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The Decision Usefulness Of Comprehensive Income Reporting In Canada

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The Decision Usefulness Of
Comprehensive Income Reporting In Canada

by

Harjinder Deol

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
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Abstract

In this study, I empirically investigate the decision usefulness of mandatory reporting of comprehensive income in Canada under the erstwhile Accounting Handbook Section 1530 (HB1530). Comprehensive income (CI) equals the sum of Net Income (NI) and Other Comprehensive Income (OCI). I operationalize the concept of decision usefulness in two ways: (i) value relevance, and (ii) association with analysts' earnings forecasts.

As a theoretical framework, I draw upon Ohlson's (1999) discussion of the attributes of transitory earnings: forecasting irrelevance, unpredictability, and value irrelevance. Ohlson pointed out that the existence of any two attributes implies the third. That is, if an earnings item is irrelevant for forecasting future abnormal earnings, and if current numbers do not predict future ones (that is, if the earnings item is unpredictable), then it must be value irrelevant.

Drawing upon a sample of firms listed on the Toronto Stock Exchange, I employ a multivariate regression approach to test whether OCI and its individual components (namely, unrealized gains and losses on cash flow hedges - HEDGE, unrealized gains and losses on available for sale investments - SEC, and foreign currency translation adjustment on foreign subsidiaries - FOREX) possess forecasting relevance, predictability and value relevance. As a specification check, I also include a component of OCI under United States GAAP, minimum pension adjustment, PENADJ, to see if it possesses the same attributes as do components of OCI under HB1530. I also test for the association of OCI and its components with analysts' earnings forecasts.

I find that aggregate OCI and some of its individual components are relevant in forecasting future abnormal earnings, predictable, and incrementally value relevant. Aggregate OCI as well as some of its components are also able to predict future net income and operating cashflows. Aggregate OCI and some of its components are also significantly associated with analysts' earnings forecasts. Finally, some components of OCI are negatively significantly associated with analysts' forecast errors. These results suggest that Ohlson's (1999) description of transitory earnings might not apply to OCI, and that the reporting of comprehensive income in Canada did enhance the decision usefulness of accounting numbers.

Additional analyses establish that the results are robust to differences observed for size, industry and macro economic variables such as interest rates, exchange rates and the rate of GDP growth. A significantly negative bias is observed for the period of adoption, but this could be attributed to the economic recession of 2007-2008.

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To my parents

You've always believed in me. While times were never easy, you did your best to give me the gift of education. I have come thus far, with your blessings and love...

To my lovely wife, Gurbinder

You've stood by me through good times and bad. My dearest, dearest wife, this one's for you!

To my children, Mayan and Robyn

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Table of Contents

Abstract	ii
Acknowledgements	iv
Dedication	vi
Table of Contents	vii
List of Tables	x
List of Figures and Illustrations	xi
Definitions of important terms and list of acronyms used in the study	xii
Illustrative example of a statement of comprehensive income	xiv
 CHAPTER ONE: INTRODUCTION	 1
1.1 Objective of the Study	1
1.2 Data Collection and Overview of the Research Method	2
1.3 Overview of the Results	3
1.4 Overview of the Dissertation	4
 CHAPTER TWO: BACKGROUND AND MOTIVATION	 5
2.1 Adoption of Handbook Section 1530 Comprehensive Income in Canada	5
2.1.1 Controversial origins of comprehensive income	6
2.1.2 Delayed adoption of comprehensive income in Canada	8
2.2 Motivating the research	9
2.2.1 Consistency with international / U.S. standards	9
2.2.2 Enhanced transparency of financial statements	12
2.2.3 Research questions	14
2.3 Contribution to the literature	16
 CHAPTER THREE: LITERATURE REVIEW	 18
3.1 Studies examining whether other comprehensive income is transitory	24
3.2 Studies examining the value relevance of comprehensive income	26
3.2.1 Early studies	26
3.2.2 Recent studies	31
3.2.3 Studies in the Canadian context	35
3.3 Studies examining analysts' earnings forecasts	37
3.3.1 Importance of analysts' forecasts	37
3.3.2 Information used by analysts in their earnings and valuation forecasts	38
3.3.3 Analyst forecast accuracy and potential reasons for forecast error	39
3.4 Implications of, and Conclusions from existing studies: the gap in the literature and how the present study fits in it	41
 CHAPTER FOUR: THEORETICAL FRAMEWORK	 44
4.1 Decision Usefulness	44
4.2 Market efficiency	45
4.3 Ohlson's Residual Income Valuation model	46
4.3.1 Empirical evidence	49
 CHAPTER FIVE: RESEARCH DESIGN AND METHODOLOGY	 51

5.1 Testing Ohlson's Residual Income Valuation model for transitory earnings.....	54
5.1.1 Regressions to test OCI's ability to forecast future abnormal earnings	56
5.1.2 Regressions to test predictability of OCI.....	58
5.2 Testing for the value relevance of OCI and its components.....	59
5.2.1 Valuation (Level) Regressions to test value-relevance of OCI and components	60
5.2.2 Returns (Change) Regressions to test value-relevance of OCI and components	63
5.3 Testing for association of OCI and its components with analysts' earnings forecasts	64
5.3.1 Regressions to test association of OCI and components with analyst forecasts	65
5.3.2 Regressions to test association of OCI and components with analyst forecast error	66
5.4 Control Variables	66
5.5 Data procedures	68
5.5.1 Missing data.....	68
5.5.2 Outliers	69
CHAPTER SIX: RESULTS	70
6.1 Descriptive statistics	70
6.2 Results of regression analyses	82
6.2.1 Regressions to test the ability of OCI and its components to forecast future abnormal earnings	82
6.2.2 Regressions to test predictability of OCI.....	84
6.2.3 Valuation (Level) Regressions to test value-relevance of OCI and components	86
6.2.4 Returns (Change) Regressions to test value-relevance of OCI and components	90
6.2.5 92	
6.2.6 Regressions to test association of OCI and components with analyst forecasts	93
6.2.7 Regressions to test association of OCI and components with analyst forecast error	96
6.3 Robustness tests	99
6.3.1 Controlling for size, leverage and industry	99
6.3.1.1 Regressions testing the ability of OCI and its components to forecast future abnormal earnings	99
6.3.1.2 Regression to test predictability of OCI	100
6.3.1.3 Valuation (Level) Regressions to test value-relevance of OCI and components	101
6.3.1.4 Returns (Change) Regressions to test value-relevance of OCI and components	103
6.3.2 Alternative specification of normal earnings	106
6.3.2.1 Regressions testing the ability of OCI and its components to forecast future abnormal earnings	108
6.3.2.2 Regressions to test predictability of OCI.....	111
6.3.3 Testing the ability of OCI and components to predict future net income and operating cash flows	113
CHAPTER SEVEN: DISCUSSION, LIMITATIONS AND FUTURE RESEARCH.....	117
7.1 Discussion of the contributions and limitations of this study	117
7.1.1 Contributions	118
7.1.2 Limitations.....	119
7.2 Conclusion and future research questions	122

APPENDIX 1: LIST OF COMPANIES	124
REFERENCES	138

List of Tables

Table 3-1: Summary of literature review of selected studies examining some aspect of usefulness of comprehensive income, OCI or components	18
Table 5-1: Illustrative example of a statement of comprehensive income	53
Table 6-1: Descriptive Statistics	71
Table 6-2: Correlation matrices and Pearson coefficients	75
Table 6-3: Regressions to test the ability of OCI and its components to forecast future abnormal earnings	83
Table 6-4: Regressions to test predictability of OCI	85
Table 6-5: Valuation (Level) Regressions to test value-relevance of OCI and components	88
Table 6-6: Returns (Change) Regressions to test value-relevance of OCI and components	92
Table 6-7 Regressions to test association of OCI and components with analysts' forecasts	95
Table 6-8 Regressions to test association of OCI and components with analyst forecast error ...	98
Table 6-9: Regression to test the ability of OCI and its components to forecast future abnormal earnings	100
Table 6-10: Regressions to test predictability of OCI and components	101
Table 6-11: Valuation regression to test value relevance of OCI and components	102
Table 6-12: Returns (Change) Regressions to test value-relevance of OCI and components	104
Table 6-13 Summary of key macroeconomic data	106
Table 6-14: Annual Returns on the S&P/TSX Index Portfolio and average industry level returns for 2001-2010	107
Table 6-15: Correlation matrix and Pearson Coefficients for various estimates of abnormal earnings	108
Table 6-16: Regression to test the ability of OCI and its components to forecast future abnormal earnings	110
Table 6-17: Regressions to test predictability of OCI and components	113
Table 6-18: Regressions to test the ability of OCI and components to forecast future net income and operating cash flows	115

List of Figures and Illustrations

Figure 1: Exchange rates for the Canadian Dollar against selected currencies	61
Figure 2: Historical Canadian Bank rates	62
Figure 3: S&P/TSX Index for the period January 1, 2005 – December 31, 2011	120
Figure 4: NYSE Composite (Dow Jones) Index for the period January 1, 2005 – December 31, 2011.....	121

Definitions of important terms and list of acronyms used in the study

<i>AbnEarn</i>	the difference between the actual earnings per share and the expected earnings specified as beginning book value per share multiplied by 12 per cent.
<i>Accruals/S</i>	Per share amount of accruals, calculated as the difference between Operating Cash Flow per share and Net Income per share.
<i>AEDiffOCI</i>	the difference between <i>AbnEarn</i> and <i>OCI</i> ₁₅₃₀ .
<i>AEInd_{it}</i>	the difference between the actual earnings per share and the expected earnings, specified as beginning book value per share multiplied by the average industry return for the calendar year.
<i>AENI_{it}</i>	the difference between the actual earnings per share and the expected earnings, specified as the earnings per share of the previous fiscal year.
<i>AETSX_{it}</i>	the difference between the actual earnings per share and the expected earnings, specified as beginning book value per share multiplied by the average S&P/TSX portfolio return for the calendar year.
<i>BVE/S</i>	the book value of common equity per share at the end of the fiscal year.
<i>D₁</i>	Dummy variable coded 1 if the net income for the year was negative.
<i>D₂</i>	Dummy variable coded 1 if the year was 2006 and after.
<i>EPS</i>	Earnings Per Share for firm <i>i</i> for immediately preceding fiscal year.
<i>FERR</i>	Forecast error in mean consensus analysts' earnings forecast, calculated as (Actual EPS – IBESMean)/Price _{it-1} .
<i>FOREX</i>	change in cumulative foreign currency translation adjustment under Canadian GAAP for the fiscal year.
<i>HEDGE</i>	the change in the fair value of cash flow hedges under Canadian the fiscal year.
<i>IBESMean</i>	Mean analysts' forecast estimate from I/B/E/S of Earnings per share (EPS) for firm <i>i</i> immediately preceding earnings announcement.

<i>IBESMed</i>	Median analysts' forecast estimate from I/B/E/S of EPS for firm <i>i</i> immediately preceding earnings announcement.
<i>LnMVE</i>	Natural log of market value of equity for firm <i>i</i> at the beginning of fiscal year (a proxy for size).
<i>LnTV</i>	Natural log of average trading volume for firm <i>i</i> stock (another proxy for size).
<i>LnFol_{it}</i>	Natural log of the number of analysts providing earnings forecasts for firm <i>i</i> shares (another proxy for size).
<i>MNMD</i>	Difference between the mean and median consensus analyst earnings forecasts, calculated as (IBESMean – IBESMed)/ Price _{it-1} .
<i>NI/S</i>	net income per share after extraordinary items and discontinued operations for the fiscal year.
<i>OCF/S_{it}</i>	operating cash flow per share for the fiscal year <i>t</i> ;
<i>OCI₁₅₃₀</i>	the sum of <i>HEDGE</i> (fair value changes in cash flow hedges), <i>SEC</i> (fair value changes in available for sale investments) and <i>FOREX</i> (changes in cumulative foreign currency translation adjustment) following Canadian GAAP.
<i>OCI₁₃₀</i>	<i>OCI₁₅₃₀</i> plus <i>PENADJ</i> (pension adjustment on defined benefit pension plans, as required under SFAS 130 of U.S. GAAP.
<i>P/S</i>	per share price three months after the end of fiscal year.
<i>PENADJ</i>	the per share change in additional minimum pension liability in excess of unrecognized prior service costs under SFAS 130 for the fiscal year.
<i>RET</i>	stock returns (change in stock price plus dividends declared) for the year ended three months after the end of fiscal year.
<i>SEC</i>	the change in the fair value of available-for-sale investments under Canadian GAAP for the fiscal year.

Illustrative example of a statement of comprehensive income

Statement of Comprehensive Income

For the year ended December 31 (\$ thousands)	20X2	20X1
Net income	<u>\$ 651</u>	<u>\$ 22</u>
Other comprehensive income, net of tax		
Unrealized gains and losses on translating financial statements of self-sustaining foreign operations (a)	547	627
Gains and losses on hedges of unrealized foreign currency translation losses and gains	(545)	(618)
Unrealized foreign currency translation gains and losses, net of hedging activities	<u>2</u>	<u>9</u>
Unrealized gains and losses on available-for-sale financial assets arising during the period	<u>1,689</u>	<u>277</u>
Reclassification adjustment for gains and losses included in net income	(317)	62
Change in unrealized gains and losses on available-for-sale financial assets	<u>1,372</u>	<u>339</u>
Gains and losses on derivatives designated as cash flow hedges	<u>1,723</u>	<u>687</u>
Gains and losses on derivatives designated as cash flow hedges in prior periods transferred to net income in the current period	(995)	(333)
Change in gains and losses on derivatives designated as cash flow hedges	<u>728</u>	<u>354</u>
Other comprehensive income	<u>2,102</u>	<u>702</u>
Comprehensive income	<u><u>\$ 2,753</u></u>	<u><u>\$ 724</u></u>

(a) It is assumed that there was no reduction in the net investment in a foreign operation. Therefore, there is no reclassification adjustment.

source: Reproduced from CICA Accounting Handbook section 1530 Comprehensive Income, paragraph 12.

Chapter One: Introduction

1.1 Objective of the Study

In 2005, the Canadian Accounting Standards Board (the AcSB) issued Handbook¹ Section (HB) 1530, *Comprehensive Income*. Comprehensive income (CI) was defined as “the change in equity (net assets) of an enterprise during a period from transactions and other events and circumstances from non-owner sources” (CICA HB1530, para 3a). Comprehensive income comprised Net Income (NI), and Other Comprehensive Income (OCI). OCI as defined under HB1530 (hereafter referred to as OCI₁₅₃₀) included three components, namely, (1) unrealized gains and losses on available-for-sale financial assets, (2) unrealized gains and losses on foreign currency translations, and (3) gains and losses on derivatives designated as cash flow hedges.

The provisions of HB1530 were broadly similar to those of Statement of Financial Accounting Standard (SFAS) 130 under the United States’ Generally Accepted Accounting Principles (US-GAAP), except that OCI under SFAS 130 (hereafter referred to as OCI₁₃₀) included an additional item – minimum pension adjustment. Historically, Canadian GAAP had been strongly influenced by US GAAP and the Canadian Accounting Standards Board was working on harmonizing Canadian GAAP with US GAAP (Blanchette and Desfleurs 2011). It is therefore somewhat surprising that HB1530 was adopted in Canada almost eight years after its counterpart in the United States, SFAS 130. It is even more surprising that section 1530 was adopted at a time when the AcSB had decided to adopt International Financial Reporting Standards as GAAP for publicly accountable entities (Accounting Standards Board of Canada 2006).

There was considerable debate within the academic and practitioner communities in the United States whether SFAS 130 would provide useful information (Norton and Porter 1982;

¹ Canada has since adopted IFRS for publicly accountable entities, and the Accounting Handbook now consists of five parts:

Part I: International Financial Reporting Standards (IFRS), Part II: Accounting Standards for Private Enterprises (ASPE), Part III: Accounting standards for Not-for-Profit Organizations, Part IV: Accounting standards for Pension Plans, and Part V: Canadian GAAP applicable till December 31, 2010. Throughout this dissertation, section 1530 refers to the section from the erstwhile GAAP (now Part V of the Handbook)

Robinson 1991; Knutson and AIMR 1993; Bisgay 1995; Beresford et al. 1996; Cope et al. 1996; Foster and Hall 1996; Johnson and Swieringa 1996; Smith and Reither 1996; Brauchle and Reither 1997; Linsmeier et al. 1997a). Ohlson (1999) captured the essence of the argument that the items included in OCI were transitory, and therefore, could not be expected to be value relevant. Empirical studies of the value relevance of Comprehensive Income conducted during the late 1990s and early 2000s provided mixed evidence on the superiority of comprehensive income related to other performance measures (Cheng et al. 1993; Hirst and Hopkins 1998; Dee 1999; Dhaliwal et al. 1999; Maines and McDaniel 2000; Cahan et al. 2000; Louis 2001; Brimble and Hodgson 2004). However, later studies did find some evidence to support the value relevance of OCI (Biddle and Choi 2006; Choi and Zang 2006; Chambers et al. 2007; Choi et al. 2007; Kanagaretnam et al. 2009).

The objective of this study is to investigate empirically, using actually reported accounting data by Canadian firms, whether mandatory reporting in Canada of OCI₁₅₃₀ and its components under HB1530, had decision usefulness incremental to, net income. I examine decision usefulness in two ways: (i) value relevance of items of OCI incremental to net income, and (ii) relationship between OCI numbers and analysts' earnings forecasts.

1.2 Data Collection and Overview of the Research Method

This study uses data on variables of interest from the following databases - Compustat (accounting data), CRSP (stock price information) and I/B/E/S (analyst forecasts) - accessed from Wharton Research Data Services. The sample for the study is drawn from an initial pool of 3,969 firm-year observations for 535 companies which have been constituents of the S&P/TSX Composite Index for at least one year for the financial years 2001 through 2010. However, missing data and controls for outliers resulted in a reduction in the usable observations to between 675 and 1464 firm-year observations for 411 companies.

To be consistent with recent value-relevance studies examining OCI, I use Ohlson's (1999) discussion of transitory earnings. Ohlson (1999) extends the work of Ohlson (1995) and Feltham and Ohlson's (1995, 1996) on the residual income model. Also known as clean surplus theory, the residual income model specifies market value as a function of book value of equity and

present value of future abnormal earnings. Ohlson's (1995) Clean Surplus Relation² is a useful starting point to examine the value relevance of Comprehensive Income, which is a performance measure broader in its scope than is Net Income, and thus provides information on earned income as well as unrealized gains and losses which could potentially affect firm value. However, Ohlson's (1999) discussion of transitory earnings (described in Chapter 4), along with the assumption held by several studies that all items of OCI are transitory in nature, do not support a hypothesis predicting value relevance for OCI.

In this study, I examine whether items of OCI really meet Ohlson's (1999) described properties of transitory earnings: unpredictability, forecasting irrelevance and value-irrelevance. Ohlson (1999) suggested that the existence of two properties would imply the third. I test the OCI numbers for unpredictability and forecasting irrelevance. My reasoning is that if OCI demonstrates predictability and forecasting relevance, then they should also be value relevant.

1.3 Overview of the Results

Consistent with Jones and Smith (2011), who find that OCI items exhibit negative persistence, I find that OCI and its components are predictable, with lagged values being significantly negatively associated with current values.

I also find that OCI and some of its components are relevant for forecasting future abnormal earnings. In additional analyses, I also find that OCI and some of its components are relevant for predicting future net income and future operating cash flows.

Controlling for book value of equity and net income, I find that some components of OCI are significantly correlated with stock price. Similarly, controlling for market returns and net income, elements of OCI are significantly correlated with stock returns. These conclusions support the findings of recent studies examining the value relevance of OCI (Chambers et al. 2007; Kanagaretnam et al. 2009; Jones and Smith 2011).

² According to the Clean Surplus Relation (CSR), all changes in book values bv_t are reported as either income x_t (for the period) or dividends d_t (assumed to be paid at the end of the period, thus reducing the book value of the assets retained by the firm). Thus:

$$bv_t = bv_{t-1} + x_t - d_t \dots (CSR)$$

I also find that some items of OCI are significantly correlated with analysts' forecasts of earnings per share. Finally, I find that two components of OCI are significantly negatively correlated with analysts' forecast errors. These findings imply the OCI information that analysts use in their forecasting models, contribute towards greater forecast accuracy.

This study extends the discussion of the decision usefulness of comprehensive income reporting, using as-reported numbers from Canada. Its primary contribution to the literature is its empirical examination of the assumption that OCI items are transitory. It concludes that OCI and its components exhibit some degree of negative persistence. In addition, it provides further evidence of the value relevance of OCI information, and supports the current presentation model which splits comprehensive income into net income and OCI.

1.4 Overview of the Dissertation

The current chapter introduced the objectives of the study, the research approach and an overview of the key results. Chapter Two provides background information on HB Section 1530, *Comprehensive Income*, and its adoption in Canada. It also provides a discussion of the motivation for the current study. Chapter Three reviews the existing literature relevant to the study. I discuss the implications of the conclusions from existing studies and identify gaps in the literature, some of which this study seeks to address. Chapter Four describes the theoretical framework which guides this study. It provides a brief discussion of the concept of decision usefulness as used in this study, as well as brief overview of Ohlson's residual income valuation model and my underlying assumption about market efficiency in using stock price information. Chapter Five describes the research design and methodology employed for this study. It formally introduces variables of interest, data sources and procedures, as well as the regression models used. Chapter Six reports the results of this study. Chapter Seven concludes this dissertation with a discussion of the results in relation to the existing literature, acknowledges limitations in this study and describes some possible questions for future research in this area.

Chapter Two: Background and Motivation

2.1 Adoption of Handbook Section 1530 Comprehensive Income in Canada

In 2005 the Canadian Accounting Standards Board (the AcSB) issued Handbook³ Section (HB) 1530, *Comprehensive Income*. Comprehensive income (CI) was defined as “the change in equity (net assets) of an enterprise during a period from transactions and other events and circumstances from non-owner sources” (CICA HB1530, para 3a). It consisted of Net Income (NI), and Other Comprehensive Income (OCI), items including (1) unrealized gains and losses on available-for-sale financial assets (SEC), (2) unrealized gains and losses on foreign currency translations (FOREX), and (3) gains and losses on derivatives designated as cash flow hedges (HEDGE).

The Canadian Standard was based on the US Financial Accounting Standard Board’s (the FASB) Statement of Financial Accounting Standard 130 (SFAS 130), which defines comprehensive income in exactly the same manner as Canadian Handbook Section 1530, except that SFAS 130 includes an additional item under OCI – minimum pension adjustments (PENADJ)⁴. SFAS 130 allows for three options for reporting OCI: (a) in an income statement as a continuation of net income; (b) in a separate statement beginning with net income; and (c) in the statement of changes in equity. HB1530 too provided for these three reporting options. The application of hedge accounting was also optional, with Canadian firms allowed to comply with SFAS 133 and with International Accounting Standard (IAS) 39. The AcSB also issued HB 3855, Financial Instruments – Recognition and Measurement; and HB 3865, Hedges, which were also similar to the FASB’s SFAS 115 and 133 respectively.

³ Canada has since adopted IFRS for publicly accountable entities, and the Accounting Handbook now consists of five parts:

Part I: International Financial Reporting Standards (IFRS), Part II: Accounting Standards for Private Enterprises (ASPE), Part III: Accounting standards for Not-for-Profit Organizations, Part IV: Accounting standards for Pension Plans, and Part V: Canadian GAAP applicable till December 31, 2010. Throughout this dissertation, section 1530 refers to the section from the erstwhile GAAP (now Part V of the Handbook)

⁴ Under IFRS, an additional item, revaluation gains under the revaluation model, is included in OCI.

2.1.1 *Controversial origins of comprehensive income*

The adoption of SFAS 130 in the United States was the result of lengthy deliberation and a split vote (Biddle and Choi 2006). The origins of the debate date back to the early 1900s, in the works of the likes of Dicksee (1982), Dickinson (1987), Paton (CICA 2005b; Freeman and Tse 1992), Preinreich (1936), Littleton (Fama and French 1992; Littleton 1940) and others on the concept of Clean Surplus (Brief and Peasnell 1996). Ohlson (1995) and Feltham and Ohlson (1995, 1996) extended the discussion by providing a theoretical framework for how the clean surplus relation could be used in security valuation. Clean surplus accounting requires that earnings, adjusted for dividends, should articulate beginning-of-period retained earnings to end-of-period retained earnings. That is, Ending Retained Earnings equals Beginning Retained Earnings plus Earnings minus Dividends. This is possible when all transactions are recorded in the earnings statement.

Items that bypass reported earnings but are adjusted against retained earnings in the balance sheet are called dirty surplus items. The basic premise of the clean surplus relation is that all changes in shareholders' equity that do not arise from transactions with shareholders (e.g. dividend payments, capital contributions) should be reflected in an income statement. Dirty surplus is said to arise when some non-shareholder-related items are adjusted directly to shareholders' equity, thus bypassing the income statement. In other words, dirty surplus is a component of comprehensive income which is excluded from reported earnings and, therefore, violates the clean surplus relation (Landsman et al, 2011). Traditionally, the accounting definition of income typically excluded unrealized gains and losses, and tended to favour historical costs (reliability) over market/fair values (relevance).

In Statement of Financial Concepts 3⁵, *Elements of Financial Accounting Statements of Business Enterprises*, the FASB defined comprehensive income as the change in a business entity's net assets for a period from all sources except transactions with owners. This definition

⁵ SFAC 3 was later replaced by SFAC 6 in 1985, which extended the definitions from SFAC 3 to not-for-profit organizations (Johnson et al 1995, p129)

was similar to the “all-inclusive” income that satisfied the clean surplus relation. In the early 1990s, calls for reporting comprehensive income began emerging (Johnson et al. 1995; Robinson 1991).

In 1993, the Association for Investment Management and Research (AIMR)⁶ urged for the practical implementation of comprehensive income in a position paper entitled *Financial Reporting in the 1990s and Beyond* (Knutson and AIMR 1993)⁷. The position paper purported to present the views of financial analysts, and argued that the field of financial analysis was faced with challenges and opportunities presented by the rapid globalization of capital markets, improved and cheaper computing power and the enhanced role of financial assets in the economic activity of firms. The document recommended reporting of market values for financial instruments and called upon the FASB to develop its concept of comprehensive income. It noted:

It is axiomatic that it is better to know what something is worth now than what it was worth at some moment in the past . . . Historic cost itself is in reality historic market value, the amount of a past transaction engaged in by the firm. . . . Historic cost data are never comparable on a firm-to-firm basis because the costs were incurred at different dates by different firms (or even within a single firm). There is no financial analyst who would not want to know the market value of individual assets and liabilities [AIMR, 1993, p39 cited in Centre for Financial Market Integrity (2007)].

In response to such calls, the FASB initiated a project on reporting comprehensive income. The project attracted much attention from academics and practitioners (Foster and Hall 1996; Linsmeier et al. 1997a, 1997b; Beresford et al. 1996; Brauchle and Reither 1997; Cope et al. 1996; Randall and David 1998). Studies examining the extent of reporting comprehensive income, and articles elucidating the requirements of the standard, were published both before and shortly after the adoption of SFAS 130 (Rao and Walsh 1999; Godwin and Alderman 1999; Keating 1999; Johnson and Swieringa 1996).

⁶ The AIMR is now known as the Certified Financial Analysts (CFA) Institute

⁷ Interestingly, although this document is widely cited, no online copy appears to exist. A summary was published by AIMR in 1992 (Financial Accounting Policy Committee 1992)

Early empirical studies did not have readily available values for OCI, and so the researchers calculated the amounts (called *as-if* values). Based on these *as-if* values, these earlier studies found that comprehensive income was not incrementally useful over other well-established metrics for income such as operating income and net income (Cheng et al. 1993; Dhaliwal et al. 1999). Experimental studies on whether sophisticated users of accounting information, such as analysts, were able to detect earnings management through the use of comprehensive income (Hirst and Hopkins 1998) and whether non-professional users were affected by the manner in which comprehensive income was reported (Maines and McDaniel 2000) also came to less-than-favourable conclusions about the general usefulness of comprehensive income.

2.1.2 Delayed adoption of comprehensive income in Canada

Until the early twenty-first century, Canadian GAAP had been strongly influenced by US GAAP and the Canadian Accounting Standards Board was working on harmonizing Canadian GAAP with US GAAP (Blanchette and Desfleurs 2011; Accounting Standards Board of Canada 2004). It was, therefore, somewhat surprising that CICA HB1530 was adopted almost eight years after its counterpart in the United States, SFAS 130. It was even more surprising that section 1530 was adopted at a time when the AcSB had decided to adopt IFRS (Accounting Standards Board of Canada 2006). HB1530 became effective for firms with financial years beginning October 2006 and later, with firms qualifying for differential reporting getting an extra year to implement the standard⁸. Under differential reporting, companies had the option of choosing among alternatives for how they accounted for subsidiaries, long term investments, joint ventures, share capital, income taxes and for financial instruments (Miller 2002). In terms of reporting comprehensive income, the only differential reporting option was that under section 3855 - an ability to elect to account for certain available-for-sale assets at cost- or amortized-cost, instead of fair value (PriceWaterhouseCoopers 2005).

⁸ According to paragraph 1300:06 of the CICA Handbook, “an enterprise [was] a qualifying enterprise for purposes of the differential reporting options set out in an Accounting Standard, Accounting Guideline or Abstract of Issue discussed by the Emerging Issues Committee when and only when: (a) it [was] a non-publicly accountable enterprise; and (b) its owners unanimously consent[ed] to the application of differential reporting options in accordance with paragraph 1300.13.”

The delay in adopting HB1530 in Canada could partly have been due to the fact that Canadian GAAP required gains and losses to be included in the income statement, thus already adhering to the requirement of clean surplus accounting. The AcSB had initially been of the view that changes in fair value of financial instruments should not be excluded from net income, something that the concept of *Other Comprehensive Income* permitted (CICA 2005, para 6-8). Before the issue of Section 1530, Canadian GAAP did not require, or permit, most gains or losses to be excluded from net income, and had held the view that “there is little conceptual basis for excluding gains and losses on changes in fair value of financial instruments from net income... [since] such losses and gains [neither] meet the definition of assets or liabilities... [nor] do they meet the definition of equity” (CICA 2005, para 6-8). In other words, the AcSB was not initially supportive of the use of OCI. This begs the question: why did the AcSB decide to adopt section 1530?

