision for liability" by an average of AUD$6,966,000 as the result of adoption of IFRSs. Finally, Table 5.8 indicates the total amount of differences exist between total equity reported under local GAAP and the one reported under IFRS.

Table 5.5: Number of items adjusted and the average amount of adjustment of various elements of income statement - Australia

	N	Mean	Std. Deviation
Revenue	30	-105924	2.83
Share of profit of associates	15	5156	2.79
Other income	25	49703	3.037
Cost of sales	13	44529	1.30
Impairment loss	1	82	0.00
Depreciation expense	26	210661	3.66
Goodwill amortization	3	21055	3.37
Intangible amortization	5	22547	3.58
Share based payment exp.	5	-72650	1.55
Selling, general & admin. exp.	26	-6395	4.24
Employee expense	21	-46567	2.19
R&D expense	2	2328	3.44
Income tax expense	34	98412	3.84
Finance cost	20	5517	2.76
Other expenses	27	-13637	3.09
Reported net profit GAAP	63	-332878	2.66
Reported net profit IFRS	63	-230646	2.95

Table 5.6: Number of items adjusted and the average amount of adjustment of various asset items – Australia

	N	Mean	Std. Deviation
Cash	7	243971	3.44
Inventory	7	-4424	3.64
PPE	29	-146258	2.44
Goodwill	7	14204	2.37
Intangible	41	275598	1.27
DTA	32	33700	1.51
Trade & receivables	23	-16695	3.51
Investment	13	197444	3.93
Other assets	21	-142048	2.49
Total asset GAAP	63	77665000	3.80
Total asset IFRS	63	76821000	3.91

Table 5.7: Number of items adjusted and the average amount of adjustment of various liability items - Australia

	N	Mean	Std. Deviation
Short-term borrowing	9	-28378	4.76
Long-term borrowing	10	33621	3.18
DTL	30	-320642	1.80
Provision for liability	27	6966	2.57
Retirement benefit	3	-34585	2.99
Trade & payables	15	-128425	3.89
Current tax liability	10	843	2.53
Other liabilities	8	7407	3.65
Total liability GAAP	63	-35977000	1.61
Total liability IFRS	63	-37883000	1.73

Table 5.8: Number of items adjusted and the average amount of adjustment of equity items – Australia

	N	Mean	Std. Deviation
Reserve	49	37764	2.17
Ret. Earnings/Accu. loss*	54	-98807	3.22
Total equity GAAP	63	47851000	2.17
Total Equity IFRS	63	47247000	2.16

*retained earnings/accumulated loss

Descriptive statistics illustrated in Tables 5.5 to 5.8 indicate that a large amount of adjustments were made within the first year of adoption of IFRSs in Australia. Adjustments made to various elements of financial statements including revenue (AASB 118), income tax expense (AASB 112), property, plant and equipment (AASB 116), and intangible assets (AASB 138). The large amounts of adjustments made indicate that technical differences between local GAAP and IFRS as well as existing complexities in IFRS could arguably cause difficulties for users of the financial reports in Australia. This may mean that users did not consider the information in reconciliation statements of companies to be sufficiently reliable or understandable to have relevance in valuing the companies' share value at the time of reporting of this information. Consequently, summary accounting numbers reported under IFRSs were not incrementally more value relevant compared to those reported under GAAP.

5.2.5.2 Reconciliation details in UK

Tables 5.9 to 5.12 illustrate the level of adjustments made and the number of companies in the UK that adjust various elements of financial statements. Table 5.9 indicates that out of 58 British companies in the sample 50 companies adjusted their "income tax expense". Income tax expense has, on average, decreased by £6,798,000. The second most adjusted item is "selling, general and administrative expenses" with 45 companies adjusting this item. Table 5.10 illustrates that "intangible asset" is the most adjusted asset item in the balance sheet with 47 companies adjusting their intangible assets. "Property, plant and equipment" and "goodwill" are the second and third most adjusted assets items in the balance sheet after goodwill. In fact, 42 and 35 companies adjusting their goodwill and property, plant and

equipment in the balance sheet, respectively. With respect to liability items, Table 5.11 indicates that in total 46 and 30 companies in the sample adjusted their "trade and payable" and "provision for liability" items. Additionally, 24 companies adjusted their borrowing costs at the year of adoption of IFRS.

Table 5.9: Number of items adjusted and the average amount of adjustment of various elements of income statement - UK

	N	Mean	Std. Deviation
Revenue	26	-322349	1.45
Share of Profit of Associates	16	38037	2.01
Other income	2	103000	2.71
Cost of sales	26	192958	3.72
Impairment Loss	5	87320	2.06
Depreciation Expense	5	16152	216
Goodwill Amortization	14	10693	3.22
Intangible Amortization	10	2660	1.41
Share Based Payment	5	-361	2.77
Selling, General & Admin Exp.	45	304595	2.11
Employee Expenses	2	21000	2.40
R&D Expenses	7	38988	1.33
Income tax expenses	50	6798	2.78
Finance costs	31	-8050	2.35
Other expenses	1	-2400	0.00
Net profit GAAP	58	33182000	1.32
Net profit IFRS	58	275137000	1.18

Table 5.10: Number of items adjusted and the average amount of adjustment of various asset items - UK

	N	Mean	Std. Deviation
Cash	21	698855	2.52
Inventory	15	-10366	2.22
PPE	42	-13546	2.12
Goodwill	35	360942	2.08
Intangible	47	-13870000	2.82
DTA	42	92140	2.90
Trade & receivable	31	-69953	3.45
Investment	24	-444692	2.38
Other assets	4	-68475	2.06
Reported asset GAAP	58	47557000	1.81
Reported asset IFRS	58	50300000	1.98

Table 5.11: Number of items adjusted and the average amount of adjustment of various liability items - UK

	N	Mean	Std. Deviation
Short term borrowings	10	-291010	3.51
Long term borrowings	14	-152188	2.28
Deferred tax liability	37	-2288	2.50
Provision for liability	30	116053	2.98
Post employment benefit	9	-560419	2.40
Retirement benefit	24	-274069	2.90
Unearned revenue	3	-2000	2.54
Trade & payables	46	94754	3.56
Current tax liability	9	27361	1.50
Other liability	9	127307	1.00
Reported liability GAAP	58	-20019000	3.07
Reported liability IFRS	58	-22031000	2.48

Table 5.12: Number of items adjusted and the average amount of adjustment of various equity items – UK

	N	Mean	Std. Deviation
Reserve	42	-30126	2.24
Ret. earnings/Acc. loss*	51	173877	1.73
Total equity GAAP	58	28617000	1.31
Total equity IFRS	58	30209000	1.50

*retained earnings/accumulated loss

Tables 5.9 to 5.12 indicate that most of the adjustments made in UK within the first year of adoption of IFRSs relate to "income tax expense (FRS 16)", "intangible assets (FRS 10)", "property, plant and equipment (FRS 15)", "goodwill (FRS 10)", provision for liabilities (FRS 12)". With considering the large amounts of adjustments made within the sample companies it could be argued that lack of knowledge of the users of the financial statements of IFRSs as well technical differences between local accounting standards and IFRSs could have caused the accounting numbers reported under IFRSs not to be incrementally more value relevant compared to those reported under local GAAPs.

5.2.5.3 Reconciliation details in Singapore

Tables 5.13 and 5.14 present the number of various items of income statement and balance sheet adjusted within the year of adoption of IFRS in Singapore. Table 5.11 indicates that out of 50 companies in the sample 14 companies adjusted their "share based payment expense". These companies have, on average, decreased their "share based payment expense" by SGD$905,929. The other most adjusted element of the income statement is "income tax expense". Eight companies in the sample adjusted their income tax expense and decreased it, on average, by SGD$575,000. With regards to the balance sheet items, 24 companies in the sample adjusted their "financial instruments", following 18 firms adjusting their "intangible assets" and 12 adjusting their "investment" within the year of adoption of IFRS.

Table 5.13: Number of items adjusted and the average amount of adjustment of various elements of Income statement - Singapore

	N	Mean	Std. Deviation
Goodwill amortization	3	-29885	2.50
Income tax expense	8	575000	1.004
Share based payment	14	-905929	1.23
Revenue	7	-470162	1.48
Cost of sales	16	17290000	1.64
Administrative expense	18	11508000	2.09
Impairment loss	15	68733000	1.47
Net profit GAAP	50	87717000	2.42
Net profit IFRS	50	94437000	2.43

Table 5.14: Number of items adjusted and the average amount of adjustment of various elements of Balance Sheet – Singapore

	N	Mean	Std. Deviation
Goodwill	7	-819196	1.80
investment	12	-20650000	1.72
Intangible	18	15012000	1.86
Financial instrument	24	72239000	1.55
PPE	9	885000	2.66
Inventory	3	-920000	2.52
Trade debtor	2	79277000	1.12
Total equity GAAP	50	73075000	1.58
Total equity IFRS	50	73763000	1.60

Tables 5.13 and 5.14 illustrate that most of adjustments made in Singapore within the year of adoption of IFRSs relate to “share based payment (FRS 102)”, “financial instruments (FRS 39)”, and “intangible assets (FRS 38)”. Results indicate that the dollar amount of adjustments made to various items of balance sheet and income statement in Singapore is lower than the level of adjustments made to various elements of financial statements within the sampled companies in the UK and Australia. This confirms the previous arguments made within this chapter, stating that the lower level of insignificant adjustments made to various elements of financial statements, due to higher alliance of accounting standards with IASs, in companies in Singapore has resulted the accounting numbers produced under IFRSs not to be incrementally more value relevant compared to those produced under local GAAPs.

5.2.5.4 Reconciliation details in Hong Kong

Tables 5.15 and 5.16 present the number of various items of income statement and balance sheet which adjusted within the year of adoption of IFRS in Hong Kong. In total the most affected items in the balance sheet are "property, plant and equipment" and "investment", with 23 companies and 12 ones adjusting their "property, plant and equipment" and "investment", respectively. With regards to the income statement, various elements of income statement are adjusted within the first year of adoption of IFRSs including, "income tax expense", "revenue" and "administrative expenses". However, the amounts of adjustments made in income statement are relatively small.

Table 5.15: Number of items adjusted and the average amount of adjustment of various elements of Balance Sheet – Hong Kong

	N	Mean	Std. Deviation
Goodwill	6	546447	2.59
Intangible	4	-118225	1.69
PPE	23	-34469000	1.47
Investment	12	-23723	1.18
DTL	4	70802	1.53
Total equity GAAP	49	25623000	3.30
Total equity IFRS	49	25628000	2.25

Table 5.16: Number of items adjusted and the average amount of adjustment of various elements of Income statement – Hong Kong

	N	Mean	Std. Deviation
Depreciation expense	4	44340	3.24
Employee expense	5	-227562	2.24
Income tax expense	15	77471	1.60
Revenue	12	10783000	2.62
Cost of sales	4	253505	3.48
Administrative expense	8	-106908	2.04
Finance costs	5	1875	1.02
Goodwill amortization	4	809872	1.63
Intangible amortization	3	11950	2.32
Net profit GAAP	49	16178000	2.85
Net profit IFRS	49	16184000	2.82

Tables 5.15 and 5.16 indicate that the net amount of adjustments made in Hong Kong on adoption of IFRS is not as large as the other three countries. Insignificant amount of adjustments made supports former results represented in Table 5.3 indicating no value relevance for adjustments made between GAAP and IFRS in Hong Kong.

5.2.6 Cross country summary of adjustment differences

This section provides a summary of the cross country reconciliation differences among the sampled countries.

Table 5.17: Net changes due to IFRS adjustments

	Proportion of total equity under IFRS to total equity under GAAP	**Proportion of total net profit under IFRS to total net profit under GAAP**
Australia	0.987 decrease in equity	0.6928 decrease in net profit
UK	1.055 increase in equity	8.921 decrease in net profit
Singapore	1.009 increase in equity	1.0766 increase in net profit
Hong Kong	1.000 no change in equity	1.000 no change in net profit

Table 5.17 gives further insight to the lack of incremental value relevance found for all four sampled countries. In respect, of Australia and UK arguably, this could be due the fact that IFRSs adoption represented a substantial change for most of the companies within the sampled countries, the extent of which was not fully appreciated by users of financial statements. Additionally, insufficient depth of technical expertise and knowledge of analysts and investors of financial reports, at the time of adoption of IFRSs, resulted in IFRS reported earnings and equities being not incrementally value relevant.

To support the idea of the existence of technical difficulties in the perception of financial statement users at the time interpreting the reported IFRS adjustments, a report, by Street (2002), leading up to the year of adoption called "*GAAP Convergence 2002*" is provided. The report provides an overview of 59 surveyed country plans, as of December 2002, to promote and achieve convergence with IFRS. This report highlights various obstacles as below:

- *"Disagreements in some countries within the period of adoption of IFRSs with the requirements of certain significant international financial reporting standards (such as financial instruments and other standards based on fair value accounting) (Street, 2002, p. 4)."*

- *"Tension between the capital markets orientation of IFRS and the tax-driven nature of some national accounting regimes (street, 2002, p. 4)."*

- *"Complicated nature of some IFRSs which was perceived as a barrier to convergence in about half of the surveyed countries (street, 2002, p. 4)."*

- *"The large firms have come to the conclusion that capital market participants need to join forces to ensure that the coverage of IFRSs in the education and training of accountants is increased and national language translations of IFRS, including interpretations, are produced on a timely basis (street, 2002, p.4)."*

Overall, this section provides evidence and discussions regarding the research question concerning the incremental value relevance of accounting information within the year of adoption of IFRSs within the sampled countries. Results indicate that IFRSs reported earnings and equities are not incrementally more value relevant within the year of adoption of IFRSs.

The next section provides results and discussion on testing the relative and incremental explanatory power of book value and earnings per share before and after adoption of IFRSs within the sampled countries.

5.3 Relative and incremental explanatory power of book value and earnings per share before and after adoption of IFRSs

In this section modelling is again based on regressions of EPS and BVPS to stock prices (dependent variable), but for data from the years before and after the adoption year. Both the relative and the incremental explanatory power of book value and EPS are analysed by utilising an approach applied previously by Biddle et *al.* (1995) and Collins et *al.* (1997). First, tests are concerned with the relative explanatory power of book value and EPS. According to Biddle et al. (1995):

> *"Relative comparisons ask which measure has greater information content, and apply when making mutually exclusive choices among alternatives, or when rankings by information content is desired (e.g. when comparing alternative disclosures) (Biddle, et al., p. 17)."*

The procedure of assessing the relative explanatory power of book value and EPS is equivalent to comparing the explanatory power of single regressions. In other words, adjusted R-squares in equations 5.3.1 and 5.3.2 and 5.3.3 (R^2_b , R^2_e and $R^2_{b,e}$) needs to be compared in order to find out whether book value or EPS has greater relative explanatory power (Biddle *et al.*, 1995).

$$P_{it} = c_0 + c_1 BVPS_{it} + e_{it} \qquad \textit{Equation } 5.3.1$$

Where R^2 *is referred to as* R_b^2 *or* exp*lanatory power of book – value*

$$P_{it} = d_0 + d_1 EPS_{it} + e_{it} \qquad \textit{Equation } 5.3.2$$

Where R^2 *is referred to as* R_e^2 *or* exp*lanatory power of earnings per share*

Measurement of relative explanatory power of book value and earnings per share could address the question of whether BVPS or EPS has greater explanatory power for each country, within each financial period. Financial periods within the sample are divided between pre-adoption and post-adoption periods. However, it should be noted that no direct test of comparative and incremental value relevance could be made, at this stage, to investigate the overall influence of adoption of IFRSs on the value relevance of accounting numbers. This is due to the fact that the tests utilized within this section are just designed to compare the relative value relevance of earnings over book value and vice versa.

The second sets of tests are in regards to measurement of incremental[13] explanatory power of BVPS over EPS and vice versa. Like Collins et *al.* (1997) and Graham and King (2000), the results of regression equations 5.3.1, 5.3.2 and 5.3.3 (below) are compared to address the question of incremental explanatory power. Once again, it should be noted that this section does not investigate the overall incremental value relevance of accounting numbers due to adoption of IFRSs. The tests compare the incremental explanatory power of book value over earnings and vice versa.

$$P_{it} = b_0 + b_1 BVPS_{it} + b_2 EPS_{it} + e_{it} \qquad \textit{Equation } 5.3.3$$

Where R^2 *is referred to as* $R_{b,e}^2$ *or* exp*lanatory power of book value and earnings*

[13] This should be, once again, noted that the term "incremental" used in section 5.3 does have a different meaning from the one used in section 5.1. Here, in section 5.3, the word "incremental" means the incremental explanatory power of BVPS compared to EPS. However, in section 5.1 "incremental" related to incremental explanatory power of IFRSs reported earnings and equity numbers compared to those reported under local GAAPs.

The incremental explanatory power of the BVPS and EPS are defined in terms of differences in the coefficient of determination (R^2) (Theil, 1971)[14]. These differences are sometimes called the *semi-partial coefficient of determination* (Cohen & Cohen, 1975, pp. 79 – 84)[15]. Additionally, according to Biddle et *al*. (1995, p. 17):

> "*Incremental comparisons ask whether one accounting measure provides information content beyond that provided by another, and apply when one measure is viewed as given and an assessment is desired regarding the incremental contribution of the other (e.g., a supplemental disclosure).*"

As mentioned above, R^2 statistics are defined from equations 5.3.1, 5.3.2 and 5.3.3 as R^2_b (explanatory power of BVPS), R^2_e (explanatory power of EPS) and $R^2_{b,e}$ (explanatory power of BVPS and EPS), respectively. Subsequently, the incremental explanatory power is defined as:

$$R^2_{b|e} = R^2_{b,e} - R^2_e \qquad \textit{Equation 5.3.4}$$

$R^2_{b|e}$ represents the incremental explanatory power of book value which is equal to the total explanatory power of book value and earnings per share less the explanatory power of earnings per share alone (Collins *et al.,* 1997; Graham & King, 2000).

$$R^2_{e|b} = R^2_{b,e} - R^2_b \qquad \textit{Equation 5.3.5}$$

$R^2_{e|b}$ corresponds to the incremental explanatory power of EPS which is equal to the total explanatory power of book value and earnings per share less the explanatory power of book value alone (Collins *et al.,* 1997; Graham & King, 2000).

$$R^2_{comm} = R^2_{b,e} - R^2_{b|e} - R^2_{e|b} \qquad \textit{Equation 5.3.6}$$

[14] As cited in Graham & King (2000)
[15] Ibid

R^2_{comm} stands for the explanatory power common to book value and earnings per share and is equal to the total explanatory power of BVPS and EPS less the incremental explanatory power of BVPS and the incremental explanatory power of EPS (Collins *et al.,* 1997; Graham & King, 2000). With regards to R^2_{comm}, it should be noted that, as cited by Graham and King (2000), Theil (1971, pp. 167-171) states that where the independent variables in equation 5.3.6 are not orthogonal, the sign of the difference between $R^2_{b,e}$ and the sum of the incremental R^2s ($R^2_{b|e}$ + $R^2_{e|b}$) is not determined. This means that R^2_{comm} may be either positive or negative (Garaham & King, 2000).

In terms of the variables in equation 5.3.6, the issue to be noted is the association that needs to be present between the market value of each company and its accounting variables. Book values and earnings are not observable until some weeks after the end of the fiscal year. This raises the question of the timing of the market value measures to be associated with the accounting variables. According to Barth et *al.* (1996), choice of contemporaneous versus lagged market value is a trade-off. The advantage to using a lagged market value is that it may reasonably reflect the accounting results since adequate time has passed for these results to be public information (Graham & King, 2000). However, lagged market values will include effects of information and events occurring after the end of the fiscal year (Graham & King, 2000). For investigating systematic changes in the value relevance of earnings and book values over time, Collins et *al.* (1997), examined associations between market values and accounting numbers for US firms taking market values three months after the end of the fiscal year. However utilising lagged market values in a cross-country analysis is problematic. This is due to the fact that the time lag between fiscal year-ends and report dates can vary largely in different countries in the sample. Consequently, this study examines the association between book value and earnings per share for a fiscal year and market values at the end of the same fiscal year.

5.3.1 Relative explanatory power of book value and earnings per share

This section provides the results on relative explanatory power of BVPS and EPS within the sampled countries. Firstly, the average explanatory power of BVPS and EPS within the pre-adoption period is tested. It is then followed by investigation of the relative explanatory power of BVPS and EPS within the post-adoption period.

5.3.1.1 Relative explanatory power of book value and earnings per share within the pre-adoption period

In respect to UK, according to Table 5.20 average relative explanatory powers of EPS (R^2_e) are lower than that of BVPS (R^2_b) within the pre-adoption period in UK. The only exception relates to year 2004 when both book value and earnings per share have equal relative explanatory powers.

Turning to Australia, Table 5.21 indicates that, similar to UK, average relative explanatory power of earnings (R^2_e) is lower than that of book value (R^2_b) within the pre-adoption period. Table 5.17 indicates that relative explanatory power of EPS (R^2_e) in 2003 has been negative within in the Australian sample. In other words, EPS has not been value relevant within that year.

Tables 5.22 and 5.24 indicate that the average relative explanatory power of EPS (R^2_e) has been lower than that of BVPS (R^2_b) in Hong Kong and Malaysia within the pre-adoption period.

However, Tables 5.23 and 5.25 indicate that the average relative explanatory power of EPS (R^2_e) has been relatively higher than that of BVPS (R^2_b) in Singapore and South Africa within the pre-adoption period.

The underlying reasons behind higher relative explanatory powers of earnings compared to book value within the sampled countries within the pre-adoption period could be due to the percentage of firms reporting loss within this period. To support this argument, the percentage of firm-observations making loss in each country within the pre-adoption period is

investigated. Table 5.18 indicates the percentage of firm-observations reporting loss in each country within the pre-adoption period.

Table 5.18: Percentage of loss making firm years during the pre-adoption period within the sampled countries

Australia	68 observations/total 192 observations (64 firms x 3 years) = 35.42%
UK	57 observations/total 174 observations (58 firms x 3 years) = 32.75%
Hong Kong	41 observations/total 147 observations (49 firms x 3 years) =27.89%
Malaysia	32 observations/total 150 observations (50 firms x 3 years) = 21.33%
Singapore	31 observations/total 150 observations (50 firms x 3 years) = 20.67%
South Africa	8 observations/total 150 observations (50 firms x 3 years) = 5.33%

According to Table 5.18, 35.42% of Australian firms reported loss within the pre-adoption period. This is followed by the UK, 32.75%, Hong Kong, 27.89%, Malaysia, 21.33%, Singapore, 20.67%, and South Africa at 5.33%. This confirms prior arguments made within chapter three, literature review, stating that the percentage of loss making firms should be regarded as the primary factor influencing the relative value relevance of earnings and book value.

With regards to South Africa, as per Table 5.18, only 5.33% of sampled firms made loss within the pre-adoption period. This obviously has affected the relative value relevance of earnings and equity. As can be seen in Table 5.25 the average relative explanatory power of earnings within the pre-adoption period in South Africa is 53%. This is only 28.7% for book value.

5.3.1.2 Relative explanatory power of book value and earnings per share within the post-adoption period

Table 5.20 indicates that the average relative explanatory power of EPS (R^2_e) is higher compared to that of BVPS (R^2_b) within the post-adoption period in UK. This is in contrast to the pre-adoption period during which the relative explanatory power of EPS was lower than that of BVPS.

With regards to Hong Kong, Table 5.22 indicates that, similar to UK, the average explanatory power of EPS (R^2_e) is higher than that of BVPS (R^2_b) within the post-adoption period.

In Singapore and South Africa, according to Table 5.23 and 5.25, average explanatory power of EPS is higher than that of book value. This is similar to the pre-adoption period within these countries during which EPS is relatively more value relevant than BVPS.

In Australia and Malaysia – according to Tables 5.21 and 5.24 – book-value has higher explanatory power within the post-adoption period compared to EPS (same as the pre-adoption period) and therefore is relatively more value relevant compared to EPS.

To find out the underlying reasons behind the changes in the relative explanatory power of EPS and BVPS after adoption of IFRSs, once again, an investigation is made of the percentage of loss-making firm years within the post-adoption period in the sampled countries. Table 5.19 indicates the percentage of firm-year observations reporting loss in each country within the post-adoption period.

Table 5.19: Percentage of loss making firm years during the post-adoption period within the sampled countries

Australia	78 observations/total 192 observations (64 firms x 3 years) = 40.62%
Malaysia	42 observations/total 150 observations (50 firms x 3 years) = 28.00%
Hong Kong	33 observations/total 147 observations (49 firms x 3 years) = 22.95%
Singapore	28 observations/total 150 observations (50 firms x 3 years) = 18.66%
UK	29 observations/total 174 observations (58 firms x 3 years) = 16.60%
South Africa	5 observations/total 150 observations (50 firms x 3 years) = 3.33%

As per Table 5.19 the trend of loss making has even increased after adoption of IFRSs in Australia and Malaysia. This could explain the lower relative explanatory power of EPS in Australia and Malaysia after the adoption of IFRSs. This confirms former arguments made within previous studies (e.g. Collins et *al*., 1997; Burgstahler & Dichev, 1997; Barth et *al.*, 1998) that negative earnings result in a shift in value relevance from earnings to book value. With regards to Hong Kong, Singapore, South Africa and UK, however, according to Table 5.19, the percentage of loss-making firm years have decreased after the adoption of IFRSs compared to the pre-adoption period. This explains the reason behind higher explanatory power of earnings compared to that of book value after adoption of IFRSs in these countries.

Tables on relative explanatory power in the pre-adoption periods for each of the six countries, Table 5.20 to 5.25, are presented below.

Table 5.20: Incremental and relative information content of book values and earnings per share - UK

Panel A: UK											
Year	N	b1EPS*	b2BVPS*	R2(b,e)*	c1EPS**	R2e**	d1BVPS***	R2b***	R2b|e	R2e|b	R2comm
2002	58	0.013 (2.567)	0.000 (7.958)	0.628	0.000 (4.069)	0.214	0.000 (9.132)	0.591	0.414	0.037	-0.377
2003	58	0.006 (2.876)	0.000 (7.301)	0.670	0.000 (5.765)	0.361	0.000 (9.835)	0.627	0.309	0.043	-0.266
2004	58	0.000 (4.7333)	0.000 (4.803)	0.873	0.000 (16.298)	0.823	0.000 (16.383)	0.824	0.05	0.049	-0.001
Mean	58	0.0064 (3.392)	0.000 (6.687)	0.724	0.000 (8.711)	0.466	0.000 (11.078)	0.681	0.258	0.043	-0.215
2006	58	0.000 (11.256)	0.004 (2.993)	0.957	0.000 (33.293)	0.951	0.000 (18.812)	0.861	0.006	0.096	0.09
2007	58	0.000 (7.266)	0.000 (6.502)	0.926	0.000 (19.624)	0.871	0.000 (18.495)	0.857	0.055	0.069	0.014
2008	58	0.000 (10.036)	0.001 (3.602)	0.758	0.000 (11.761)	0.707	0.000 (5.368)	0.328	0.051	0.43	0.379
Mean	58	0.000 (9.519)	0.002 (4.366)	0.881	0.000 (21.559)	0.843	0.000 (14.225)	0.682	0.0374	0.198	0.161

***** EPS, BVPS and R^2 indicate the coefficients and adjusted R-square of the regression modelling of earnings per share and book value on market price on a yearly basis

** EPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of earnings per share alone on market price on a yearly basis

*** BVPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of book value per share alone on market price on a yearly basis

Table 5.21: Incremental and relative information content of book values and earnings per share - Australia

Panel B: Australia											
Year	N	b1EPS*	b2BVPS*	R2(b,e)*	c1EPS**	R2e**	d1BVPS***	R2b***	R2b|e	R2e|b	R2comm
2002	63	0.000 (4.594)	0.000 (5.161)	0.599	0.000 (7.006)	0.433	0.000 (7.521)	0.469	0.166	0.13	0.303
2003	63	0.419 (0.813)	0.000 (6.674)	0.407	0.544 (0.610)	-0.01	0.000 (6.690)	0.41	0.417	-0.003	-0.007
2004	63	0.452 (0.757)	0.000 (5.222)	0.519	0.000 (6.475)	0.315	0.000 (8.358)	0.522	0.204	-0.003	0.318
Mean	63	0.291 (1.512)	0.000 (5.686)	0.508	0.182 (4.697)	0.246	0.000 (7.523)	0.467	0.263	0.042	0.205
2006	63	0.068 (1.856)	0.000 (4.093)	0.483	0.000 (5.923)	0.351	0.000 (7.425)	0.462	0.132	0.021	0.330
2007	63	0.001 (3.479)	0.000 (5.250)	0.583	0.000 (6.620)	0.405	0.000 (8.136)	0.509	0.178	0.074	0.331
2008	63	0.005 (2.900)	0.000 (5.638)	0.489	0.000 (4.512)	0.235	0.000 (6.935)	0.428	0.254	0.061	0.174
Mean	63	0.0246 (2.745)	0.000 (5.083)	0.518	0.000 (5.685)	0.330	0.000 (7.498)	0.466	0.188	0.052	0.278

***** EPS, BVPS and R^2 indicate the coefficients and adjusted R-square of the regression modelling of earnings per share and book value on market price on a yearly basis

** EPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of earnings per share alone on market price on a yearly basis

*** BVPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of book value per share alone on market price on a yearly basis

Table 5.22: Incremental and relative information content of book values and earnings per share – Hong Kong

Panel C: Hong Kong											
Year	N	b1EPS*	b2BVPS*	R2(b,e)*	c1EPS**	R2e**	d1BVPS***	R2b***	R2b|e	R2e|b	R2comm
2002	49	0.061 (1.924)	0.000 (5.969)	0.748	0.000 (7.906)	0.562	0.000 (11.527)	0.7333	0.186	0.015	0.547
2003	49	0.058 (1.947)	0.000 (5.844)	0.765	0.000 (8.525)	0.599	0.000 (12.069)	0.751	0.166	0.014	0.585
2004	49	0.000 (7.250)	0.000 (3.856)	0.910	0.000 (19.058)	0.883	0.000 (14.364)	0.811	0.027	0.099	0.784
Mean	49	0.0397 (3.707)	0.000 (5.223)	0.807	0.000 (11.829)	0.682	0.000 (12.653)	0.765	0.126	0.0426	0.638
2006	49	0.000 (14.514)	0.552 (0.559)	0.953	0.000 (31.598)	0.950	0.000 (11.910)	0.746	0.003	0.207	0.743
2007	49	0.000 (11.442)	0.160 (-1.429)	0.913	0.000 (14.315)	0.911	0.000 (10.011)	0.674	0.002	0.239	0.627
2008	49	0.000 (6.148)	0.000 (4.802)	0.870	0.000 (14.315)	0.809	0.000 (12.674)	0.769	0.061	0.101	0.708
Mean	49	0.000 (10.701)	0.237 (1.3106)	0.912	0.000 (20.076)	0.891	0.000 (11.531)	0.729	0.022	0.182	0.692