2.2 Motivating the research

In its discussion of the basis for conclusions, the AcSB provided two reasons for the introduction of section 1530: (i) harmonization with international / U.S. standards, and (ii) enhanced transparency of financial statements. It hoped that “the use of comprehensive income ... will not result in a significant cost to prepare and will help make certain gains and losses more transparent to financial statement users”.⁹

2.2.1 Consistency with international / U.S. standards

Supporters of harmonization of standards claimed that it would help Canadian companies reduce reporting costs. As standards converged across jurisdictions, the need for having to prepare reconciliation statements from one GAAP to another would be minimized. Moreover, it was argued that users would find it easier to compare financial statements for companies across countries. Later on, studies would help buttress this argument in favour of harmonization. For example, Bae, Tan and Welker (2008) found that GAAP differences are negatively correlated

⁹ Curiously, when the AcSB developed its separate set of accounting standards for private enterprises (Part II of the current *Accounting Handbook*), it chose not to retain other comprehensive income as an element of financial statements.

with foreign analyst following, and with forecast accuracy. In a related study, Tan, Wang and Welker (2011) found that mandatory IFRS adoption attracts foreign analysts, especially from other IFRS-adopting countries, and that to the extent that the adoption of IFRS reduces GAAP differences, it also improves foreign analysts' forecast accuracy. Daske et al (2008) found that mandatory IFRS reporting leads to increased market liquidity, increased equity valuations, and a decrease in firms' cost of capital in countries where firms have incentives to be transparent and where legal enforcement is strong.

A more skeptical view could be that international harmonization provides fewer economic benefits than are claimed by its proponents, and that the move towards harmonization might have political and social motivations (Chua and Taylor 2008) intended to help promote globalization of "big-four" accounting services (Arnold 2005). It has also been alleged that the standard setting process of international accounting standards may be susceptible to influence from powerful industry players as was the case for IFRS 6 which dealt with accounting for extractive industries¹⁰ (Cortese and Irvine 2010).

In its discussion of the basis for conclusions, the AcSB noted that both the FASB and the IASB had adopted an approach that required a firm to recognize certain gains and losses in a separate statement as "other comprehensive income" or "equity". The IASB and the FASB had formed a joint advisory group for this project. Since Canada was committed to adopting International Financial Reporting Standards (IFRS) by January 2011, it was logical that Canada should adopt a standard consistent with IFRS. The AcSB claimed that "without introducing other comprehensive income", it would not have been possible to "introduce comprehensive standards for accounting for financial instruments in Canada that are converged with those in place internationally" (CICA 2005a).

At the time HB1530 was introduced, the AcSB recognized that future conclusions of the joint IASB/FASB/ UK Accounting Standards Board project on Financial Performance Reporting were

¹⁰ There was intensive lobbying against the IASB's initial decision to make the successful efforts method mandatory under IFRS 6 *Exploration for and Evaluation of Mineral Resources*. These efforts resulted in the retention of choice between successful efforts and full cost accounting for pre-production costs.

uncertain and that international consensus on the standard was not expected in the near term. Meanwhile, the US remained the major international trading partner for Canada. The United States accounted for approximately 75 (51) percent of all Canadian exports (imports) as of the year 2009 (CIA 2008). Also, as of 2003 more than 180 Canadian firms were cross-listed on the New York Stock Exchange (NYSE), the American Stock Exchange, or the NASDAQ (Gray 2005; Hendry and King 2004). Approximately 15 percent of Toronto Stock Exchange (TSX) listed firms also had a U.S. listing, making Canadian firms the single largest group of foreign firms listed on U.S. stock exchanges. Although the Canada-U.S. Multi-jurisdictional Disclosure System allows eligible Canadian public companies to access the U.S. public markets using Canadian disclosure documents and without becoming subject to the U.S. domestic registration and reporting system (Gray 2005), it could be argued that it was preferable to financial statement preparers if the standards in both jurisdictions were as similar as possible.

For example, a 1997 interim submission by the Canadian Bankers' Association to the Task Force on the Future of the Canadian Financial Services Sector read as follows:

“Our primary concern is that, as the U.S. is Canada’s most significant trading partner and both countries have similar markets and economic environments, it is of utmost importance that we continue to be closely aligned with the U.S. on major accounting developments (particularly as four of Canada’s banks already or shortly must file U.S. GAAP financial statements to support SEC registration). While global harmonization in principle is desirable, for practical reasons, the CICA’s focus must be on promoting harmonization of measurement and valuation accounting standards for financial instruments with the U.S. Moreover, the banks feel that Canada is not in the best position to lead the world in this regard due to our relative size on the international scale and the competitive disadvantage that will result in comparisons with our U.S. counterparts” (emphasis added, (Canadian Bankers Association 1997), p4)

SFAS 130 allowed companies following U.S. generally accepted accounting principles (US-GAAP) to bypass the income statement and report certain (unrealized) gains and losses as part of OCI, whereas prior to the introduction of Section 1530, companies following Canadian GAAP were required to include them in the income statement. This was regarded as a possible disadvantage for Canadian GAAP companies, as noted by the AcSB: “[I]t is unlikely to be

acceptable to introduce a requirement for Canadian enterprises to recognize all gains and losses in net income when foreign competitors have the ability to do otherwise” (CICA 2005; para 12).

At face value, the generally inconclusive findings in the literature for comprehensive income and its components may well lend credence to a political pressures argument. For instance, although the AcSB felt that “the use of comprehensive income is not an elegant option... [it] concluded that it is a necessary and worthwhile first step to introduce an ability for Canadian enterprises to exclude certain (strictly controlled) gains and losses from net income” (CICA 2005, para 12). This line of reasoning resonates with a political pressures or ‘economic consequences’ view of accounting standard setting (Zeff 2002, 1997), which views such political pressures to mean “self-interested considerations or pleadings by preparers and others that may be detrimental to the interests of investors and other users” (Zeff 2002)

2.2.2 Enhanced transparency of financial statements

The desire expressed by the AcSB for greater transparency of the “certain gains and losses” may be interpreted as suggesting that disclosing them as part of OCI would result in an increased value relevance of accounting information. A counter-argument would suggest that having to report items in its income statement which competitors elsewhere (primarily the U.S.) could disclose as OCI, thus bypassing the income statement, placed Canadian companies at a potentially disadvantageous position in the market for capital. It should be noted here that this perspective does not subscribe to market efficiency, and appears to believe that the manner and place in which information is presented is important and determinative of the reactions by financial statement users. Recall that similar to SFAS 130, HB1530 provided for three possible reporting formats:

1. in the income statement below the total for net income;
2. in a separate statement of comprehensive income that begins with net income; or
3. in a statement of changes in equity, provided that statement is displayed as a primary financial statement and not in the notes (CICA 2005b)

Standard setters had hoped that reporting comprehensive income in either a second statement of income or an expanded income statement would lead to enhanced understandability of financial statements (Beresford et al. 1996). However, following the introduction of SFAS130, most companies in the US chose to disclose comprehensive income items as part of the statement of changes in shareholders' equity (Bhamornsiri and Wiggins 2001; Pandit and Phillips 2004; Pandit et al. 2006), instead of reporting it in a performance statement such as the statement of comprehensive income. Why should reporting choice matter? If market efficiency holds, the choice of how comprehensive income is disclosed should have no effect. However, experimental behavioural research examining this question suggests that financial statement users (mostly analysts) use comprehensive income depending on the format and location of its disclosure in the financial statements. Hirst and Hopkins (1998) found that financial analysts make use of comprehensive income only when it is reported as a separate statement, but not when it is reported as part of the statement of changes in shareholders' equity. Maines and McDaniel (2000) found that non-professional investors rely more heavily on comprehensive income for evaluating performance when it is reported in a separate statement, and do not use the information much if it is reported in other forms. Research also suggests that a more transparent format (e.g. a separate statement of comprehensive income) reduces the likelihood of managers engaging in earnings management (Hunton et al. 2006).

It has been suggested in the literature that users of financial statements tend to use numbers from the income statement (the "bottom line") and do not consider disclosure in the balance sheet (changes in equity). This is known as the functional fixation hypothesis (Ashton 1976; Ijiri and Jaedicke 1966; Haka et al. 1986), and although it has been sought to be empirically discredited (Harris and Ohlson 1990), it may yet explain, in part, the greater preference for the income statement, as well as why preparers tend to choose to mostly avoid reporting comprehensive income in either the income statement or as a stand-alone statement, but instead prefer to report it in the statement of changes in equity.

Although reporting location choice could be an important factor determining the usefulness of OCI information, for my current study, I do not include this information. This is because of two reasons. First, Chambers et al (2007) found no statistically significant difference between

companies using a performance statement format (single or dual comprehensive income statements) or a statement of changes in equity format for reporting OCI. Secondly, Chambers et al (2007) report greater significance for OCI information when reported in a statement of changes in equity. Note that the SCE format is preferred by financial statement preparers in the United States. It could be that financial statement users both *expect to* and *are able to* find the information from an SCE. Since HB1530 was modeled after SFAS 130, along with the likelihood that most users (investors, analysts, etc.) would be used to the location choices in the U.S., I expect that results similar to Chambers et al's (2007) would also hold for Canada.

2.2.3 Research questions

The objective of this study is to investigate empirically whether mandatory reporting of OCI and its components in Canada, under the CICA HB1530 as part of comprehensive income, has decision usefulness in comparison with, as well as incremental to, net income. By decision usefulness, I mean whether these accounting metrics are incrementally useful for decision making, as evidenced by statistically significant coefficients in multivariate regressions of stock prices and returns on accounting information, including OCI.

The issue of whether OCI meets the definition of income is contentious. Critics of comprehensive income reporting argue that OCI reflects transitory earnings, and hence does not represent core earnings. In other words, OCI adds noise to reported income, is difficult to forecast, and is essentially beyond the scope of managerial control. On the other hand, the advocates of comprehensive income argue that it is the only measure that captures all sources of value creation as distinguished from value distribution, is most consistent with the residual income model of accounting-based valuation theory, and as such, has the potential to enforce discipline on managers and analysts to consider all factors affecting value (Biddle and Choi 2006). In sum, it is possible that the items of OCI are not transitory in nature. That is, they are both predictable and relevant for forecasting and valuation purposes. If so, we should treat them as valid components of a broad definition of income. If OCI and its components are not transitory, they should be value relevant, and hence useful for decision making. In this study I empirically investigate the following research questions:

- (i) Are components of OCI transitory?
- (ii) In Canada, do OCI and its components have incremental value relevance over traditional net income?
- (iii) Are OCI and its components associated with analyst' earnings forecasts?

The question of value relevance of OCI has been examined by several authors using data for US companies. Early empirical studies found little compelling evidence to support value relevance. A major reason for the failure of earlier research in finding significant results for OCI and its components could be that earlier research used *as-if* numbers (researcher calculated) instead of *as-reported* (reported in financial statements) numbers. Chambers et al. (2007) demonstrated that actual *as-reported* numbers for OCI are better reflected in stock prices than the *as-if* numbers, possibly because the latter contain substantial measurement error. For example, Dee (1999) demonstrated one way in which measurement error might creep in when data from archival sources such as Compustat is used without proper screening. Compustat reports a value if companies report the data separately on their balance sheet, but not if they report it in a statement of shareholders' equity or as a footnote. However, earlier studies examining value relevance of comprehensive income reporting used *as-if* numbers calculated by putting together line items pulled out from archival databases instead of actual reported data. For most of the earlier studies, this compromise was necessary, because they sought to examine the issue using data from time periods prior to the implementation of mandatory comprehensive income reporting.

With more companies formally reporting data on OCI under SFAS 130, empirical studies dating later than 2006 began reporting evidence supportive of value relevance of OCI. Given that Canada has an institutional context similar to the United States, the question arises why a study using data from Canadian companies could be sufficiently different to be of interest. In response to this question, it might be argued that the adoption of comprehensive income reporting in Canada did not enhance clean surplus accounting. Instead, some items which were included in the income statement (and hence summarized by net income) before the adoption of HB1530 were later required to be stated separately as OCI. Doing so could have made the earnings

information noisier, and hence led to reduced value relevance. In that case comprehensive income could be less decision useful than net income. On the other hand, if treasury management (managing investments) and risk management (hedging) are considered by financial statement users to be important activities from a stewardship perspective, separate disclosure on these items may well be incrementally informative (Venkatachalam 1996; Kanagaretnam et al. 2009). Further, with increasing globalization, and a commodities driven appreciation of the Canadian dollar relative to major foreign currencies including the US dollar, it is possible that gains and losses arising from foreign currency translations may be value relevant. Alternatively, despite recent evidence supporting the usefulness of OCI and its components in the United States, the same might not hold true for Canada.

2.3 Contribution to the literature

This study provides direct empirical evidence on the decision usefulness or otherwise of mandatory comprehensive reporting in Canada. Of course, following Skinner (1999) it could be argued that sophisticated investors might probably not consider components of OCI, because they are transitory in nature, in that they are unpredictable, irrelevant for predicting future earnings and hence, value irrelevant. This study addresses this concern by testing whether components of other comprehensive income are transitory. Jones and Smith (2011) is the only other study that I am aware of that examines this issue in detail. Jones and Smith (2011) use data on U.S. firms to jointly estimate the value relevance, predictive value, and persistence of OCI gains and losses. They conclude that OCI is value relevant, display negative persistence by partially reversing over time and have predictive value in terms of its ability to predict future operating income and cash flows. My study examines the issue of predictive value and persistence by using the specifications described in Ohlson (1999). In doing so, it provides evidence complementary to Jones and Smith (2011). The current study also goes beyond value relevance studies in examining the association between OCI and analysts' earnings forecasts.

Ohlson (1999) pointed out that due to its lack of persistence, transitory earnings should only be incorporated into price on a dollar-for-dollar basis, insofar as it results in a change in a company's book value only in the current year, and is not expected to persist in the future. It

should be interesting to examine if this is the case in the Canadian context, or whether comprehensive income is a superior predictor of stock prices and returns than net income. Using both level (valuation) and change (returns) regressions this study provides empirical evidence in the Canadian context.

This study also uses actually reported data following the coming into effect of HB1530 for firm years commencing from October 2006 onwards. It should help allay concerns of measurement error that may have caused mixed results in earlier studies, while also providing more recent empirical evidence on Kanagaretnam et al.'s (2009) finding of significant association between components of OCI and share price as well as market returns for the 1998-2003 period for Canadian firms.

Lastly, this study examines whether components of other comprehensive income are associated with analysts' earnings forecasts, and their effect on analysts' forecast errors. Often, investors rely on analysts' recommendations in making their investment decisions. These recommendations may at times be affected by the analysts' predispositions towards certain accounting information (the functional fixation hypothesis), which therefore, indirectly condition the market's reaction to the information – in this case, comprehensive income.

A number of studies examining the value-relevance of comprehensive income and other comprehensive income have been published. The findings of extant research on the subject may help condition the expectations for Canada. The following chapter provides an overview of the literature related to the usefulness / value relevance of comprehensive income.

Chapter Three: Literature Review

In this chapter I review the literature related to my research questions. Section 3.1 reviews studies examining whether OCI is transitory. Section 3.2 reviews the literature examining the value relevance and usefulness of comprehensive income. Subsection 3.2.1 summarizes early studies, while subsection 3.2.2 reviews more recent studies. Subsection 3.2.3 summarizes the only study of the value relevance of OCI that uses Canadian data. My intention in splitting section 3.2 is to contrast the results of the earlier studies with those of the recent ones, as well as highlight the findings from Canada. Section 3.3 reviews studies examining analysts' earnings forecasts. I did not come across any study which directly examined the use of OCI by stock analysts. However, I believe a general review of the literature's basic findings would be helpful in evaluating my results. Finally, section 3.4 discusses the implications of the existing literature for my study. Table 3.1 below summarizes the studies covered in the following literature review.

Table 3-1: Summary of literature review of selected studies examining some aspect of usefulness of comprehensive income, OCI or components

Reference	Data	Research question	Data and method	Key result(s)
Cheng, Cheung and Gopalakrishnan (1993)	U.S.	Comparative usefulness of three earnings measures – operating income, net income and comprehensive income	Average of 922 firms for 18 years. Compared r-squareds for the earnings measures. Defined comprehensive income as equal to change in retained earnings + preferred dividends + common dividends	The adjusted r-squared for Operating income (R^2_{OI}) was greater than that for net income (R^2_{NI}), which in turn was greater than for comprehensive income (R^2_{CI}) → Comprehensive income is less useful.
Hirst and Hopkins (1998)	U.S.	Does reporting of comprehensive income and its components facilitate detection of earnings management by buy-side financial analysts?	3x2 between subjects experimental design 96 buy-side security analysts and portfolio managers not specializing in banking, insurance or financial industries.	Clear display of comprehensive income and its components in a separate performance statement made earnings management more transparent. Disclosure in a statement of changes in equity was not as effective.

Reference	Data	Research question	Data and method	Key result(s)
Dhaliwal, Subramanyam and Trezevant (1999)	U.S.	Compare the relative ability of comprehensive income and net income to summarize firm performance (association with stock returns) and market value of equity	11,000-plus firm-years for the years 1994 and 1995. Value of OCI items computed by authors (<i>as-if</i>)	No evidence that comprehensive income is more strongly associated with stock returns, market value or cash flows than net income.
Skinner (1999)	N/A	Review / critique of Dhaliwal et al (1999)	Not applicable	Questions the motivation for Dhaliwal et al (1999); does not find the results either interesting or surprising.
Dee (1999)	U.S.	Relative usefulness of net income and comprehensive income in modeling firm value	Hand collected data for 126 firms for 1986-1996 (1,386 firm years)	OCI items are not related to firm value OCI items have small positive autocorrelation and zero means → they are transitory
Maines and McDaniel (2000)	U.S.	Does the financial statement presentation format affect non-professional investors' judgment of comprehensive income	Experiment using 95 MBA students; 3x2 between-subjects design	Nonprofessional investors rely more on information provided in a performance statement (Statement of Comprehensive Income) than in other presentation formats.
Louis (2003)	U.S.	Value relevance of foreign translation adjustment	4,972 firm years	Translation adjustment is significantly but negatively associated with firm value
O'Hanlon and Pope (1999)	U.K.	Value relevance of UK dirty surplus accounting flows	158 firms with data for 20 years (1973-1992); test association in the short- and the long-intervals between stock returns and accounting flows (operating profit, extraordinary items and dirty surplus items)	Operating profit is value-relevant in the short- and long-intervals Extraordinary items are value-relevant in long-interval tests only Dirty surplus items (items bypassing the income statement) are not value-relevant

Reference	Data	Research question	Data and method	Key result(s)
Brimble and Hodgson (2004)	Australia	Value relevance of comprehensive income and components	<p>Defined comprehensive income as ordinary net income, extraordinary items, change in asset revaluation reserve, foreign currency translation and sundry (dirty surplus) items</p> <p>Used linear and non-linear (arctan) regression models</p> <p>Australian data for 92 companies for years 1988-1997 (920 observations)</p>	<p>Net income from ordinary operations dominates comprehensive income as the more value relevant metric.</p> <p>Components of OCI are not value relevant.</p>
Biddle and Choi (2006)	U.S.	Is comprehensive income useful?	<p>Uses five definitions for usefulness (information content, predictive ability, use in compensation contracting, relative usefulness in the preceding three contexts, and whether separate disclosure of income components is useful) and 16 definitions of income</p> <p>Approximately 18,700 observations, US firms</p>	<p>Comprehensive income has greater information content for equity returns than net income</p> <p>Broadly defined net income has the greatest predictive ability</p> <p>Some components of OCI are relevant for executive compensation contracts</p> <p>More comprehensive definitions of income are more useful, and it is decision useful to separately disclose components of comprehensive income</p>

Reference	Data	Research question	Data and method	Key result(s)
Choi and Zang (2006)	U.S.	Is comprehensive income associated with subsequent period net income and with analysts' earnings forecasts/forecast revisions/forecast errors?	Assumes that OCI helps managers in the timing and recognition of unrealized gains and losses. Control for size (minimum stock price of \$5) and materiality of OCI (absolute value of OCI > 0.1% of beginning of year stock price) Approximately 5,200 observations obtained from IBES	Comprehensive income can predict subsequent period net income incremental to current net income. Managers use discretion in timing of recognition of components of OCI when these relate to unrealized losses. If comprehensive income is less than net income (i.e. AOCI represents unrealized losses), analysts revise their forecasts downwards more than when the opposite situation holds → asymmetry in usefulness.
Choi, Das and Zang (2007)	U.S.	Is OCI associated with subsequent period income and is this association reflected in stock prices?	15,977 firm-year observations for 3,716 US firms Use components for OCI as defined under SFAS 130. Control variables include natural logs of market value of equity, book-to-market ratio, accruals, security-beta and earnings-to-price ratio	OCI is incrementally useful in predicting subsequent period net income The market does not impound the information in OCI in stock price. A zero-investment strategy based on current period OCI yields an abnormal return of 5.4% even after controlling for other correlated variables.

Reference	Data	Research question	Data and method	Key result(s)
Lee, Petroni and Shen (2006)	U.S.	Do reporting choices for comprehensive income represent opportunities for cherry picking securities gains and losses?	Analyze reporting decisions of 82 publicly traded property insurance companies	<p>Identify 23 companies as cherry pickers</p> <p>Cherry pickers are less likely to report comprehensive income in a performance statement</p> <p>Companies that report comprehensive income in a performance statements have a tendency to not smooth earnings, have a reputation for high-quality disclosures, and an auditor that ranks among the top-two in the insurance industry</p>
Bamber, Jiang, Petroni and Wang (2010)	U.S.	Which factors explain the reporting choices of firms regarding comprehensive income?	<p>Analyze comment letters on the exposure draft for SFAS 130, surveys and behavioural research</p> <p>Identify equity-based incentives and concerns for job security as two major factors driving comprehensive income reporting choice</p> <p>Reporting choices of 440 firms for the years 1998-2001</p> <p>Use logit model to test hypotheses</p>	<p>Managers with more equity-based incentives (or more job security concerns) tend to avoid reporting comprehensive income in a performance statement.</p> <p>Analysis of comment letters suggests that managers were concerned that stakeholders would negatively perceive comprehensive income's higher volatility compared to net income</p>

Reference	Data	Research question	Data and method	Key result(s)
Chambers, Linsmeier, Shakespeare and Sougiannis (2007)	U.S.	<p>Are OCI components priced by investors?</p> <p>Are OCI components transitory?</p> <p>Does the reporting location preference matter?</p>	<p>1,727 firm-years (<i>as-if</i> data) for pre-SFAS 130 years (1994-1997) and 2,807 firm-years (<i>as-reported</i> data) for post SFAS-130 period (1998-2003)</p>	<p>In the pre-SFAS 130 period, OCI was not priced. However, it was priced by investors in the post-SFAS 130 period.</p> <p><i>As-if</i> data contained significant measurement error</p> <p>Coefficients on OCI components are not significantly different from 1 (implying they are transitory), except for MKTADJ, the coefficient for which is significantly greater than 1 (implying persistence)</p> <p>Reporting preferences appear to vary by industry</p> <p>The expected location choice (statement of changes in equity) appears to receive greater attention from investors than the standard-setters' preferred choice (statement of comprehensive income)</p>
Kanagaretnam, Mathieu and Shehata (2009)	Canadian	Usefulness of comprehensive income reporting in Canada	<p>228 firm-year observations for 75 Canadian firms cross-listed on US stock exchanges.</p> <p>Valuation and returns regressions used</p>	<p>Unrealized gains and losses on available for sale securities and on cash flow hedges are value relevant</p> <p>Comprehensive income is more strongly associated with stock price and returns than is net income, and is also a better predictor of future cash flows.</p>

Reference	Data	Research question	Data and method	Key result(s)
Jones and Smith (2011)	U.S.	Comparison of the value relevance, predictive value and persistence of OCI and special (irregular or extraordinary) items	236 companies reporting non-zero OCI for each year during 1986-2005 (4,720 observations) Use Seemingly Unrelated Regressions approach to estimate dynamic responses capturing marginal effects of shocks to OCI and special items	OCI is value relevant, but less so than continuing net income or even special items OCI is negatively persistent, at least for three years OCI has incremental ability to predict future continuing net income for one year, as well as future cash flows

3.1 Studies examining whether other comprehensive income is transitory

Barth et al (1999) were amongst the first to test attributes of earnings components using the framework developed by Ohlson (1999). They examined the value relevance of accruals and cash flows in terms of their ability to predict future abnormal earnings incremental to abnormal earnings. They defined abnormal earnings, $NI_t^a = NI_t - r * BV_{t-1}$ where NI_t is income from continuing operations, and BV is book value of equity. They set $r=12$ per cent, the long-term return on equities. They asserted that they tested their model using alternative values for r , with no change in their conclusions. Barth et al (1999) concluded that the interaction between forecasting relevance and persistence resulted in different valuations for the accrual and cashflow components of earnings.

Chambers et al (2007) cited an unpublished article by Hillegeist and Penalva (1999) who find that coefficients on OCI and its components are not stable over time. Chambers et al (2007) ran sensitivity tests using 100 random pooled sub-samples, and report that whereas coefficients for year-by-year regressions were unstable, the results are stable when pooled over longer periods. The stability of pooled regression coefficients on OCI and its components suggests that they are possibly not transitory.

Chambers et al (2007) also checked serial correlations for OCI and its components. They found that *as-if* values for OCI (i.e. values computed by the researchers) had a significantly negative serial correlation, whereas all *as-reported* values (i.e. values obtained from companies'

annual reports) had insignificant serial correlation except for unrealized gains and losses on available for sale securities. Dismissing their finding of significant serial correlation in *as-if* values to be due to measurement error, Chambers et al (2007) concluded that OCI and its components were transitory in nature. This result, of course, is at odds with their earlier suggestion that OCI might not be transitory. It should be interesting to re-examine this issue using actually reported numbers.

Another puzzling result reported by Chambers et al (2007) was that the coefficient on one of the components of OCI, the unrealized gain or loss on available for securities (called *MKTADJ* by Chambers et al) was not only significantly greater than one¹¹, but it also turned out to be significantly greater than the coefficient on Net Income. The result is puzzling, because it seems to suggest that the variable *MKTADJ* has greater persistence than net income. Typically, earnings components with high persistence should possess significantly positive serial correlation. In contrast, Chambers et al (2007) reported a significantly negative serial correlation in as-reported *MKTADJ*. This implies that although unrealized gains and losses show a tendency to reverse in future years, they appear to be priced as persistent earnings items. One explanation for the negative serial correlation could be that firms might be locking onto the gains and losses in the following years, and moving them to net income following the practice of recycling of OCI. Under this practice, when the underlying asset is sold, any OCI related to it is reclassified as a realized gain or loss, and included in Net Income. As for Chambers et al's (2007) finding that the coefficient for *MKTADJ* is greater than that for NI, no convincing explanation is available. To rule out the possibility that this result was idiosyncratic to their data, it would be interesting to re-examine the relationship using an alternative sample.

Jones and Smith (2011) used a model that jointly estimates value relevance, predictive value, and persistence to study OCI and Special Items (SI). They found that whereas SI are transitory, OCI gains and losses exhibit negative persistence. They also found that items of OCI are autocorrelated with their lagged values, indicating persistence. Jones and Smith (2011) also

¹¹ Ohlson (1999) predicted that transitory earnings are priced on a dollar-for-dollar basis due to their lack of persistence.

reported that the sign of significant serial correlation for OCI and components is not stable. This raises the possibility that Chambers et al.'s (2007) findings regarding serial correlation on OCI variables might be a function of the time period of their sample. A similar argument could apply to Jones and Smith (2011) as well. In empirically testing the issue by using Ohlson's (1999) regressions, in this study, I seek to provide further evidence one way or the other.

3.2 Studies examining the value relevance of comprehensive income

Several studies have examined the value relevance of comprehensive income reporting in different settings, including the USA (Chambers et al. 2007; Choi and Zang 2006; Dee 1999; Biddle and Choi 2006; Dhaliwal et al. 1999), Europe (Goncharov and Hodgson 2011), the UK (O'Hanlon and Pope 1999), New Zealand (Cahan et al. 2000), Japan (Kubota et al. 2006) and Canada (Kanagaretnam et al. 2009). The earlier studies used *as-if* data and did not find much support for the value relevance of OCI. Later studies, from the mid-2000s were able to use *as-reported* data, and reported finding value relevance for at least some components of OCI. The following is a brief description of the major studies examining the value relevance of comprehensive income.

3.2.1 Early studies

Comprehensive income reporting was of interest not only in the U.S., but also in other countries. For example, financial reporting standards requiring comprehensive income reporting were issued by the accounting standards boards of the UK (FRS 3, 1992), New Zealand (FRS 2, 1994), and the IASC (IAS 1, 1997). However, direct comparisons may be somewhat misleading, as the respective GAAPs are different in their treatment of certain items. For example, under New Zealand FRS 2, revaluation of assets is permitted, and is reported in a statement of changes in equity. Under IFRS, companies are permitted to use the revaluation model to account for property, plant and equipment, with any increase in asset values reported in other comprehensive income. Asset revaluation was not permitted under Canadian GAAP, and is not allowed under the U.S. GAAP. Nevertheless, both U.S. and non-U.S. empirical research is informative about the perceived usefulness of comprehensive income reporting. Early studies found little evidence on the value relevance of comprehensive income and its components.

Cheng, Cheung and Gopalakrishnan (1993) evaluated the usefulness of operating income, net income and comprehensive income. They defined usefulness as “the goodness-of-fit (adjusted r-squared) in the regression of residual stock returns on earnings” (p 195) and based their analysis on 18 years of annual data from 1972 to 1989. They reported their results in terms of relative information content as well as incremental information content of the three competing earnings measures. They concluded that in terms of relative information content, operating income (OI) dominates net income (NI), which in turn dominates comprehensive income (CI) (p 199). In terms of incremental information content, where they tested the hypotheses of equality of r-squareds, they again found that the r-squared for OI was greater than that for NI, which in turn was greater than the r-squared for CI. Interpreting their results for the usefulness of comprehensive income, Cheng et al. (1993) noted that while they found “very little incremental explanatory power attributable to those earnings items that account for the difference between comprehensive income and net income... one could (also) interpret the results as suggesting that investors are fixated on net income” (p 202). Cheng et al.’s (1993) study predated the actual implementation of SFAS 130 by a few years, and their definition of comprehensive income (Change in Retained Earnings + Preferred Dividends + Common Dividends) was different from what the standard recommended (Net Income + OCI).