***** EPS, BVPS and R^2 indicate the coefficients and adjusted R-square of the regression modelling of earnings per share and book value on market price on a yearly basis

** EPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of earnings per share alone on market price on a yearly basis

*** BVPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of book value per share alone on market price on a yearly basis

Table 5.23: Incremental and relative information content of book values and earnings per share – Singapore

Panel D: Singapore											
Year	N	b1EPS*	b2BVPS*	R2(b,e)*	c1EPS**	R2e**	d1BVPS***	R2b***	R2b|e	R2e|b	R2comm
2002	50	0.000 (7.684)	0.000 (7.114)	0.811	0.000 (8.924)	0.616	0.000 (8.336)	0.583	0.195	0.228	0.388
2003	50	0.000 (7.423)	0.000 (5.936)	0.869	0.000 (13.045)	0.775	0.000 (11.301)	0.721	0.094	0.148	0.627
2004	50	0.000 (4.497)	0.000 (4.813)	0.878	0.000 (15.091)	0.822	0.000 (15.485)	0.83	0.056	0.048	0.774
Mean	50	0.000 (6.535)	0.000 (5.954)	0.853	0.000 (12.353)	0.738	0.000 (11.707)	0.712	0.115	0.142	0.596
2006	50	0.000 (8.576)	0.000 (5.862)	0.949	0.000 (22.886)	0.914	0.000 (18.382)	0.873	0.035	0.076	0.838
2007	50	0.001 (3.416)	0.000 (4.863)	0.813	0.000 (11.386)	0.724	0.000 (12.881)	0.771	0.089	0.042	0.682
2008	50	0.000 (6.188)	0.000 (4.500)	0.893	0.000 (16.692)	0.85	0.000 (14.476)	0.810	0.043	0.083	0.767
Mean	50	0.0003 (6.06)	0.000 (5.075)	0.885	0.000 (16.988)	0.829	0.000 (15.246)	0.818	0.0556	0.067	0.762

***** EPS, BVPS and R^2 indicate the coefficients and adjusted R-square of the regression modelling of earnings per share and book value on market price on a yearly basis

** EPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of earnings per share alone on market price on a yearly basis

*** BVPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of book value per share alone on market price on a yearly basis

Table 5.24: Incremental and relative information content of book values and earnings per share – Malaysia

Panel E: Malaysia											
Year	N	b1EPS*	b2BVPS*	R2(b,e)*	c1EPS**	R2e**	d1BVPS***	R2b***	R2b|e	R2e|b	R2comm
2002	50	0.719 (-0.362)	0.000 (7.002)	0.468	0.623 (0.495)	-0.014	0.000 (7.084)	0.477	0.482	-0.009	-0.005
2003	50	0.392 (0.864)	0.005 (2.898)	0.272	0.001 (3.473)	0.17	0.000 (4.636)	0.275	0.102	-0.003	0.173
2004	50	0.007 (2.783)	0.003 (3.068)	0.514	0.000 (6.551)	0.473	0.000 (6.735)	0.452	0.041	0.062	0.411
Mean	50	0.373 (1.095)	0.00267 (4.323)	0.418	0.208 (3.506)	0.209	0.000 (6.152)	0.402	0.208	0.0167	0.193
2006	50	0.169 (-1.395)	0.000 (5.893)	0.414	0.073 (1.829)	0.042	0.000 (6.130)	0.404	0.372	0.01	0.032
2007	50	0.005 (2.946)	0.000 (4.579)	0.575	0.000 (6.267)	0.415	0.000 (7.614)	0.513	0.16	0.062	0.353
2008	50	0.022 (2.354)	0.000 (5.206)	0.735	0.000 (9.126)	0.604	0.000 (11.594)	0.712	0.131	0.023	0.581
Mean	50	0.0653 (1.302)	0.000 (5.226)	0.575	0.0243 (5.742)	0.354	0.000 (8.446)	0.543	0.221	0.032	0.322

***** EPS, BVPS and R^2 indicate the coefficients and adjusted R-square of the regression modelling of earnings per share and book value on market price on a yearly basis

** EPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of earnings per share alone on market price on a yearly basis

*** BVPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of book value per share alone on market price on a yearly basis

Table 5.25: Incremental and relative information content of book values and earnings per share – South Africa

Panel F: South Africa											
Year	N	b1EPS*	b2BVPS*	R2(b,e)*	c1EPS**	R2e**	d1BVPS***	R2b***	R2b|e	R2e|b	R2comm
2002	50	0.000 (7.542)	0.025 (2.316)	0.683	0.000 (9.674)	0.654	0.000 (4.834)	0.313	0.029	0.37	0.284
2003	50	0.108 (1.636)	0.620 (0.499)	0.212	0.000 (3.891)	0.224	0.001 (3.472)	0.184	-0.012	0.028	0.196
2004	50	0.000 (7.558)	0.812 (0.239)	0.707	0.000 (11.066)	0.713	0.000 (5.388)	0.364	-0.006	0.343	0.37
Mean	50	0.036 (5.578)	0.486 (1.018)	0.534	0.000 (8.210)	0.530	0.0003 (4.565)	0.287	0.00367	0.247	0.283
2006	50	0.000 (8.372)	0.000 (3.742)	0.653	0.000 (7.946)	0.559	0.003 (3.147)	0.154	0.094	0.499	0.06
2007	50	0.100 (1.676)	0.000 (5.220)	0.618	0.000 (5.914)	0.409	0.000 (8.700)	0.604	0.209	0.014	0.395
2008	50	0.000 (4.848)	0.101 (1.671)	0.705	0.000 (10.577)	0.694	0.000 (8.057)	0.566	0.011	0.139	0.555
Mean	50	0.033 (4.965)	0.0336 (3.544)	0.659	0.000 (8.146)	0.554	0.0001 (6.635)	0.441	0.105	0.2173	0.337

***** EPS, BVPS and R^2 indicate the coefficients and adjusted R-square of the regression modelling of earnings per share and book value on market price on a yearly basis

** EPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of earnings per share alone on market price on a yearly basis

*** BVPS and R^2 indicate the coefficient and adjusted R-square of the regression modelling of book value per share alone on market price on a yearly basis

5.3.2. Incremental explanatory power of BVPS and EPS

This section investigates the incremental explanatory power of BVPS beyond that of EPS ($R^2_{b|e}$), the incremental explanatory power of EPS beyond that of BVPS ($R^2_{e|b}$) and the common explanatory power of book value and earnings (R^2_{comm}). As previously mentioned, the financial periods are divided into pre-and-post adoption periods. However, no tends across the individual years of these two periods have been presented on the influence of adoption of IFRSs on accounting numbers.

Focusing on the pre-adoption period, results indicate that in the UK (Figure 5.1), Australia (Figure 5.2), Hong Kong (Figure 5.3) and Malaysia (Figure 5.5) the incremental explanatory power of BVPS is higher than that of EPS within this period. However, this is not the case in Singapore and South Africa (Figures 5.4 and 5.6 respectively). In fact, within the pre-adoption years (i.e. 2002 to 2004), incremental explanatory powers of earnings tends to be higher than that of BVPS in Singapore and South Africa.

Within the post-adoption years (i.e. 2006 to 2008), in UK and Hong Kong, the incremental explanatory powers shift from BVPS to EPS. As previously mentioned, one of the underlying reasons could be decrease in reported loss making by firms within the UK and Hong Kong sample after the adoption of IFRSs. In fact, Tables 5.18 and 5.19 reveal that there is a decrease in proportion of loss-making observations from 32.75% to 16.60% for UK firms and a decrease from 27.89% to 22.95% in proportion of firms reporting loss in Hong Kong.

In Singapore and South Africa, EPS has higher explanatory power compared to BVPS after the adoption of IFRSs. Once again this could be due to decrease in the proportion of loss-making observations from the pre-adoption years to the post-adoption period. In fact, the percentage of loss-making firm-year observations has decreased from 20.67% to 18.66% in Singapore within the post-adoption period. In South Africa, this proportion has decreased from 5.33% during the pre-adoption years to 3.33% within the post-adoption period.

In Australia and Malaysia, BVPS, same as the pre-adoption periods, continues to have higher explanatory powers compared to earnings. Once again, lower explanatory power of EPS compared to BVPS could be due to an increase in the proportion of firms reporting loss within the post-adoption period in these countries. In fact, the proportion of loss-making firm year observations in Australia has increased from 35.42% within the pre-adoption period to

40.62% within the post-adoption years. In Malaysia, the percentage of firms reporting loss has increased from 21.33% within pre-adoption years to 28% within the post-adoption period.

In brief, similar to relative explanatory powers of book value and earnings, the trend of loss making by companies within the sampled countries could be the influencing factor on variations in incremental explanatory powers of book value and earnings within the pre-and-post adoption periods.

Figures on incremental explanatory power of EPS and BVPS within the pre-and post-adoption periods for each of the six countries, Figures 5.1 to 5.6, are presented below.

Figure 5.1: Incremental explanatory power of earnings and book value in United Kingdom

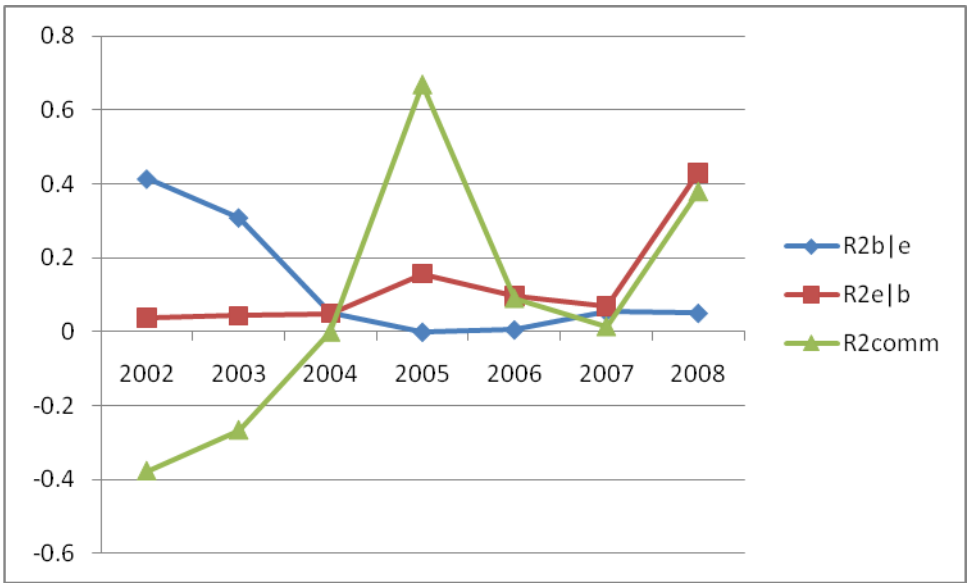


Figure 5.2: Incremental explanatory power of earnings and book value in Australia

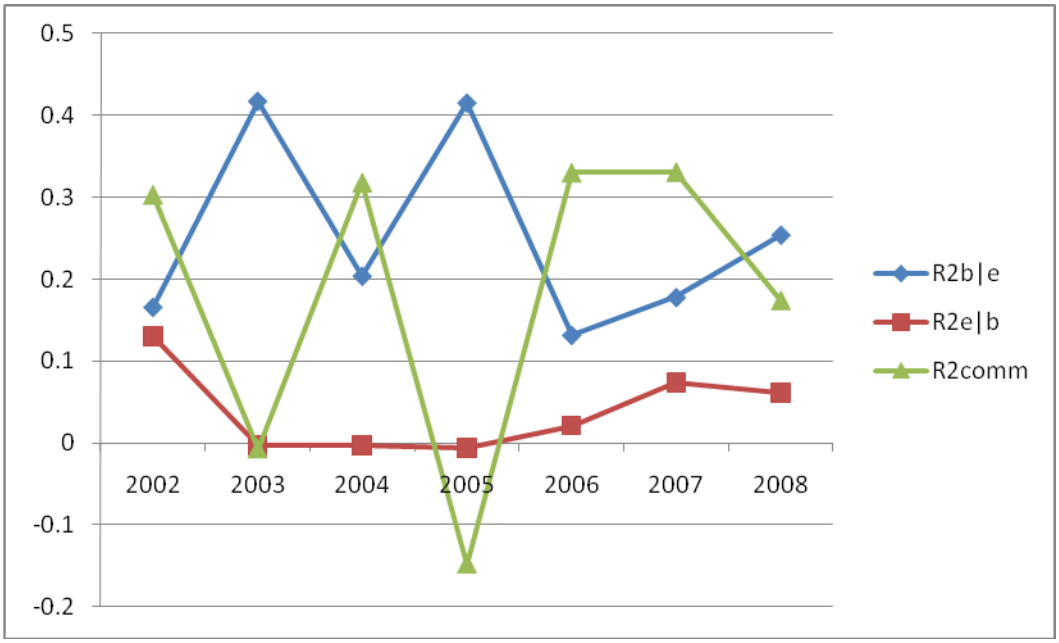


Figure 5.3: Incremental explanatory power of earnings and book value in Hong Kong

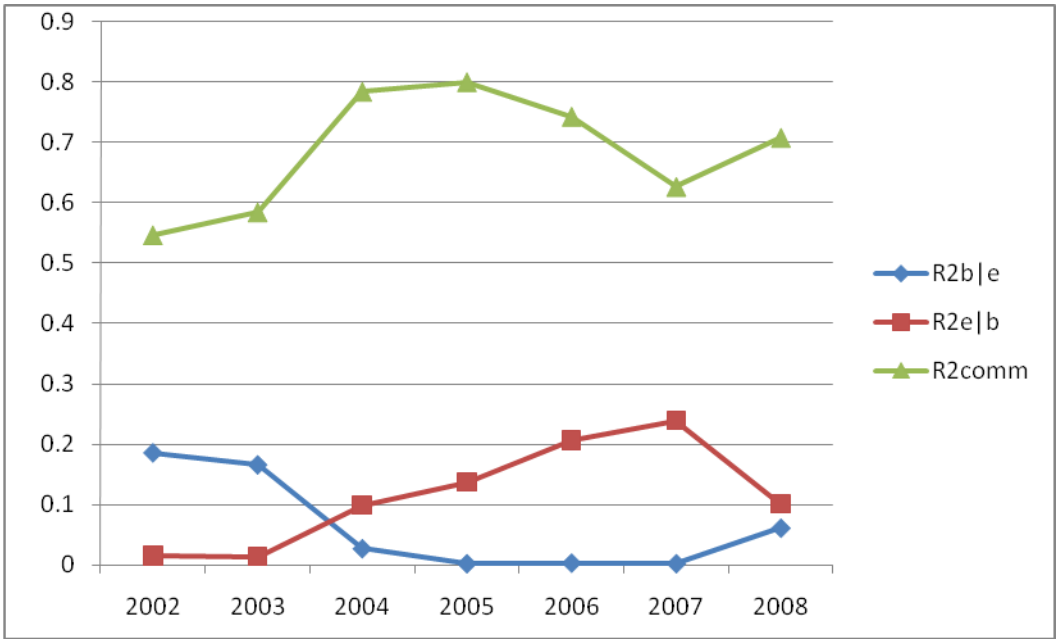


Figure 5.4: Incremental explanatory power of earnings and book value in Singapore

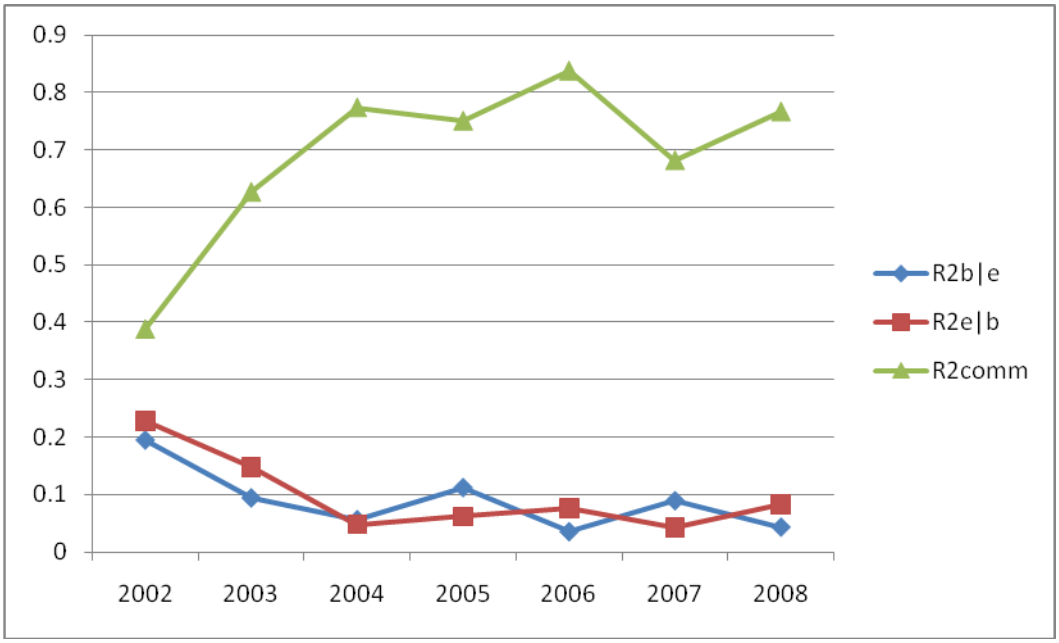


Figure 5.5: Incremental explanatory power of earnings and book value in Malaysia

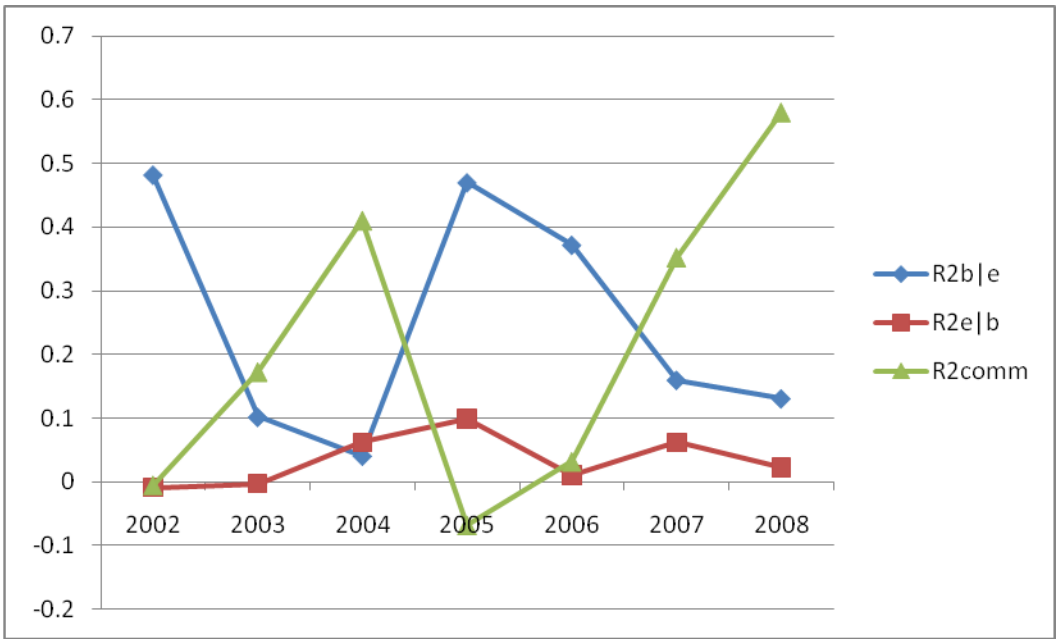
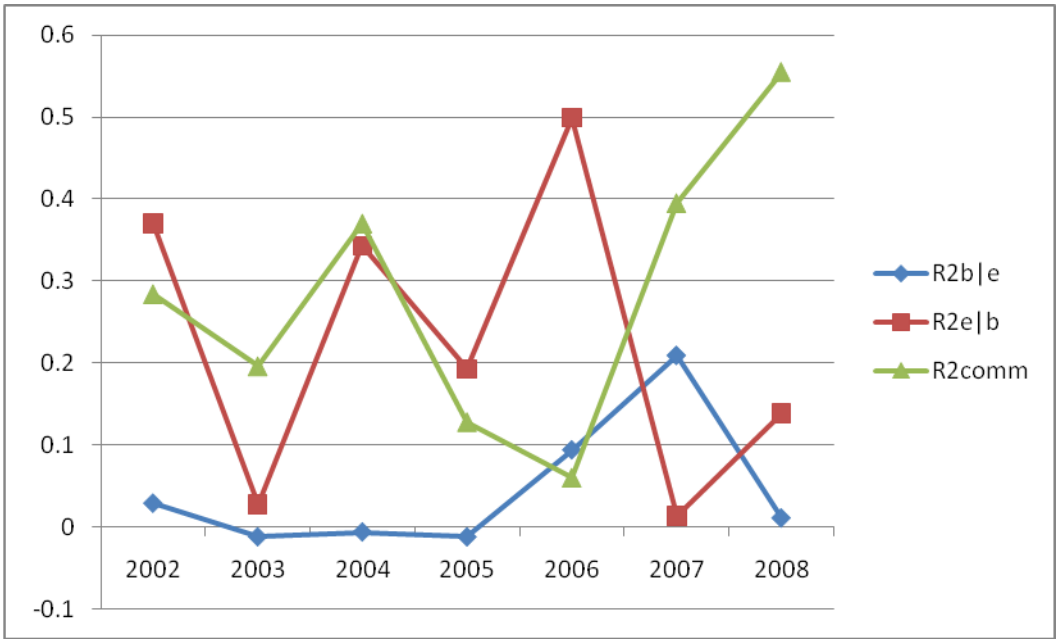


Figure 5.6: Incremental explanatory power of earnings and book value in South Africa



Another interesting observation from the trend patterns in Figures 5.1 to 5.6 relates to the R^2_{comm} (common explanatory power of book value and earnings) line around the year of adoption (i.e. 2005). The trend for Hong Kong and Singapore has remained fairly steady through the year of 2005. These two countries were long standing adopters of IASs leading up to the year of adoption. So the impact on the combined explanatory power of EPS and BVPS did not change substantially due to IFRS adoption. In contrast, the trend for R^2_{comm} in Australia, the UK, South Africa and Malaysia reveals a very visible trough or peak in 2005. These countries, especially Australia, the UK and South Africa had a long history of independent setting of accounting standards leading up to the year of adoption of IFRSs.

5.4 Implementing panel regression for direct test of the incremental value-relevance arising from change of accounting regimes

To provide an analysis that integrates time series data into one model, in a way that can directly compare the incremental value-relevance results for the pre-and post-IFRS adoption periods, this section utilises panel regression to investigate the next research question of this study i.e. to find out if the adoption of IFRSs has resulted in more incrementally value relevant accounting numbers. Once again, it should be noted that the term "incremental" used in this section relates to the value relevance of accounting numbers reported under IFRSs compared to those reported under local GAAPs. This section initially provides an explanation with regards to the advantages of panel regression analysis and the underlying reasons behind using panel regression in this study. Different types of panel regression are then introduced.

5.4.1 Advantages of panel regression

The first part of this section provides a discussion on broad advantages of panel regression. This is then followed by a discussion focusing on this thesis and the underlying reasons behind using panel regression to test the incremental value relevance of accounting figures.

Panel regression analysis has a number of advantages. First of all, as far as panel data relate to firms, countries, etc., over time, heterogeneity and structural variations in these units is unavoidable. The techniques of panel data estimation can take such heterogeneity explicitly into consideration by allowing for firm-specific variables (Gujarati, 2003, p.637). Additionally, by combining time series of cross-section observations, panel data give *"more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency (Gujarati, 2003, p. 638)."* Thirdly, by investigating the recurring cross section of observations, panel data turn out to be more suitable to study the *dynamics of change.* Fourthly, panel data can better detect and measure effects that simply cannot be detected in pure cross-section or pure time series data. In addition, panel data facilitate the study of more complicated behavioural models. Finally, "*by making data available for several thousand units, panel data can minimize the bias that might result if we aggregate individuals or firms into broad aggregates (Gujarati, 2003, p. 638)".* In summary,

panel data improve empirical analysis in ways that might be unlikely if only cross-section or pure time series data is utilised (Gujarati, 2003, p. 638).

With regards to this study, as in section 5.3, it is possible to run simple regressions for each year separately. However, this will decrease the degrees of freedom. According to Gujarati (2003, p. 77), *"The term number of degrees of freedom means the total number of observations in the sample (=n) less the number of independent (linear) constraints or restrictions put on them. In other words, it is the number of independent observations out of a total of "n" observations.* According to Gujarati (2003, p. 77), the general rule to measure the degree of freedom is *"def = (n - number of parameters estimated)"*. For example, considering UK (one of the countries in the sample with 58 firms and seven years of data) and equation 5.4.1 with two independent variables, if the analysis is conducted on a yearly basis the degree of freedom would be just 56 (i.e. 58 observations less two independent variables). However, if this is done by utilizing a panel regression the degree of freedom would be 404 (406 observations over seven years less two independent variables). This indicates a substantial discrepancy in degrees of freedom.

$$P_{it} = b_0 + b_1 BVPS_{it} + b_2 EPS_{it} + e_{it} \qquad \textit{Equation } 5.4.1$$

In summary, higher numbers of observations increase the degree of freedom and make the study more meaningful. If the regression analysis, as in section 5.3, is performed on a yearly basis, this decreases the degrees of freedom and consequently results in less meaningful regression analysis. To overcome this limitation in this section all the observations are pooled together to produce a more meaningful regression analysis.

5.4.2 Characteristics of panel regression

This section provides a discussion regarding characteristics of the panel regression. The first part is dedicated to identifying the characteristics of balanced panels versus unbalanced panels. It is then followed by a discussion with regards to fixed effects and random effects approaches.

5.4.2.1 Panel data characteristics

5.4.2.1.1 Balanced versus non-balanced panels

After pooling all the observations in each sample country, there will be a maximum of *N* cross sectional units and a maximum of *T* time periods. If each cross-sectional unit has the same number of time series observations, then such a panel data is called a balanced panel. With regards to this study, too, each observation (i.e. firm per year) is associated with one year and, therefore, the panel would be a balanced one. However, if the numbers of observations differ among panel members, such a panel is called an unbalanced panel.

5.4.2.1.2 Fixed approach versus random effect approach

In essence every panel regression is dependent upon the assumptions made about the intercept, the slope coefficients, and the error term, e_{it}. Therefore, there would be several possibilities. The next section provides a discussion with regards to the underlying assumptions behind the fixed effect approach.

- **Fixed effect approach (FEM)**

Fixed effect approach takes the "individuality" of each company (or each cross-sectional unit) into consideration by allowing the intercept to vary for each company but still assume that the slope coefficients are constant across firms. This makes the model as equation 5.4.2.

$$P_{it} = b_{0i} + b_1 BVPS_{it} + b_2 EPS_{it} + e_{it} \qquad \textit{Equation } 5.4.2$$

The subscript *i* on the intercept term suggests that the intercepts of the firms within the sample might be different. The differences may be due to special features of each company such as executive style or corporate values (Gujarati, 2003, p. 642). According to Gujarati (2003), this model is known as the fixed effects model (FEM). This is called "fixed effect" because of the fact that, although the intercept may differ across various companies within the sample, each company's intercept does not change over time. Therefore, every company's intercept is *"time invariant"* (Gujarati, 2003, p. 642).

- **Random effect approach (REM)**

Random effect approach assumes that the dataset being analysed consists of a hierarchy of various cross-sectional units whose differences relate to that hierarchy. In other words, returning to equation 5.4.2, instead of treating b_{0i} as fixed it is assumed that it is a random variable with a mean value of b_0. Therefore, the intercept value for every cross-sectional unit could be expressed as:

$b_{0i} = b_1 + e_i \quad i = 1, 2, \ldots, N$ *Equation 5.4.3*

In equation 5.4.3, e_i is a random error term with a mean value of zero and variance of σ^2_e.

In summary, according to Gujarati (2003, p. 648), the differences between FEM and REM is that "*in FEM each cross-sectional unit has its own (fixed) intercept value, in all N such values for N cross-sectional units."* With regards to REM, however, *"the intercept b_{0i} represents the mean value of all the (cross-sectional) intercepts and the error component e_i represents the random deviation of individual intercept from this mean value (Gujarati, 2003, p. 648)".* It should be noted that this study just focuses on the fixed effect model. This is because, with regards to this study, one could assume that the intercept among the companies within the sample might changes, however, arguably, it is a fixed amount for each firm within the sample. Therefore, it is argued that it could not be a random variable which changes over time and has a mean value of b_0. Additionally, this argument is supported at the time of running the random effect regression analyses. In fact, the adjusted R-squares of the random effect regression models are considerably lower than that of fixed effect model.

5.4.3 Results of running panel regression for direct test of incremental value relevance

This section provides the results of implementing panel regressions for direct test of incremental value relevance of accounting information. Tables 5.27 to 5.38 indicate the results of panel regressions utilised. Fixed effect panel regression is utilised to test the incremental value relevance of IFRSs. As previously mentioned, the random effect approach is not used as the adjusted R-squares of the random effect approach are considerably low (e.g. lower than 20%). That is why this study just provides the results of implementing the fixed

effect approach. Before providing the results some technical settings specified to implement the analyses are explained. Firstly, the model utilised to test the research questions within all sampled countries estimates the "Generalised Least Squares (GLS)" specifications. According to Eviews 6 User's Guide II (2007, page 499) *"GLS accounts for various patterns of correlation that might exist between the residuals."* To put it simply, GLS is applied when there is a certain degree of correlation between observations. There are various types of GLS specifications that could be utilised. The one which is utilised in the setting of the panel regression utilised for study is called "cross-section heteroskedasticity (or cross-section weight)" which allows for a different residual variance for each cross sectional unit (i.e. each observation) (Eviews 6 User's Guide II, 2007, page 499). Additionally, "white cross-section standard method" is utilised in the setting of the panel regression conducted in this study. This estimator, too, is used to suggest whether heteroscedasticity is likely to exist. In fact, it is robust to cross-equation correlation as well as different error variances in each cross-section.

Returning to results, Tables 5.27 to 5.38 indicate that the value of "Durbin-Watson test statistics[16]" is well above zero "(0)" which indicates that no first-order auto-correlation[17], either positive or negative, exists among the cross-sectional units investigated within each country. In fact, the lowest value of Durbin-Watson test is reported in Hong Kong at 1.57 and the highest one is reported in South Africa at 1.80. Adjusted R-square is relatively large in almost all panel regressions conducted for the sampled countries. Adjusted R-square indicates how well the variations of the dependent variable are explained by the independent variables (Gujarati, 2003, p. 217). In fact, the highest level of adjusted R-square is reported in the Australian sample firms, at 88.65%, and the lowest one belongs to Singapore, at 76.07%.

As well as each panel regression analysis conducted to test the incremental value relevance of accounting information, each and every panel regression is supported by a "Wald test coefficient". Wald test coefficients are used to support the results of the panel regression analyses.