Dhaliwal, Subramanyam and Trezevant (1999) computed comprehensive income under SFAS 130 ($COMP_{130}$)¹² as well as a broader measure ($COMP_{broad}$)¹³, and tested the relative value relevance of these measures as well as net income after extraordinary items and discontinued operations (NI) by regressing raw daily percentage returns compounded over the fiscal year on each of these earnings measures. Requiring Compustat and CRSP data needed to calculate returns, NI, $COMP_{broad}$ and $COMP_{130}$, they used a sample consisting of all 1994 and

¹² At the time of Dhaliwal et al.’s (1999) study, under SFAS 130, the three items included in Other comprehensive income were (i) the change in the balance of unrealized gains and losses on marketable securities (MKT-ADJ), (ii) the change in the cumulative foreign currency translation adjustment (FC-ADJ), and (iii) the change in additional minimum pension liability in excess of unrecognized prior service costs (PENS-ADJ)

¹³ Dhaliwal et al (1999) defined $COMP_{broad}$ as the change in a firm’s comprehensive retained earnings (COMPUSTAT item #36), adjusted for common stock dividends.

1995 firm years¹⁴. Consistent with Cheng et al. (1993), Dhaliwal et al. (1999) reported “no clear evidence that comprehensive income is on average more strongly associated with returns than (is) net income” (p64). Of the various components of other comprehensive income (OCI) described in SFAS 130, Dhaliwal et al. (1999) found only marketable securities adjustments improve the association between net income and stock returns, but even this finding is shown to be driven by financial sector firms.

Skinner (1999) in a critique of Dhaliwal et al. (1999) raised several concerns for research into value relevance of comprehensive income. Skinner (1999) argued that comprehensive income amounts to little more than reclassification of income, and as such does not bring in new information. In Skinner’s (1999) opinion, past changes in the value of investments have no implications for future cash flows and earnings. Therefore, he argued that in the absence of such implications, it was not clear why comprehensive income should be expected to be more highly correlated with stock returns than net income. Skinner (1999) felt that the main problem with the Dhaliwal et al. (1999) study was inadequate motivation, in that the study sought to provide empirical tests for SFAS 130, a standard that Skinner (1999) considered as having very little economic justification. In Skinner’s opinion, given the definition of comprehensive income, and the fact that stock market investors were more likely to prefer a current operating performance approach (operating income) to an all-inclusive approach (comprehensive income), it was not surprising that Dhaliwal et al. (1999) got the results they did. Given Ohlson’s (1999) exposition of a residual income valuation theory of transitory earnings in which he suggested that the components of other comprehensive income are transitory earnings, which are characterized as being unpredictable, forecast irrelevant and value irrelevant, Skinner’s (1999) criticism appears valid. There is little ex-ante reason to expect value relevance for OCI, *if it is transitory*.

Dee (1999) argued that if comprehensive income includes more transitory items than net income, it should be less useful than net income in valuing a firm. She used hand-collected data for 126 firms over 11 years (1986-1996) and regressed annual returns excluding dividends on NI

¹⁴ Data required for computing the change in balance of unrealized gains and losses on marketable securities (MKT-ADJ) were not available until 1994.

and CI variables. Although none of her r-squareds was larger than 10 percent, the largest r-squared was for a simplified model regressing annual returns on change in NI and gross OCI, where she found only NI to be statistically significant. Using Operating Income (OI) as a predictor, Dee (1999) obtained the largest r-squared (11.6 percent) for a simplified model regressing annual returns on change in OI, after controlling for the market rate of return. Thus, Dee (1999) appeared to corroborate Cheng et al.'s (1993) finding of the dominance of operating income over net income, and that of net income over comprehensive income.

An important point made by Dee (1999), and later picked up by Chambers et al. (2007), is the problem of omission of data from archival sources such as Compustat when the data are not clearly disclosed in the balance sheet, but are instead disclosed by way of footnotes or in a statement of equity. Another important observation by Dee (1999) is that “items of OCI are found to exhibit small positive autocorrelation and have zero means. This is consistent with the prediction that items of OCI are transitory”.

Louis (2001, 2003) examined the value relevance of one component of OCI in particular, the foreign currency translation adjustment (which he refers to as FCT_{adj} , and is called FOREX in this study), and OCI in general. Louis (2001, 2003) argued that although it was claimed that comprehensive income is a better statistic of a firm's performance because it identifies all sources of value added, the economics of FCT_{adj} suggest otherwise. Louis (2001, 2003) predicted, and found, that FCT_{adj} is negatively associated with firm value, implying that while the adjustment is value relevant, it is not in the direction of the adjustment. For example, a firm might have a negative effect of foreign currency translation due to depreciation of the foreign currency (assuming that the foreign currency is the functional currency), while the overall effect on firm value may still be positive, because the firm would now be able to produce in the foreign country at a cheaper cost than before. Louis (2001, 2003) also reported evidence suggesting that items of OCI in general negatively affect the value relevance of the income number. On the basis of earnings persistence and earnings response coefficient, the reported net income is superior to both comprehensive income and net income adjusted for FCT_{adj} .

O'Hanlon and Pope (1999) use data for United Kingdom companies to examine the relationship between stock returns and dirty surplus accounting flows over long intervals of up to 20 years. Dirty surplus accounting flows here relate to direct adjustments to equity for items such as goodwill-writeoff, asset revaluation, foreign currency translation and extraordinary items. They found ordinary profit (net income) reported under dirty surplus UK GAAP to be value relevant across short- and long-intervals, whereas extraordinary items were found to be value relevant only over long intervals. In other words, while net income is value-relevant for all time-periods, a dirty surplus item such as extraordinary items was found to be value-relevant only over a long time-period. The implication is that if OCI were to bypass the performance statement, it would potentially not be value relevant.

O'Hanlon and Pope's results appear consistent with the conclusions of Cahan et al. (2000), who found no evidence that individual OCI items provide information that is incrementally value relevant over net income. This suggests that the statement of changes in equity (SCE) which reported details about dirty surplus items provided no additional value to investors.

Maines and McDaniel (2000) examined whether non-professional investors' use of comprehensive income information depends on the financial statement in which it is reported. They used a 3x2 between-subjects experiment on 95 MBA students with an average of less than six years of accumulated personal investment and business experience. Participants were given materials related to one of two versions of an insurance company that reported high or low unrealized gains and losses (UGL) volatility over a three-year time period, presented in one of three forms – (1) as per SFAS 115 as change in equity; (2) as per SFAS 130 as change in equity; and (3) as per SFAS 130 as part of income statement. Maines and McDaniel (2000) reported that although participants read the information and appropriately evaluated the volatility of the UGL in all three formats, they placed significant weight on their volatility assessments when UGL appears as part of option (3) above. Under option (3), participants were able to better judge corporate and management performance for the low-volatility version than for the high volatility version. This suggests that non-professional investors rely on financial statements to provide signals about the nature and importance of comprehensive income information, and consider such information important only when it is reported as a stand-alone statement.

Brimble and Hodgson (2004) reported empirical evidence on the usefulness of comprehensive income in the Australian context. They replicated the adjustments for comprehensive income required under IAS 1 as part of the joint project between the IASB and the FASB, using data from 92 firms listed on the Australian Stock Exchange from 1988 to 1997. They compiled three pooled data sets: (i) the ten annual data observations; (ii) aggregating two five-year consecutive non-overlapping periods, 1988-1992 and 1993-1997; and (iii) one ten-year aggregation. Drawing upon the earlier work by Freeman and Tse (1992), Brimble and Hodgson (2004) used linear and non-linear (arctan) regressions to test value relevance of the components of comprehensive income as per the IAS. They found that net income from ordinary operations is the dominant metric over comprehensive income.

In summary, the earlier empirical studies found very little evidence supporting the value relevance or incremental usefulness of comprehensive income over other measures of earnings such as net income or operating income. Experimental behavioural studies appeared to support Russo's (1977) observation: "it is not sufficient that the information be available; it must also be processable"¹⁵ (p 194, quoted by Hirst and Hopkins, 1998; p 57).

3.2.2 Recent studies

Recent studies have revisited the question of usefulness of comprehensive income disclosures, providing results different from those of the earlier studies. Biddle and Choi (2006) examined the decision usefulness of sixteen different definitions of income in terms of information content, predictive ability and executive compensation contracting, using data for US firms. They reported that among the different income definitions, the FASB's definition for comprehensive income under SFAS 130 dominates traditional net income as well as other conceptions of income in explaining stock returns. Net income, on the other hand, is better at

¹⁵ Russo's (1977) comment was on the display format of unit prices. However, the comment is equally valid in almost all situations where information processing is required. It does assume bounded rationality and limited information processing capacity on the parts of the users of the information. It may, of course, be argued that whereas individuals may have cognitive limitations, the market as a whole, and on an average, is able to accurately process the information. However, in this study, I assume at least a semi-strong form of market efficiency, and hence do not pursue this point.

explaining executive compensation contracting. No single measure of income is found to be superior in terms of relative ability to predict future values of itself..

Choi and Zang (2006) found comprehensive income to be incrementally useful in predicting subsequent period net income. OCI was found to be significantly associated with next period net income, although the improvement in r-squared is marginal (from 14.33 percent to 14.91 percent). In a related paper, Choi, Das and Zang (2007) examined the implication of current period OCI for subsequent period income, and whether the stock market incorporates the current period OCI in stock prices. They found that the market does not reflect the implications of current period OCI for next period net income. They then showed that a one-year, zero-investment strategy based on current period OCI yields an abnormal return of around 5 percent after controlling for other correlated variables such as the Fama-French risk factors - log of market value of equity, log of book-to-market ratio, the firm beta (Fama and French 1992), accruals (measured as difference between income before extraordinary items and operating cash flows) and earnings per share deflated by end of year stock price. Choi, Das and Zang (2007) also compared r-squareds for their regressions of next-period net income on current period (1) Net Income; (2) Comprehensive Income; (3) Net income and aggregate OCI; and (4) Net Income and individual OCI components. They found that OCI is incrementally value relevant. However, comparing equation 3 and 4 did not result in a significant improvement in the r-squared, partly because only the securities and foreign currency translation adjustments are statistically significant in equation 4, but the pension adjustment is not. This may well be a result of the (generally) smaller magnitude, and hence insignificant materiality, of OCI numbers.

Lee, Petroni and Shen (2006) studied the comprehensive income reporting choices of property liability insurers. They predicted that firms with greater volatility in their earnings as a result of reporting comprehensive income were more likely to avoid reporting using a performance statement. Although they did not find results to support this prediction, Lee et al. (2006) found that insurers with a tendency to 'cherry-pick' (manage earnings through realized securities gains and losses) as well as insurers with a reputation for poor disclosure quality, are more likely to report comprehensive income in a statement of changes in equity. These firms are also more likely to be audited by an audit-firm that is not one of the top-two specialists in the

insurance industry. It should be noted here that if insurers did wish to manage reported earnings, it may be easier to manipulate adjustments to reserves than to cherry-pick securities gains and losses. Lee et al (2006) could have merely documented a within-sample association of firms that cherry-pick and prefer not to use the income statement approach to reporting comprehensive income.

In a related study, Bamber, Jiang, Petroni and Wang (2010) investigated the comprehensive income reporting location choice made by S&P500 firms during the 1998 to 2001 period, and found that firms that disregard policymakers' preferences (i.e. report comprehensive income in a statement of equity instead of in a performance statement as preferred by accounting standard setters) are headed by CEOs with more powerful equity-based incentives and less job-security. Bamber et al (2010) operationalized equity incentive as the change in the CEO's total annual compensation from the firm in response to a one percentage point increase in the firm's stock price. Job security equals the sum of two indicator variables, CEO-chair duality (the CEO is also the chairperson of the board of directors) and board's lack of independence (whether proportion of independent directors in the board is smaller than the sample median). Bamber et al. (2010) reported that a firm's likelihood of reporting comprehensive income in a performance statement is a decreasing (increasing) function of the CEO's equity incentive (job security). Bamber et al (2010) also found that managers with stronger equity-based incentives and less job security are significantly less likely to use performance reporting. Their results are robust to controls for items of OCI, disclosure quality, leverage and size. Only the marketable securities dummy variable was found to be significantly related to comprehensive income reporting location choice. Barring utilities, all other industry dummy variables were also found to be statistically significantly related to the comprehensive income reporting choice, suggesting that industry may be an important variable.

Chambers, Linsmeier, Shakespeare and Sougiannis (2007) followed the theory developed in Ohlson (1999) in their study of valuation usefulness of OCI and its components. Consistent with Ohlson's (1999) proposition that transitory earnings should be valued dollar-for-dollar, Chambers et al. (2007) reported that OCI numbers are positively priced, dollar-for-dollar in the post-SFAS 130 period (i.e. the year 1998 onwards), but not in the earlier period. An important

reason for this finding is in Chambers et al.'s (2007) use of *as-reported* (actually reported in statements) figures for the post-SFAS 130 period (1998-2003) as opposed to computed *as-if* (amounts calculated by the researchers because these were not reported in the statements) numbers for the period prior to 1998. Earlier studies including Dhaliwal et al (1999) had used computed *as-if* OCI numbers, which could have introduced measurement error into the analyses (Chambers et al. 2007, Table 2 panel C, p576). Chambers et al. (2007) also found that investors price OCI when it is reported in the statement of shareholders' equity. This finding is contrary to the expectation of the FASB (SFAS 130, paragraph 67) that the statement of changes of equity is a less transparent location than the income statement or a separate statement of comprehensive income (p 586). Chambers et al. (2007) also supported the assertion that the location of OCI disclosure matters. They used post-SFAS 130 data to compare the pricing of OCI across two disclosure locations: (i) a statement of financial performance¹⁶; or (ii) in a statement of changes in equity. Interestingly, over eighty per cent of firms in their sample reported information on OCI in the statement of changes in equity, although the mean and median values for the variables reported were not significantly different from those choosing the performance statement option for reporting OCI. However, the two groups had significantly different beta, book-to-market and earnings-to-price ratios. This finding is consistent Bamber et al's (2010) contention that the location of comprehensive income disclosure matters.

Jones and Smith (2011) is amongst the most recent studies which examine the value relevance of OCI. Jones and Smith jointly tested for the value relevance, predictive value, and persistence of OCI and Special Items (SI). Special Items are infrequent or unusual gains and losses that are separately reported in net income. SI items include realized gains and losses from the sale of assets and investments, unrealized impairment write-offs, and realized or unrealized restructuring charges, merger costs, settlements, and other accrued items. Jones and Smith (2011) is an important study, since many researchers have assumed both OCI and SI to be transitory items. Jones and Smith's (2011) sample comprises 236 companies in the United States which

¹⁶ Under both SFAS 130 and HB1530, companies could report information on comprehensive income in (i) a single Statement of Comprehensive Income; (ii) a separate Statement of Comprehensive Income that begins with Net Income and adds information on OCI items, or (iii) a Statement of Changes in Equity

reported nonzero OCI gains and losses in each year between 1986 and 2005. Part of their data is hand collected, and the remainder is collected from Compustat and CRSP. They found that although OCI and SI are both value relevant, the value relevance of OCI is less in comparison to SI. They also reported that OCI is positively, and significantly, associated with future net income before special items, and future cash flows, albeit less significantly.

In summary, the evidence for the value relevance of OCI and its components continues to be mixed, although recent studies have begun documenting significant results for these numbers. This could be due to a number of possible reasons. First, it could be that earlier research, in using *as-if* numbers computed by the researchers from extant archival databases, incorporated measurement error (Chambers et al. 2007; Dee 1999). Secondly, it could be that in keeping with the functional fixation hypothesis, initially the analysts and investors continued to use operating income, or net income for their decision making purposes. Financial statement users do not always analyze financial statements in great detail (Hirst et al. 1995), and unless they perceive the information to be important (Brimble and Hodgson 2004; Sanbonmatsu et al. 1997), they tend to rely on simple heuristics (Imhoff et al. 1995). However, gradually, they could have started paying closer attention to OCI and started incorporating it into their valuation models. Thirdly, following Ohlson's (1999) theory of transitory earnings, even if components of OCI are valuation irrelevant, they do impact firm value on a dollar-per-dollar basis. The magnitude of the OCI adjustments could have been growing over time, and this could have resulted in the significant associations with stock price and returns.

3.2.3 Studies in the Canadian context

Kanagaretnam, Mathieu and Shehata (2009) is the only study I am aware of that studied the usefulness of comprehensive income reporting in the Canadian context. They used *as-reported*¹⁷

¹⁷ Kanagaretnam et al.(2009) use the numbers *as-reported* by the firms in their financial statements to compute the values for OCI as per the (then) proposed Canadian Handbook Section 1530. They collected the information on fair value disclosures from notes to financial statements. They exclude the change in additional minimum pension liability in excess of unrecognized prior service costs because this is not part of the Canadian standard. To the extent that this information is incrementally value relevant Kanagaretnam et al.'s (2009) study may have an omitted correlated variable bias.

numbers for OCI and its components for a sample of Canadian firms cross-listed in the United States, which were required to report comprehensive income in accordance with SFAS 130 and 133¹⁸. Kanagaretnam et al. (2009) studied the usefulness of comprehensive income using data on seventy-five Canadian firms listed on the Toronto Stock Exchange and also traded on the New York Stock Exchange in the U.S. Cross-listed firms are required to reconcile the difference between Canadian and U.S. GAAP in the notes to their financial statements.

Kanagaretnam et al. (2009) ran two sets of regressions: (i) stock price on book-value, net income and individual OCI components, and (ii) stock returns on net income and individual OCI components. Individual OCI components tested by them include the change in (a) fair value of cash flow hedges (HEDGE); (b) fair value of available-for-sale investments (SEC); and (c) cumulative foreign currency translation adjustment (FOREX). All predictor variables were deflated by the number of outstanding shares. The choice of the deflator is not discussed, but it seems that they used the number of shares at the end of the period as the deflator.

Kanagaretnam et al. (2009) reported that for the Canadian firms, comprehensive income is more strongly associated with stock price (adjusted r-squared of 69.83 percent versus 66.69 percent for net income) and returns (adjusted r-squared of 5.25 percent versus 3.26 percent for net income) than is net income, and that two of its components, HEDGE and SEC, are also associated with stock price and stock returns (at a $p < .05$ level). Interestingly, when they compared their basic, contemporaneous model with an expanded model that incorporates lagged values of the components of OCI as additional predictors for the association test for market returns, Kanagaretnam et al. (2009) reported an increase in adjusted r-squared from 12.4 percent to 16.2 percent, although none of the lagged variables turn out to be statistically significant. They also used dummy variables for losing and winning hedge positions, but only found statistical significance for the losing hedge position. They concluded that possibly such a partition only adds noise to net income, or, it could be that the markets view hedged positions in general as a positive signal of well-managed risk.

¹⁸ SFAS 133, *Accounting for Derivative Instruments and Hedging Activities*, requires adjustments on derivative securities that qualify for cash flow or foreign currency hedge accounting treatment to be shown as part of other comprehensive income.

3.3 Studies examining analysts' earnings forecasts

Choi and Zang (2006) is the only study that I am aware of which empirically examines the association between OCI and analysts' earnings forecasts. Using U.S. data, Choi and Zang (2006) found comprehensive income to be significantly associated with analysts' earnings forecast revisions and forecast errors. They documented an asymmetric use of comprehensive income by analysts and found that analysts tend to revise their following year's forecast downward when CI is lower than NI, but do not revise the forecast upward when CI is greater than NI. Choi and Zang (2006) attributed this finding to the greater possibility of future recognition of unrealized losses (which result in CI being less than NI) than the future recognition of unrealized gains (which cause CI to be greater than NI), which is in keeping with accounting conservatism.

In the following subsections, I briefly review the important findings of studies of analyst forecasts and forecast accuracy. Excellent summaries are provided by Kothari (2001) and Ramnath, Rock and Shane (Ramnath et al. 2008) for the extant literature which studies analysts' forecasts. These studies usually focus on the decision processes followed by analysts, the nature of analyst expertise and the distributional characteristics of their earnings forecasts, the information content of analyst research, the implication of analysts' forecast efficiency for securities market efficiency, analysts' incentives and behavioral biases, the impact of changes in the regulatory environment, and methodological issues (Ramnath et al. 2008).

3.3.1 Importance of analysts' forecasts

Analysts provide stock recommendations (i.e. buy-hold-sell) and produce reports to support these recommendations. Given this job-description, analysts may be expected to collect information, including accounting information for use in valuation and forecasting models. Under semi-strong market efficiency, the models that produce more accurate earnings forecasts could also be considered good proxies of market expectations (Brown 1993). It has been suggested that analysts' earnings forecasts convey information about firm value beyond what is implied by current earnings, book values and dividends (Sougiannis and Yaekura 2001).

Ou and Sepe (2002) found that the value relevance of current earnings correlates negatively with the extent to which consensus analysts' forecasts deviate from current earnings. This implies that the extent to which analysts are able to accurately forecast earnings and the degree of consensus that exists amongst analysts with respect to these forecasts are associated with the value relevance of current earnings. This raises the question of what information and which valuation and forecasting techniques are used by analysts in making their forecasts.

3.3.2 Information used by analysts in their earnings and valuation forecasts

Analysts are believed to heavily use earnings-related information disaggregated into non-GAAP segments, and focus on core earnings as a basis for their forecasts of future earnings (Previts et al. 1994). It is also suggested that in being selective in their choice of which nonrecurring items contained in GAAP earnings to include in their valuation models, analysts demonstrate expertise in processing earnings information (Gu and Chen 2004). Analysts also incorporate other information such as sales forecasts and management-provided forward looking information in their analyses (Bouwman et al. 1995; Keung 2010), although information processing limitations or limited time could inhibit analysts' use of more complex information (Plumlee 2003).

Analysts have been found to rely less on present value techniques such as Ohlson's residual income valuation model, and more on simple heuristics such as price-earnings-growth [PEG] multiples (Block 1999; Demirakos et al. 2004; Bryan and Tiras 2007), to convert analysts' earnings forecasts into price targets and recommendations (Bradshaw 2004). An implication of the lower level of usage of valuation models by analysts is that analysts could be making little or no use of the accounting information about other comprehensive income. If this were the case, there should be no significant association between OCI numbers and analysts' earnings forecasts.

Hirst and Hopkins (1998) investigated whether clear reporting of comprehensive income and its components facilitates detection of earnings management by buy-side financial analysts and predictably affects their stock price judgments. They used a 3x2 between-subjects experimental design on 96 buy-side security analysts and portfolio managers with an average of 14 years' financial analysis experience. The experiment included disclosure of the information in three

formats, (1) pre-SFAS 130 format with comprehensive income not explicitly reported (No-CI), (2) Reporting comprehensive income in a statement of changes of equity (CI-SCE), and (3) separate reporting of comprehensive income in a statement accompanying the income statement (CI-IS). The earnings management involved the selling of a marketable security, recognizing the gain and then repurchasing the said security. Thus, in all cases - with earnings management (EM) and without earnings management (NEM), the comprehensive income was the same.

Accumulated Other Comprehensive Income (AOCI) was also included in the Balance Sheet in all six cases. Hirst and Hopkins (1998) found that clear display of comprehensive income as CI-IS made earnings management more transparent and resulted in statistically equal stock price judgments for the EM and NEM conditions. They also suggest that “fundamental variation in the way accounting information is reported in financial statements can have a predictable impact on analysts’ stock price estimates”, and that “CI SCE reporting is not as effective in reporting value-relevant information as the originally proposed CI IS reporting”.

It should be noted that since OCI is not included in the calculation of the earnings per share (EPS) number, we should expect to find little to no significant association between analysts’ forecasts of earnings and OCI. However, given that OCI components represent unrealized gains and losses, analysts could be making assumptions about their eventual (early) realization, and hence, we could find some significant association between analysts’ forecasts and OCI numbers. If so, the OCI numbers could be contributory to the error in the analysts’ forecasts relative to the actual EPS numbers.

3.3.3 Analyst forecast accuracy and potential reasons for forecast error

Analysts are believed to generally under-react to information, but over-react to positive information or good news (Chopra 1998; Easterwood and Nutt 1999; Karamanou 2000; Kantsyrev 2007). This results in forecast errors which tend to be significantly optimistic for buy recommendations and significantly pessimistic for sell recommendations (Eames et al. 2002). The accuracy of analysts’ forecasts depends on several factors, including the number of stocks normally followed (Hirst et al. 2004), the quality of corporate disclosures (Lang and Lundholm 1996; Botosan and Harris 2000; Dhaliwal et al. 2011; Hsu and Chiao 2011; Hope 2003) and

corporate governance (Bhat et al. 2006), analysts' education and experience (Clement 1999; Bernard 2008), audit quality (Behn et al. 2008; Payne 2008), information complexity and readability (Hodder et al. 2008; Leavy et al. 2011), and the political connectedness of the firms followed (Chen et al. 2010).

Gu and Wu (2003) pointed out that earnings skewness is significantly related to analysts' forecast bias (or error). Analysts' efforts to improve forecast accuracy could, in fact, be contributing to the observed forecast bias. Other factors that have been found to be related to analysts' forecast error include firm size, the number of analysts following a company, dispersion in analysts' forecasts, trading volume, expected future return on equity (Bradshaw 2000; Fan et al. 2006; Gu and Wu 2003; Han and Manry 2000; Beyer and Guttman 2011).

Ahmed et al (2005) found that analysts do not distinguish between discretionary and non-discretionary accruals. Qiang (2005) found that although analysts' forecasts summarize 45-83 per cent of the information from a set of 22 information items, proxies for accounting conservatism and transitory earnings are incrementally useful in predicting future earnings. To the extent that OCI items are transitory, and are regarded by analysts to be transitory, there should be no significant association between OCI information and analysts' earnings forecasts. If OCI items are transitory, but are regarded by analysts to be persistent, they would be found to be significantly associated with analysts' earnings forecasts but contributing to significant forecast error. Lastly, if OCI items are, and are regarded by analysts as, persistent, they should be both significantly associated with analysts' forecasts and contributory to greater forecast accuracy.

Barth and Hutton (2004) examined whether analysts' earnings forecast revisions reflect information about the persistence of earnings incremental to that contained in accruals, and whether this information is reflected in stock prices. They found that analysts' forecast revisions are positively and significantly associated with future changes in accruals as well as changes in earnings, after controlling for current year accruals. They also found that firms with consistent accrual and forecast revisions have significantly less persistent earnings, but they were unable to say whether analysts were able to identify firms with low accrual persistence.

Recent psychological-experimental studies have documented the inability of users of financial accounting information to correctly process information pertaining to fair value gains and losses, especially when these arise from changes in credit risk (Gaynor et al. 2011), or where these fair value changes are contingent on whether the financial instrument is an asset or liability, whether such fair value changes give rise to gains or losses, and whether the underlying item would be sold or settled soon (Koonce et al. 2011). Given that OCI is generally considered to be transitory, it would be interesting to test for the association of OCI and its components with analysts' earnings forecasts. As mentioned in the earlier section, it may be possible that OCI numbers could be significantly associated with analysts' forecast errors. This is because analysts could make erroneous assumptions regarding the timing of the realization of the unrealized gains and losses represented by OCI.

3.4 Implications of, and Conclusions from existing studies: the gap in the literature and how the present study fits in it

Over the years, there has been an increase in the amount of evidence indicating that OCI and at least some of its components are associated with stock value and stock returns (Chambers et al. 2007; Choi et al. 2007; Kanagaretnam et al. 2009). OCI items have also been found to be associated with analysts' earnings forecasts, with negative OCI values leading to more pronounced downward revisions by analysts. OCI has been shown to display negative persistence, that is they tend to partially reverse over time (Jones and Smith 2011). Whereas persistence in general is viewed as proof that an earnings item is not transitory, the atrophy indicated by the negative persistence could be viewed as proof that OCI items are transitory but that their value reversals take multiple periods of time, perhaps because managers exercise discretion in timing the realization of unrealized gains and losses (Choi and Zang 2006).

There remains the question whether the items currently designated as components of OCI should be aggregated as such, or if they merit separate disclosure based on their individual persistence, predictive ability and value relevance. Theory suggests that the components of other comprehensive income are transitory, and hence likely to be of no predictive value. However, it does not mean that OCI does not affect firm value at all. Ohlson (1999) predicted that OCI would

affect firm value on a dollar-per-dollar basis, i.e. every dollar of OCI would cause an equivalent amount of change in firm value. In other words, the coefficient on a regression of stock price on per-share OCI would be one. However, Chambers et al (2007) found that whereas the coefficients on three components of OCI₁₃₀, namely the foreign currency translation adjustment (FCADJ), the pension adjustment (PENADJ) and the sum of unrealized gains and losses from derivatives and other residual adjustments reported by firms under SFAS 130 (OTHER) were all insignificantly different from one, the coefficient on the adjustment for marketable securities (MKTADJ) was not only significantly different from one, it was also larger than the coefficient on net income. In their discussion of this puzzling result, Chambers et al (2007) refer to Bloomfield, Nelson and Smith's (2006) theory in which they suggested that investors might fail to recognize the redundancy of unrealized gains and losses that are correlated with past firm returns. If the correlated investment is large, and the correlated unrealized gains and losses are made salient by comprehensive income reporting, the prices and earnings would become highly volatile. This line of thinking indicates market mispricing as a potential reason for the seemingly higher persistence of the MKTADJ variable. Chambers et al (2007) leave this issue open to future research. While not directly addressing the reasons, in this study I test whether Chambers et al's (2007) findings hold in the Canadian context.

There is an apparent gap in the literature with regards to studying the decision-usefulness of comprehensive income using actually reported Canadian data, especially given the reluctance on part of the AcSB in adopting the concept of comprehensive income in Canada. Kanagaretnam et al.'s (2009) study can be extended in a number of ways. First, the sample used by Kanagaretnam et al. (2009) is limited to the years 1998-2003, i.e. a time period prior to the coming into effect of HB1530 in Canada. In this study, I use actually reported data for the time period during which HB1530 was in effect. Secondly, Kanagaretnam et al (2009) do not examine the possibility that the OCI component not included under HB1530 - minimum pension adjustment (PENADJ) – might yet be value relevant.

Finally, other than Choi and Zang (2006), the issue of the association between OCI and analysts' earnings forecasts has not been examined in the literature. Analysts are generally regarded to proxy for capital markets (Fried and Givoly 1982; Ofer and Siegel 1987). Also, sell-

side analysts act as important source of investment advice for retail, unsophisticated users (Mikhail et al. 2007; Bonner et al. 2003). In this study, I test for the association between analysts' earnings forecasts and aggregate OCI, as well as its components. I also test whether OCI and its components are associated with analysts' forecast errors.

Chapter Four: Theoretical Framework

4.1 Decision Usefulness

Accounting information may be said to have decision usefulness if it is used by financial statements users for decision making. The two primary qualities that make accounting information useful for decision making are *relevance* and *reliability* (Schroeder and Clark 1995; Kieso et al. 2007)¹⁹. Reliability relates to *verifiability*, *representational faithfulness* and *neutrality*, and is usually considered to be achieved if the information is backed by independent assurance. However, since audited financial statements take time to be released²⁰, it is argued that the delayed release of the information reduces its relevance. Relevance refers to the ability of information to influence a decision, and such information must meet the criteria of *predictive value*, *feedback value* and *timeliness*²¹.

Accounting information is considered to be decision-useful if it (i) has information content, i.e. it elicits a reaction in the form of stock price changes (returns) and/or increased trading activity (Beaver, 1968); (ii) is valuation-relevant, i.e. is significantly associated with stock price (returns) relative to or incremental to other competing information, given prior expectations (Ball and Brown, 1968); or (iii) is value-relevant, i.e. it is associated with stock price (returns). As Lo and Lys (2000) explained, the major difference between valuation-relevance and value-relevance is that whereas the former requires a specification of prior expectations, the latter precludes the need for any predicted relationship.

Research examining the timeliness of accounting numbers is usually called the *information content* literature, which examines the association between announcement of earnings and stock-market return or trading volume (Beaver 1968; Ball and Brown 1968; Beaver et al. 1997). If a

¹⁹ The conceptual framework under IFRS views Relevance (Predictive Value, Confirmatory Value and Materiality) and Faithful Representation (Completeness, Neutrality and Freedom from Error) as the two fundamental qualitative characteristics of useful accounting information. This change was effected to address the problem of trading-off Relevance (which formerly included the additional attribute of Timeliness) and Reliability (which required Verifiability as an attribute in addition to Faithful Representation).

²⁰ It is common for audited financial statements to be released up to 3 or 4 months after the fiscal year end.

²¹ Part II of the Accounting Handbook retains the original descriptions of Relevance and Reliability as the primary qualitative characteristics.

statistically significant change is observed in either the stock price or trading volume in the period around the announcement, then such announcement is considered to have information content, i.e. timeliness. Research examining the *value relevance* of accounting numbers typically draws upon the residual income valuation approach suggested by Ohlson (1995) and Feltham and Ohlson (1995) to examine the *relative* or *incremental* associations of certain accounting data with stock-price (Barth et al. 2001a; Holthausen and Watts 2001; Aboody et al. 1999; Barth et al. 1992). In this case, a statistically significant coefficient on the variable of interest in regression analyses is considered to indicate value relevance.

In the case of comprehensive income, relative value-relevance studies compare the r-squareds for regressions of stock price (returns) on operating income / net income and comprehensive income. Studies of incremental value-relevance examine the coefficient on items of OCI in multivariate regressions of stock price (returns) on net income and the OCI items. Relative value relevance studies compare the coefficients and the r-squareds of regressions using competing predictors (e.g. Net Income and Comprehensive Income in Dhaliwal et al. 1999), while incremental value relevance studies include both competing predictors in the same model and test the coefficients for significance (e.g. Chambers et al. 2007). Van Cauwenberge (2007) provides a detailed discussion on the nature and specification of value relevance tests. This research is situated within the broader domain of capital markets research in accounting, for which there are excellent summaries available in the literature (Lev and Ohlson 1982; Kothari 2001).

4.2 Market efficiency

The efficient markets hypothesis (EMH) builds on the notion of informational and suggests that capital markets impound all available information in the prices of traded assets, such that it is impossible to outperform the market using an information-based trading strategy. However, markets may be efficient to varying degrees – strong, semi-strong and weak (Fama 1991, 1970). Strong form market efficiency hypothesis suggests that current stock prices incorporate *all information* relevant to the firm, both public and private. The weak-form efficiency hypothesis suggests that stock prices reflect all information that can be derived from market trading data,

such as past prices, trading volume or short interest (Bodie et al. 2003). It is usual in accounting research to assume semi-strong market efficiency, which suggests that all *publicly available* information regarding the firm's prospects is already reflected in the stock price.

Market efficiency is a broad notion, and implies *informational* (transparency and disclosure of information required to make an investment decision) efficiency, *transactional* (operational) and *allocational* (investors adjust the rate of return to ensure the present value of the marginal project equals zero) efficiency (Hendry and King 2004). This assumption is vital to any capital markets based study, since capital markets research uses stock price or stock returns as the dependent variable, and accounting information as part of the exogenous variable set.

In this study I employ the value-relevance approach to examine both the relative and the incremental (to net income) value-relevance of comprehensive income and other comprehensive income. Since I use stock prices and returns as dependent variables, I assume semi-strong securities market efficiency. In the absence of a viable alternative, this is a necessary assumption (Malkiel 2005; Malkiel and Fama 1970), although a valid charge can be leveled against it that such an assumption renders any capital markets study a test of joint hypotheses - the ones under examination *and* the efficient markets hypothesis. Ironically, there is a considerable body of literature which provides evidence that questions market efficiency, including the post-earnings announcement drift (Ball and Brown 1968), the accruals anomaly (Sloan 1996) as well as studies from behavioural finance (Shleifer 2000; Shiller 2003; Subrahmanyam 2007).

4.3 Ohlson's Residual Income Valuation model

I use the theoretical model proposed by Ohlson (1999) to examine the question of value relevance of comprehensive reporting in Canada. According to Ohlson (1999), a firm's earnings may be decomposed into "core" earnings and "transitory" earnings. Core earnings refer to those components of earnings that display persistence over time. Core earnings are usually proxied for by earnings before non-recurring items (Collins et al. 1997), although the term could well be defined in many other ways (Bricker et al. 1995). Applying Ohlson's (1999) definition of predictability, forecasting-relevance and valuation-relevance, earnings are transitory if they are unpredictable (i.e. future earnings cannot be predicted using current period numbers), forecasting

irrelevant (current period numbers are not helpful in predicting future performance), and valuation-irrelevant (current period numbers do not affect future changes in value). Using Ohlson's (1999) notations, $x_t = x_{1t} + x_{2t}$ = total earnings in period t , where, x_{1t} = core earnings in period t and x_{2t} = transitory earnings in period t . Ohlson (1999) assumes:

- (i) Present Value Relation (PVR) $P_t = b_t + \sum_{\tau=1}^{\infty} R^{-\tau} E_t \left[\tilde{d}_{t+\tau} \right]$ holds, i.e. stock price equals per-

share book-value of assets plus the present value of expected future dividends, where

P_t = market value at date t ,

b_t = book value at date t ,

$R = 1 + \text{cost-of-equity capital}$,

$E_t[\cdot]$ is the expected value function for period t and

$\tilde{d}_{t+\tau}$ refers to expected future dividends.

- (ii) The Clean Surplus Relation (CSR) (Feltham and Ohlson 1995; Ohlson 1999) holds. Clean surplus accounting obtains when $x_t = b_t + d_t - b_{t-1}$, where the partial derivatives are $\partial b_t / \partial d_t = -1$ and $\partial x_t / \partial d_t = 0$, and the subscripts denote the time period. This definition of earnings, x_t , is conceptually similar to the one intended by the FASB (and the AcSB) for comprehensive income, in that it includes net income along with any 'dirty surplus' items that have bypassed the income statement (Ohlson, (1999); p148)
- (iii) and that the forecasting error terms, although they may be correlated, are unpredictable with zero means,

Considering the three assumptions above, Ohlson (1999) obtains the following residual income valuation (RIV) formula:

$$P_t = b_t + \sum_{\tau=1}^{\infty} R^{-\tau} E_t \left[\tilde{x}_{t+\tau}^a \right],$$

where the definitions of P_t , b_t , R and E_t are as above, and

$x_t^a \equiv x_t - rb_{t-1}$ = abnormal earnings in period t .

This RIV formula holds provided the dividend policy is such that $R^{-\tau} E_t \left[\tilde{b}_{t+\tau} \right] \rightarrow 0$ as $\tau \rightarrow$

∞ , i.e. in the long run, the assets of the firm would be liquidated and distributed among the shareholders.

Ohlson's (1999) third assumption specifies the forecasting of the sequence of expected abnormal earnings in terms of the current information. Specifically, it is assumed:

$$\tilde{x}_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2t} + \tilde{\varepsilon}_{1t+1} \text{ and,}$$

$\tilde{x}_{2t+1} = \omega_{21}x_t^a + \omega_{22}x_{2t} + \tilde{\varepsilon}_{2t+1}$, where ω_{ij} are regression coefficients, $\tilde{x}_{t+1}^a$ is forecast abnormal earnings for period $t+1$, x_t^a is abnormal earnings in period t , and x_{2t} is the transitory earnings in period t . ε 's are the forecast-errors for the two equations. Ohlson (1999) notes that (p 148)

- (i) ω_{22} should be equal to zero. This indicates *unpredictability* or *non-persistence* of transitory earnings. However, Ohlson (1999) does consider the possibility that $0 < \omega_{22} < 1$, which would suggest that while transitory earnings are serially correlated, their long run average equals zero.
- (ii) $\omega_{21} = 0$, suggesting that core earnings and book values do not influence the evolution of transitory earnings. ω_{21} ought to be zero if x_{2t} is transitory earnings, i.e. current period's abnormal earnings do not predict the next period's OCI. This too implies *unpredictability*.
- (iii) Because x_t^a includes transitory earnings, it is expected that $\omega_{11} + \omega_{12} = 0$, implying that $x_{1t}^a \equiv x_{1t} - rb_{t-1}$, i.e. current core earnings summarize all relevant information to forecast next-period expected abnormal earnings. This is referred to as *forecasting-irrelevance* of transitory earnings. This means that transitory earnings have a similar effect on next period's expected earnings as do dividends. That is, even if $\omega_{11} + \omega_{12} \neq$

0, the partial derivatives $\partial b_t / \partial d_t = -1$ and $\partial b_t / \partial x_{2t} = 1$, imply that transitory earnings contribute to book value on a dollar-for-dollar basis.

- (iv) $\omega_{11} + \omega_{12} = 0$ also implies because transitory earnings are “passed-on” as dividends, they would have no effect on next-period expected earnings (p 150). Applying the RIV formula, we get $P_t = b_t + \alpha_1 x_t^a + \alpha_2 x_{2t}$, where α ’s are coefficients. Ohlson (1999) suggests that transitory earnings are *value-irrelevant*, i.e. $\alpha_1 + \alpha_2 = 0$, which implies that the partial derivative is $\partial P_t / \partial x_{2t} = 1$.

In summary, Ohlson (1999) formalized three attributes of transitory earnings, (i) unpredictability ($\omega_{22} = 0$); (ii) forecasting-irrelevance ($\omega_{11} + \omega_{12} = 0$); and (iii) value-irrelevance ($\alpha_1 + \alpha_2 = 0$). Thus, the RIV formula precludes any role for transitory earnings, in that being unpredictable, and therefore not persistent, transitory earnings would not have any abnormal component. However, Ohlson (1999) cautioned against making such an inference. Although transitory earnings items “are of no *informational* relevance in forecasting and valuation, ... it is not implied that the underlying transaction is irrelevant” (p 146-147). Consistent with prior residual earnings valuation models (Feltham and Ohlson 1995; Ohlson 1995), Ohlson (1999) demonstrated that whereas core earnings, being further decomposed into expected and abnormal components is expected to affect value at a rate greater than dollar for dollar, transitory earnings are unpredictable, forecast irrelevant and value irrelevant. Nevertheless, “their informational significance is fully picked up by end-of-period book values” (p 151), and as demonstrated by Chambers et al. (2007), transitory earnings should affect firm value dollar-for-dollar.

4.3.1 Empirical evidence

Barth, Beaver, Hand and Landsman (1999) were possibly the first to use the framework of Ohlson (1999) to study the value relevance of accrual and cash flow components of earnings. Barth et al (1999) specifically tested (i) the ability of accruals and cash flow components of earnings to forecast future abnormal earnings, (ii) whether accrual and cash flow components of earnings have incremental explanatory power in a valuation model that includes book value and abnormal earnings, and (iii) whether valuation multiples on accruals and cash flows vary based

on persistence of the components of earnings? In order to estimate abnormal earnings, Barth et al (1999) used a 12 per cent rate to estimate expected earnings (beginning book value of equity time 12%), with abnormal earnings being equal to net income less expected earnings. Barth et al found that accruals and cash flows have significant explanatory power in forecasting future abnormal earnings, as well as for valuation. They concluded that their reported findings were consistent with Ohlson (1999) and that accruals and cash flow components of earnings are persistent.

What about transitory earnings? Ohlson (1999) had likened OCI to special items (pp 159-160). The incidence of special items reported in the income statement has increased (Johnson et al. 2011), with some “non-recurring” items showing a greater propensity to “recur” so often that the market has begun valuing them more like other components of recurring earnings (Cready et al. 2010). Jones and Smith (2011) compared the Value Relevance, Predictive Value, and Persistence of OCI and Special Items (SI). They found that contrary to the predictions of Ohlson (1999), both special items and other comprehensive income display the characteristics of value relevance and predictive value. Further, whereas SI have zero persistence, OCI items display negative persistence, that is, they tend to partially reverse over time. It should be noted that Jones and Smith (2011) do not employ Ohlson’s (1999) linear information dynamics approach, and thus, it possible that their tests’ specification caused their results to be different from Ohlson’s (1999) predictions. In this study, I provide additional evidence on OCI’s persistence, forecasting relevance and value relevance by following the specifications in Ohlson (1999).

Chapter Five: Research Design and Methodology

In this study I am interested in determining the decision usefulness of comprehensive income. Comprehensive income consists of net income plus other comprehensive income. Under HB1530, components of other comprehensive income include:

- (1) changes in gains and losses on derivatives designated as cash flow hedges (HEDGE)
- (2) changes in fair value of available for sale investments, net of reclassification adjustments²² (SEC)
- (3) unrealized foreign currency translation gains and losses, net of hedging activities (FOREX)

I refer to the three components listed above as HEDGE, SEC and FOREX, and their sum as OCI₁₅₃₀. I refer to OCI under SFAS 130 as OCI₁₃₀, which includes the three components of OCI₁₅₃₀ and an additional item:

- (4) minimum required pension liability adjustments (PENADJ).

For examining value relevance I test the association between OCI or its components and the following dependent variables:

- a. Price (P/S_{it}): The market price per share of firm i 's equity three months after the end of the fiscal year t .
- b. Return (RET_{it}) = $P/S_{i,t} - P/S_{i,t-1} + d_{it}$. The buy-and-hold raw return, calculated as the change in price per share ($P/S_{i,t} - P/S_{i,t-1}$), plus the dividend per share (d_{it}) for the year ended three months after the end of the fiscal year t (i.e. for the window nine months before to three months after the fiscal year-end). Under the Continuous Disclosure requirements of the Ontario Securities Commission, firms listed on the Toronto Stock Exchange must file their annual reports within 90 days of their fiscal year-end (Ontario Securities Commission). It is assumed that the stock purchase is made at the time of the annual earnings announcement, by

²² Once a gain or loss which was earlier accounted for in comprehensive income is recognized, it may be reclassified from accumulated other comprehensive income to net income. Any adjustment required at the time of reclassification is to be recorded to OCI

which time much of the information contained in the earnings number would have been impounded in the stock price. The holding period is until the next earnings announcement, and again, it is assumed that the stock price reflects the new information contained in the next period earnings.

In this study I do not attempt to address the question of whether comprehensive income information is timely. I only seek to provide some empirical evidence on how well comprehensive income reflects or summarizes “the economic condition of the firm, as reflected by its stock price” (Van Cauwenberge 2007).

Table 5.1 reproduces the illustration provided in the CICA Accounting Handbook section 1530, *Comprehensive Income*²³. It would be noticed from the example that, for the most part, the gains and losses recorded under OCI do end up in net income upon realization. Hence, these items would be expected to have a long-term mean of zero as suggested in Dee (1999). This also implies that the components of OCI are transitory, as there are no plausible reasons to expect a permanent mismatch between the amounts recorded under OCI and their final recognition to net income²⁴.

²³ This table is also included on page xiv. It is reproduced here for ease of reference.

²⁴ For a detailed discussion and example of the accounting treatment of one of the components of OCI, namely available for sale investments, see Kieso et al. (2007, pp 523-534). Please note that later editions of the text are based on IFRS, and may not be directly comparable.

Table 5-1: Illustrative example of a statement of comprehensive income**Statement of Comprehensive Income**

For the year ended December 31 (\$ thousands)	20X2	20X1
Net income	<u>\$ 651</u>	<u>\$ 22</u>
Other comprehensive income, net of tax		
Unrealized gains and losses on translating financial statements of self-sustaining foreign operations (a)	547	627
Gains and losses on hedges of unrealized foreign currency translation losses and gains	(545)	(618)
Unrealized foreign currency translation gains and losses, net of hedging activities	<u>2</u>	<u>9</u>
Unrealized gains and losses on available-for-sale financial assets arising during the period	1,689	277
Reclassification adjustment for gains and losses included in net income	(317)	62
Change in unrealized gains and losses on available-for-sale financial assets	<u>1,372</u>	<u>339</u>
Gains and losses on derivatives designated as cash flow hedges	1,723	687
Gains and losses on derivatives designated as cash flow hedges in prior periods transferred to net income in the current period	(995)	(333)
Change in gains and losses on derivatives designated as cash flow hedges	<u>728</u>	<u>354</u>
Other comprehensive income	<u>2,102</u>	<u>702</u>
Comprehensive income	<u><u>\$ 2,753</u></u>	<u><u>\$ 724</u></u>

(a) It is assumed that there was no reduction in the net investment in a foreign operation. Therefore, there is no reclassification adjustment.

source: Reproduced from CICA Accounting Handbook section 1530 Comprehensive Income, paragraph 12.

If OCI items are transitory, Ohlson's (1999) predictions should apply. None of the components of OCI should be value relevant, i.e. their coefficients from regressing stock price (or total MVE) on components of comprehensive income should be insignificant. Also, the components should be forecast irrelevant, i.e. the coefficients from regressing future period stock

price (or current stock price on lagged components) should also be statistically insignificant. However, as Ohlson (1999) reminds us, the components of OCI would impact firm value on a dollar-for-dollar basis, similar to the effect of dividends. Whereas items of OCI might revert over time, if the unrealized gains and losses are indeed realized (say an available for sale security with OCI losses is sold at a loss) the loss is reported in the income statement through a reclassification adjustment. The markets could anticipate that reclassification and impound this information about future earnings. This could cause OCI values being associated with stock price or stock return, indicating value relevance.

Alternatively, from a functional fixation perspective, it may be argued that in the early years following the implementation of SFAS 130 in the U.S., financial statement users did not consider information on OCI. This may well have been due to processing limitations imposed by the decision of the majority of firms to report OCI as part of the statement of changes in equity, instead of a more prominent display in a statement of comprehensive income. However, with the passage of time, market participants could have started using the OCI information in their valuation decisions, thus attributing value relevance to OCI.

5.1 Testing Ohlson's Residual Income Valuation model for transitory earnings

One of Skinner's (1999) major criticisms of Dhaliwal et al.'s (1999) study of the value-relevance of comprehensive income was that the tests were not informed by any economic theory. In this study I address this concern by using Ohlson's (1999) work on the relevance of transitory earnings. However, before proceeding, I would like to test whether the predictions of the model are satisfied empirically. Specifically, Ohlson (1999) predicts that transitory earnings reflect the following characteristics: (i) unpredictability (ii) forecasting-irrelevance and (iii) value-irrelevance.

Ohlson (1999) also specifies the following:

$$\tilde{x}_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2t} + \tilde{\varepsilon}_{1t+1} \text{ and,}$$

$$\tilde{x}_{2t+1} = \omega_{21}x_t^a + \omega_{22}x_{2t} + \tilde{\varepsilon}_{2t+1},$$

where ω_{ij} are regression coefficients, $\tilde{x}_{t+1}^a$ is forecast abnormal earnings for period $t+1$, x_t^a is abnormal earnings in period t , and x_{2t} is the transitory earnings in period t . ε 's are the forecast-errors for the two equations.

The preceding equations require specification of what comprises abnormal earnings. Abnormal earnings may be specified in several different ways. For example, one option would be to estimate the cost of equity capital for each firm using its β (*beta*), using the market model $R_{j,t} = \alpha_t + \beta * R_{m,t} + \varepsilon_t$,

where $R_{j,t}$ is the return on security j over time t ,

α_t is the intercept term equal to $R_{f,t} * (1 - \beta)$, where $R_{f,t}$ is the risk free rate in time t ,

$R_{m,t}$ is the market return over time t , and

ε_t is the error term. The error term is viewed as the abnormal stock return, that is the excess of the stock return over the expected return ($\alpha_t + \beta * R_{m,t}$)

There are, of course, other specifications possible for the stock beta (Brimble and Hodgson 2007). However empirical support for using market beta has yielded mixed results. Fama and French (1992) show that size, measured as the market value of equity, and leverage, measured as the book-value to market-value ratio, capture the variations in stock returns. They also show that size is highly correlated with stock beta, and can thus substitute for it. Fama and French (1992) also show that controlling for size, stock beta is only marginally associated with stock returns. One possible explanation for the poor results for beta is that it does not remain stationary, and that it changes over time (Chen 1981). It could be that over a long period of time, beta is associated with stock returns, as was shown by Kothari, Shanken and Sloan, (Kothari et al. 1995). However, using the market model to estimate the betas is prone to estimation error (Shanken 1992; Clarkson and Thompson 1990).

Another option may be to estimate a normal return r_m and specify $x_t^a = x_t - r_m b_{t-1}$, i.e. abnormal earnings x_t^a equals actual earnings x_t minus expected earnings, which is equal to the normal return, r_m , times the beginning of period b_{t-1} . We can specify an expected rate of return

of 12 percent, such that $x_t^a = x_t - 0.12b_{t-1}$. The 12 percent rate is the average return on equity investments, and has been used in the literature (see, for example, Barth et al, 1999). The 12 per cent rate is also the average profitability rate reported by Industry Canada for Small and Medium Industries (Industry Canada 2010). According to a Statistics Canada publication, the return on equity, calculated as earnings before interest and taxes (EBIT) divided by Shareholders' Equity was around 30 per cent during the 2000 to 2009 period (Lafrance 2012). Assuming a debt-equity ratio of 1:1, interest cost of 10 per cent, and an average tax rate of 40 per cent, the ROE would be 15 per cent if calculated on after-tax earnings. It could be argued that 12 per cent is a slightly conservative estimate of ROE.

Even if it is conceded that using a 12 per cent normal rate to compute abnormal earnings provides for a crude proxy, this approach is a pragmatic alternative to the possibly more problematic issue of estimation error in calculating the expected rate of return for individual companies using market beta. The basic idea behind Ohlson's approach is that as long as a rate of return of capital employed is specified, the model should work. Nevertheless, as part of robustness checks, I re-estimated abnormal earnings using the annual TSX return, or 2-digit SIC industry level return as alternative specifications of expected return. It should be noted, though, that the TSX or industry returns are returns on stocks, and might not be good proxies for expected returns on capital employed. Yet another alternative could be to make a naive assumption that the previous year's net income is a proxy for the current year's expected income. Hence, any difference between the previous- and the current-year's net income could be considered abnormal earnings.

5.1.1 Regressions to test OCI's ability to forecast future abnormal earnings

Forecasting irrelevance is implied if the sum of the coefficients of the regression of current period abnormal earnings on prior year abnormal earnings (ω_{11}) and prior-year OCI (ω_{12}) is (statistically close to) zero. Note that abnormal earnings include items of OCI, so reintroducing OCI into the equation would appear as double counting, unless the regression coefficients adjust for this fact. However, if abnormal earnings are defined as excluding OCI items, the coefficients would be partial-coefficients. In this case, the sum of the two coefficients should be the

coefficient of the regression of current-period abnormal earnings (including OCI) on prior-period abnormal earnings (including OCI). I estimate the following regressions:

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 OCI/S_{1530\ it-1} + \varepsilon_{it} \quad [1a]$$

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 OCI/S_{130\ it-1} + \varepsilon_{it} \quad [1b]$$

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 HEDGE/S_{it-1} + \alpha_3 SEC/S_{it-1} + \alpha_4 FOREX/S_{it-1} + \varepsilon_{it} \quad [1c]$$

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 HEDGE/S_{it-1} + \alpha_3 SEC/S_{it-1} + \alpha_4 FOREX/S_{it-1} + \alpha_5 PENADJ/S_{it-1} + \varepsilon_{it} \quad [1d]$$

where subscripts i and t denote the firm i and year t respectively,

$AbnEarn/S_{it}$ the difference between the actual earnings per share and the expected earnings, specified as beginning book value per share multiplied by 12 per cent.

$AbnEarn/S_{it-1}$ value of $AbnEarn_{it}$ for the fiscal year preceding year t

$HEDGE/S_{it-1}$ the per share change in the fair value of cash flow hedges under Canadian GAAP the fiscal year $t-1$;

SEC/S_{it-1} the per share change in the fair value of available-for-sale investments under Canadian GAAP for the fiscal year $t-1$; and

$FOREX/S_{it-1}$ the per share change in cumulative foreign currency translation adjustment under Canadian GAAP for the fiscal year $t-1$.

$PENADJ/S_{it-1}$ the per share change in additional minimum pension liability in excess of unrecognized prior service costs under SFAS 130 for the fiscal year $t-1$

OCI_{1530}/S_{it-1} the sum of $HEDGE/S_{it-1}$ (fair value changes in cash flow hedges), SEC/S_{it-1} (fair value changes in available for sale investments) and $FOREX/S_{it-1}$ (changes in cumulative foreign currency translation adjustment) following Canadian GAAP.

OCI_{130}/S_{it-1} OCI_{1530}/S plus $PENADJ/S_{it-1}$ (pension adjustment on defined benefit pension plans, as required under SFAS 130 of U.S. GAAP).

According to Ohlson (1999), forecasting irrelevance is implied if the sum of the coefficients on abnormal earnings and on OCI in equation 1a are statistically equal to zero. To test for this, I

compute a new variable AEDiffOCI, which is equal to the difference of Abnormal Earnings and OCI₁₅₃₀²⁵. I then run the following model:

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AEDiffOCI_{it-1} + \varepsilon_{it} \quad [1e]$$

where

AEDiffOCI_{it-1} the difference between *AbnEarn/S_{it-1}* (value of *AbnEarn_{it}* for the fiscal year preceding year *t*) and *OCI_{1530/S_{it-1}}*

With other variables as defined earlier

Equation 1e is a constrained model since by computing one coefficient for the difference of Abnormal Earnings and OCI₁₅₃₀ I am forcing the estimated effects of their sum to be equal to zero. Equation 1a is the unconstrained model, where the effects of Abnormal Earnings and OCI₁₅₃₀ are not constrained to be equal to zero. I then conduct an incremental F test:

$$F_{J,N-K-1} = \frac{(R_U^2 - R_C^2) * (N - K - J)}{(1 - R_U^2) * J}, \text{ where } F_{J,N-K-1} \text{ is the F-statistic value with J constraints, N}$$

observations, and K independent variables in the unconstrained model. R_U^2 is the r-squared value for the unconstrained model and R_C^2 is the r-squared value for the constrained model. The significance of the F-statistic is given by the t-statistic obtained by the square-root of F.

If the sum of the coefficients on abnormal earnings and OCI is indeed equal to zero, the t-statistic obtained from the above procedure should be statistically insignificant. If, on the other hand, the incremental F-test does prove to be significant, then we can conclude that the sum of the coefficients is not (statistically) equal to zero, and that OCI does indeed possess incremental forecasting relevance.

5.1.2 Regressions to test predictability of OCI

Testing for unpredictability requires regressing current-year OCI on prior-year abnormal earnings (ω_{21}) and prior-year OCI (ω_{22}). Ohlson's (1999) prediction is that the coefficients

²⁵ I am indebted to Professor Richard Williams of the Notre Dame University for this approach, which I found to be particularly simple to apply. I accessed Professor Williams' teaching notes through an online search from www.nd.edu/~rwilliam/stats2/l42.pdf

would be (statistically close to) zero. He does note, however, that it is possible that there might be some serial correlation among the OCI items, i.e. ω_{22} may lie between 0 and 1. However, if ω_{22} is negative, that is $\omega_{22} < 0$, it would suggest that OCI displays negative persistence, and tends to partially reverse over time. Accordingly, I estimate the following regressions:

$$OCI_{1530}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 OCI_{1530}/S_{it-1} + \varepsilon_{it} \quad [2a]$$

$$OCI_{1530}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 HEDGE/S_{it-1} + \beta_3 SEC/S_{it-1} + \beta_4 FOREX/S_{it-1} + \varepsilon_{it} \quad [2b]$$

$$OCI_{130}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 OCI_{130}/S_{it-1} + \varepsilon_{it} \quad [2c]$$

$$OCI_{130}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 HEDGE/S_{it-1} + \beta_3 SEC/S_{it-1} + \beta_4 FOREX/S_{it-1} + \beta_5 PENADJ/S_{it-1} + \varepsilon_{it} \quad [2d]$$

where subscripts i and t denote the firm i and year t respectively, and the variables are as defined earlier.