[16] Durbin Watson test statistics is used to detect the existence of serial correlations among cross-sectional units. The value of the test ranges between 0 and 4. As a rule of thumb, if the test statistics is found to be 2 in an application, it is assumed that there is no first-order autocorrelation, either positive or negative, among cross sections. However, the closer the value of the test to zero, the greater the evidence of positive serial auto-correlation would be (Gujarati, 2003, page 469).

[17] Autocorrelation is defined as "*correlation between members of series of observations ordered in time or space*" (Gujarati, 2003, page 442).

The next section provides the results for all the six sampled countries. The first set of results is the one used to investigate the incremental value relevance of accounting information in UK. This is then followed by the analysis for Australia, Hong Kong, Singapore, Malaysia and South Africa, respectively.

5.4.3.1 Results of direct tests of incremental value relevance – UK

Table 5.27 indicates the results of the panel regression analysis conducted for the sampled UK firms. With regards to PREPOSTXBVPS, results indicate that the variable is not significant (p-value at 0.5894). Additionally, the variable's coefficient (0.112) is lower than that of BVPS (0.551). This indicates that the adoption of IFRSs has not incrementally increased the value relevance of book value per share reported under IFRSs compared to the one reported under local GAAP. On the other hand, PREPOSTXEPS, another independent variable used to identify the incremental value relevance, is significant (p-value at 0.000 and coefficient at 2.967). This implies that adoption of IFRSs, in UK, has resulted in reporting earning numbers that are more incrementally value relevant than those ones reported under local GAAP.

To ensure that the adoption of IFRSs has resulted in an increase in value relevance of earning numbers, in addition to the regression analysis conducted for UK, a Wald coefficient test is performed to determine whether the regression coefficient for the variable PREPOSTXEPS, as generated from the regression analysis in Table 5.27, is significant for the post-adoption period. The Wald coefficient test is based on a null hypothesis which hypothesizes that the set of coefficients generated for the pre- and post-adoption periods (i.e. EPS and PREPOSTXEPS) have no effect on the share price. Therefore, the null hypothesis is written as "EPS + PREPOSTXEPS = 0". However, Table 5.28 indicates that the null hypothesis is rejected in this case (sig. at 0.000). The value of the Chi-square test (X^2) is, too, large (at 44.03). This indicates that the squared differences between the pre-adoption and post-adoption periods are large with regards to the value relevance of EPS. This further re-confirms the results of the panel regression conducted for the UK sample (Table 5.27). In other words, it re-confirms that adoption of IFRSs has resulted in an incremental increase in value relevance of accounting numbers compared to the pre-adoption periods.

No Wald coefficient test is conducted for PREPOSTXBVPS as this variable is not significant.

5.4.3.2 Results of direct tests of incremental value relevance – Australia

Table 5.29 illustrates the results of the panel regression analysis conducted for the Australian sample. The variable PREPOSTXEPS is not significant (sig. at 0.469, and coefficient of variable at -0.00268). This indicates that the adoption of IFRSs has not resulted in an incremental increase in value relevance of earning numbers reported under IFRSs. The p-value of the other independent variable i.e. PREPOSTXBVPS, however, is significant at 0.0015 (coefficient at 0.344). Wald coefficient test conducted (Table 5.30) also re-confirms this (p-value at 0.000 and Chi-square at 38.156). In other words, adoption of IFRSs has resulted in an increase in value relevance of book value numbers reported under IFRSs compared to those reported under local GAAPs.

5.4.3.3 Results of direct tests of incremental value relevance – Hong Kong

Table 5.31 illustrates the results of panel regression analysis for Hong Kong. As can be seen in Table 5.31 the variable PREPOSTXEPS is significant (p-value at 0.007 and the variable coefficient at 1.95). However, this is not the case for PREPOSTXBVPS (p-value at 0.105, coefficient at 0.211).

The results for the variable PREPOSTXEPS are once again re-investigated by the Wald coefficient test. Table 5.32 indicates that the value of the Chi-square test is 19.505. This illustrates a large difference between the pre-and post-adoption periods with regards to the value relevance of EPS. Additionally, the p-value is lower than 0.05. This indicates that the adoption of IFRSs in Hong Kong has resulted in an increase in value relevance of earning numbers reported under IFRSs compared to those ones reported under local GAAPs.

5.4.3.4 Results of direct tests of incremental value relevance – Singapore

Table 5.33 illustrates the results of panel regression analysis for Singapore. As can be seen in Table 5.33 the variable PREPOSTXBVPS seems significant (p-value at 0.005 and the variable coefficient at -0.1222). However, this is not the case for PREPOSTXEPS (p-value at 0.213, coefficient at 0.887).

The results for the variable PREPOSTBVPS are once again re-investigated by the Wald coefficient test. Table 5.34 indicates that the value of the Chi-square test is just 1.369. This illustrates just a very trivial difference between the pre-and post-adoption periods with regards to the value relevance of BVPS in Singapore. Additionally, the p-value is 0.242. This could just marginally support the hypothesis that the adoption of IFRSs in Singapore results in an increase in value relevance of book values reported under IFRSs compared to those reported under local GAAPs.

Further investigation is made to find out more descriptive statistics with regards to book value per share in Singapore. Table 5.26, among other things, compares the average BVPS between the pre-and post-adoption periods. As can be seen in the table, the average amount of BVPS has increased after adoption of IFRSs in Singapore. Furthermore, no company reports any negative book value in the sample within the pre- or the post-adoption periods. Therefore, it could be concluded that adoption of IFRSs has resulted in an increase in the value relevance of BVPS in Singapore.

Table 5.26: Descriptive statistics on characteristics of book value per share - Singapore

	N	Minimum	Maximum	Mean	Median	St. deviation
Pre-adoption periods	175	0.00	5.96	0.4989	0.1700	0.87068
Post-adoption periods	175	0.01	6.91	0.5880	0.2200	1.06068

5.4.3.5 Results of direct tests of incremental value relevance – Malaysia

Table 5.35 demonstrates the results of panel regression analysis for Malaysia. As can be seen in Table 5.35 the variable PREPOSTXBVPS is significant (p-value at 0.0009 and the variable coefficient at -0.1426). However, this is not the case for PREPOSTXEPS (p-value at 0.0959, coefficient at 1.6698).

Variable PREPOSTXBVPS is once again re-investigated by the Wald coefficient test to re-assure that the adoption of IFRSs has resulted in an increase in value relevance of BVPS. Table 5.36 indicates that the value of the Chi-square test is 28.83. This illustrates a large difference between the pre- and post-adoption periods with regards to the value relevance of BVPS. Additionally, the p-value is lower than 0.05. This indicates that the adoption of IFRSs in Malaysia has resulted in an increase in value relevance of book values reported under IFRSs compared to those ones reported under local GAAPs.

The coefficient on the variable PREPOSTXEPS is 0.834 which is relatively higher than the one for EPS, at -0.042. However, it is not large enough to make a significant difference between the value relevance of EPS before and after adoption of IFRSs. As a result, it could not be concluded that the adoption of IFRSs has resulted in an increase in value relevance of EPS.

5.4.3.6 Results of direct tests of incremental value relevance – South Africa

Table 5.37 demonstrates the results of panel regression analysis for South Africa. As can be seen within Table 5.43 the variable PREPOSTXEPS is significant (p-value at 0.000 and the variable coefficient at 6.016). However, this is not the case for PREPOSTXBVPS (p-value at 0.2595, coefficient at -0.169).

The results for the variable PREPOSTXEPS are once again re-investigated by the Wald coefficient test to re-assure the positive influence of adoption of IFRSs on value relevance of EPS. Table 5.38 indicates that the value of the Chi-square test is 25.56. This illustrates a large difference between the pre-and post-adoption periods (p-value is lower than 0.05). This indicates that value relevance of EPS has increased after adoption of IFRSs. This indicates that the adoption of IFRSs in South Africa has resulted in an increase in value relevance of earning numbers reported under IFRSs compared to those ones reported under local GAAPs.

In summary, within all sampled countries, adoption of IFRSs has partially affected the value relevance of earnings and book value per share within the sample countries. It has resulted in an increase in incremental value relevance of earnings per share in UK, Hong Kong and South Africa. With regards to Australia and Malaysia it has increased the incremental value relevance of book value per shares.

Tables on direct test of incremental value relevance of accounting information for each of the six countries, Tables 5.27 to 5.38, are presented below:

Table 5.27: Panel regression for direct test of incremental value relevance - UK

Dependent Variable: Market price
Method: Panel EGLS (Cross-section weights)
Date: 05/07/10 Time: 21:35
Sample: 2002 2008
Periods included: 7
Cross-sections included: 58
Total panel (balanced) observations: 406
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.990267	0.240433	8.277839	0.0000
PREPOST	0.085749	0.079982	1.072096	0.2844
BVPS	0.551445	0.149313	3.693210	0.0003
PREPOSTXBVPS	0.112644	0.208543	0.540150	0.5894
EPS	0.304222	0.099393	3.060787	0.0024
PREPOSTXEPS	2.967560	0.594883	4.988474	0.0000

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.901632	Mean dependent var	4.737991
Adjusted R-squared	0.883851	S.D. dependent var	3.519726
S.E. of regression	1.470236	Sum squared resid	741.4268
F-statistic	50.70809	Durbin-Watson stat	1.656975
Prob(F-statistic)	0.000000		

Table 5.28: Wald coefficient restrictions test - UK

Wald Test
Test of coefficients EPS + PREPOSTXEPS = 0

Test Statistic	Value	df	Probability
F-statistic	44.03950	(1, 343)	0.0000
Chi-square	44.03950	1	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5) + C(6)	3.271781	0.493018

Restrictions are linear in coefficients.

Table 5.29: Panel regression for direct test of incremental value relevance - Australia

Dependent Variable: Market price
Method: Panel EGLS (Cross-section weights)
Date: 05/07/10 Time: 22:01
Sample: 2002 2008
Periods included: 7
Cross-sections included: 63
Total panel (balanced) observations: 448
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.614234	0.111875	14.42892	0.0000
PREPOST	0.002004	0.015645	0.128077	0.8982
BVPS	0.500398	0.107407	4.658911	0.0000
PREPOSTXBVPS	0.344242	0.107692	3.196536	0.0015
EPS	0.750690	0.161351	4.652524	0.0000
PREPOSTXEPS	-0.002683	0.003707	-0.723733	0.4697

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.903770	Mean dependent var	4.426234
Adjusted R-squared	0.886505	S.D. dependent var	3.635250
S.E. of regression	1.757932	Sum squared resid	1171.233
F-statistic	52.34551	Durbin-Watson stat	1.614033
Prob(F-statistic)	0.000000		

Table 5.30: Wald coefficient restrictions test - Australia

Wald Test:
Test of coefficients BVPS + PREPOSTXBVPS = 0

Test Statistic	Value	df	Probability
F-statistic	38.15679	(1, 379)	0.0000
Chi-square	38.15679	1	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(3) + C(4)	0.844640	0.136737

Restrictions are linear in coefficients.

Table 5.31: Panel regression for direct test of incremental value relevance – Hong Kong

Dependent Variable: Market price
Method: Panel EGLS (Cross-section weights)
Date: 05/07/10 Time: 22:45
Sample: 2002 2008
Periods included: 7
Cross-sections included: 49
Total panel (balanced) observations: 343
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

	Coefficient	Std. Error	t-Statistic	Prob.
C	4.318223	0.767796	5.624178	0.0000
PREPOST	-0.580710	0.137551	-4.221792	0.0000
BVPS	0.114122	0.287855	0.396458	0.6921
PREPOSTXBVPS	0.211961	0.130361	1.625954	0.1050
EPS	2.149268	0.627579	3.424697	0.0007
PREPOSTXEPS	1.952810	0.728526	2.680496	0.0078

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.810654	Mean dependent var	8.476807
Adjusted R-squared	0.775929	S.D. dependent var	9.056376
S.E. of regression	4.600928	Sum squared resid	6117.709
F-statistic	23.34535	Durbin-Watson stat	1.571542
Prob(F-statistic)	0.000000		

Table 5.32: Wald coefficient restrictions test – Hong Kong

Wald Test:
Test of coefficients EPS + PREPOSTXEPS = 0

Test Statistic	Value	df	Probability
F-statistic	19.50581	(1, 289)	0.0000
Chi-square	19.50581	1	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5) + C(6)	4.102079	0.928799

Restrictions are linear in coefficients.

Table 5.33: Panel regression for direct test of incremental value relevance – Singapore

Dependent Variable: Market price
Method: Panel EGLS (Cross-section weights)
Date: 05/08/10 Time: 11:59
Sample: 2002 2008
Periods included: 7
Cross-sections included: 50
Total panel (balanced) observations: 350
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.658723	0.052845	12.46529	0.0000
PREPOST	0.022147	0.016208	1.366386	0.1729
BVPS	-0.014683	0.087905	-0.167033	0.8675
PREPOSTXBVPS	-0.122233	0.043657	-2.799851	0.0054
EPS	2.670873	0.658232	4.057646	0.0001
PREPOSTXEPS	0.887674	0.712117	1.246528	0.2136

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.797772	Mean dependent var	1.087135
Adjusted R-squared	0.760754	S.D. dependent var	0.921214
S.E. of regression	0.533819	Sum squared resid	84.06411
F-statistic	21.55087	Durbin-Watson stat	1.728614
Prob(F-statistic)	0.000000		

Table 5.34: Wald coefficient restrictions test – Singapore

Wald Test:
Test of coefficients BVPS + PREPOSTXBVPS = 0

Test Statistic	Value	df	Probability
F-statistic	1.369237	(1, 295)	0.2429
Chi-square	1.369237	1	0.2419

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(3) + C(4)	-0.136916	0.117008

Restrictions are linear in coefficients.

Table 5.35: Panel regression for direct test of incremental value relevance – Malaysia

Dependent Variable: Market price
Method: Panel EGLS (Cross-section weights)
Date: 05/08/10 Time: 12:10
Sample: 2002 2008
Periods included: 7
Cross-sections included: 50
Total panel (balanced) observations: 350
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.084224	0.172628	6.280706	0.0000
PREPOST	-0.076032	0.034486	-2.204743	0.0282
BVPS	0.657139	0.125134	5.251466	0.0000
PREPOSTXBVPS	-0.142671	0.042507	-3.356443	0.0009
EPS	-0.042472	0.234605	-0.181038	0.8565
PREPOSTXEPS	0.834331	0.499645	1.669847	0.0959

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.912565	Mean dependent var	3.534673
Adjusted R-squared	0.896692	S.D. dependent var	2.404479
S.E. of regression	1.075413	Sum squared resid	375.8670
F-statistic	57.49226	Durbin-Watson stat	1.718124
Prob(F-statistic)	0.000000		

Table 5.36: Wald coefficient restrictions test – Malaysia

Wald Test:
Test of coefficients BVPS + PREPOSTXBVPS = 0

Test Statistic	Value	df	Probability
F-statistic	28.83562	(1, 325)	0.0000
Chi-square	28.83562	1	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(3) + C(4)	0.514468	0.095806

Restrictions are linear in coefficients.