5.2 Testing for the value relevance of OCI and its components

To test for the value-relevance of OCI and its components, I regress stock price on current book value, net income and OCI, using the following residual income valuation function:

$$P/S_{it} = b_0 + b_1 BVE/S_{it} + b_2 NI/S_{it} + b_3 v_t$$

This approach is consistent with earlier research (Graham et al. 2003; Dechow et al. 1999; Kanagaretnam et al. 2009). P/S_{it} is the price per share of firm i at time t , BVE/S_{it} is the book value per share of firm i at time t , NI/S_{it} is the net income per share for the period t , and v is other information (on a per share basis) about future abnormal earnings reflected in the firm's equity but not in the firm's financial statements, in this case, OCI per share.

Some authors suggest that using non-linear models such as *arctan* may produce better fit with the data (Brimble and Hodgson 2004; Goncharov and Hodgson 2008). The idea here is that the regressions follow an S-shape, which may be a closer fit to what Ohlson (1999) envisages for transitory earnings. Once they get picked up dollar-for-dollar in firm value, their future effect on earnings is close to zero, hence the slope of the curve before and after the event period would be flat. However, their approach is not very common in the literature, and hence, I choose to opt for linear regressions.

5.2.1 Valuation (Level) Regressions to test value-relevance of OCI and components

Consistent with Kanagaretnam et al. (2009), I investigate the association between stock price and changes in components of other comprehensive income (OCI). Kanagaretnam et al. point out that their sample, being composed of the largest Canadian firms that are also listed in the U.S., is likely to be positively biased towards a higher incidence of use of hedge accounting and foreign currency translations. Thus, in keeping with the predicted value irrelevance of transitory earnings (Ohlson 1999), there should be no significant association for a sample that includes smaller, non-U.S. listed Canadian firms. On the other hand, if comprehensive income is indeed value relevant, then there should be a positive association between components of OCI and stock market price. Kanagaretnam et al. (2009) do not find a significant association between stock price and the foreign currency translation adjustment $FOREX_{it}$. This could be an artefact of the time period under consideration. Given the appreciation of the Canadian dollar versus the U.S. dollar from 2002 to 2010, I retain this variable.

Figure 1 shows the sustained change in the exchange rate for the Canadian Dollar (CAD) versus other significant currencies. Curiously, although we notice a similar pattern for the change in the exchange rate for the CAD versus the U.S. Dollar (USD), Chinese Renminbi (RMB), Mexican Peso (MXN) and the Japanese Yen (YEN), the pattern is somewhat different for the CAD versus the Euro (EUR) and the British Pound (GBP). This is possibly because the former currencies are marked to the U.S. Dollar, while the latter ones aren't. In almost all cases, we notice a sustained strengthening of the Canadian dollar. The effect of a sustained change in exchange rates on the foreign currency translation has been documented in the literature (Davis-Friday and Gordon 2005), although there remains some debate about the direction of the effect (Louis 2001).

Figure 1: Exchange rates for the Canadian Dollar against selected currencies²⁶

source: Bank of Canada

http://www.bankofcanada.ca/rates/exchange/cad-selected-currencies/?page_moved=1#IEXM2001

accessed on August 30, 2011

²⁶ Due to the background color used in the charts, the dates on the horizontal axis are not clearly visible. These dates are all year-end (December 31) for the years 2002 through 2010.

Interest rates can also play a role in the change in fair value of investments as well as exchange rate fluctuations. As Figure 2 below shows, the monthly bank rate in Canada has changed frequently, and sometimes quite sharply. While on the most part this is probably in response to macroeconomic pressures or to changes in the U.S. interest rates, such interest rate changes would also have contributed to the other comprehensive income of many Canadian firms.

Figure 2: Historical Canadian Bank rates

source: Bank of Canada <http://www.bankofcanada.ca/rates/interest-rates/canadian-interest-rates>

Cash flow hedges are one way that companies may protect themselves from interest rate and currency-exchange rate shocks. Kanagaretnam et al. (2009) use an interaction term to account for losing and winning hedging positions, and report a marginally significant positive coefficient on the interaction term $HEDGE_GAIN_{it}$, and a marginally significant negative coefficient for $HEDGE_{it}$. Kanagaretnam et al speculate that this result could be attributed to a favourable market opinion for companies engaging in risk management, regardless of actual results of such hedges. I use only the $HEDGE_{it}$ variable in my association tests, and estimate the following set of valuation regressions:

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 OCI_{1530}/S_{it} + \varepsilon_{it} \quad [3a]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 OCI_{130}/S_{it} + \varepsilon_{it} \quad [3b]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 HEDGE/S_{it} + \gamma_4 SEC/S_{it} + \gamma_5 FOREX/S_{it} + \varepsilon_{it} \quad [3c]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 HEDGE/S_{it} + \gamma_4 SEC/S_{it} + \gamma_5 FOREX/S_{it} + \gamma_6 PENADJ/S_{it} + \varepsilon_{it} \quad [3d]$$

where

P/S_{it} the stock price of firm i three months after the end of fiscal year t ;

BVE/S_{it} the book value of common equity per share at the end of the fiscal year t ;

NI/S_{it} net income per share after extraordinary items and discontinued operations for the fiscal year t ;

Other variables are as defined earlier.

Ohlson (1999) models stock price as a function of book value, abnormal earnings and transitory earnings (namely, OCI), and specifies the following equation: $P_t = b_t + \alpha_1 x_t^a + \alpha_2 x_{2t}$. Following Ohlson (1999), I also test specifically for value irrelevance by modeling stock price as a function of book value, abnormal earnings and OCI. Ohlson predicts that the sum of the coefficients on abnormal earnings and OCI in the above valuation regression would be zero, i.e. $\alpha_1 + \alpha_2 = 0$. I test for this by carrying out an incremental F-test similar to that described in section 5.1.1. using the following equations:

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 AbnEarn_{it} + \gamma_3 OCI_{1530}/S_{it} + \varepsilon_{it} \quad [3e]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 AEDiffOCI_{it} + \varepsilon_{it} \quad [3f]$$

where the variables are as defined in earlier sections.

Equation 3e above serves as the unconstrained model, while equation 3f is the constrained model.

5.2.2 Returns (Change) Regressions to test value-relevance of OCI and components

Kothari and Zimmerman (1995) suggest that price models are better specified than returns models in that their estimated slope coefficients and earnings response coefficients are less biased. However, return models have less serious econometric problems, and therefore, the

combined use of both price and return models may be useful in some research contexts. Therefore, I follow Kanagaretnam et al (2009), and run the following returns regressions, numbered 4a through 4d. As a specification check, consistent with Chambers et al. (2007), I use dummy variables to test for possible differences in pricing of OCI and its components in the post-2006 period (i.e. the period in which OCI reporting became mandatory under section 1530) and for loss-making firm-years (Hayn 1995). In regression equation 4e, D_1 is an indicator variable that is coded 1 for years in which NI is negative. D_2 is a dummy variable which is coded 1 for post 2006 years.

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 OCI_{1530it} + \varepsilon_{it} \quad [4a]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 OCI_{130it} + \varepsilon_{it} \quad [4b]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 HEDGE_{it} + \phi_3 SEC_{it} + \phi_4 FOREX_{it} + \varepsilon_{it} \quad [4c]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 HEDGE_{it} + \phi_3 SEC_{it} + \phi_4 FOREX_{it} + \phi_5 PENADJ_t + \varepsilon_{it} \quad [4d]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 HEDGE_{it} + \phi_3 SEC_{it} + \phi_4 FOREX_{it} + \phi_5 PENADJ_t + \phi_6 D_1 * NI_{it} + \phi_7 D_2 * NI_{it} + \varepsilon_{it} \quad [4e]$$

where (all variables other than RET are scaled by the market value of common equity at the beginning of the fiscal year),

RET_{it} stock returns (inclusive of dividends) for the year ended three months after the end of fiscal year t.

NI_{it} net income for the fiscal year t under Canadian GAAP after extraordinary items and discontinued operations;

D_1 Dummy variable coded 1 if the net income for the year was negative

D_2 Dummy variable coded 1 if the year was 2006 and after

Other variables are as described in section 5.1.1

5.3 Testing for association of OCI and its components with analysts' earnings forecasts

I test for the association of OCI and its components with analysts' earnings forecasts in two ways. First, I regress mean and median analyst earnings forecasts on the lagged earnings per

share and current year- and lagged-OCI and its components. Secondly, I regress analysts' forecast error on OCI and its components, while controlling for forecast dispersion, firm size, trading volume and analyst following.

5.3.1 Regressions to test association of OCI and components with analysts forecasts

I use two alternative measures of analysts' earnings forecasts – the consensus mean EPS and the median of the analysts' EPS estimates. As pointed out by Gu and Wu (2003), the median forecast is more accurate than the mean due to earnings skewness. However, the mean forecast has been used in other studies (for example, (Barth and Hutton 2004)), so I choose to retain it as well.

$$IBESMean_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 OCI_{1530it-1} + \varphi_6 OCI_{1530it} + \varepsilon_{it} \quad [5a]$$

$$IBESMean_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 HEDGE/S_{it} + \varphi_6 SEC/S_{it} + \varphi_7 FOREX/S_{it} + \varphi_8 PENADJ/S_{it} + \varphi_9 HEDGE/S_{it-1} + \varphi_{10} SEC/S_{it-1} + \varphi_{11} FOREX/S_{it-1} + \varphi_{12} PENADJ/S_{it-1} + \varepsilon_{it} \quad [5b]$$

$$IBESMed_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 OCI_{1530it-1} + \varphi_6 OCI_{1530it} + \varepsilon_{it} \quad [6a]$$

$$IBESMed_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 HEDGE/S_{it} + \varphi_6 SEC/S_{it} + \varphi_7 FOREX/S_{it} + \varphi_8 PENADJ/S_{it} + \varphi_9 HEDGE/S_{it-1} + \varphi_{10} SEC/S_{it-1} + \varphi_{11} FOREX/S_{it-1} + \varphi_{12} PENADJ/S_{it-1} + \varepsilon_{it} \quad [6b]$$

where,

$IBESMean_{it}$ is the mean analysts' forecast estimate from I/B/E/S of Earnings per share (EPS) for firm i immediately preceding earnings announcement

$IBESMed_{it}$ is the median analysts' forecast estimate from I/B/E/S of EPS for firm i immediately preceding earnings announcement

EPS_{it-1} is the actual EPS for firm i for immediately preceding fiscal year

$LnMVE_{it-1}$ is the natural log of market value of equity for firm i at the beginning of fiscal year

$LnTV_{it}$ is the natural log of average trading volume for firm i stock

$LnFol_{it}$ is the natural log of number of analysts providing earnings forecasts for firm i shares

Other variables are as defined in earlier sections

5.3.2 Regressions to test association of OCI and components with analyst forecast error

A number of studies document the existence of analyst forecast bias, which may arise due to incentive effects (Karamanou 2000), analysts' desire to gain access to management (Das et al. 1998; Libby et al. 2008), or perhaps because of analysts trying to correct for earnings skewness (Gu and Wu 2003). Extant research also documents the market's ability to adjust for analysts' forecast bias, to the extent that potentially profitable trading strategies could be devised by incorporating the effects of such bias (Karamanou 2000; Han et al. 2001; Hughes et al. 2008). The extent of analyst forecast bias has been found to be reducing in the face of increased regulations (Bradshaw 2009; Chen and Chen 2009), at least in the case of short-term forecasts (Srinidhi et al. 2009).

The above research notwithstanding, analysts' forecasts remain an important source of information for markets, and thus, the question whether OCI and its components are associated with analyst earnings forecast errors is important. To test for the potential association, I test the following regressions. I control for several variables, including the dispersion between the mean and median consensus forecasts, accruals, firm size, trading volume, analyst following and for loss making firms.

$$FERR_{it} = \lambda_0 + \lambda_1 MNMD_{it} + \lambda_2 Accruals/S_{it} + \lambda_3 LnMVE_{it-1} + \lambda_4 LnTV_{it} + \lambda_5 LnFol_{it} + \lambda_6 NegNI + \lambda_7 OCI_{1530it} + \varepsilon_{it} \quad [7a]$$

$$FERR_{it} = \lambda_0 + \lambda_1 MNMD_{it} + \lambda_2 Accruals/S_{it} + \lambda_3 LnMVE_{it-1} + \lambda_4 LnTV_{it} + \lambda_5 LnFol_{it} + \lambda_6 NegNI + \lambda_7 HEDGE/S_{it} + \lambda_8 SEC/S_{it} + \lambda_9 FOREX/S_{it} + \lambda_{10} PENADJ/S_{it} + \varepsilon_{it} \quad [7b]$$

where the variables are as defined in earlier sections

5.4 Control Variables

As part of my tests of robustness, I control for the following:

1. $LnTA/S_{it}$: I use the natural logarithm of the book value of total assets per share of firm i for the fiscal year t , to control for size (Nikolaev 2010). Since the seminal paper on Positive Accounting Theory by Watts and Zimmerman (1978) it has become common practice to use firm size as a control against possible omitted variable biases (Bujaki and Richardson 1997).
2. $DebtEquity_{it}$: Debt-to-Equity ratio, a common proxy of leverage (Duke and Hunt 1990), to control for possible agency incentives to manage earnings by timing the realization of gains and losses, which would result in a transfer from accumulated other comprehensive income to net income (Cheng and Warfield 2005; Dechow and Sloan 1991). It should be noted that the debt-equity ratio is correlated with stock beta, it could yet be incrementally associated with stock returns (Fama and French 1992).
3. Industry Dummy variables: Dhaliwal et al (1999) showed that items of OCI might be significant for firms in the financial industry. Indeed, the amount of OCI is often larger in firms belonging to some industries than others. For example, financial firms would have greater exposure to financial instruments including available-for-sale securities. Resource extraction firms such as those in the Oil and Gas industry may be exposed to foreign currency risks, and may be involved in hedging their risks through cash flow and other hedging mechanisms.
4. The years 2007-2008 witnessed a period of acute economic recession which triggered a steep decline in major capital markets globally. It may be recalled that HB1530 became effective for firm years beginning on or after October 1, 2006. This means that companies with a fiscal year starting just prior to this date, were not required (although early adoption was permitted) to adopt the standard until their next fiscal, which started later in 2007. Effectively, these companies would have until the year 2008 to report their OCI numbers. To control for a possible bias arising from the time of adoption of HB1530 by individual firms, I use a dummy variable which is coded 1 for firm years 2007 and 2008, and zero for other years. The logic here is that if there exists a bias arising purely from the difference in the time of adoption of the standard, I should find statistical significance for this dummy variable.

5.5 Data procedures

The sample for this study is drawn from Canadian firms listed on the S&P/TSX Composite Index, which is an index of the largest Canadian companies in terms of market capitalization, and accounts for approximately seventy percent of the market capitalization of firms listed on the Toronto Stock Exchange. HB1530 came into effect for firm years beginning October 2006. As such, 2007 is the first fiscal year for which any *mandatorily-reported* data are available. However, due to SEC reporting requirements, several firms cross-listed on U.S. exchanges were already reporting comprehensive income information under SFAS 130.

The first step in data collection involved identifying firms for which data should be collected. This was done by retrieving the index constituents for the S&P/TSX Composite Index for financial years 2001 through 2010 from the Compustat database. This step generated a list of 617 companies. Using this list, data on stock prices and accounting information was collected. This step generated 4,206 firm-year-observations. Observations which did not contain information on stock price or book-value were deleted, resulting in a final list of 3,969 firm-year observations for 535 companies. The full list of companies is included in Appendix 1. Data on analysts' earnings forecasts was collected from the I/B/E/S database accessed through Wharton Research Data Services (WRDS). A total of 2,359 observations were collected. These data were merged with the data collected from Compustat.

5.5.1 Missing data

There was considerable missing data, especially for OCI and its components. This is not surprising, given that HB1530 came into effect for financial years starting October 1, 2006, and its full effect was not seen until fiscal 2007. Data on OCI and components was available for very few firms for earlier periods. These were firms which were either using US-GAAP for accounting, or provided the information for US SEC filings.

If a firm reported data for any component of OCI, I replaced the missing values for the other components with zero. For example, a firm might have reported a value for SEC, but nothing for FOREX and HEDGE. In such a case, I inserted a null value for FOREX and HEDGE.

For the first instance of a firm reporting data for any component of OCI, I inserted zeroes for the lagged values, so as not to lose too many observations. It may be noted that replacing such missing data by zeroes actually results in a weakening of the power of the results, and thus, my results are possibly more conservative than what would be the case otherwise.

For other instances of firm year observations with missing data, I used list-wise deletion. List-wise deletion is the preferred approach for dealing with missing data in the accounting literature, although it does have the disadvantage of reducing the sample size.

5.5.2 Outliers

To make my regression results comparable with those of Kanagaretnam et al (2009), I ran initial multivariate regressions for each model and saved the studentized residuals for each regression. I then excluded firm-year observations with an absolute Z-Student score of greater than 3. Coupled with list-wise deletion, this procedure of excluding multivariate outliers resulted in a substantial diminution in my sample size. For various regressions, the sample size ranged between 675 and 1464 firm-year observations. The following chapter presents descriptive statistics and results of regression analyses.

Chapter Six: Results

6.1 Descriptive statistics

Table 6-1 presents the descriptive statistics for the variables used in the tests. The descriptive statistics include the number of observations (N), the mean, the standard deviation, and the quartile values (the 25th, 50th and 75th percentiles) for each variable. The table is split into panels A through F. Panel A describes the variables testing the forecasting ability and predictability of OCI and its components. Panel B presents the descriptive statistics for the variables used in testing the predictability of OCI and its components. Panel C describes the variables used in the valuation or price regressions to test the value relevance of OCI and its components. Panel D describes the variables used in the returns regressions to test the value relevance of OCI and its components. Panel E describes variables used in testing the association between analysts' earnings forecasts and OCI and its components. Finally, Panel F describes variables used in testing the association between analysts' earnings forecast errors and OCI and its components.

As it can be seen from table 6.1, the median value for OCI (50th percentile) items is zero, while the mean values are mostly negative. This is likely the result of the time period covered in this study, which included a prolonged period of economic recession, and slumps in fair values of financial assets. In terms of materiality, aggregate OCI per share constitutes approximately 7.3 per cent of total comprehensive income²⁷. However, the materiality of the per-share unrealized gains and losses on available for sale securities (SEC) is much higher at 9.8 per cent. The mean values of the other components of OCI were all negative for the sample, and other than the FOREX (2 per cent), are not material.

²⁷ Mean Comprehensive Income per share = Mean Net Income per share + Mean OCI₁₅₃₀ per share = .8289 + .0657 = 0.8946

OCI₁₅₃₀ as percentage of comprehensive income = .0657/.8946 = 0.073

SEC as a percentage of comprehensive income = .0877/.8946 = 0.098

FOREX as a percentage of comprehensive income = -.0179/.8946 = .020

Table 6-1: Descriptive Statistics**Panel A: Variables used in regressions testing the Forecasting Ability of OCI and components**

Variables	N	Mean	Standard Deviation	25%	50%	75%
<i>AbnEarn_{it}</i>	1074	-.5028	2.0430	-.8894	-.2386	.2830
<i>OCI_{1530it-1}</i>	1074	-.0583	1.3565	-.0847	.0000	.0401
<i>OCI_{130it-1}</i>	1074	-.0609	1.3593	-.0926	.0000	.0431
<i>HEDGE_{it-1}</i>	1074	-.0090	.7453	.0000	.0000	.0000
<i>SEC_{it-1}</i>	1074	-.0233	.6645	.0000	.0000	.0000
<i>FOREX_{it-1}</i>	1074	-.0259	.8137	-.0223	.0000	.0005
<i>PENADJ_{it-1}</i>	1074	-.0027	.0845	.0000	.0000	.0000

Panel B: Variables used in regressions testing the Predictability of OCI and components

Variables	N	Mean	Standard Deviation	25%	50%	75%
<i>AbnEarn_{it}</i>	1074	-.5028	2.0430	-.8894	-.2386	.2830
<i>OCI_{1530it}</i>	1074	.0308	1.8031	-.0822	.0000	.0631
<i>OCI_{130it}</i>	1074	.0245	1.8087	-.0913	.0000	.0643
<i>HEDGE_{it}</i>	1074	-.0052	.7502	.0000	.0000	.0000
<i>SEC_{it}</i>	1074	.0393	1.2407	.0000	.0000	.0000
<i>FOREX_{it}</i>	1074	-.0033	.7786	-.0483	.0000	.0000
<i>PENADJ_{it}</i>	1074	-.0063	.1279	.0000	.0000	.0000

Panel C: Variables used in Valuation regressions testing the Value Relevance of OCI and components

Variables	N	Mean	Standard Deviation	25%	50%	75%
<i>P/S_{it}</i>	1464	18.8633	26.8991	5.4550	13.3700	26.2227
<i>BVE/S_{it}</i>	1464	12.5767	31.2102	3.1771	7.8892	13.8948
<i>NI/S_{it}</i>	1464	.8289	3.5364	-.1035	.5225	1.5365
<i>OCI/S_{1530it}</i>	1464	.0657	3.3699	-.0741	.0000	.0399
<i>OCI/S_{130it}</i>	1464	.0600	3.3722	-.0818	.0000	.0404
<i>HEDGE/S_{it}</i>	1464	-.0041	.6461	.0000	.0000	.0000
<i>SEC/S_{it}</i>	1464	.0877	3.1422	.0000	.0000	.0000
<i>FOREX/S_{it}</i>	1464	-.0179	.7633	-.0321	.0000	.0000
<i>PENADJ/S_{it}</i>	1464	-.0056	.1109	.0000	.0000	.0000
<i>AbnEarn_{it}</i>	1464	-.5970	5.1876	-.8697	-.2179	.2968

From Panel D, it can be inferred that the mean return on stock was 8.54 per cent, with a standard deviation of 52.92 per cent. From panels E and F, it can be seen that on average, analysts tended to produce mean earnings forecasts that were more conservative (negative forecast error implies that the forecast earnings were lower than actual earnings), and tended to be more precise, i.e. not widely distributed (the Mean-Median difference was low).

Panel D: Variables used in Returns regressions testing the Value Relevance of OCI and components

Variables	N	Mean	Standard Deviation	25%	50%	75%
<i>Ret_{it}</i>	1097	.0854	.5293	-.2792	.0618	.3794
<i>NI_{it}</i>	1097	.0092	.3507	-.0051	.0525	.0880
<i>OCI_{1530it}</i>	1097	.0056	.1635	-.0113	-.0001	.0093
<i>OCI_{130it}</i>	1097	.0053	.1635	-.0121	-.0003	.0093
<i>HEDGE_{it}</i>	1097	.0048	.1135	-.0002	.0000	.0002
<i>SEC_{it}</i>	1097	.0022	.0359	.0000	.0000	.0000
<i>FOREX_{it}</i>	1097	-.0014	.1135	-.0088	.0000	.0023
<i>PENADJ_{it}</i>	1097	-.0003	.0089	.0000	.0000	.0000

Panel E: Variables used in regressions testing the association between OCI and components and Analysts' Earnings Forecasts

Variables	N	Mean	Standard Deviation	25%	50%	75%
<i>IBESMean_{it}</i>	675	1.1549	1.7859	.0900	.7900	1.6800
<i>IBESMed_{it}</i>	675	1.1567	1.8063	.0900	.7900	1.6800
<i>EPS_{it}</i>	675	1.0762	2.4875	-.0200	.7900	1.7900
<i>LnMVE_{it}</i>	675	7.4119	1.4730	6.4553	7.2996	8.2383
<i>LnTV_{it}</i>	675	15.5393	1.8374	14.6226	15.7653	16.6444
<i>LnFol_{it}</i>	675	1.5977	.8733	1.0986	1.7918	2.3026
<i>OCI/S_{1530it}</i>	675	-.0226	1.2149	-.1001	.0000	.0517
<i>HEDGE/S_{it}</i>	675	-.0208	.8617	-.0018	.0000	.0000
<i>SEC/S_{it}</i>	675	-.0430	.4007	.0000	.0000	.0000
<i>FOREX/S_{it}</i>	675	.0412	.8428	-.0130	.0000	.0247
<i>PENADJ_{it}</i>	675	-.0016	.0963	.0000	.0000	.0000

Panel F: Variables used in regressions testing the association between OCI and components and Analysts' Earnings Forecast Errors

Variables	N	Mean	Standard Deviation	25%	50%	75%
<i>FERR_{it}</i>	675	-0.0292	0.1952	-0.0223	-0.0017	0.0077
<i>MNMD_{it}</i>	675	-0.0005	0.0087	-0.0002	0.0000	0.0002
<i>Accruals/S_{it}</i>	675	1.4766	3.3572	0.1424	0.7889	1.9512
<i>LnMVE_{it}</i>	675	7.4119	1.4730	6.4553	7.2996	8.2383
<i>LnTV_{it}</i>	675	15.5393	1.8374	14.6226	15.7653	16.6444
<i>LnFol_{it}</i>	675	1.5977	.8733	1.0986	1.7918	2.3026
<i>OCI/S_{1530it}</i>	675	-.0226	1.2149	-.1001	.0000	.0517
<i>HEDGE/S_{it}</i>	675	-.0208	.8617	-.0018	.0000	.0000
<i>SEC/S_{it}</i>	675	-.0430	.4007	.0000	.0000	.0000
<i>FOREX/S_{it}</i>	675	.0412	.8428	-.0130	.0000	.0247
<i>PENADJ_{it}</i>	675	-.0016	.0963	.0000	.0000	.0000

Table 6.2 presents the correlation matrix and the Pearson correlation coefficients for the variables used in the regressions. The data are segregated into panels A through E to correspond with the different sets of association tests. Panel A presents the correlation matrix and the Pearson correlation coefficients for the variables used in testing the forecasting ability of OCI and its components. Panel B presents the correlation matrix and the Pearson correlation coefficients for the variables used in testing the predictability of OCI and its components. Panel C presents the correlation matrix and the Pearson correlation coefficients for the variables used in the valuation or price regressions to test the value relevance of OCI and its components. Panel D presents the correlation matrix and the Pearson correlation coefficients for the variables used in the returns regressions to test the value relevance of OCI and its components. Panel E presents the correlation matrix, and the Pearson correlation coefficients, for variables used in testing the association between analysts' earnings forecasts and OCI and its components. Finally, Panel F presents the correlation matrix and the Pearson correlation coefficients for variables used in testing the association between analysts' earnings forecast errors and OCI and its components.

Significant correlations are marked with (*) for $p < .05$ and (**) for $p < .01$. None of the correlations is so large as to suggest multicollinearity, except for book value per share (BV/S)

and stock price (P/S), where the correlation is quite strong (please see Panel C). However, conceptually, this is to be expected. OCI_{1530} and OCI_{130} are highly correlated, which is expected, given that they are almost identical constructs. However, they are never included in the same equation together.

As can be seen from panel A of Table 6.2, lagged values of *OCI* and *HEDGE* are significantly and positively correlated with abnormal earnings. As expected, *PENADJ* is significantly, and negatively, correlated with abnormal earnings. This helps condition expectations for the ability of *OCI* and at least some of its components to forecast future abnormal earnings. Panel B shows that lagged values of aggregate OCI_{1530} and all three of its components are significantly and negatively correlated with current OCI_{1530} . This conforms to the expectation that *OCI* items tend to display negative persistence, i.e. they tend to reverse over time. Lagged *PENADJ* is not significantly associated with either OCI_{130} or OCI_{1530} . Interestingly, lagged abnormal earnings are significantly positively correlated with *OCI*.

Panel C shows that except for *HEDGE*, aggregate OCI_{1530} and its components are significantly correlated with stock price. However, *PENADJ* and abnormal earnings (*AbnEarn*) are significantly negatively correlated with stock price. While the negative correlation for *PENADJ* can be explained by the market's expectation of higher pension costs in the future, the negative correlation for abnormal earnings is puzzling. Panel D indicates that aggregate OCI_{1530} and all of its components are also significantly correlated with stock returns, while *PENADJ* is not. These correlations help condition expectations of value relevance of *OCI* and its components.

As panel E indicates, while aggregate OCI_{1530} is not significantly correlated with mean (or median) analysts' earnings forecasts. Among its individual components, only *SEC* is found to be negatively significantly correlated with analysts' earnings forecasts. Finally, as can be seen in Panel F, accruals and aggregate OCI_{1530} are significantly negatively correlated with analysts' earnings forecast errors. Among its components, only *HEDGE* is found to be negatively significantly correlated with analysts' earnings forecast errors. *PENADJ* is also significantly, though positively, correlated with analysts' earnings forecast errors.

Table 6-2: Correlation matrices and Pearson coefficients

Panel A: Variables used in regressions testing the Forecasting Ability of OCI and components

Correlations ^a		<i>AbnEarn/S_{it}</i>	<i>AbnEarn/S_{it-1}</i>	<i>OCI₁₃₀/S_{it-1}</i>	<i>OCI₁₅₃₀/S_{it-1}</i>	<i>HEDGE/S_{it-1}</i>	<i>SEC/S_{it-1}</i>	<i>FOREX/S_{it-1}</i>	<i>PENADJ/S_{it-1}</i>
<i>AbnEarn_{it}</i>	Pearson Correlation	1.000							
	Sig. (1-tailed)								
<i>AbnEarn/S_{it-1}</i>	Pearson Correlation	.251**	1.000						
	Sig. (1-tailed)	.000							
<i>OCI₁₃₀/S_{it-1}</i>	Pearson Correlation	.133**	-.342**	1.000					
	Sig. (1-tailed)	.000	.000						
<i>OCI₁₅₃₀/S_{it-1}</i>	Pearson Correlation	.140**	-.341**	.998**	1.000				
	Sig. (1-tailed)	.000	.000	.000					
<i>HEDGE/S_{it-1}</i>	Pearson Correlation	.277**	-.018	.537**	.538**	1.000			
	Sig. (1-tailed)	.000	.283	.000	.000				
<i>SEC/S_{it-1}</i>	Pearson Correlation	-.010	-.440**	.607**	.609**	.010	1.000		
	Sig. (1-tailed)	.376	.000	.000	.000	.376			
<i>FOREX/S_{it-1}</i>	Pearson Correlation	-.012	-.193**	.676**	.677**	-.028	.189**	1.000	
	Sig. (1-tailed)	.347	.000	.000	.000	.184	.000		
<i>PENADJ/S_{it-1}</i>	Pearson Correlation	-.115**	-.033	.064*	.002	.003	-.002	.002	1.000
	Sig. (1-tailed)	.000	.142	.018	.474	.462	.476	.472	

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

a. Listwise N=1074

Panel B: Variables used in regressions testing the Predictability of OCI and components

Correlations^a		OCI/S_{1530it}	OCI/S_{130it}	AbnEarn/S_{it-1}	OCI₁₅₃₀/S_{it-1}	OCI₁₃₀/S_{it-1}	HEDGE/S_{it-1}	SEC/S_{it-1}	FOREX/S_{it-1}	PENADJ/S_{it-1}
OCI/S_{1530it}	Pearson Correlation	1.000								
	Sig. (1-tailed)									
OCI/S_{130it}	Pearson Correlation	.997**	1.000							
	Sig. (1-tailed)	.000								
AbnEarn/S_{it-1}	Pearson Correlation	.372**	.370**	1.000						
	Sig. (1-tailed)	.000	.000							
OCI₁₅₃₀/S_{it-1}	Pearson Correlation	-.713**	-.710**	-.342**	1.000					
	Sig. (1-tailed)	.000	.000	.000						
OCI₁₃₀/S_{it-1}	Pearson Correlation	-.715**	-.713**	-.341**	.998**	1.000				
	Sig. (1-tailed)	.000	.000	.000	.000					
HEDGE/S_{it-1}	Pearson Correlation	-.180**	-.181**	-.018	.537**	.538**	1.000			
	Sig. (1-tailed)	.000	.000	.283	.000	.000				
SEC/S_{it-1}	Pearson Correlation	-.705**	-.703**	-.440**	.607**	.609**	.010	1.000		
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.376			
FOREX/S_{it-1}	Pearson Correlation	-.451**	-.450**	-.193**	.676**	.677**	-.028	.189**	1.000	
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.184	.000		
PENADJ/S_{it-1}	Pearson Correlation	.004	.022	-.033	.064*	.002	.003	-.002	.002	1.000
	Sig. (1-tailed)	.454	.239	.142	.018	.474	.462	.476	.472	

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

a. Listwise N=1074

Panel C: Variables used in Valuation regressions testing the Value Relevance of OCI and components

Correlations ^a		P/S_{it}	BVE/S_{it}	NI/S_{it}	OCI/S_{1530it}	OCI/S_{130it}	$HEDGE/S_{it}$	SEC/S_{it}	$FOREX/S_{it}$	$PENADJ/S_{it}$	$AbnEarn_{it}$
P/S_{it}	Pearson Correlation	1.000									
	Sig. (1-tailed)										
BVE/S_{it}	Pearson Correlation	.895**	1.000								
	Sig. (1-tailed)	.000									
NI/S_{it}	Pearson Correlation	.504**	.383**	1.000							
	Sig. (1-tailed)	.000	.000								
OCI/S_{1530it}	Pearson Correlation	.373**	.465**	-.211**	1.000						
	Sig. (1-tailed)	.000	.000	.000							
OCI/S_{130it}	Pearson Correlation	.375**	.466**	-.211**	.999**	1.000					
	Sig. (1-tailed)	.000	.000	.000	.000						
$HEDGE/S_{it}$	Pearson Correlation	.002	-.013	-.033	.160**	.161**	1.000				
	Sig. (1-tailed)	.475	.316	.105	.000	.000					
SEC/S_{it}	Pearson Correlation	.364**	.458**	-.269**	.958**	.958**	-.018	1.000			
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.250				
$FOREX/S_{it}$	Pearson Correlation	.154**	.179**	.201**	.335**	.334**	-.064**	.129**	1.000		
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.007	.000			
$PENADJ/S_{it}$	Pearson Correlation	-.055*	-.012	-.008	.037	.004	-.009	.001	.020	1.000	
	Sig. (1-tailed)	.017	.330	.380	.078	.437	.365	.479	.218		
$AbnEarn_{it}$	Pearson Correlation	-.179**	-.325**	.475**	-.421**	-.421**	-.004	-.462**	.044*	.008	1.000
	Sig. (1-tailed)	.000	.000	.000	.000	.000	.443	.000	.046	.383	

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

a. Listwise N=1464

Panel D: Variables used in Returns regressions testing the Value Relevance of OCI and components

Correlations^a		<i>Ret_{it}</i>	<i>NI_{it}</i>	<i>OCI_{1530it}</i>	<i>OCI_{130it}</i>	<i>HEDGE_{it}</i>	<i>SEC_{it}</i>	<i>FOREX_{it}</i>	<i>PENADJ_{it}</i>
<i>Ret_{it}</i>	Pearson Correlation	1.000							
	Sig. (1-tailed)								
<i>NI_{it}</i>	Pearson Correlation	.158**	1.000						
	Sig. (1-tailed)	.000							
<i>OCI_{1530it}</i>	Pearson Correlation	.163**	-.038	1.000					
	Sig. (1-tailed)	.000	.101						
<i>OCI_{130it}</i>	Pearson Correlation	.163**	-.053*	.999**	1.000				
	Sig. (1-tailed)	.000	.040	.000					
<i>HEDGE_{it}</i>	Pearson Correlation	.100**	-.181**	.688**	.686**	1.000			
	Sig. (1-tailed)	.000	.000	.000	.000				
<i>SEC_{it}</i>	Pearson Correlation	.207**	.031	.209**	.209**	-.003	1.000		
	Sig. (1-tailed)	.000	.154	.000	.000	.458			
<i>FOREX_{it}</i>	Pearson Correlation	.070**	.116**	.686**	.686**	-.008	-.013	1.000	
	Sig. (1-tailed)	.010	.000	.000	.000	.391	.337		
<i>PENADJ_{it}</i>	Pearson Correlation	.001	-.262**	-.019	.036	-.037	.002	.010	1.000
	Sig. (1-tailed)	.486	.000	.269	.116	.108	.469	.372	

** . Correlation is significant at the 0.01 level (1-tailed).

* . Correlation is significant at the 0.05 level (1-tailed).

a. Listwise N=1097

Panel E: Variables used in regressions testing the association between OCI and components and Analysts' Earnings Forecasts

Correlations ^a		<i>IBESMean_{it}</i>	<i>IBESMed_{it}</i>	<i>EPS_{it}</i>	<i>LnMVE_{it-1}</i>	<i>LnTV_{it}</i>	<i>LnFol_{it}</i>	<i>OCI/S_{1530it}</i>	<i>HEDGE/S_{it}</i>	<i>SEC/S_{it}</i>	<i>FOREX/S_{it}</i>	<i>PENADJ/S_{it}</i>
<i>IBESMean_{it}</i>	Pearson Correlation	1.000										
	Sig. (1-tailed)											
<i>IBESMed_{it}</i>	Pearson Correlation	.999**	1.000									
	Sig. (1-tailed)	.000										
<i>EPS_{it}</i>	Pearson Correlation	.777**	.770**	1.000								
	Sig. (1-tailed)	.000	.000									
<i>LnMVE_{it-1}</i>	Pearson Correlation	.545**	.540**	.433**	1.000							
	Sig. (1-tailed)	.000	.000	.000								
<i>LnTV_{it}</i>	Pearson Correlation	.112**	.111**	.052	.445**	1.000						
	Sig. (1-tailed)	.002	.002	.090	.000							
<i>LnFol_{it}</i>	Pearson Correlation	.259**	.258**	.208**	.422**	.343**	1.000					
	Sig. (1-tailed)	.000	.000	.000	.000	.000						
<i>OCI/S_{1530it}</i>	Pearson Correlation	.019	.016	-.081*	-.068*	.063*	.037	1.000				
	Sig. (1-tailed)	.308	.340	.018	.038	.050	.171					
<i>HEDGE/S_{it}</i>	Pearson Correlation	.052	.051	-.083*	-.039	.113**	.026	.680**	1.000			
	Sig. (1-tailed)	.088	.092	.016	.157	.002	.252	.000				
<i>SEC/S_{it}</i>	Pearson Correlation	-.149**	-.155**	-.066*	-.123**	.012	.021	.240**	-.016	1.000		
	Sig. (1-tailed)	.000	.000	.043	.001	.378	.292	.000	.341			
<i>FOREX/S_{it}</i>	Pearson Correlation	.045	.044	.000	.000	-.029	.017	.632**	-.035	-.113**	1.000	
	Sig. (1-tailed)	.119	.125	.492	.495	.224	.334	.000	.185	.002		
<i>PENADJ/S_{it}</i>	Pearson Correlation	-.013	-.014	.080*	.000	-.007	-.003	.012	.069*	-.002	-.053	1.000
	Sig. (1-tailed)	.367	.362	.019	.496	.428	.471	.380	.036	.477	.085	

**, Correlation is significant at the 0.01 level (1-tailed). *, Correlation is significant at the 0.05 level (1-tailed). a. Listwise N=675

Panel F: Variables used in regressions testing the association between OCI and components and Analysts' Earnings Forecast Errors

Correlations ^a		<i>FERR_{it}</i>	<i>MNMD_{it}</i>	<i>Accruals/S_{it}</i>	<i>LnMVE_{it}</i>	<i>LnTV_{it}</i>	<i>LnFol_{it}</i>	<i>OCI/S_{1530it}</i>	<i>HEDGE/S_{it}</i>	<i>SEC/S_{it}</i>	<i>FOREX/S_{it}</i>	<i>PENADJ/S_{it}</i>
<i>FERR_{it}</i>	Pearson Correlation	1.000										
	Sig. (1-tailed)											
<i>MNMD_{it}</i>	Pearson Correlation	.207**	1.000									
	Sig. (1-tailed)	.000										
<i>Accruals/S_{it}</i>	Pearson Correlation	-.239**	.001	1.000								
	Sig. (1-tailed)	.000	.493									
<i>LnMVE_{it-1}</i>	Pearson Correlation	.061	.035	.135**	1.000							
	Sig. (1-tailed)	.056	.185	.000								
<i>LnTV_{it}</i>	Pearson Correlation	-.049	-.029	-.021	.445**	1.000						
	Sig. (1-tailed)	.102	.228	.296	.000							
<i>LnFol_{it}</i>	Pearson Correlation	.051	-.038	-.005	.422**	.343**	1.000					
	Sig. (1-tailed)	.093	.161	.451	.000	.000						
<i>OCI/S_{1530it}</i>	Pearson Correlation	-.162**	.009	.118**	-.068*	.063*	.037	1.000				
	Sig. (1-tailed)	.000	.410	.001	.038	.050	.171					
<i>HEDGE/S_{it}</i>	Pearson Correlation	-.228**	.000	.055	-.039	.113**	.026	.680**	1.000			
	Sig. (1-tailed)	.000	.499	.078	.157	.002	.252	.000				
<i>SEC/S_{it}</i>	Pearson Correlation	-.005	.013	-.101**	-.123**	.012	.021	.240**	-.016	1.000		
	Sig. (1-tailed)	.448	.373	.004	.001	.378	.292	.000	.341			
<i>FOREX/S_{it}</i>	Pearson Correlation	.001	.007	.162**	.000	-.029	.017	.632**	-.035	-.113**	1.000	
	Sig. (1-tailed)	.485	.430	.000	.495	.224	.334	.000	.185	.002		
<i>PENADJ/S_{it}</i>	Pearson Correlation	.152**	.008	-.062	.000	-.007	-.003	.012	.069*	-.002	-.053	1.000
	Sig. (1-tailed)											

Sig. (1-tailed)	.000	.419	.054	.496	.428	.471	.380	.036	.477	.085
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**, Correlation is significant at the 0.01 level (1-tailed). *, Correlation is significant at the 0.05 level (1-tailed). a. Listwise N=675

The results of the various regression models described in chapter 5 are reported in section 6.2. Results of additional regressions to test the sensitivity of the results are then reported in section 6.3.

6.2 Results of regression analyses

The following subsections report the results of regressions testing (6.2.1) the ability of OCI and its components to forecast future abnormal earnings, (6.2.2) the predictability of OCI and its components, (6.2.3) the value relevance of OCI and its components, as indicated by their association with stock prices, (6.2.4) the value relevance of OCI and its components, as indicated by their association with stock returns, (6.2.5) the association of OCI and its components with analysts' earnings forecasts, and (6.2.6) the association of OCI and its components with analysts' earnings forecast errors.

6.2.1 Regressions to test the ability of OCI and its components to forecast future abnormal earnings

Following Ohlson (1999), I test the ability of OCI and its components to forecast future abnormal returns using the following models:

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 OCI/S_{1530\ it-1} + \varepsilon_{it} \quad [1a]$$

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 OCI/S_{130\ it-1} + \varepsilon_{it} \quad [1b]$$

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 HEDGE/S_{it-1} + \alpha_3 SEC/S_{it-1} + \alpha_4 FOREX/S_{it-1} + \varepsilon_{it} \quad [1c]$$

$$AbnEarn/S_{it} = \alpha_0 + \alpha_1 AbnEarn/S_{it-1} + \alpha_2 HEDGE/S_{it-1} + \alpha_3 SEC/S_{it-1} + \alpha_4 FOREX/S_{it-1} + \alpha_5 PENADJ/S_{it-1} + \varepsilon_{it} \quad [1d]$$

Where variables are as defined earlier.

Ohlson's (1999) prediction is that transitory earnings should not have any ability to forecast future abnormal earnings. Table 6.3 reports the results for the four regression models. The adjusted r-squareds for models 2a through 2d range between 11.6 per cent and 16.3 per cent, indicating that the model fit is modest at best.

Table 6-3: Regressions to test the ability of OCI and its components to forecast future abnormal earnings

<i>Dependent Variable</i>	<i>AbnEarn_{it}</i>				
<i>Independent Variables</i>	Model 1a	Model 1b	Model 1c	Model 1d	Model 1e
<i>Intercept</i>	-.378 [t= -6.367 p= .000]	-.379 [t= -6.360 p= .000]	-.390 [t= -6.674 p= .000]	-.398 [t= -6.854 p= .000]	-.504 [t= -8.100 p= .000]
<i>AbnEarn/S_{it-1}</i>	.261 [t = 11.094 p= .000]	.259 [t = 10.990 p= .000]	.243 [t = 9.994 p= .000]	.240 [t = 9.908 p= .000]	
<i>AEDiffOCI_{it-1}</i>					-.011 [t = -2.069 p= .039]
<i>OCI₁₅₃₀/S_{it-1}</i>	.385 [t = 8.386 p= .000]				
<i>OCI₁₃₀/S_{it-1}</i>		.372 [t = 8.110 p= .000]			
<i>HEDGE/S_{it-1}</i>			.775 [t = 10.048 p= .000]	.775 [t = 10.119 p= .000]	
<i>SEC/S_{it-1}</i>			.368 [t = 3.801 p= .001]	.362 [t = 3.757 p= .000]	
<i>FOREX/S_{it-1}</i>			.085 [t = 1.173 p= .241]	.084 [t = 1.172 p= .420]	
<i>PENADJ/S_{it-1}</i>				-2.557 [t = -3.783 p= .000]	
<i>No. of observations</i>	1074	1074	1074	1074	1074
<i>F-Value</i>	73.543	71.113	49.356	42.838	4.281
<i>Adjusted R²</i>	.119	.116	.153	.163	.004

Consistent with Ohlson (1999), the coefficient on lagged abnormal returns is positive and significant at the $p < 0.01$ level, suggesting that prior abnormal returns are an indicator of abnormal returns in the future. However, contrary to Ohlson's (1999) prediction that OCI is transitory earnings, the coefficient on both OCI_{1530} and on OCI_{130} is positive, and significant at a $P < .01$ level. As for individual components of OCI_{1530} , HEDGE and SEC are positively and significantly associated with future abnormal earnings, whereas FOREX is not. PENADJ is negatively and significantly associated with future earnings. These results make sense conceptually. An unrealized gain (loss) related to a cash flow hedge or on an available for sale

security would increase future earnings when it is realized (assuming recycling of OCI through net income is permitted). On the other hand, a higher pension adjustment amount would represent potentially higher pension expense in the future, thereby causing earnings to decline.

To test whether the coefficients on abnormal earnings and OCI₁₅₃₀ are statistically equal to zero, I carry out an incremental F-test, using model 1a as the unconstrained model, and model 1e as the constrained model. The incremental F-statistic is calculated as

$$F_{J,N-K-1} = \frac{(R_U^2 - R_C^2) * (N - K - J)}{(1 - R_U^2) * J}, \text{ where the number of constraints, } J=1, N=1074, K=2, R_U^2 =$$

.119 and $R_C^2 = .004$. Accordingly, the F-statistic equals 139.80²⁸, implying a t-statistic of 11.823, and is significant at a $p < .01$ level. Thus, we reject the hypothesis that the coefficients on abnormal earnings and OCI₁₅₃₀ are equal to zero, implying that contrary to Ohlson' (1999) prediction, OCI does possess forecasting relevance.

6.2.2 Regressions to test predictability of OCI

Following Ohlson (1999), I estimate the following regressions to test predictability of OCI. Ohlson suggested that transitory earnings items are unpredictable. If OCI is indeed transitory, we would expect to find that the regression coefficients would be insignificant.

$$OCI_{1530}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 OCI_{1530}/S_{it-1} + \varepsilon_{it} \quad [2a]$$

$$OCI_{1530}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 HEDGE/S_{it-1} + \beta_3 SEC/S_{it-1} + \beta_4 FOREX/S_{it-1} + \varepsilon_{it} \quad [2b]$$

$$OCI_{130}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 OCI_{130}/S_{it-1} + \varepsilon_{it} \quad [2c]$$

$$OCI_{130}/S_{it} = \beta_0 + \beta_1 AbnEarn/S_{it-1} + \beta_2 HEDGE/S_{it-1} + \beta_3 SEC/S_{it-1} + \beta_4 FOREX/S_{it-1} + \beta_5 PENADJ/S_{it-1} + \varepsilon_{it} \quad [2d]$$

where subscripts i and t denote the firm i and year t respectively, and the variables are as defined earlier.

²⁸ $F_{J,N-K-1} = \frac{(R_U^2 - R_C^2) * (N - K - J)}{(1 - R_U^2) * J} = \frac{(.119 - .004) * (1074 - 2 - 1)}{(1 - .119) * 1} = 139.80$

t-statistic = $\sqrt{139.80} = 11.823$

The results of the tests are reported in Table 6.4. The adjusted r-squareds for models 2a through 2d range between 52.2 per cent and 63.5 per cent, indicating a fairly good model fit.

Table 6-4: Regressions to test predictability of OCI

<i>Dependent Variable</i>	<i>OCI_{1530it}</i>		<i>OCI_{130it}</i>	
<i>Independent Variables</i>	Model 2a	Model 2b	Model 2c	Model 2d
<i>Intercept</i>	.018 [t=.466 p=.641]	-.024 [t= -.718 p=.473]	.009 [t=.238 p=.812]	-.029 [t= -.861 p=.389]
<i>AbnEarn_{it-1}</i>	.099 [t=6.521 p= .000]	.020 [t=1.395 p=.163]	.098 [t=6.396 p= .000]	.019 [t=1.362 p= .174]
<i>OCI_{1530it-1}</i>	-.885 [t=-29.881 p= .000]			
<i>OCI_{130it-1}</i>			-.880 [t=-29.438 p= .000]	
<i>HEDGE_{it-1}</i>		-.443 [t=-9.908 p= .000]		-.445 [t=-9.872 p= .000]
<i>SEC_{it-1}</i>		-1.703 [t=-30.331 p= .000]		-1.704 [t=-30.093 p= .000]
<i>FOREX_{it-1}</i>		-.736 [t= -17.517 p= .000]		-.735 [t= -17.356 p= .000]
<i>PENADJ_{it-1}</i>				.486 [t= 1.222 p= .222]
<i>No. of observations</i>	1074	1074	1074	1074
<i>F-Value</i>	604.171	466.963	586.716	367.820
<i>Adjusted R²</i>	.529	.635	.522	.631

Models 2a and 2c regress OCI_{1530} and OCI_{130} on lagged abnormal earnings and lagged OCI_{1530} and OCI_{130} respectively. In both cases, the predictor variables turn out to be significant at a $p < .01$ level. The coefficient on OCI_{1530} and OCI_{130} is negative, and close to minus-1. This is consistent with Ohlson's (1999) description of OCI being transitory, in the sense that aggregate OCI values appear to reverse in the following year. The coefficient on lagged abnormal earnings is positive, and although it is statistically significant, it is closer to zero than to one. This is qualitatively consistent with Ohlson's (1999) prediction.

Models 2b and 2d regress OCI_{1530} and OCI_{130} respectively on their lagged components, as well as lagged abnormal earnings. In this case, the coefficient on lagged abnormal earnings is insignificant, confirming Ohlson's (1999) prediction that the coefficient would be statistically equal to zero. Similarly, the coefficients on HEDGE and FOREX, while statistically significant, have absolute values less than one, implying low persistence. Smith and Jones (2011) also report negative persistence for OCI items.

However, contrary to Ohlson's (1999) prediction, the coefficient on SEC has an absolute value greater than one. This result is puzzling, but resonates with Chambers et al's (2007) equally puzzling finding of the coefficient on the same variable (called MKTADJ by the authors) in a valuation regression being greater than even that on net income. Perhaps, there is at least one component of OCI, namely unrealized gains and losses on available for sale securities, SEC, which is (negatively) persistent.

6.2.3 Valuation (Level) Regressions to test value-relevance of OCI and components

The results reported in the preceding two sections suggest that aggregate OCI as well as some of its components are both predictable and relevant for forecasting future abnormal earnings. Following Ohlson (1999), these results imply value relevance. To confirm these expectations, I test for value relevance of OCI and its components by running two sets of regressions: valuation (price-level) regressions and returns (price-change) regressions. In this section, I report the results for the following valuation regressions:

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 OCI_{1530}/S_{it} + \varepsilon_{it} \quad [3a]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 OCI_{130}/S_{it} + \varepsilon_{it} \quad [3b]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 HEDGE/S_{it} + \gamma_4 SEC/S_{it} + \gamma_5 FOREX/S_{it} + \varepsilon_{it} \quad [3c]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 NI/S_{it} + \gamma_3 HEDGE/S_{it} + \gamma_4 SEC/S_{it} + \gamma_5 FOREX/S_{it} + \gamma_6 PENADJ/S_{it} + \varepsilon_{it} \quad [3d]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 AbnEarn_{it} + \gamma_3 OCI_{1530}/S_{it} + \varepsilon_{it} \quad [3e]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 AEDiffOCI_{it} + \varepsilon_{it} \quad [3f]$$

$$P/S_{it} = \gamma_0 + \gamma_1 BVE/S_{it} + \gamma_2 AbnEarn_{it} + \gamma_3 HEDGE/S_{it} + \gamma_4 SEC/S_{it} + \gamma_5 FOREX/S_{it} + \gamma_6 PENADJ/S_{it} + \varepsilon_{it} \quad [3g]$$

where subscripts i and t denote the firm i and year t respectively, and the variables are as defined earlier.

As reported in Table 6.5, based on the results of the valuation regressions, other comprehensive income is significantly associated with stock price. The t-statistic for OCI₁₅₃₀ as well as for OCI₁₃₀ is considerably smaller than for book value per share and net income. However, the coefficients for book value, net income and OCI are all positive and significant at a $P < .01$ level. The sign of the coefficient on the change in fair value of available for sale investments (SEC/S) is positive and significant at the $P < .01$ level. This result is consistent with the findings of Kanagaretnam et al. However, contrary to Kanagaretnam et al (2009), I find the sign of the coefficient on the change in cash flow hedges ($HEDGE/S$) to be positive, and only marginally significant at the $p < .1$ level. Kanagaretnam et al had found the coefficient to be negative and non-significant, prompting the authors to test the interaction effect of losing versus winning hedge positions. Kanagaretnam et al used an indicator variable GAIN for winning hedge positions, and an interaction variable HEDGE_GAIN in an expanded model. They found the coefficient on the change in cash flow hedges to be significant, albeit still negative in sign. The coefficient on the interaction variable was positive, but only marginally significant. The authors concluded that “losing hedged positions can also be viewed as a positive signal by the market since it indicates that the firm actively manages its risk” (page 359). My finding of a positive, though marginally significant, coefficient on changes in the cash flow hedges could be interpreted to mean that the market does distinguish effective risk management from ineffective efforts, and prices them accordingly.

Table 6-5: Valuation (Level) Regressions to test value-relevance of OCI and components

<i>Dependent Variable</i>	<i>P/S_{it}</i>						
<i>Independent Variables</i>	Model 3a	Model 3b	Model 3c	Model 3d	Model 3e	Model 3f	Model 3g
<i>Intercept</i>	8.941 [t=28.411; p=.000]	8.934 [t=28.369; p=.000]	8.874 [t=28.393; p=.000]	8.823 [t=28.366; p=.000]	9.056 [t=27.303; p=.000]	8.866 [t=26.935; p=.000]	8.976 [t=27.174; p=.000]
<i>BVE/S_{it}</i>	.680 [t=54.259; p=.000]	.682 [t=54.384; p=.000]	.669 [t=52.453; p=.000]	.669 [t=52.697; p=.000]	.810 [t=72.942; p=.000]	.819 [t=75.189; p=.000]	.812 [t=73.097; p=.000]
<i>NI/S_{it}</i>	1.618 [t=16.157; p=.000]	1.610 [t=16.065; p=.000]	1.797 [t=16.902; p=.000]	1.794 [t=16.975; p=.000]			
<i>AbnEarn_{it}</i>					.626 [t=9.598; p=.000]		.642 [t=9.622; p=.000]
<i>AEDiffOCI_{it}</i>						.456 [t=9.761; p=.000]	
<i>OCI/S_{1530it}</i>	.417 [t=3.802; p=.000]				-.096 [t=-.899; p=.369]		
<i>OCI/S_{130it}</i>		.397 [t=3.619; p=.000]					
<i>HEDGE/S_{it}</i>			.741 [t=1.675; p=.094]	.727 [t=1.652; p=.099]			.509 [t=1.090; p=.276]
<i>SEC/S_{it}</i>			.661 [t=5.368; p=.000]	.662 [t=5.408; p=.000]			-.067 [t=-.575; p=.566]
<i>FOREX/S_{it}</i>			-1.463 [t= -3.756; p=.000]	-1.427 [t= -3.683; p=.000]			-.613 [t=-1.508; p=.132]
<i>PENADJ/S_{it}</i>				-10.615 [t= -4.150; p=.000]			-10.941 [t= -4.030; p=.000]
<i>No. Of Obs.</i>	1464	1464	1464	1464	1464	1464	1464
<i>F-Value</i>	2430.698	2428.017	1487.275	1256.053	2144.377	3181.720	1088.080
<i>Adjusted R²</i>	.833	.833	.836	.837	.815	.813	.817

The signs on the coefficients on the cumulative foreign currency translations (*FOREX/S* in models 3c and 3d), as well as that on the pension adjustment (*PENADJ/S* in model 3d) turn out to be negative, and significant at $p < .01$ level. The former result is consistent with Louis (2003), who argues that foreign currency translation adjustments are negatively associated with firm valuation. The latter result appears qualitatively consistent with the findings of Barth, Beaver and

Landsman (1992). A higher pension adjustment in the current period indicates a higher pension expense in future periods, which would result in a decrease in future earnings. This fact is priced by the market.

Ohlson (1999) models stock price as a function of book value, abnormal earnings and transitory earnings (OCI). He predicts that OCI would not be value relevant, and that the coefficient on OCI should be statistically insignificant. Further, Ohlson (1999) predicts that the sum of the coefficients on abnormal earnings and OCI would be statistically equal to zero. This is because abnormal earnings and transitory earnings (OCI) are expected to have zero means (page 148). These predictions are tested as models 3e and 3f.

As reported in table 6.5, the coefficients on book value and abnormal earnings are positive and significant at a $p < .01$ level. The coefficient on OCI_{1530} is negative and insignificant. This result is very different from the result of model 3a, under which the coefficient on OCI_{1530} was found to be positive and significant at a $p < .01$ level. The outcome under model 3e is as Ohlson (1999) predicts in terms of significance. The negative sign indicates that aggregate OCI is value-reducing. To explore this result further, I replace OCI_{1530} with its individual components, namely, HEDGE, SEC and FOREX, and include the additional component under OCI_{130} (PENADJ) and re-run model 3e as model 3g. None of the individual components of OCI_{1530} turns up as significant. However, PENADJ (which is an additional component of OCI under SFAS 130) proves to be significantly, though negatively, associated with stock price, suggesting that when firms do report information on it, the markets price it in.

The findings for models 3e through 3g do not appear to support value relevance. In fact, they support Ohlson's (1999) prediction that OCI is value irrelevant beyond what is explained by abnormal earnings. To test whether the sum of the coefficients on abnormal earnings and OCI_{1530} statistically equals zero, I compute an incremental F-statistic as

$$F_{J, N-K-1} = \frac{(R_U^2 - R_C^2) * (N - K - J)}{(1 - R_U^2) * J}, \text{ where the number of constraints, } J=1, N=1464, K=3, R_U^2 =$$

.815 and $R_C^2=.813$. Accordingly, the F-statistic equals 15.783²⁹, implying a t-statistic of 3.97, which is significant at a $p < .01$ level. Thus, we reject the hypothesis that the sum of coefficients on abnormal earnings and OCI₁₅₃₀ is equal to zero. However, this result is moot since I did not find any significance for either aggregate OCI₁₅₃₀ or its components.