Table 5.37: Panel regression for direct test of incremental value relevance – South Africa

Dependent Variable: Market price
Method: Panel EGLS (Cross-section weights)
Date: 05/08/10 Time: 12:16
Sample: 2002 2008
Periods included: 7
Cross-sections included: 50
Total panel (balanced) observations: 350
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

	Coefficient	Std. Error	t-Statistic	Prob.
C	9.585527	1.488461	6.439890	0.0000
PREPOST	1.913378	0.466127	4.104843	0.0001
BVPS	0.432175	0.277180	1.559184	0.1200
PREPOSTXBVPS	-0.169499	0.150024	-1.129812	0.2595
EPS	-1.020652	0.728144	-1.401716	0.1621
PREPOSTXEPS	6.016087	0.823479	7.305696	0.0000

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.894994	Mean dependent var	31.33266
Adjusted R-squared	0.875773	S.D. dependent var	27.49928
S.E. of regression	11.61093	Sum squared resid	39770.06
F-statistic	46.56229	Durbin-Watson stat	1.802490
Prob(F-statistic)	0.000000		

Table 5.38: Wald coefficient restrictions test – South Africa

Wald Test:
Test of coefficients EPS + PREPOSTXEPS = 0

Test Statistic	Value	df	Probability
F-statistic	25.56638	(1, 295)	0.0000
Chi-square	25.56638	1	0.0000

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5) + C(6)	4.995435	0.987958

Restrictions are linear in coefficients.

5.5 Incremental explanatory power of BVPS and EPS during the Global Financial Crisis

As previously mentioned in chapter three, Davis-Friday et *al.* (2006) investigate the value relevance of earnings and book value in four Asian countries over the period surrounding the Asian financial crisis. Results of their study are mixed. For instance, their results indicate that value relevance of earnings in Indonesia and Thailand significantly reduced during the Asian financial crisis while the value relevance of book value increased. In Malaysia, the value relevance of both earnings and book value decreased during the crisis and finally in South Korea, neither book value nor earnings was significantly affected by the crisis.

Following Davis-Friday et *al.* (2006), this study provides evidence of the extent of change in the value relevance of accounting information in six countries during the global financial crisis which reached its peak in the corporate reporting year ended 31 December, 2008 (Azis, 2010). The results for each country in turn are gleaned from Tables 5.20 to 5.25.

In the UK, as indicated in Table 5.20, the relative explanatory power of book value and earnings per share ($R^2_{(b,e)}$) significantly decreased from 92.6% in 2007 to 75.8% in 2008. Further analysis and testing the explanatory power of earnings per share (R^2_e) and book value per share (R^2_b) alone, indicates that the relative explanatory power of book value as well as that of earnings per share both decreased from 2007 to 2008 in the UK. However, the explanatory power of book value per share has reduced by a higher rate compared to that of earnings per share between 2007 and 2008.

With regards to Australia, as shown in Table 5.21, the relative explanatory power of book value and earnings per share ($R^2_{(b,e)}$) decreased from 58.3% in 2007 to 48.9% in 2008. Relative explanatory power of earnings per share alone (R^2_e) decreased from 40.5% in 2007 to 23.5% in 2008 and that of book value alone (R^2_b) decreased from 50.9% in 2007 to 42.8% in 2008.

For Hong Kong, Table 5.22 indicates that the relative explanatory power of book value and earnings per share ($R^2_{(b,e)}$) also decreased at the height of the global financial crisis. In fact, it dropped from 91.3% in 2007 to 87.0% in 2008. Relative explanatory power of earnings per share alone (R^2_e) also decreased from 91.1% in 2007 to 80.9% in 2008. However, in contrast

to earnings per share, the relative explanatory power of book value alone (R^2_b) increased from 67.4% in 2007 to 76.9% in 2008. It is evident that the value relevance of accounting numbers shifted from earnings to book value as a result of the global financial crisis in Hong Kong.

For Singapore, Table 5.23 reveals that, in contrast to the results for the UK, Australia and Hong Kong, the global financial crisis has not reduced the value relevance of accounting numbers. As can be seen in Table 5.23 the relative explanatory power of book value and earnings per share ($R^2_{(b,e)}$) increased slightly from 81.3% in 2007 to 89.3% in 2008. Similarly, the relative explanatory power of book value and earnings alone (R^2_b and R^2_e, respectively) increased slightly between 2007 and 2008 in Singapore.

In Malaysia, the result shows an increase in value relevance that is more pronounced than Singapore. As can be seen in Table 5.24, the relative explanatory power of book value and earnings ($R^2_{(b,e)}$) increased from 57.5% (2007) to 73.5% (2008). Similarly, the value relevance of both earnings and book value alone (i.e. R^2_e and R^2_b, respectively) increased in Malaysia at the peak of the global financial crisis.

Finally in South Africa, similar to Singapore and Malaysia, as can be seen in Table 5.25, the relative explanatory power of earnings and book value ($R^2_{(b,e)}$) increased to some extent from 61.8% (2007) to 70.5% (2008). This was primarily due to the increase in value relevance of earnings (i.e., R^2_e increased from 40.9% (2007) to 69.4% (2008).

In summary, there is a clear divide between countries in the way their share markets have relied on reported accounting numbers for purposes of determining the current value in the share market of listed companies. In the years 2007 and 2008, all six countries were applying the same IFRSs. However, the relevance of EPS and BVPS numbers to analysts and investor in the share market declined in the year of the global financial crisis in three countries (the UK, Australia and Hong Kong) and increased in the other three countries (Singapore, Malaysia and South Africa). What could be the explanation?

Two contrasting views can be put forward about the way analysts and investors treat reported accounting numbers during a period of major financial downturn. On the one hand, it could be expected that equity investors rely less on accrual numbers (i.e. EPS and BVPS) and more on cash flow information and macroeconomic indicators during the year of a financial crisis.

That is, the value relevance of accounting information in the reported EPS and BVBS numbers would be expected to decline in 2008 compared to 2009 because investors give greater weight to cash flow and broader financial conditions, than to accrual accounting numbers. Hence, the relevance given to accrual accounting numbers is reduced. On the other hand, analysts and investors could be expected to give heightened attention to all reported company financial information during a financial crisis. The reported EPS and BVPS would remain prominent, because these numbers have implication for liquidity. For example, EPS has implications for cash outflows on company taxation and dividends and BVPS has implications for gearing and meeting debt covenants.

The inference from the results is that analysts and investors in different countries take different approaches to modelling of share values during a financial crisis. The evidence in this study suggests that analysts in the UK, Australia and Hong Kong tend to focus more attention on information beyond EPS and BVPS, such as cash flows and broader industry and economy information, thereby reducing the value relevance given separately to EPS and BVPS. However, analysts in Singapore, Malaysia and South Africa tend to give even closer attention to financial information reported by companies, especially EPS and BVPS, during a financial crisis, thereby increasing the value relevance given to these numbers.

5.6 Chapter summary

This chapter presented the results of the data analysis and provided the relevant discussions following the findings. The data are drawn from secondary sources, including the reconciliation statements contained within the annual reports of the sampled companies. Financial Data including the annual reports is extracted from the OSIRIS database. Various methods of analyses used within this chapter including descriptive statistics to measure the dollar amounts and the level of adjustments made to various elements of financial statements of the sampled companies, regression analysis to compare the incremental value relevance of accounting information prepared under IFRSs to those prepared under local GAAPs within the year of adoption of IFRSs, measurement of adjusted R-squares to compare the relative explanatory powers of BVPS and EPS within the pre-and post-adoption periods and finally

panel regression for direct test of incremental value relevance of accounting information prepared under IFRSs.

Descriptive statistics indicate that, as was expected, higher level of adjustments made to various elements of financial statements of the Australian and British firms compared to the elements of financial statements of firms in Hong Kong and Singapore. This is because; in Hong Kong (since 1993) and Singapore (since the establishment of IASC) standards issued have been local adaptations of IASs. Results, regarding the incremental value relevance of accounting information within the year of adoption of IFRSs, indicate that accounting information produced under IFRSs are not incrementally more value relevant compared to those produced under local accounting standards, within the sampled countries. Regarding the relative and incremental explanatory powers of BVPS and EPS, results indicate that after the adoption of IFRSs, except for Australia and Malaysia, the relative explanatory power of EPS is higher than that of BVPS within all sampled countries. Lower explanatory power of EPS compared to BVPS in Australia and Malaysia, within the post-adoption period, could be partially explained by the increase in number of firm-year observations reporting loss within the sample. It appears that the IASB's strategy to develop IFRSs that place greater emphasis on the balance sheet for valuing firms has been just partially successful. Panel regression results regarding direct test of incremental value relevance of accounting information indicates that accounting information produced under IFRSs are partially more value relevant compared to those produced under local accounting standards. Finally, dividing companies within the sample into two major industries i.e. traditional and new economy indicates no significant affect on the share price and, therefore, has no confounding effect.

Results regarding to the changes in value relevance of accounting information within the period of global financial crisis are mixed. In fact, there is a clear divide between sampled countries with regards to the change in value relevance. While the relevance of EPS and BVPS numbers to analysts and investor in the share market declined in the year of the global financial crisis in three countries including the UK, Australia and Hong Kong and increased in the other three countries i.e. Singapore, Malaysia and South Africa. The inference from the results is that analysts and investors in different countries take different approaches to modelling of share values during a financial crisis. The evidence in this study suggests that analysts in the UK, Australia and Hong Kong tend to focus more attention on information

beyond EPS and BVPS, such as cash flows and broader industry and economy information, thereby reducing the value relevance given separately to EPS and BVPS. However, analysts in Singapore, Malaysia and South Africa tend to give even closer attention to financial information reported by companies, especially EPS and BVPS, during a financial crisis, thereby increasing the value relevance given to these numbers.

This next chapter aims to determine the extent to which items of intellectual capital disclosure (ICD), in the text of company annual reports, contribute to the overall value-relevance of information provided in corporate reports.

CHAPTER 6: RESULTS AND DISCUSSION ON EXTENSION OF THE VALUE RELEVANCE MODEL TO INCLUDE INTELLECTUAL CAPITAL DISCLOSURE (ICD)

6.1 Introduction

Results from the former chapter on the incremental value relevance of reported earnings and equity due to the adjustment in accounting numbers from a change in accounting regime are mixed when the sampled countries are compared. Can these mixed results be attributed to the fact that a change in the quality of financial statement numbers due to a change in accounting regime is confounded by other value-generating phenomenon associated with earnings and equity, but not captured in prevailing accounting frameworks?

This chapter aims to determine the extent to which items of ICD, in the text of company annual reports, contribute to the overall value-relevance of information provided in corporate reports. In fact, this chapter provides the data analysis and empirical findings for testing the research question concerning the value relevance of intellectual capital (IC) information and its moderating effect on the value relevance of accounting information (i.e. earnings per share and book value per share). Value relevance of IC information is tested within the first year of adoption of IFRSs across four of the sampled countries, namely, the UK, Australia, Hong Kong and Singapore. These four countries are included because these countries are the only ones which provided IFRSs reconciliation statements in the footnotes to their financial reports in the year of adoption of IFRSs.

6.2 Issues concerning the importance and value relevance of IC information

An issue raised in the value-relevance literature, where limited evidence has been provided to date, is the argument that the value relevance of accounting information's association with share prices/returns is deteriorating because companies have an increasing amount of intangible assets. This argument is that, in the 'new economy', companies in knowledge-intensive (non-traditional) industries experience rapid changes and have complex intangibles that are problematic to account for, thereby making accounting numbers less useful to investors (see: Barth and Clinch, 1998; Lev and Zarowin, 1999; Beisland et *al.*, 2008). To address this issue, Lev and Zarowin (1999) investigated the usefulness of financial information to investors in comparison to the total information in the marketplace. Their evidence indicated that the usefulness of reported earnings, cash flows, and book (equity) values are deteriorating. They concluded that whether driven by innovation, competition, or deregulation, the impact of change on firms' operations and economic conditions is not adequately reflected by the current financial reporting system.

The research design in this chapter is based on the premise that more transparent disclosure concerning dimensions of a firm's intellectual capital will increase the overall reliability of financial statements as reflected in the summary financial measures of earnings and equity, resulting in higher decision-usefulness to investors (i.e., higher value-relevance). This premise is consistent with the information economics perspective that higher quality disclosure which produces information with higher precision will have a greater impact on stock price (e.g., Verrecchia 2001). In fact, Verrecchia (2001) indicates that higher quality disclosure interacts with accounting numbers to increases the value-relevance. Healy, Hutton and Palepu (1999) and Francis, Schipper and Vincent (2002), too, present evidence generally consistent with the theoretical prediction in Verrecchia (2001). In fact, they indicate that firms' disclosure activities reveal credible and relevant information not found in current earnings, but reflected in current stock prices. In this study, the extent of value-relevance of ICD information, and its moderating effect on information about earnings and equity numbers, will be compared across the aforementioned four sampled countries and across traditional and non-traditional sectors. The modelling of the effects on market value of equity of not only key financial indicators (i.e. earnings and book value of equity), but also textual

information about business activities (i.e. ICD), is consistent with the broad-based business reporting view (ICAA, 2008). This view requires "closer alignments of external reporting with internal management information from which (key stakeholders) make their varying decisions" (ICAA, 2008, p.7).

6.3 Extending the Value relevance model to include ICD

The incremental value relevance model applied in the year of adoption of IFRSs is extended by including corporate disclosures about major value-generating resources that are largely off-balance sheet. These resources, voluntarily reported in ICD, comprise of human, structural and relational capital of a corporation. The former chapter examined the effects of first-time adoption of IFRSs within the sampled countries. This chapter, however, provides evidence from the perspective of modelling the combined effects of earnings numbers, equity numbers and ICD information on the company's share market value. The significance of this perspective is that it seeks to clarify, not only whether IFRSs really do produce higher quality accounting information compared to the former GAAPs, but whether the extent of reporting IC information has value-relevance on its own right, or moderates the extent to which earnings or equity numbers attain their value relevance. Waterhouse (1999) argues that intellectual capital assets are strategically now more important to wealth creation than they ever were in the past. Similarly, Pike, Rylander and Roos (2002), argue that the dominating factor in enterprise valuation for most companies now and especially the hi-techs and professional service firms is intellectual capital. According to Adolphson and Hedlin (2000), several shortcomings in the content of financial reporting stem from a discrepancy between the value-creating processes of modern corporations and the foundations underpinning the traditional accounting model. They state that in modern times, different forms of intellectual capital are the prime resources that companies invest in to thrive in the future. However, the traditional value relevance accounting model from the literature has yet to directly accommodate non-financial information on intellectual capital.

Other studies point to an information gap that exists between financial reporting and capital markets (e.g. Lev and Sougiannis, 1996; Amir and Lev, 1996; Nielson et *al.*, 2006). According to Nielson et *al.* (2006) financial reporting, which primarily assesses the tangible

assets of an organisation, is to a certain degree losing value relevance particularly for industrial sectors that are dominated by knowledge intensive and innovative organisations. In such organisations, the approach to accounting for intangible assets in financial statements is found to create information asymmetries and lack of transparency (Aboody and Lev, 1998; Barth et *al.*, 2001).

As a result, arguably, the next best corporate information source for investors in annual reports would be voluntary disclosures by management of plans, contracts, activities and achievements concerning components of intellectual capital. However, the implementation of the intellectual capital concept at firm level requires management to make sense of the concept of intellectual capital and to practically make it functional in terms of specific management tools. According to Chaminade & Roberts (2003), although the implementation designs for the intellectual capital concept are found to be different in different firms, a dominant accounting perspective can lead to an excessive focus on measurement issues and little attention to management processes. Chaminade and Roberts (2003) further state that measuring intellectual capital with a broader and less defined focus might help firms to experiment with, and implement the concept in a more open-minded way.

In this chapter, the approach to measuring ICD is based on a count of key words in relevant written discourses in annual reports on quantitative performance indicators relating to components of firms' intellectual capital. This approach is underpinned by the broad-based business reporting view (ICAA, 2008) in which external reporting should to be more aligned with internal management information, and is supported by the findings of Chaminade & Roberts (2003) that management processes for implementing the intellectual capital concept are more effective when a broader and less defined focus is taken. The next section provides further explanation of the measurement of ICD in this study. Given that ICD in annual reports could be an important determinant of a firm's market valuation, it can be modelled as an extension to the original incremental value-relevance model which is indicated in equation 6.1.