6.2.4 Returns (Change) Regressions to test value-relevance of OCI and components

The valuation (level) regressions described in the previous section reported significant association between OCI and components with share price. In this section, I report the results for the following returns (change) regressions:

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 OCI_{1530it} + \varepsilon_{it} \quad [4a]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 OCI_{130it} + \varepsilon_{it} \quad [4b]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 HEDGE_{it} + \phi_3 SEC_{it} + \phi_4 FOREX_{it} + \varepsilon_{it} \quad [4c]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 HEDGE_{it} + \phi_3 SEC_{it} + \phi_4 FOREX_{it} + \phi_5 PENADJ_t + \varepsilon_{it} \quad [4d]$$

$$RET_{it} = \phi_0 + \phi_1 NI_{it} + \phi_2 HEDGE_{it} + \phi_3 SEC_{it} + \phi_4 FOREX_{it} + \phi_5 PENADJ_t + \phi_6 D_1 * NI_{it} + \phi_7 D_2 * NI_{it} + \varepsilon_{it} \quad [4e]$$

where all variables other than RET are scaled by the market value of common equity at the beginning of the fiscal year

As reported in Table 6.6, the coefficients on net income and OCI – both aggregate as well as components – are all significant at conventional levels. All coefficients are positive. The results indicate that net income, aggregate OCI, $HEDGE$ and SEC are more strongly associated with stock returns (all at a $p < 0.01$ level) than are $FOREX$ and $PENADJ$ (both at a $p < 0.10$ level). The adjusted r-squared is higher for models 4c and 4d, which include components of OCI than for models 4a and 4b, which include aggregate OCI. Kanagaretnam et al (2009) had found only the coefficients for $HEDGE$ and SEC to be significantly associated with stock returns, whereas I find

$$^{29} F_{J, N-K-1} = \frac{(R_U^2 - R_C^2) * (N - K - J)}{(1 - R_U^2) * J} = \frac{(.815 - .813) * (1464 - 3 - 1)}{(1 - .815) * 1} = 15.783$$

$$t\text{-statistic} = \sqrt{15.783} = 3.972$$

the coefficients for FOREX (models 4c and 4d) and PENADJ (model 4d) to be marginally significantly associated with stock returns at a $p < .1$ level. However, the significance of the association is lost under model 4e, where I include the dummy variables for negative net income (D_1) and post 2006 years (D_2). The significance for HEDGE and SEC is not materially altered. These results indicate that stock returns were significantly different for loss making firms ($p < .1$) as predicted by Hayn (1995), as well as for the post 2006 period ($p < .05$). I discuss the significance of the study period later in the concluding chapter.

My results differ from those of Kanagaretnam et al (2009) in two major respects. First, the sign on the coefficient for HEDGE is positive, whereas Kanagaretnam et al report the coefficient to be negative. Theoretically, a positive coefficient is more plausible, as it would suggest that a gaining position for a cash flow hedge would indicate better performance and thus be associated with higher stock returns. In fact, when Kanagaretnam et al parse their data on HEDGE into winning and losing positions, they do find the coefficient for winning hedge positions to be positive.

Table 6-6: Returns (Change) Regressions to test value-relevance of OCI and components

<i>Dependent Variable</i>	<i>Ret_{it}</i>				
<i>Independent Variables</i>	Model 4a	Model 4b	Model 4c	Model 4d	Model 4e
<i>Intercept</i>	.080 [t= 5.140 p= .000]	.080 [t= 5.148 p= .000]	.074 [t= 4.815 p= .000]	.075 [t= 4.861 p= .000]	.053 [t= 2.895 p= .004]
<i>NI_{it}</i>	.248 [t= 5.578 p= .000]	.252 [t= 5.664 p= .000]	.255 [t= 5.697 p= .000]	.278 [t= 5.971 p= .000]	1.599 [t= 3.194 p= .001]
<i>OCI_{1530it}</i>	.550 [t= 5.769 p= .000]				
<i>OCI_{130it}</i>		.557 [t= 5.851 p= .000]			
<i>HEDGE_{it}</i>			.612 [t= 4.460 p= .000]	.634 [t= 4.607 p= .000]	.598 [t= 4.327 p= .000]
<i>SEC_{it}</i>			2.986 [t= 7.009 p= .000]	2.977 [t= 6.995 p= .000]	2.893 [t= 6.778 p= .000]
<i>FOREX_{it}</i>			.253 [t= 1.864 p= .063]	.243 [t= 1.787 p= .074]	.163 [t= 1.153 p= .249]
<i>PENADJ_{it}</i>				3.162 [t= 1.776 p= .076]	2.605 [t= 1.453 p= .146]
<i>D₁*NI_{it}</i>					-.283 [t= -1.963 p= .050]
<i>D₂*NI_{it}</i>					-1.097 [t= -2.215 p= .027]
<i>No. of observations</i>	1097	1097	1097	1097	1097
<i>F-Value</i>	31.002	31.494	25.532	21.097	16.498
<i>Adjusted R²</i>	.052	.053	.082	.088	.090

6.2.5

6.2.6 Regressions to test association of OCI and components with analyst forecasts

To test the association of OCI and components with analyst forecasts of earnings per share, I estimate the following equations:

$$IBESMean_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 OCI_{1530it-1} + \varphi_6 OCI_{1530it} + \varepsilon_{it} \quad [5a]$$

$$IBESMean_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 HEDGE/S_{it} + \varphi_6 SEC/S_{it} + \varphi_7 FOREX/S_{it} + \varphi_8 PENADJ/S_{it} + \varphi_9 HEDGE/S_{it-1} + \varphi_{10} SEC/S_{it-1} + \varphi_{11} FOREX/S_{it-1} + \varphi_{12} PENADJ/S_{it-1} + \varepsilon_{it} \quad [5b]$$

$$IBESMed_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 OCI_{1530it-1} + \varphi_6 OCI_{1530it} + \varepsilon_{it} \quad [6a]$$

$$IBESMed_{it} = \varphi_0 + \varphi_1 EPS_{it-1} + \varphi_2 LnMVE_{it-1} + \varphi_3 LnTV_{it} + \varphi_4 LnFol_{it} + \varphi_5 HEDGE/S_{it} + \varphi_6 SEC/S_{it} + \varphi_7 FOREX/S_{it} + \varphi_8 PENADJ/S_{it} + \varphi_9 HEDGE/S_{it-1} + \varphi_{10} SEC/S_{it-1} + \varphi_{11} FOREX/S_{it-1} + \varphi_{12} PENADJ/S_{it-1} + \varepsilon_{it} \quad [6b]$$

where the variables are as defined in earlier sections

The results of the association tests are reported in Table 6.7. The results are qualitatively similar for both models. The adjusted r-squareds are between 42 per cent and 46 per cent. Lagged EPS and OCI per share, as well as current year's OCI per share are positively associated with analysts' mean (model 5a) and median (model 6a) earnings per share forecasts at the $p < .01$ level.

In the expanded models (models 5b and 6b) where I replace aggregate OCI_{1530} with its components, I find that except for the current year available for sale securities (SEC), each of the other components, as well as the lagged values, is positively associated with analysts' earnings forecasts at better than a $p < .05$ level. The additional component under OCI_{130} , the minimum pension adjustment (PENADJ), is also significantly, but negatively, associated with analysts' earnings forecasts.

Among the control variables, market capitalization (natural logarithm of beginning Market Value of Equity) is positively associated with analysts' earnings forecasts, confirming the findings of Gu and Wu (2003). As well, trading volume is significantly negatively associated with analysts' forecasts. This could be interpreted to mean that analysts' earnings forecasts tend to be optimistic (conservative) for thinly (heavily) traded stocks. The number of analysts following a stock, another variable reported in the literature to be significantly associated with analysts' earnings forecasts, proved to be insignificant.

A possible concern for these models testing the association of OCI and components with analysts' forecasts could be that it might suffer from multicollinearity. Multicollinearity arises when a substantial portion of the variance in a variable is explained by other independent variables. It is identified by measuring the tolerance for the selected independent variable. The tolerance value should be high to indicate low multicollinearity. It is common practice to convert the tolerance metric into a variance inflation factor (VIF) value, which is equal to the inverse of the tolerance. A common cut-off threshold for multicollinearity is a VIF value of 10, corresponding to a tolerance of 0.10 (Hair et al. 2010). However, this is not a problem for the model, as none of the variables in the model has variance inflation factor (VIF) values of greater than 2.5. That is, the tolerance for none of the variables is less than 0.40. The only variables with a VIF value greater than 2 were FOREX and its lagged value.

Table 6-7 Regressions to test association of OCI and components with analysts' forecasts

<i>Dependent Variable</i>	<i>IBESMean_{it}</i>		<i>IBESMed_{it}</i>	
<i>Independent Variables</i>	Model 5a	Model 5b	Model 6a	Model 6b
<i>Intercept</i>	-1.013 [t= -2.191 p=.029]	-.786 [t= -1.725 p=.085]	-1.013 [t= -2.151 p= .032]	-.767 [t= -1.657 p=.098]
<i>EPS_{it-1}</i>	.226 [t= 9.620 p= .000]	.221 [t= 9.616 p= .000]	.227 [t= 9.482 p= .000]	.222 [t= 9.496 p= .000]
<i>OCI/S_{1530it-1}</i>	.432 [t= 6.206 p= .000]		.434 [t= 6.119 p= .000]	
<i>OCI/S_{1530it}</i>	.370 [t= 6.924 p= .000]		.366 [t= 6.731 p= .000]	
<i>LnMVE_{it-1}</i>	.609 [t= 13.333 p= .000]	.593 [t= 13.153 p= .000]	.609 [t= 13.101 p= .000]	.592 [t= 12.932 p= .000]
<i>LnTV_{it}</i>	-.172 [t= -5.237 p=.000]	-.181 [t= -5.603 p=.000]	-.173 [t= -5.158 p=.000]	-.182 [t= -5.556 p=.000]
<i>LnFol_{it}</i>	.082 [t= 1.214 p=.225]	.088 [t= 1.343 p=.180]	.086 [t= 1.252 p= .211]	.093 [t= 1.397 p=.163]
<i>HEDGE/S_{it}</i>		.471 [t= 6.702 p= .000]		.470 [t= 6.588 p= .000]
<i>SEC/S_{it}</i>		.068 [t= .469 p=.639]		.052 [t= .352 p=.725]
<i>FOREX/S_{it}</i>		.320 [t= 3.662 p=.000]		.315 [t= 3.547 p=.000]
<i>PENADJ/S_{it}</i>		-1.149 [t= -1.763 p=.078]		-1.158 [t= -1.750 p=.081]
<i>HEDGE/S_{it-1}</i>		.422 [t= 5.235 p=.000]		.421 [t= 5.151 p=.000]
<i>SEC/S_{it-1}</i>		1.566 [t= 5.899 p= .000]		1.653 [t= 6.135 p= .000]
<i>FOREX/S_{it-1}</i>		.307 [t= 2.112 p= .035]		.299 [t= 2.025 p= .043]
<i>PENADJ/S_{it-1}</i>		-1.718 [t= -1.854 p=.064]		-1.706 [t= -1.813 p=.070]
<i>No. of observations</i>	675	675	675	675
<i>F-Value</i>	84.926	49.052	82.341	48.277
<i>Adjusted R²</i>	.428	.461	.420	.457

How should I interpret the above results? From a purely accounting point of view, it may be argued that since the earnings-per-share calculation does not include OCI, there should be no reason to expect any association between analysts' EPS forecasts and OCI. The counter-argument could be that by the time the firms announce their earnings, some of the unrealized earnings items previously included in OCI could have been realized, and thus, included in their forecasts by the analysts. For example, unrealized gains and losses on available for sale securities reported in OCI in the previous year, may have been realized in the current year. This would explain my finding of a significant association between lagged available for sale securities (SEC/S_{it-1}) and analysts' earnings forecasts. Furthermore, as analysts also have access to sources of information other than accounting data, they might anticipate (if not know) the status of firms' cash flow hedges, and thus include this information in their earnings forecast calculations.

6.2.7 Regressions to test association of OCI and components with analyst forecast error

To test for the potential association of OCI and its components with analyst forecast error, I test the following regressions. Following the literature, I control for several variables, including the dispersion between the mean and median consensus forecasts, accruals, firm size, trading volume, analyst following and for loss making firms.

$$FERR_{it} = \lambda_0 + \lambda_1 MNMD_{it} + \lambda_2 OCI_{1530it} + \lambda_3 Accruals/S_{it} + \lambda_4 LnMVE_{it-1} + \lambda_5 LnTV_{it} + \lambda_6 LnFol_{it} + \lambda_7 NegNI + \varepsilon_{it} \quad [7a]$$

$$FERR_{it} = \lambda_0 + \lambda_1 MNMD_{it} + \lambda_2 Accruals + \lambda_3 HEDGE/S_{it} + \lambda_4 SEC/S_{it} + \lambda_5 FOREX/S_{it} + \lambda_6 LnMVE_{it-1} + \lambda_7 LnTV_{it} + \lambda_8 LnFol_{it} + \lambda_9 NegNI + \varepsilon_{it} \quad [7b]$$

where,

$FERR_{it}$ is the forecast error in mean consensus analysts' earnings forecast, calculated as (Actual EPS – IBESMean)/Price_{it-1}

$MNMD_{it}$ is the difference between the mean and median consensus analyst earnings forecasts, calculated as (IBESMean – IBESMed)/ Price_{it-1}

$Accruals/S_{it}$ is the per share amount of accruals, calculated as the difference between Operating Cash Flow per share and Net Income per share.

Other variables are as defined in earlier sections

The results of the association tests are reported in Table 6.8. Aggregate OCI is negatively associated with analyst forecast error at a $p < .05$ level. This suggests that the availability of information of other comprehensive income could be helpful to analysts in making more accurate earnings forecasts. However, individual components of OCI do not appear to be as strongly associated with analysts' forecast errors. Only unrealized gains and losses on cash flow hedges ($HEDGE/S_{it}$) was found to be negatively and significantly ($p < .01$) associated with analysts' forecast errors. Interestingly, the additional component under OCI_{130} , namely the minimum pension adjustment ($PENADJ/S_{it}$) is positively and significantly ($p < .01$) associated with analysts' forecast errors. This implies that including information contained in $PENADJ$ could actually increase the magnitude of analysts' forecast errors.

Among the control variables, the difference between the mean and median forecasts ($MNMD$) proved to be the largest contributor to forecast errors, with a positive association at the $p < .01$ level. Interestingly, accruals are negatively associated with forecast error ($p < .01$), suggesting that analysts are able to correctly control for the effect of accruals in their earnings forecasts. This result appears to be puzzling initially, since it goes against the well-known accruals anomaly cited by Sloan (1996). A possible explanation could be that over the years, analysts might have begun paying closer attention to the information conveyed by accruals, and have become better able to use such information in improving their earnings forecast accuracy.

Trading volume ($LnTV$), market capitalization ($LnMVE$) and the number of analysts following a stock ($LnFol$) did not prove to be significantly associated with analysts' forecast errors. However, the incidence of losses ($NegNI$) does appear to contribute to greater forecast accuracy, as it is negatively and significantly associated ($p < .01$) with analysts forecast error.

Table 6-8 Regressions to test association of OCI and components with analyst forecast error

<i>Dependent Variable</i>	<i>FERR_{it}</i>	
	Model 7a	Model 7b
<i>Intercept</i>	.095 [t= 1.588 p=.113]	.066 [t= 1.142 p=.254]
<i>MNMD_{it}</i>	4.064 [t= 5.186 p= .000]	4.006 [t= 5.288 p= .000]
<i>Accruals/S_{it}</i>	-.012 [t= -5.955 p= .000]	-.012 [t= -6.035 p= .000]
<i>LnMVE_{it}</i>	-.005 [t= -.813 p=.416]	-.008 [t= -1.294 p=.196]
<i>LnTV_{it}</i>	-.002 [t= -.525 p=.600]	.001 [t= .238 p=.812]
<i>LnFol_{it}</i>	.003 [t= .352 p=.725]	.002 [t= .239 p=.812]
<i>NegNI</i>	-.125 [t= -7.397 p= .000]	-.132 [t= -8.056 p= .000]
<i>OCI/S_{1530it}</i>	-.023 [t= -4.046 p= .000]	
<i>HEDGE/S_{it}</i>		-.054 [t= -7.010 p=.000]
<i>SEC/S_{it}</i>		-.011 [t= -.632 p=.528]
<i>FOREX/S_{it}</i>		.007 [t= .915 p=.360]
<i>PENADJ/S_{it}</i>		.318 [t= 4.650 p=.000]
<i>No. of observations</i>	675	675
<i>F-Value</i>	23.723	22.788
<i>Adjusted R²</i>	.191	.244

6.3 Robustness tests

To ensure the robustness of my analyses, I conducted additional tests which are described in the following sub-sections. I first control for potential effects of size, leverage and industry-specific factors. Next, to test whether my use of an expected rate of 12 per cent in estimating abnormal earnings produced robust results, I use alternative specifications of expected return on assets and re-run the regressions testing forecasting ability and predictability of OCI and components. Finally, to test for alternative indicators of decision usefulness, I test for the ability of OCI to predict future net income and operating cash flows.

6.3.1 *Controlling for size, leverage and industry*

It is possible that much of the variation in dependent variables that my regression models seek to capture could be explained by firm size, leverage or industry-specific factors. The justification for including these control variables was discussed in To ensure the robustness of my results to potential, I re-ran the regressions including control variables for size (natural logarithm of total assets per share, $LnTA/S$), leverage (Debt-Equity ratio) and industry (dummy variables for Mining, Manufacturing and Financial, at the 2-digit SIC code level). The following sections report the results of these tests.

6.3.1.1 Regressions testing the ability of OCI and its components to forecast future abnormal earnings

As reported in table 6.9 below, except for size, none of the control variables are significant, while the original results (reported in table 6.3) remain materially unaltered. Aggregate OCI₁₅₃₀ is significantly positively associated with future abnormal earnings, as are HEDGE and SEC at a $p < .01$ level. FOREX is not significantly associated with future abnormal earnings. Size, proxied by the natural logarithm of total assets per share, is negatively associated with future abnormal earnings at a $p < .05$ level. This indicates that larger firms experience less abnormal earnings, that is, their earnings tend to be more stable. The additional component under OCI₁₃₀, PENADJ, is negatively associated with future abnormal earnings at a $p < .01$ level, indicating that the incidence of a pension adjustment is able to forecast lower abnormal earnings in the future. This could possibly be because of greater pension expense recognition in the following year.

Table 6-9: Regression to test the ability of OCI and its components to forecast future abnormal earnings

Dependent Variable	<i>AbnEarn_{it}</i>					
	Aggregate OCI ₁₅₃₀			OCI ₁₅₃₀ components		
	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
<i>Intercept</i>	-.064	-.370	.711	-.039	-.234	.815
<i>AbnEarn_{it-1}</i>	.261	11.108	.000	.239	9.877	.000
<i>OCI_{1530it-1}</i>	.379	8.234	.000			
<i>HEDGE_{it-1}</i>				.779	10.183	.000
<i>SEC_{it-1}</i>				.345	3.565	.000
<i>FOREX_{it-1}</i>				.074	1.029	.304
<i>PENADJ_{it-1}</i>				-2.598	-3.846	.000
<i>LnTA/S_{it}</i>	-.091	-2.119	.034	-.106	-2.538	.011
<i>Debt_Equity</i>	.002	.533	.594	.002	.529	.597
<i>Mining</i>	-.086	-.540	.589	-.090	-.578	.564
<i>Manufacturing</i>	-.145	-.857	.392	-.090	-.893	.372
<i>Financial</i>	-.085	-.445	.656	-.108	-.576	.564
<i>No. of observations</i>	1074			1074		
<i>F-Value</i>	21.846			22.321		
<i>Adjusted R²</i>	.120			.166		

6.3.1.2 Regression to test predictability of OCI

As reported in table 6.10 below, none of the control variables are significant, while the original results (reported in table 6.4) remain materially unaltered, except for a slight diminution in significance for lagged abnormal earnings and HEDGE. Aggregate lagged OCI₁₅₃₀ is significantly associated with current OCI₁₅₃₀ at a p<.01 level, as are lagged HEDGE, SEC and FOREX. PENADJ is not found to be able to predict future OCI₁₅₃₀. This makes sense, since the PENADJ is not a component of OCI₁₅₃₀. These results are robust to differences in size, leverage or industry differences.

Table 6-10: Regressions to test predictability of OCI and components

<i>Dependent Variable</i>	<i>OCI_{1530it}</i>					
	Aggregate OCI ₁₅₃₀			OCI ₁₅₃₀ components		
	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
<i>Intercept</i>	-.102	-.914	.361	-.102	-1.037	.300
<i>AbnEarn_{it-1}</i>	.099	6.479	.000	.019	1.331	.183
<i>OCI_{1530it-1}</i>	-.882	-29.645	.000			
<i>HEDGE_{it-1}</i>				-.443	-9.898	.000
<i>SEC_{it-1}</i>				-1.705	-30.128	.000
<i>FOREX_{it-1}</i>				-.735	-17.434	.000
<i>PENADJ_{it-1}</i>				.104	.262	.793
<i>LnTA/S_{it}</i>	.030	1.086	.278	.023	.931	.352
<i>Debt_Equity</i>	-.001	-.351	.725	.000	-.202	.840
<i>Mining</i>	.057	.553	.580	.060	.655	.513
<i>Manufacturing</i>	.036	.331	.740	.023	.243	.808
<i>Financial</i>	.086	.697	.486	-.044	-.398	.690
<i>No. of observations</i>	1074			1074		
<i>F-Value</i>	172.485			186.102		
<i>Adjusted R²</i>	.528			.633		

6.3.1.3 Valuation (Level) Regressions to test value-relevance of OCI and components

The results of the basic valuation regressions to test value relevance of OCI and its components were reported in Table 6.5. Both aggregate OCI and its components were found to be associated with stock price at conventional levels of statistical significance. In addition to controls for size, debt-equity and industry, I included additional controls to test whether (i) the timing of adoption of HB1530 caused significance variation in the amounts of OCI reported, (ii) macroeconomic factors such as the exchange rate, the rate of gross domestic product (GDP) and interest rates had any significant influence on the results. The results of these additional tests are reported in table 6.11.

The addition of control variables does not have a material impact on the results. Aggregate OCI₁₅₃₀ (the result is similar for OCI₁₃₀) is still positively associated with stock price at a p<.01 level. As for the individual components of OCI₁₅₃₀, except for HEDGE (which was found to be only marginally associated with stock price in the original regressions), they are all still significantly associated with stock price at a p<.05 or better level.

Table 6-11: Valuation regression to test value relevance of OCI and components

<i>Dependent Variable</i>	<i>P/S_{it}</i>			<i>P/S_{it}</i>		
	Coefficient	t-statistic	p-value	Coefficient	t-statistic	p-value
<i>Intercept</i>	-10.677	-.986	.324	-11.734	-1.092	.275
<i>BVE/S_{it}</i>	.633	52.984	.000	.627	51.911	.000
<i>NI/S_{it}</i>	1.430	15.815	.000	1.549	16.137	.000
<i>OCI/S_{1530it}</i>	.496	5.036	.000			
<i>HEDGE/S_{it}</i>				.585	1.479	.139
<i>SEC/S_{it}</i>				.661	5.995	.000
<i>FOREX/S_{it}</i>				-.704	-2.008	.045
<i>PENADJ/S_{it}</i>				-10.001	-4.330	.000
<i>LnTA/S_{it}</i>	2.288	11.111	.000	2.224	10.888	.000
<i>Debt_Equity</i>	.020	.896	.370	.020	.893	.372
<i>Mining</i>	-.159	-.224	.823	-.010	-.015	.988
<i>Manufacturing</i>	-3.158	-4.209	.000	-3.030	-4.077	.000
<i>Financial</i>	-2.303	-2.731	.006	-2.135	-2.554	.011
<i>Adoption</i>	-12.930	-8.795	.000	-12.900	-8.821	.000
<i>ExchRate_t</i>	15.538	1.344	.179	16.425	1.432	.152
<i>GDP_t</i>	17.705	.789	.430	14.740	.662	.508
<i>IntRate_t</i>	295.927	6.143	.000	303.854	6.343	.000
<i>No. of observations</i>	1,464			1,464		
<i>F-Value</i>	791.524			648.085		
<i>Adjusted R²</i>	.866			.869		

Among the control variables, size is found to be highly significantly associated with stock price, whereas leverage (debt-equity) seems to have no association with stock price at all. The results also point to significant industry level differences with significantly negative association found for the manufacturing and the financial sectors ($p < .05$). Further, the timing of adoption of HB1530 also appears to have had a significant bias on the results, with the dummy variable proving to be significantly negatively associated with stock price ($p < .01$). As for macroeconomic variables, neither exchange rates nor the rate of GDP appear to have much effect on the results. However, interest rates are significantly positively associated ($p < .01$) with stock price. This is to be expected, since interest rates are used as an input for determining the discount rate used for bond valuation purposes. When interest rates increase, bond yields should follow, causing bond prices to fall. This could have the effect of a shift of invested funds from the bond markets to equity markets. The reverse should happen when interest rates fall, as did happen with central banks lowering interest rates to help revive recession hit economies in the follow-up to the Great Recession.

6.3.1.4 Returns (Change) Regressions to test value-relevance of OCI and components

Table 6.6 reported the results of the returns (change) regressions testing value-relevance of OCI and components. The coefficients on net income and OCI – both aggregate as well as components – were all found to be positively significant at conventional levels. Table 6.12 reports the results of running the same tests with additional control variables for size, debt-equity and industry dummies. For returns regressions, my variables are scaled by beginning of the period market value of equity. As such, using a per share amount could be problematic. To avoid econometric problems, I use the natural logarithm of total assets instead of total assets per share as a control for size.

The results of the basic regressions are found to be robust. OCI_{1530} (and OCI_{130} , not reported) is found to be positively associated with total returns at a $p < .01$ level. The components of OCI_{1530} are also found to be significantly associated with returns at a $p < .05$ or better level. Similar to the valuation regressions, size was found to be significantly associated ($p < .01$) with returns. Leverage (debt-equity) turned out to be not significantly associated with returns. Of the

industry dummy variables, only mining turned out to be significantly associated with stock returns at a $p < .01$ level.

Table 6-12: Returns (Change) Regressions to test value-relevance of OCI and components

Dependent Variable	Panel A			Panel B			Panel C		
	Ret_{it}			Ret_{it}			Ret_{it}		
	Coeff.	t-stat	p-val	Coeff.	t-stat	p-val	Coeff.	t-stat	p-val
<i>Intercept</i>	-.357	-.799	.424	-.285	.641	.521	1.048	3.718	.000
NI_{it}	.215	6.243	.000	.241	6.596	.000	.212	6.131	.000
OCI_{1530it}	.338	4.555	.000						
$HEDGE_{it}$				.366	3.373	.001	.325	3.169	.000
SEC_{it}				1.307	3.865	.000	1.119	3.499	.000
$FOREX_{it}$				.239	2.256	.024	.295	2.940	.003
$PENADJ_{it}$				3.410	2.446	.015	2.970	2.254	.024
$LnAssets$	.059	4.081	.000	.056	3.875	.000	.051	3.816	.000
$Debt_Equity$	-.001	-1.275	.202	-.001	-1.291	.197	-.000	-.846	.398
<i>Mining</i>	.130	3.944	.000	.125	3.814	.000	.116	3.745	.000
<i>Manufacturing</i>	-.036	-1.113	.266	-.035	-1.068	.286	-.033	-1.083	.279
<i>Financial</i>	-.008	-.209	.835	-.011	-.279	.781	-.011	-.305	.760
<i>Adoption</i>	-.773	-12.419	.000	-.754	-12.134	.000	.108	1.665	.096
$ExchRate_t$	.681	1.422	.155	.601	1.261	.208	-1.082	-3.580	.000
GDP_t	-5.481	-5.617	.000	-5.306	-5.457	.000			
GDP_{t+1}							12.653	12.774	.000
$IntRate_t$	7.722	3.815	.000	7.384	3.663	.000	-7.112	-5.285	.000
<i>No. of observations</i>	1,097			1,097			1,097		
<i>F-Value</i>	79.106			63.939			80.884		
<i>Adjusted R²</i>	.439			.446			.505		

That the timing of adoption of HB1530 caused significant bias was yet again supported by a significantly negative association ($p < .01$) for the adoption dummy. Among the controls for macroeconomic variables, interest rates (the rate of GDP) was found to be significantly positively (negatively) associated with stock returns at a $p < .01$ level. While the positive significance for interest rates is understandable, given their direct relationship to stock prices, the negative significance for the rate of GDP is puzzling. Assuming semi-strong market efficiency,

and the fact that macroeconomic data are generally published frequently enough for markets to be able to predict the following year's GDP rate, it may be argued that market participants revise their discount rates in anticipation of future economic activity. Therefore, it is possible that the correct control for GDP should be the expected GDP rate, rather than the current year's rate. To test for this, I replaced the GDP control with the following year's GDP rate.

The results, reported in Panel C of table 6.12, stay consistent for the components of OCI, size and industry. However, the sign for adoption changes from negative to positive, and its significance level diminishes to a $p < .1$ level. Exchange rate, which had not been found significant earlier, is found to be negatively significant at $p < .01$ level. The sign for interest rate changed from positive to negative ($p < .01$), and that for GDP from negative to positive ($p < .01$). Among the industry controls, only the mining sector was found to be significantly positively associated with stock returns.

I interpret these results in the following manner. The Canadian economy is primarily a resource driven economy, with Oil and Gas being a major economic sector. As table 6.13 shows, the time period under study witnessed a marked increase in crude oil prices, which could explain the positive significance for mining stocks. The Canadian dollar, being sensitive to the price of crude, also gained over the US Dollar. As a result it weakened the export competitiveness of other industries (note the negative association, although insignificant, for manufacturing and financial sectors). This explains the finding of negative significance for exchange rates. Also included in the study period is the time of the great recession followed by the financial crisis of 2007-2008, which led to a sharp decline in stock prices. Most central banks responded to the crisis by cutting interest rates to promote economic activity. The pullback in stock markets witnessed in 2009 could well have been initiated by the availability of cheap credit, thus explaining the negative association found between interest rates and stock returns.

Table 6-13 Summary of key macroeconomic data

Year	Exchange Rate CAD:USD	GDP Rate	Bank of Canada Interest Rate (Average)	Crude Oil Prices (USD per barrel)
2001	0.6458	1.80%	4.31%	24.87
2002	0.6368	2.90%	2.71%	24.97
2003	0.7135	1.90%	3.19%	29.53
2004	0.7683	3.10%	2.50%	38.13
2005	0.8253	3.00%	2.92%	52.37
2006	0.8818	2.80%	4.31%	64.33
2007	0.9304	2.20%	4.60%	70.04
2008	0.9381	0.70%	3.21%	101.41
2009	0.8757	-2.80%	0.65%	60.29
2010	0.9709	3.20%	0.85%	79.14

Sources:

Exchange Rates: <http://www.bankofcanada.ca/rates/exchange/exchange-rates-in-pdf/>

GDP Data: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/countries?display=default>

BoC Interest rates: <http://www.bankofcanada.ca/rates/interest-rates/selected-historical-interest-rates/>

Crude Oil prices: <http://www.oecd-ilibrary.org/sites/factbook-2011-en/06/02/03/index.html>

In conclusion, even after controlling for size, industry and certain key macroeconomic factors, the significant association observed between stock returns and aggregate OCI₁₅₃₀ as well as its components appears to support their value relevance.