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 EPSDIF_{it} + \alpha_4 BVPSDIF_{it} + \varepsilon_{it} \qquad \textit{Equation } 6.1$$

The equation would be changed as indicated in equation 6.2 after extending the ICD into the model.

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 EPSDIF_{it} + \alpha_4 BVPSDIF_{it} + ICD_{it} + \varepsilon_{it} \qquad \textit{Equation } 6.2$$

Returning to the broad-based business reporting view, the argument is that investors seek information revealing of *"how a business effectively manages and utilises its limited resources to deliver on its defined strategy".* (ICAA, 2008, p.7). This involves a set of relevant financial and non-financial information about tangible and intangible "*resources and their performance in executing the business strategy and managing business risks*" (ICAA, 2009, p.6). Thus, it could be argued that in a business environment of rapid technological development, short product lifecycles and integration of capital markets, company-specific information on intellectual capital, even if it is unaudited and inconsistent information, would be used interactively with reported accounting numbers by sophisticated capital market players. Therefore, the moderating effects of ICD items on the extent of incremental value relevance of earnings and equity (i.e. on relationship between EPSDIF and P, and BVPSDIF and P can be tested by extending equation 6.2 as follows:

$$P_{it} = \alpha_0 + \alpha_1 BVPS_{it} + \alpha_2 EPS_{it} + \alpha_3 ICD_{it} + \alpha_4 (EPSDIF_{it} \times ICD)_{it} + \alpha_5 (BVPSDIF_{it} \times ICD_{it}) + \varepsilon_{it} \qquad \textit{Equation 6.3}$$

6.4 Industry selection

As previously explained in former chapters, the sampling process first involved a stratification of companies by industry-type, in order to divide company groups approximately evenly between traditional and non-traditional (new economy) industries. Those industries selected into the sample (based on the three-digit SIC code) are illustrated in Table 6.1. These are deemed to be the more obvious types of industries to allocate to traditional and non-traditional groupings. After the industry stratification step, companies were chosen from the largest down, but eliminated if a full GAAP-IFRS reconciliation statement had not been disclosed in their financial statement footnotes.

Table 6.1: Industries selected in the samples of traditional and non-traditional groups

Traditional Industries		**Non-traditional Industries**	
020	Agricultural products—livestock	283	Drugs
160	Heavy construction, excl. building	357	Computer and office equipment
170	Construction—special trade	360	Electrical machinery and equipment, excluding computers
202	Dairy products	361	Electrical transmissions and distribution equipment
220	Textile mill products	362	Electrical industrial apparatus
240	Lumber and wood products, excluding Furniture	363	Household appliances
260	Paper and allied products	364	Electrical lighting arid wiring equipment
300	Rubber and miscellaneous plastics products	365	Household audio, video equipment, audio receiving
307	Miscellaneous plastics products	366	Communication equipment
324	Cement hydraulic	367	Electronic components, semiconductors
331	Blast furnaces and steel works	368	Computer hardware
356	General industrial machinery and equipment	481	Telephone communications
371	Motor vehicles and motor vehicle equipment	737	Computer programming, software, data processing
399	Miscellaneous manufacturing industries	873	Research, development, testing services
401	Railroads		
421	Trucking, land/sea courier		
440	Water transportation		
451	Air transportation, air courier		
541	Grocery stores		

6.5 Intellectual capital disclosure measurement

Following former studies (e.g. Guthrie and Petty, 2000; Bontis, 2003; and Brüggen et *al.*, 2009) content analysis is utilised to measure intellectual capital information. In this study the classification scheme structured for measurement of intellectual capital information is similar to Brüggen et *al.*, (2009) in which IC related terms are divided into four categories including general terms, intellectual, human and relational capital. Brüggen et *al.*, (2009, p. 238) defines human, intellectual and relational capital terms as below:

- *"Human capital: the tacit knowledge embedded in the minds of the employees;*
- *Structural capital: the organizational routines of the business; and*
- *Relational capital: the knowledge embedded in the relationships established with the outside environment*."

Table 6.2 shows the relevant ICD terms used by Bontis (2003) and Brüggen et *al.* (2009) as adopted in this study.

Table 6.2: Common terminology used under categories of the concept of intellectual capital

General terms	**Human capital**	**Structural capital**	**Relational capital**
Economic value added	Employee expertise	Structural capital	Relational capital
Intellectual capital	Employee know-how	Intellectual property	Supplier knowledge
Intellectual resources	Employee knowledge	Cultural diversity	Customer knowledge
Intellectual asset	Employee productivity	Organizational culture	Customer capital
Knowledge asset	Employee skill	Corporate learning	Company reputation
Knowledge stock	Employee value	Organizational learning	
Intellectual material	Human capital	Corporate university	
Intellectual capital	Human asset	Knowledge sharing	
Business knowledge	Human value	Management quality	
Competitive intelligence	Expert team	Knowledge management	
		Information system	
		Expert network	

The approach taken to measure ICD variables is to count the key words as listed in Table 6.2, which are found from a trawl of all written text in the annual report of each sampled company. The fixed set of key words is used as the unit of content analysis to ensure consistent comparison between different annual reports.

Table 6.3 shows the frequency (i.e. aggregate count of key words for all companies in respective categories of intellectual capital) and the mean (i.e. average count of key words per company in respective categories) for each country and industry-type. Structural capital is clearly the most frequently disclosed category in all four countries. This implies that the dominant focus of textual discourses about intellectual capital in company annual reports is around aspects of corporate learning, knowledge sharing, knowledge management and information systems. However, the term 'intellectual property', an element of structural capital, is the most frequently disclosed term. Its disclosure occurs mainly in the context of legal and accounting information concerning identifiable intangible assets such as patents, trademarks, licences and copyrights. In the other two categories – general and human capital – there are low levels of disclosure in the UK, Australia and Singapore, while there is no disclosure at all in Hong Kong. Finally, except Australia, there is no disclosure on relational capital items in companies within other three sampled countries. The mean of the total keyword count per company is particularly low in Hong Kong (0.40 keywords) compared to the UK (2.23 keywords), Australia (3.50 keywords) and Singapore (1.17 keywords).

Table 6.3: Frequencies of use of keywords for categories of intellectual capital disclosure within each sampled country

Country		General	Human	Structural	Relational	Total Companies
United Kingdom N=58	0 keywords	57	55	22	58	18
	1 keyword	1	2	9	0	12
	2-5 keywords	0	1	19	0	20
	6-20 keywords	0	0	5	0	5
	>20 keywords	0	0	3	0	3
	Mean	0.017	0.055	1.63	0.000	2.23
Australia N=63	0 keywords	58	60	23	62	14
	1 keyword	3	3	13	1	20
	2-5keywords	2	0	17	0	19
	6-20 keywords	0	0	9	0	9
	>20 keywords	0	0	1	0	1
	Mean	0.086	0.05	1.74	0.02	3.50
Hong Kong N=49	0 keyword	49	49	35	49	35
	1 keyword	0	0	7	0	7
	2-5 keywords	0	0	7	0	7
	6-20 keywords	0	0	0	0	0
	>20 keywords	0	0	0	0	0
	Mean	0.000	0.000	0.40	0.00	0.40
Singapore N=50	0 keyword	43	48	32	50	23
	1 keyword	7	0	10	0	17
	2-5 keywords	0	2	5	0	7
	6-20 keywords	0	0	3	0	3
	>20 keywords	0	0	0	0	0
	Mean	0.163	0.042	0.563	0.00	1.17

Comparing two industry sectors with respect to the level of disclosure of IC information, Table 6.4 reveals that, as is expected, the average of total keywords disclosed per company is lower within the traditional sector (0.71) than the new economy (2.56). Further scrutiny of non-traditional industry sector indicates that health care, information technology, and telecommunication services are the particular industries providing the most ICD. For companies in traditional industries, however, Table 6.4 indicates that such companies provide particularly minimal ICD. Only 41% of companies (i.e. 41 disclosing companies out of totally 99 companies or 41/99) within the traditional sector disclose non-zero keywords and, of these companies, just one disclosed more than 5 keywords.

Table 6.4: Frequencies of use of keywords for categories of intellectual capital disclosure within each industry sector

Industry-type		General	Human	Structural	Relational	Total Companies
Traditional Industry N=99	0 keyword	93	95	66	99	58
	1 keyword	4	2	19	0	25
	2-5 keywords	0	2	13	0	15
	6-20 keywords	0	0	1	0	1
	>20 keywords	0	0	0	0	0
	Mean	0.043	0.042	0.50	0.000	0.71
Non-traditional Industry N=121	0 keyword	114	116	45	120	34
	1 keyword	5	3	20	0	28
	2-5 keywords	1	2	34	1	38
	6-20 keywords	0	0	17	0	17
	>20 keywords	0	0	4	0	4
	Mean	0.052	0.043	1.67	0.0083	2.56

In terms of the location of ICD in annual reports, it is found in different sections, including notes to financial statements, the directors' reports and operations sections of the annual reports. The results in Table 6.3 on the nature and extent of ICD lend support to the findings of Guthrie and Petty (2000) in their investigation of ICD by Australian companies. They concluded that key intellectual capital components of Australian companies are "*poorly understood, inadequately identified, inefficiently managed, and not reported in a consistent framework (Guthrie and Petty, 2000, p.248).*"

6.6 Multivariate results for value relevance of ICD, earnings and equity

As formerly mentioned the primary research questions in this chapter are whether companies' disclosures about their intellectual capital information have value-relevance in share markets and whether ICD moderates the incremental value-relevance of reported earnings and equity. Equation 6.3 is utilised to investigate these research questions. Results of multiple regression, using equation 6.3, are given in Table 6.5. Table 6.5 has four panels, one for each country. All four panels show strong overall model explanatory power as measured by the adjusted R square. In fact, Hong Kong indicates the highest explanatory power at 87.3% and Australia indicates the lowest at 53.9%. All four panels satisfy the test for multicollinearity between independent variables in the models, as indicated by a variable inflation factor (VIF) of less than 10. Because interaction variables can create multicollinearity, the data for each of the interaction variables has been mean-centred. The industry control variable (INDType) is not significant in each panel and, therefore, does not have any confounding effect on the dependent variable.

The first set of results in Table 6.5 relates to the regression coefficients to test the incremental value-relevance of earnings (EPSDIF) and equity (BVPSDIF), respectively. Panels A, B, C and D reveal that the conversion from local GAAPs to IFRSs did not incrementally contribute to the value-relevance of reported earnings or book value of net assets in any sampled country.

The second set of results of most interest in Table 6.5 relates to the value-relevance of ICD. Results indicate that the direct effect of ICD on share price is significant for UK (sig. = 0.060) and Hong Kong (sig. = 0.063), however, it is neither significant within Australia (0.361) nor Singapore (0.399). Accordingly, it is argued that disclosure of intellectual capital information provides relevant signals to investors and securities analysts in UK as well as Hong Kong. This indicates that non financial intellectual capital information has enough relevance to directly affect value of the firm in the share market within these two sampled countries. These results empirically verify former studies' arguments (e.g. Comby and Conrod, 2001; Holland, 2003; Mouritsen, 2003; Nielson, 2006) claiming the value relevance of intellectual capital information.

In addition, the moderating effects of ICD on the relationships between EPSDIF and share price (P) and BVPSDIF and P, respectively, are shown in the interactions within Table 6.5. The interaction between ICD and EPSDIF as well as BVPSDIF is significantly positive for just one of the countries within the sample i.e. UK (sig. = 0.021 and 0.027 respectively). Results provide consistent evidence that the interaction of changes in accounting policies concerning a company's book value and earnings per share and the extent of ICD given within companies' annual reports could be regarded a significant contributing factor in the pricing of shares in UK. Arguably, higher extent of ICD reporting in UK results in IC information becoming sufficiently detailed in annual reports and consequently it will have enough relevance to directly and indirectly affect the value of firm in the share market for UK companies.

Table 6.5: Regression results for value relevance of IC information as well as its moderating effects on the value relevance of accounting information

Panel A: UK				
Model summary: R=0.941, R-Square=0.885, Adjusted R-Square=0.866, F=47.146, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		2.226	.031	
EPS	.371	2.777	.008	7.616
BVPS	.483	3.871	.000	6.632
EPSDIF	.005	.100	.921	1.094
BVPSDIF	-.014	-.263	.794	1.257
ICD	.135	1.927	.060	2.093
EPSDIFxICD	.224	2.393	.021	3.719
BVPSDIFxICD	.167	2.285	.027	2.264
INDType	-.029	-.481	.633	1.540
Panel B: Australia				
Model summary: R=0.774, R-Square=0.598, Adjusted R-Square=0.539, F=10.05, Sig=0.000				
(Constant)		1.646	.106	
EPS	-.016	-.157	.876	1.394
BVPS	.655	5.860	.000	1.680
EPSDIF	.256	1.425	.160	4.323
BVPSDIF	.005	.041	.967	1.837
ICD	-.098	-.922	.361	1.532
EPSDIFxICD	-.085	-.641	.524	2.364
BVPSDIFxICD	.370	1.957	.156	4.816
INDType	-.022	-.210	.834	1.521
Panel C: Hong Kong				
Model Summary: R=0.944, R-Square=0.892, Adjusted R-Square=0.873, F=45.987, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		0.004	0.997	
EPS	0.570	5.174	0.000	4.376
BVPS	0.402	3.635	0.001	4.410
EPSDIF	0.034	0.453	0.653	2.036
BVPSDIF	0.050	0.644	0.524	2.176
ICD	0.132	1.914	0.063	1.727
EPSDIFxICD	0.017	0.277	0.783	1.317
BVPSDIFxICD	0.059	0.924	0.361	1.463
INDType	0.017	0.277	0.783	1.260
Panel D: Singapore				
Model summary: R=0.903, R-Square=0.815, Adjusted R-Square=0.782, F=24.770, Sig=0.000				
DV: Market Price	Beta	T	Sig.	VIF
(Constant)		1.022	0.312	
EPS	0.227	1.880	0.067	3.532
BVPS	0.722	5.987	0.000	3.534
EPSDIF	0.014	0.151	0.880	1.940
BVPSDIF	0.014	0.133	0.894	2.651
ICD	0.067	0.852	0.399	1.522
EPSDIFxICD	0.029	.238	0.813	3.491
BVPSDIFxICD	0.003	0.025	0.980	3.772
INDType	0.110	1.602	0.116	1.145

6.7 Chapter summary

The potency of prior research on the incremental value-relevance of accounting numbers has been limited by the inadequacy of financial statements to reflect companies' intellectual capital resources and capabilities. To deal with this limitation, this chapter included the variable ICD into the traditional modelling of incremental value-relevance of reported earnings and equity. ICD is measured using a set of key words for the human, structural, relational and general dimensions of intellectual capital as the unit of content analysis of annual reports, similar to the approach taken by Bontis (2003) and Brüggen et *al.* (2009). Inclusion of this quantitative measure of information that is not embodied in financial statements, alongside financial measures in the value-relevance model is justified from the perspective of a broad-based business reporting view (ICAA, 2008). From this perspective, external reporting of the firm's intellectual capital is based on management processes for implementation than on quantitative performance indicators (Chaminade & Roberts, 2003). In this chapter it was posited that company-specific information on intellectual capital (i.e., ICD in annual reports), even if it is unaudited and inconsistent information, would be used both directly and interactively with reported accounting numbers by capital market players in assessing the market price of equity.

Results provide descriptive statistics on the extent of ICD and relevant financial statement adjustments in the year of IFRS adoption. First in respect of ICD, The most frequently disclosed category of intellectual capital in all four countries studied is structural capital (i.e., corporate learning, knowledge management and intellectual property). Total ICD is particularly low in Singapore and Hong Kong compared to the UK and Australia, while ICD is considerably higher in non-traditional industries compared to traditional industries.

Results for the value-relevance models first reveal a significant direct effect of ICD on share price for companies in UK and Hong Kong, but not for companies in Australia or Singapore. The value-relevance models further reveal that the interaction between ICD and EPSDIF and BVPSDIF is positively related to share price for UK companies. Arguably, higher extent of ICD reporting in UK results in IC information to become sufficiently detailed in annual reports and consequently it will have enough relevance to directly and indirectly affect the value of firm in the share market for UK companies. This result provides consistent evidence that ICD information given in annual reports of British companies will moderate the effect

that accounting policy adjustments to reported balance sheet amounts have on pricing decisions in the share market. With regards to Hong Kong, it could be argued that even low level of disclosure of IC information within annual reports is still properly understood and valued by the market players. Perhaps higher level of disclosure of IC information could have moderating effects on accounting figures.

Chapter 7: CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

7.1 Introduction

This chapter presents an overview of the study by providing summaries and conclusions on the research questions and the empirical findings. The chapter then considers the implications of the findings for accounting standard setters and regulatory authorities within developed countries in their evaluation of standards setting and compliance with IFRSs. Finally, the chapter discusses the limitations and directions for future research on the extent of IFRSs and their value relevance.

7.2 Summary of the thesis

This study has six main objectives. The first objective is to describe the comparative effects of accounting policy change created by first-time adoption of IFRSs in various elements in the financial statements of listed companies in a set of Commonwealth and former British colony countries. The countries included in this study are Britain, Australia, Hong Kong, Singapore, Malaysia and South Africa. The second objective is to compare, for this set of countries, the extent of incremental value-relevance of accounting numbers (i.e. earnings and book value of net assets) produced under different financial reporting regimes, namely, local GAAPs compared to IFRSs. The third objective is to determine the change in relative explanatory power to investors in the share market of reported earnings vis a vis book value of net assets under different accounting regimes. The fourth objective is to determine whether the value relevance of earnings and book value of net assets under the IFRS regime is systematically different for companies in non-traditional (new economy) industries compared to companies in traditional (old economy) industries. The fifth objective is to determine the extent to which items of intellectual capital disclosure (ICD), in the text of company annual reports, as mainly voluntary and non-financial disclosures, contribute to the overall value-relevance of accounting numbers provided in corporate reports. The final objective is to identify the extent to which reported earnings and book value of net assets

under IFRSs become less value relevant to equity investors when there is a rapid economic downturn.

To achieve these objectives, a set of alternative econometric models drawn prior studies is utilised to explain the changes in value relevance of accounting figures as a result of adoption of IFRSs. Companies' annual reports, pre-calculated financial data including share price (at the balance date), earnings and book value per share and non-financial intellectual capital information (obtained from the text of annual reports) are the data used in various econometric models of this study to provide answers for the objectives.

Chapter 2 provides a background on the development of the corporate regulatory framework and the history of accounting standard setting, with emphasis on the harmonization and standardization of accounting standards. The historical development of the major international bodies responsible for harmonization of accounting standards i.e. international accounting standards committee (IASC) and its successor i.e. international accounting standards board (IASB) is also outlined. With regards to the history of international harmonization leading up to IFRS-adoption by all countries in 2005, Malaysia, Singapore and Hong Kong have taken the strategy of basing their local standards on IASs as they become available from the IASC. By comparison, South Africa, Australia and Britain have been influenced by IASs as they became available, but continued developing their own standards in a way that achieved harmonization with IASs.

Chapter 3 presents a broad review of the prior literature focusing on the value relevance of accounting information over time in various countries as well as various factors that could influence the value relevance of accounting figures. In addition, the chapter reviews prior studies focusing on the effect of change in accounting regime on value relevance of accounting information.

Integration of the harmonization histories of the sampled countries (presented in chapter 2) with the arguments and findings of the literature in chapter 3, underlies the formulation of the research questions and objectives in chapter 1. Chapter 4 describes the research methodology for this study, including sampling, data collection and content analysis used for measurement of intellectual capital information, model design and variable measurement.

Chapter 5 presents the results and discusses the findings. The key descriptive and empirical findings are summarized as follows:

- Descriptive statistics indicate that, as was expected, higher level of adjustments was made to the elements of financial statements of the Australian and British firms compared to those firms in Hong Kong and Singapore. This is because Hong Kong (since 1993) and Singapore (since the establishment of IASC) have taken the strategy of selectively adopting IASs. Accounting standards issued in these two countries have been in fact the local version of IASs.

- Results regarding the incremental value relevance of accounting information within the year of adoption of IFRSs indicate that accounting information produced under IFRSs are not incrementally more value relevant compared to those produced under local accounting standards, within all the sampled countries.

- Regarding the relative and incremental explanatory powers of BVPS and EPS results indicate that after the adoption of IFRSs, except for Australia and Malaysia, the relative explanatory power of EPS is higher than that of BVPS within all sampled countries. Lower explanatory power of EPS compared to BVPS in Australia and Malaysia, within the post-adoption period, could be partially explained by the increase in number of firm-year observations reporting loss within the sample. It appears that the IASB's strategy to develop IFRSs that place greater emphasis on the balance sheet for valuing firms has been of limited success in terms of providing financial statement information of increased relevance to the share market.

- Panel regression results regarding a direct test of incremental value relevance of accounting information indicates that earnings and book value produced under IFRSs are partially more value relevant compared to those numbers produced under local accounting standards.

- Dividing the sampled companies into two major industries types (i.e. traditional and new economy) indicates no significant effect on the share price. Therefore, it can be inferred that, whether the industry-type consists of companies with high levels of intellectual capital or not, does not have a confounding effect on change in value relevance of accounting numbers.

- When the traditional value relevance model is extended to include the extent of corporate intellectual capital disclosures, the direct effect of ICD on share price is found to be significant in Britain and Hong Kong. Results indicate that disclosure of intellectual capital information provides relevant signals to investors and securities analysts in those countries and this indicates that intellectual capital information has enough relevance to directly affect the value of firms within the share market. The interaction between ICD and EPSDIF as well as BVPSDIF (within the adoption year) is, too, significantly positive only in Britain. Arguably, a high level of disclosure of ICD in sampled companies within Britain has led this information to be sufficiently detailed and consequently affects the relationship between EPSDIF, BVPSDIF and the share price.

- With regards to change in the value relevance of accounting numbers in 2008 (the year of the greatest impact of the global financial crisis of companies' financial performance), the evidence in this study indicates that analysts in the Britain, Australia and Hong Kong tended to focus more attention on information beyond EPS and BVPS, such as cash flows and broader industry and economy information, thereby reducing the value relevance given separately to EPS and BVPS. However, analysts in Singapore, Malaysia and South Africa tended to give even closer attention to key accounting numbers (EPS and BVPS) reported by companies during a financial crisis, thereby increasing the value relevance given to these numbers.

The significance of this study is that it contributes more comprehensive findings than prior literature on the value relevance of reported earnings and equity under different accounting regimes. Prior studies have investigated the incremental value relevance of IFRSs compared to GAAPs but have not related their findings to the extent to which different countries have harmonized their GAAPs leading up to the first time adoption of IFRSs, while taking into consideration the different concentrations of industries between knowledge-intensive 'new economy' industries that have accumulated high levels of intellectual capital not captured in financial statement numbers, and traditional industries that rely less of internally generated intellectual capital. A further gap in the literature addressed in this study is that alternative

value relevance models have not been run on data covering periods of years before and after the year of first-time adoption of IFRSs, or during a period of economic turbulence.

7.3 Implications

The results of this study have provided an increased understanding of the level and direction of changes in value relevance of accounting information within the post-IFRSs adoption period compared to the pre-IFRSs period. In addition, this study provides insight of the factors that could influence the changes in value relevance of accounting figures within pre- and post-IFRSs periods in traditional and new economy sectors. Findings of this study should be of interest to corporate management, accounting standard setters, investors and others interested in capital market-based accounting research. This greater understanding could be translated into improved decision making for these three main financial statement groups:

1- Corporate management: This study highlights the continuing importance of accounting 'bottom line' numbers of earnings and book value of equity to the determination of the value of companies. However, the change in accounting standards for computing these numbers by adopting the espoused higher quality IFRSs has not incrementally increased the value relevance of these numbers to the market. So corporate managements' fears about the effect that future changes in IFRSs might have in terms of affecting reported earnings and book value numbers in a way that reduces the company's share price, are probably unfounded. A further finding of interest to management is the significance of voluntary intellectual capital disclosures as a relevant factor in the analyst/shareholder's assessment of the market value of the company. Management should consider the importance of providing signals, especially textual information about the human and structural intellectual capital, of their company. The ability of management to efficiently exploit and communicate such information to potential investors is likely to enhance the market value of the company. Moreover, initiating disclosure frameworks for intellectual capital information would help management in its strategic management and decision making processes within the firm.

2- Accounting standard setters: Findings of this study can be informative to accounting standards setters in considering the future directions for their conceptual framework and IFRSs. Evidence in this study of differences in the significance of incremental and relative value relevance of accounting numbers under GAAPs and IFRSs across countries could point to the need to allow national standards setters in individual countries more degrees of flexibility in deviating from global reporting standards. The models used in this paper could be applied by national standards setters on an on-going way in the future to establish with the IASB that any permitted deviations from IFRSs can be proven to render greater value relevance to investors in that country's share market. Further, implications for standards setters can arise from evidence that the value relevance of accounting numbers is affected when companies operate in 'new economy' industries, or when companies voluntarily disclosing more non-financial information about their intellectual capital. Such evidence points to the need for standards setters, especially the IASB, to broaden their conceptual framework beyond financial reporting into broader-based intellectual capital reporting.

3- Prospective and current shareholders: Findings of this study contribute to prospective shareholders' appreciation of the significance of management providing better quality voluntary disclosures concerning corporate intellectual capital formation and performance. Prospective shareholders with the intention of investment in the high technology sector will become aware of various means by which firms communicate with investors as well as non-financial factors that can have an important role in financial decision making. Turning to current shareholders, the findings of no significant incremental value relevance arising from the adoption of IFRSs in the respective countries in this study, points to a costly exercise for companies without achieving the benefit of providing shareholders with more relevant information than existed under local GAAPs. However, the costs incurred by companies at the time of adoption of IFRSs (which affected the shareholders' value) are expected to be recovered by companies operating and incorporated in multiple countries because they now function under common international financial accounting and reporting standards.

7.4 Limitations of the study

The findings and conclusions from this study need to be read with caution because of the following limitations:

7.4.1 Limitations of data utilised and the variable measurement

Reconciliation statements extracted from the footnotes to the financial statements are prepared by corporate managers within the year of adoption of IFRSs. The consistency of approach used by managers in the preparation of these reconciliation statements across six countries is not feasible to test. Further, as formerly explained in chapter four (i.e. research methodology and variable measurement) accounting figures utilised within the value relevance model are secondary type data and are obtained from the OSIRIS database. These types of data are usually audited by external auditors at the time of disclosure. However, the reliability of data extraction and classification remains with the preparers of the OSIRIS database, a private enterprise..

With regards to measurement of intellectual capital information, following former studies (i.e. Guthrie and Petty, 2000; Bontis, 2003; Brüggen et *al.*, 2009) content analysis is utilised to measure such information. However, the method applied in this study only deals with the quantity, not the quality, of intellectual capital disclosure. Generally, as suggested by Zeghal and Ahmed (1990) one of the major limitations of content analysis is that there is an element of subjectivity involved in determining what constitutes a particular type of disclosure.

7.4.2 Limitations of the selected sample

A sample of Commonwealth and former British colony countries (i.e. Britain, Australia, Hong Kong, Singapore, Malaysia and South Africa) is used in this study. However, other countries with comparable Anglo-accounting histories, such as New Zealand and Canada, are not included in this study. This is because their IFRS adoption date is not within the framework of this study. In addition, this study is carried out in a sample of developed countries with Anglo- accounting background. As a result findings of this study could not be generalised to developing countries and countries with continental accounting background.

7.4.3 Limitations of the model

A traditional price model is utilised in this study to measure the value relevance of accounting figures. As formerly mentioned in chapter three (literature review), the price model has a number of advantages and disadvantages compared to the return model of value relevance. Researchers are in fact dealing with two imperfect but well-designed models: one that gives more economically sensible earnings response coefficient (price models) and another with "*less severe White (1980) specification problems*" (return models) but more "*biased slope coefficients"* (Kothari and Zimmerman, 1995, p. 157). Since each functional form has its weakness, Kothari and Zimmerman (1995) suggest the researcher to be aware of the econometric limitations in designing their experiments. Landsman and Magliolo (1988), too, conclude that the advantages of one approach over the other are largely dictated by what researchers wish to assume. Finally, Ota (2001) does not suggest utilising both models for the same sample since the results might be somewhat confusing.

The other limitation of this study relates to the clean surplus accounting assumption made behind the price model of value relevance. As stated by Ohlson (1995), accounting assigns an important "integrative" function to the statement of changes in owners' equity. The statement includes the bottom-line items in the balance sheet and income statement - book value and earnings - and its format that requires the change in book value to equal earnings minus dividends (net of capital contributions). This is referred as the clean surplus relation because, as stated by Ohlson (1995), all changes in assets and liabilities unrelated to dividends must pass through the income statement. Most value relevance studies are based on this clean surplus accounting assumption. To the extent that changes in assets and liabilities do not pass through the income statement for companies sampled in this study, the analysis is weakened, at least theoretically.

7.5 Directions for future research

This study generates many possibilities for future research. Firstly, as formerly mentioned, a limitation of this study is its sample size, which is relatively small in terms of companies per country. Future research might usefully examine a larger sample of firms (by including firms with smaller market capitalisation) and this would increase the depth and strength of any conclusion.

Secondly, as formerly mentioned, the identification and categorisation of IC information using content analysis to identify IC disclosures is, at present, subjective. Perhaps future research studies could consider alternative methods of measurement of IC information. For instance, corporate managers and annual report preparers could be interviewed to discover the extent to which they deliberately signal particular types of intellectual capital information to the market. The level and type of disclosure of such information could be measured by conducting qualitative interview studies and questionnaires with annual report preparers.

A further opportunity for value relevance research arises from the on-going changes in IFRSs that are expected to continue to emerge from the IASB and FASB convergence program. For example an exposure draft about revenue recognition has been recently issued by the IASB due to this convergence program. This exposure draft proposes fundamental new conceptualization for recognizing and measuring revenue from contracts with customers. It applies to all contracts with customers except leases, financial instruments and insurance contracts (IFRS foundation, 2010). Arguably such changes can substantially affect the earnings and net equity numbers reported by companies, particularly in the construction industry where longer-term contracts with customers exist. and the introduction of such a fundamental accounting standard could consequently affect the value relevance of accounting numbers. Measurement of value relevance of accounting numbers at the time of adoption of new IFRSs or within the pre-and post-adoption periods of such standards could become future research that is used by standards setters in different countries to assess the quality of the change introduced by IASB.

With regards to other ways of using the value relevance model in future research, further variables such as corporate governance and ownership factors could be added to the model to

examine the impact of corporate governance factors on change in value relevance of accounting numbers.

Finally, future research could comprise a sample of companies within developing countries such as Turkey, United Arab Emirates and other developing countries which recently adopted IFRSs. Future research could indicate the level of changes in value relevance of accounting information as a result of adoption of IFRSs in such countries.

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