6.3.2 Alternative specification of normal earnings

It will be recalled that I had used a 12 per cent rate of return to compute normal earnings, which I used to estimate abnormal earnings. A concern might be expressed that using an arbitrary rate of return produces potentially unreliable results. To test whether this is indeed the case, I use two alternative proxies for required rate of return: (i) the return on the average S&P/TSX portfolio for the calendar year, and (ii) the average return calculated at the industry level. To calculate the latter metric, I first grouped the firms from a 2-digit SIC level into Mining, Manufacturing, Financial and Others. Then, I calculated the average return for each year within each group. The industry average returns should be viewed with caution, since they are

not weighted for firm size (market capitalization, trading volume, etc). Table 6.14 presents the returns for the years 2001 through 2010.

Table 6-14: Annual Returns on the S&P/TSX Index Portfolio and average industry level returns for 2001-2010

	TSX³⁰	Mining	Manufacturing	Financial	Other
2001	(0.1260)	0.8320	0.1568	0.0870	(0.2366)
2002	(0.1240)	0.3223	(0.3423)	(0.1342)	(0.3189)
2003	0.2670	1.6939	0.0599	0.4035	0.8270
2004	0.1450	0.8260	(0.1485)	0.1843	0.2548
2005	0.2410	1.8820	(0.2118)	0.3438	0.0612
2006	0.1730	0.5901	(0.0131)	0.0697	0.1957
2007	0.0980	0.0651	(0.6094)	(0.1187)	0.0677
2008	(0.3300)	(0.4248)	(0.7921)	(0.3685)	(0.3765)
2009	0.3510	1.1993	1.7166	0.5292	0.2124
2010	0.1760	0.3662	1.0329	0.0382	0.1549

Source: Self calculated, except for TSX return data

During the ten year period, the broader S&P/TSX index delivered negative returns during three years. In contrast, the mining sector experienced negative returns only once, that too during the financial crisis in 2008. The manufacturing sector delivered negative returns in five out of the ten years, indicating industry level difficulties. The financial sector reported negative returns in 2002, and then in 2007 and 2008. The latter two years is reflective of the difficult times the financial sector experienced during the financial crisis. The other industries broadly followed the S&P/TSX sector.

A third specification for normal (or expected) earnings could be the previous year's earnings. This approach was used in early capital markets research, including the seminal work of Ball and Brown (1968).

³⁰ I obtained the data on the S&P/TSX portfolio returns from <http://www.ndir.com/cgi-bin/PeriodicTableofAnnualReturns.cgi>

Table 6.15 reports the Pearson correlation coefficients for the three measures of abnormal earnings. *AbnEarn* is the measure I used for my earlier tests of forecasting relevance and predictability, calculated as the difference between actual earnings per share and expected earnings (beginning book value per share multiplied by 12 per cent). *AETSX* is the first alternative measure, calculated as the difference between actual earnings per share and expected earnings (beginning book value per share multiplied by the average S&P/TSX return for the calendar year). *AEInd* is the second alternative measure, calculated as the difference between actual earnings per share and expected earnings (beginning book value per share multiplied by the average Industry return for the calendar year). *AENI* is the third alternative measure, which is equal to the difference between current net income per share and the lagged net income per share. As table 6.15 shows all of the alternative measures of abnormal earnings are significantly correlated with each other.

Table 6-15: Correlation matrix and Pearson Coefficients for various estimates of abnormal earnings

Correlations ^a		AbnEarn	AETSX	AEInd	AENI
AbnEarn	Pearson Correlation	1.000	.321**	.228**	.502**
	Sig. (1-tailed)		.000	.000	.000
AETSX	Pearson Correlation	.321**	1.000	.873**	.315**
	Sig. (1-tailed)	.000		.000	.000
AEInd	Pearson Correlation	.228**	.873**	1.000	.235**
	Sig. (1-tailed)	.000	.000		.000
AENI	Pearson Correlation	.502**	.315**	.235**	1.000
	Sig. (1-tailed)	.000	.000	.000	

**. Correlation is significant at the 0.01 level (1-tailed).

a. Listwise N=1074

6.3.2.1 Regressions testing the ability of OCI and its components to forecast future abnormal earnings

To test for the ability of OCI or its components to forecast these alternative measures of abnormal earnings, I run the following variants of model 1. The results are summarized in table 6.16. I decided to include lagged PENADJ as a precaution against possible omitted variables problem.

$$AETSX_{it} = \alpha_0 + \alpha_1 AETSX_{it-1} + \alpha_2 OCI_{1530\ it-1} + \varepsilon_{it} \quad [1f]$$

$$AETSX_{it} = \alpha_0 + \alpha_1 AETSX_{it-1} + \alpha_2 HEDGE_{it-1} + \alpha_3 SEC_{it-1} + \alpha_4 FOREX_{it-1} + \alpha_5 PENADJ_{it-1} + \varepsilon_{it} [1g]$$

$$AEInd_{it} = \alpha_0 + \alpha_1 AEInd_{it-1} + \alpha_2 OCI_{1530\ it-1} + \varepsilon_{it} \quad [1h]$$

$$AEInd_{it} = \alpha_0 + \alpha_1 AbnInd_{it-1} + \alpha_2 HEDGE_{it-1} + \alpha_3 SEC_{it-1} + \alpha_4 FOREX_{it-1} + \alpha_5 PENADJ_{it-1} + \varepsilon_{it} [1i]$$

$$AENI_{it} = \alpha_0 + \alpha_1 AENI_{it-1} + \alpha_2 OCI_{1530\ it-1} + \varepsilon_{it} \quad [1j]$$

$$AENI_{it} = \alpha_0 + \alpha_1 AENI_{it-1} + \alpha_2 HEDGE_{it-1} + \alpha_3 SEC_{it-1} + \alpha_4 FOREX_{it-1} + \alpha_5 PENADJ_{it-1} + \varepsilon_{it} [1k]$$

Where

$AETSX_{it}$ the difference between the actual earnings per share and the expected earnings, specified as beginning book value per share multiplied by the average S&P/TSX portfolio return for the calendar year.

$AEInd_{it}$ the difference between the actual earnings per share and the expected earnings, specified as beginning book value per share multiplied by the average industry return for the calendar year.

$AENI_{it}$ the difference between the actual earnings per share and the expected earnings, specified as previous year's earnings per share.

$HEDGE_{it-1}$ the change in the fair value of cash flow hedges under Canadian the fiscal year t-1;

SEC_{it-1} the change in the fair value of available-for-sale investments under Canadian GAAP for the fiscal year t-1; and

$FOREX_{it-1}$ change in cumulative foreign currency translation adjustment under Canadian GAAP for the fiscal year t-1.

$PENADJ_{it-1}$ the per share change in additional minimum pension liability in excess of unrecognized prior service costs under SFAS 130 for the fiscal year t-1

$OCI_{1530,it-1}$ the sum of $HEDGE_{it-1}$ (fair value changes in cash flow hedges), SEC_{it-1} (fair value changes in available for sale investments) and $FOREX_{it-1}$ (changes in cumulative foreign currency translation adjustment) following Canadian GAAP.

Table 6-16: Regression to test the ability of OCI and its components to forecast future abnormal earnings

<i>Dependent Variable</i>	<i>AETSX_{it}</i>		<i>AEInd_{it}</i>		<i>AENI_{it}</i>	
<i>Independent Variables</i>	Model 1f	Model 1g	Model 1h	Model 1i	Model 1i	Model 1j
<i>Intercept</i>	.012 [t=.084 p=.933]	.000 [t=.002 p=.999]	-1.520 [t= -5.422 p=.000]	-1.441 [t= -5.296 p=.000]	-.147 [t= -2.247 p=.025]	-.153 [t= -2.381 p=.017]
<i>AETSX_{it-1}</i>	-.353 [t= -15.979 p=.000]	-.298 [t= -10.894 p=.000]				
<i>AEInd_{it-1}</i>			-.273 [t= -9.513 p=.000]	-.154 [t= -4.939 p=.000]		
<i>AENI_{it-1}</i>			-.273 [t= -9.513 p=.000]	-.154 [t= -4.939 p=.000]	-.467 [t= -18.606 p=.000]	-.466 [t= -18.482 p=.000]
<i>OCI_{1530it-1}</i>	.212 [t= 1.708 p=.088]		1.278 [t= 5.557 p=.000]		.821 [t= 17.030 p=.000]	
<i>HEDGE_{it-1}</i>		.667 [t= 3.414 p=.001]		.600 [t= 1.629 p=.104]		1.077 [t= 12.502 p=.000]
<i>SEC_{it-1}</i>		1.119 [t= 3.815 p=.000]		5.146 [t= 10.082 p=.000]		1.134 [t= 11.361 p=.000]
<i>FOREX_{it-1}</i>		-.461 [t= -2.554 p=.011]		-.038 [t= -.111 p=.911]		.405 [t= 5.064 p=.000]
<i>PENADJ_{it-1}</i>		.724 [t=.424 p=.672]		2.698 [t=.840 p=.401]		-1.868 [t= 2.472 p=.014]
<i>No. of observations</i>	1074	1074	1074	1074	1074	1074
<i>F-Value</i>	191.191	83.478	104.200	58.726	343.504	152.897
<i>Adjusted R²</i>	.262	.278	.161	.216	.390	.414

As reported in table 6.16, using AETSX, AEInd and AENI as alternative measures of abnormal earnings yield considerably higher adjusted r-squareds (16.1 per cent to 41.4 per cent) than for AbnEarn (11.5 per cent to 15.5 per cent). The results for the alternative measures are broadly comparable with those for AbnEarn.

When AETSX is used as a proxy for abnormal earnings (models 1f and 1g), the results remain qualitatively similar to those reported for AbnEarn (table 6.3). Lagged aggregate OCI (model 1f), and HEDGE and SEC (model 1g) are significantly positively associated with

AETSX. However, the sign of the coefficient on lagged AETSX is negative ($p < .01$), most likely due to the fact that the abnormal earnings are conditional on S&P/TSX returns, which were negative during 2008 in the midst of the financial crisis. Another difference is that although lagged OCI₁₅₃₀ remains significant, its significance drops to a $p < .1$ level. Further, lagged FOREX is found to be negatively significantly associated with AETSX at a $p < .05$ level.

Lagged PENADJ did not turn out to be a significant predictor of either AETSX or AEInd. Lagged aggregate OCI₁₅₃₀ is found to be significantly positively associated with AEInd (models 1h) at a $p < .01$ level. Lagged AEInd is significantly, but negatively, associated with AEInd at a $p < .01$ level (models 1h and 1i). However, among the components of OCI₁₅₃₀, only lagged SEC proves significantly positively associated with AEInd.

In contrast, when AENI is used as a measure for abnormal earnings, lagged values of OCI₁₅₃₀ and all of its components are found to be significantly positively associated with it at a $p < .01$ level. Lagged AENI is also found to be significantly ($p < .01$), but negatively, associated with AENI. Further, PENADJ, which was not found to be associated with either AETSX or AEInd, turns out to be significantly negatively associated with AENI at a $p < .05$ level.

In conclusion, the ability of OCI₁₅₃₀, and some of its components, to forecast future abnormal earnings is robust to multiple alternative specifications of abnormal earnings.

6.3.2.2 Regressions to test predictability of OCI

The preceding results suggest that the finding of forecasting relevance for OCI is not driven by my measure of abnormal earnings. However, as an additional precaution, I also test for predictability of OCI and its components using the alternative measures of abnormal earnings by running the following variants of model 2. The results are presented in table 6.16 which follows.

$$OCI_{1530it} = \beta_0 + \beta_1 AETSX_{it-1} + \beta_2 OCI_{1530\ it-1} + \varepsilon_{it} \quad [2e]$$

$$OCI_{1530it} = \beta_0 + \beta_1 AETSX_{it-1} + \beta_2 HEDGE_{it-1} + \beta_3 SEC_{it-1} + \beta_4 FOREX_{it-1} + \beta_5 PENADJ_{it-1} + \varepsilon_{it} \quad [2f]$$

$$OCI_{1530it} = \beta_0 + \beta_1 AEInd_{it-1} + \beta_2 OCI_{1530\ it-1} + \varepsilon_{it} \quad [2g]$$

$$OCI_{1530it} = \beta_0 + \beta_1 AEInd_{it-1} + \beta_2 HEDGE_{it-1} + \beta_3 SEC_{it-1} + \beta_4 FOREX_{it-1} + \beta_5 PENADJ_{it-1} + \varepsilon_{it} \quad [2h]$$

$$OCI_{1530it} = \beta_0 + \beta_1 AENI_{it-1} + \beta_2 OCI_{1530it-1} + \varepsilon_{it} \quad [2i]$$

$$OCI_{1530it} = \beta_0 + \beta_1 AENI_{it-1} + \beta_2 HEDGE_{it-1} + \beta_3 SEC_{it-1} + \beta_4 FOREX_{it-1} + \beta_5 PENADJ_{it-1} + \varepsilon_{it} \quad [2j]$$

where subscripts i and t denote the firm i and year t respectively, and the variables are as defined earlier.

As reported in table 6.17, the tests for predictability of OCI_{1530} and its components using alternative measures of abnormal earnings yield results which are qualitatively identical to those reported in table 6.4. The lagged values of the alternative measures of abnormal earnings are positively significantly associated with OCI_{1530} . Lagged values of aggregate OCI_{1530} (models 2e and 2g) and those of its components, HEDGE, SEC, and FOREX (models 2f and 2h), are all significantly negatively associated with OCI_{1530} at a $p < .01$ level. Lagged PENADJ is not found to be significantly associated with OCI_{1530} . These results are consistent with those reported in table 6.4, where AbnEarn was used as the measure for abnormal earnings. These results confirm that my finding of predictability for OCI is not affected by my measure of abnormal earnings.

Table 6-17: Regressions to test predictability of OCI and components

<i>Dependent Variable</i>	<i>OCI_{1530it}</i>		<i>OCI_{1530it}</i>		<i>OCI_{1530it}</i>	
<i>Independent Variables</i>	Model 2e	Model 2f	Model 2g	Model 2h	Model 2i	Model 2j
<i>Intercept</i>	-.048 [t= -1.409 p=.159]	-.045 [t= -1.391 p=.164]	-.008 [t= -.219 p=.827]	-.024 [t= -.738 p=.461]	-.015 [t= -.393 p=.695]	-.037 [t= -1.100 p=.271]
<i>AETSX_{it-1}</i>	.089 [t= 17.119 p=.000]	.054 [t= 8.853 p=.000]				
<i>AEInd_{it-1}</i>			.042 [t= 11.334 p=.000]	.020 [t= 5.164 p=.000]		
<i>AENI_{it-1}</i>					.037 [t= 2.512 p=.012]	-.016 [t= -1.187 p=.235]
<i>OCI_{1530it-1}</i>	-.700 [t= -24.057 p=.000]		-.801 [t= -26.819 p=.000]		-.945 [t= -33.306 p=.000]	
<i>HEDGE_{it-1}</i>		-.391 [t= -8.959 p=.000]		-.409 [t= -9.142 p=.000]		-.438 [t= -9.752 p=.000]
<i>SEC_{it-1}</i>		-1.294 [t= -18.458 p=.000]		-1.551 [t= -25.055 p=.000]		-1.748 [t= -33.567 p=.000]
<i>FOREX_{it-1}</i>		-.729 [t= -18.096 p=.000]		-.735 [t= -17.811 p=.000]		-.743 [t= -17.828 p=.000]
<i>PENADJ_{it-1}</i>		.102 [t=.268 p=.789]		.039 [t=.101 p=.920]		.072 [t= .183 p=.855]
<i>No. of observations</i>	1074	1074	1074	1074	1074	1074
<i>F-Value</i>	860.581	415.160	692.118	386.802	567.107	372.948
<i>Adjusted R²</i>	.616	.659	.563	.643	.513	.634

6.3.3 Testing the ability of OCI and components to predict future net income and operating cash flows

I used value relevance and association with analysts' earnings forecasts as indicators of decision usefulness. However, the concept of decision usefulness can be conceived of in other ways as well. For example, it is common to describe the objective of financial reporting in terms of predicting future cash flows. There is a sizeable literature examining whether current earnings items can predict future cash flows (Orpurt and Zang 2009; Dechow et al. 1998; Kim and Kross 2005; Finger 1994; Barth et al. 2001b; Sloan 1996). Sloan (1996) showed that net income can be decomposed into two components – operating cash flows, and accruals. Operating cash flows are

expected to be more persistent, whereas accruals are transitory, and expected to reverse in future. Furthermore, given that accruals are transitory, they should not be able to predict future cash flows.

Jones and Smith (2011) found that OCI is able to predict future income from continuing operations (i.e. net income minus special, or non-recurring, items) and operating cash flows. Their finding provides additional, albeit indirect, evidence that OCI items are not transitory. To test whether OCI is able to predict future net income and cash flows for my sample, I ran the following regressions. Results are tabulated in table 16.18 which follows.

$$NI/S_{it} = \eta_0 + \eta_1 NI/S_{it-1} + \eta_2 OCI_{1530\ it-1} + \varepsilon_{it} \quad [8a]$$

$$NI/S_{it} = \eta_0 + \eta_1 NI/S_{it-1} + \eta_2 HEDGE_{it-1} + \eta_3 SEC_{it-1} + \eta_4 FOREX_{it-1} + \eta_5 PENADJ_{it-1} + \varepsilon_{it} \quad [8b]$$

$$OCF/S_{it} = \tau_0 + \tau_1 OCF/S_{it-1} + \tau_2 Accruals/S_{it-1} + \tau_3 OCI_{1530\ it-1} + \varepsilon_{it} \quad [9a]$$

$$OCF/S_{it} = \tau_0 + \tau_1 OCF/S_{it-1} + \tau_2 Accruals/S_{it-1} + \tau_3 HEDGE_{it-1} + \tau_4 SEC_{it-1} + \tau_5 FOREX_{it-1} + \tau_6 PENADJ_{it-1} + \varepsilon_{it} \quad [9b]$$

where,

NI/S_{it} net income per share after extraordinary items and discontinued operations for the fiscal year t;

OCF/S_{it} operating cash flow per share for the fiscal year t;

$Accruals/S_{it}$ per share amount of accruals, calculated as the difference between Operating Cash Flow per share and Net Income per share.

Other variables are as defined in earlier sections

As reported in table 6.18, lagged aggregate OCI_{1530} is significantly positively associated with future net income at a $p < .01$ level. Each of its components is also significantly positively associated with future net income at a $p < .01$ level. Lagged $PENADJ$ is also significantly, but negatively, associated with future net income. Lagged net income is also highly significantly, and positively, associated with future net income, indicating a high degree of persistence of net

income. Furthermore, consistent with Sloan (1996), lagged operating cash flows (OCF) are highly significantly associated with future OCF. Consistent with Jones and Smith (2011), I also find lagged aggregate OCI₁₅₃₀ to be incrementally predictive of future OCF. However, amongst its components, only unrealized gains and losses on available for sale securities (SEC) is significantly associated with future OCFs.

Table 6-18: Regressions to test the ability of OCI and components to forecast future net income and operating cash flows

<i>Dependent Variable</i>	<i>Nl/S_{it}</i>		<i>OCF/S_{it}</i>	
<i>Independent Variables</i>	Model 8a	Model 8b	Model 9a	Model 9b
<i>Intercept</i>	.313 [t= 3.617 p= .000]	.245 [t= 2.881 p= .004]	1.071 [t= 12.366 p=.000]	1.011 [t= 10.820 p=.000]
<i>Nl/S_{it-1}</i>	.572 [t= 20.676 p= .000]	.598 [t= 21.676 p= .000]		
<i>OCF/S_{it-1}</i>			.468 [t= 21.178 p=.000]	.489 [t= 20.624 p=.000]
<i>Accruals/S_{it-1}</i>			-.001 [t= -.259 p=.796]	-.001 [t= -.243 p=.808]
<i>OCI_{1530it-1}</i>	.340 [t= 6.987 p= .000]		.307 [t= 7.615 p=.000]	
<i>HEDGE_{it-1}</i>		.872 [t= 8.305 p=.000]		.141 [t= 1.396 p=.163]
<i>SEC_{it-1}</i>		.216 [t= 2.918 p=.004]		.559 [t= 8.356 p=.000]
<i>FOREX_{it-1}</i>		.269 [t= 2.677 p=.008]		-.055 [t= -.569 p=.569]
<i>PENADJ_{it-1}</i>		-2.397 [t= -2.553 p=.011]		-1.223 [t= -1.357 p=.175]
<i>No. of observations</i>	1077	972	1077	972
<i>F-Value</i>	371.265	170.199	151.277	72.903
<i>Adjusted R²</i>	.408	.466	.295	.308

How do we interpret these results? It would appear that its decision usefulness is defined in terms of the ability to predict future net income, aggregate OCI₁₅₃₀ and its components are all

decision useful. In fact, even PENADJ is able to predict future net income. However, if we describe decision usefulness in terms of the ability to predict future operating cash flows, then, although aggregate OCI₁₅₃₀ appears to be able to do so, only one of its components, namely SEC, is able to predict future OCFs. The implication of this latter finding is that not all components of OCI are useful for decision making.

Chapter Seven: Discussion, Limitations and Future Research

7.1 Discussion of the contributions and limitations of this study

Motivated by an absence of consensus in the literature on the value relevance of comprehensive income and its components, as well as the recent availability of actually reported data which helps mitigate potential measurement error, this study is an empirical investigation of the decision usefulness of mandatory comprehensive income reporting in Canada. HB1530 *Comprehensive Income* became effective for firm fiscal years starting October 1, 2006 and later. In its discussion of the basis for conclusions for the new standard, the AcSB did not provide compelling economic justification for the standard. The new standard appeared to have been adopted as an effort to align Canadian accounting with that in the U.S. However, one of the reasons cited for its introduction in Canada was that the proposed standard would “help make certain gains and losses more transparent to financial statement users” (CICA 2005a). This, of course, begged the question whether such disclosure was useful.

In this study I address the above question by using a market returns and valuation model to inquire whether other comprehensive income and its components are significantly associated with market value of equity and with stock returns, after controlling for book value, net income and other factors. I find that aggregate OCI, and some of its components are significantly associated with stock price. Also, aggregate OCI and its components are significantly associated with stock returns, although the significance for FOREX disappears when controls for negative net income (i.e. loss) and post-2006 period are added. My findings are qualitatively similar to those documented by Chambers et al (2007), Kanagaretnam et al (2009) and Jones and Smith (2011). However, through additional robustness tests, I demonstrate that the significant association with stock price that was observed for individual components of OCI vanishes when we control for size. I also show that Dhaliwal et al’s (1999) finding that industry differences matter when considering the usefulness of comprehensive income, still holds for valuation purposes.

7.1.1 Contributions

The primary contribution of this study is in its systematic examination of the value relevance of OCI. Although it has been considered by researchers for a long time to be transitory earnings, I draw upon Ohlson's (1999) propositions about the properties of transitory earnings to demonstrate that OCI has the ability to forecast future abnormal earnings, as well as predictability. For my empirical examination I apply Ohlson's residual income valuation model incorporating transitory earnings. In specifically testing whether OCI matches Ohlson's (1999) characterization of transitory earnings as unpredictable, and valuation- and forecast-irrelevant, this is one of the very few studies that explicitly test the assumptions of Ohlson's theoretical model before applying its residual income specification to value relevance type tests. I tested OCI and its components for forecasting relevance and predictability, two attributes of transitory earnings specified by Ohlson (1999) as vital for an earnings item to be value relevant. I conclude that OCI and two of its components, namely SEC and HEDGE, are able to forecast future abnormal earnings, and are able to predict future OCI. The FOREX variable is not relevant for forecasting abnormal earnings, but is significantly able to predict future OCI. Ohlson (1999) predicted that if an earnings component is persistent, and is able to forecast abnormal earnings, it would also be value relevant. My results support Ohlson's (1999) prediction. However, my results do not concur with Ohlson's characterization of OCI as being transitory. I do not claim that Ohlson's analysis is incorrect. However, I would submit that perhaps OCI should not be considered to be transitory earnings. In this respect, my study echoes the results of Jones and Smith (2011).

A basic premise underlying the Conceptual Framework for Accounting is that accounting information is useful for decision making. But what makes the information decision useful? According to the discussion of qualitative characteristics of useful information presented in Section 1000 *Financial Statement Concepts*, accounting information is considered to be useful if it possesses the primary characteristics of relevance, reliability, understandability and comparability (paragraphs 18-23). Comparability is generally achieved through the application of generally accepted accounting principles and specific accounting standards.

Understandability is assumed to exist where users "have a reasonable understanding of business

and economic activities and accounting, together with a willingness to study the information with reasonable diligence” (para 19). Reliability is broadly assured through audit. This is why most extant studies pertaining to decision usefulness tend to focus on the issue of relevance. This study goes beyond the issue of value relevance in its exposition of the concept of decision usefulness. Through multiple specifications, of which value relevance is one, I provide a well rounded body of evidence on the issue of decision usefulness of OCI. I provide evidence on the predictive ability of OCI and its components, i.e. their ability to predict future income and cash flows (para 20(a)).

I also provide evidence on whether information contained in OCI is used by analysts in their earnings forecasts, and whether such information helps analysts make better forecasts. In doing so, this study contributes to the literature studying analysts’ forecasts in presenting evidence of the association between OCI and its components and analysts’ earnings forecasts. I show that information on OCI appears to be used by analysts, and that this information does have the effect of reducing analysts’ forecast errors.

7.1.2 Limitations

Similar to other value relevance studies, this study is based on the assumption of semi-strong market efficiency. To the extent that this is an untenable assumption, it may be considered one of the limitations of this study. However, as Ball (2009), writing in response to criticism of the efficient market hypothesis in the wake of the financial crisis of 2007-2008 argues, “The impact of the theory of efficient markets has proven to be durable, and seems likely to continue to be so, despite its inevitable and painfully obvious limitations” (p. 16).

Another limitation of this study is the time period to which my data pertains. The years 2007-2008 saw the precipitation of what has been called the Great Recession, a period of financial crisis of a magnitude that is perhaps not witnessed in decades. Furthermore, the interval it studies is rather short, and it may well be hard to discern stable relationships. O’Hanlon and Pope (1999) noted that due to timing differences between the recognition of events in stock returns (assuming market efficiency) and their recognition by the accounting system, tests based on annual stock returns and annual accounting flows have low power in detecting value-relevance.

Moreover, it may also be the case that investors take time before they start incorporating additional information, such as that presented in OCI. Hirst and Hopkins' (1998) and Maines and McDaniel's (2000) experimental behavioural research suggests that although certain disclosures under comprehensive income (e.g. fair value changes in available for sale securities) does help analysts' judgments, some of them may well consider the information to be "a simple *reformatting* of the financial statements" (Hirst and Hopkins 1998) (emphasis in the original).

A potential limitation of this study is that the results could have been impacted by the potentially confounding effects of the macro-economic environment which saw major global economies including Canada suffer from a sharp and prolonged recession. What is special about the post 2006 period? Recall that I used the post-2006 period to correspond to the period of time when HB1530 was in effect. However, as can be seen from Figures 3 and 4 below, this period of time also corresponded with a period of sustained stock market growth (up to the latter half of the year 2008) followed by a sharp decline that almost halved the index capitalization. This decline in stock prices was preceded by a series of events that are collectively referred to as the financial crisis of 2007-2008.

Figure 3: S&P/TSX Index for the period January 1, 2005 – December 31, 2011

source: Google Finance

<https://www.google.ca/finance?q=TSE%3AOSPTX&sq=TSX&sp=1&ei=3CUpUZj3Kcq3qAH0-gE&hl=en>

Figure 4: NYSE Composite (Dow Jones) Index for the period January 1, 2005 – December 31, 2011

source: Google Finance

https://www.google.ca/finance?q=INDEXNYSEGIS%3ANYA&hl=en&ei=fjEpUZi_EsW_rQGSWw

Although the crisis of 2007-2008, and the resulting economic slowdown was certainly not the first of its kind in history (Reinhart and Rogoff 2008), its severity was acute enough to earn it monikers such as “Financial Meltdown” and “The Great Recession” (Posner and Vermeule 2009; Cochrane 2011). The causes for the financial crisis continue to be studied extensively. A commonly cited reason for the crisis is a liquidity crunch (Brunnermeier and Pedersen 2009), triggered by the collapse of a major subprime lending fuelled real estate boom in early 2007 (Bordo 2008). The collapse of the housing market is in turn attributed to major changes in regulation, lax oversight, relaxation of lending standards, monetary policy that helped keep interest rates abnormally low over a prolonged period of time, thus creating incentives for excessive risk taking and engaging in fraudulent behaviour (Bordo 2008; Stiglitz 2009; Cecchetti 2008). Scholars of Behavioural Finance offer psychology based explanations, including over-extrapolation and belief manipulation, as for why the crisis precipitated (Barberis 2011).

Whatever the reasons might have been for the crisis, it is undeniable that it created macro-economic conditions that abnormally impacted financial markets, and financial instruments.

Almost all of the items of OCI were directly, or indirectly, affected by the goings-on in the financial markets. For example, SEC and HEDGE values were directly impacted by changes in the values of financial instruments. As reported in table 6.6, the results were indeed different for the post-2006 period. However, even after controlling for the post-2006 period, HEDGE and SEC were found to be significantly positively associated with stock returns.

A consideration of the sample reveals a potential limitation of generalizability. The S&P/TSX Composite Index, which is the leading index in Canada, is composed of 275 companies with a combined market capitalization of just over CAD 1.5 trillion. However, the index is dominated by financial sector (30 percent), energy (28 percent) and materials (17 percent) firms. While this may well be indicative of the composition of the Canadian economy, it does raise the likelihood that the results may be biased in favour of finding significance for comprehensive income and its components, all else being equal. This is because the components of OCI such as fair value changes in securities, foreign currency translations and cash flow hedges are more likely to apply to firms in sectors that dominate the Canadian index. The U.S. economy, in comparison, is more broad-based. The more specialized nature of the sample may reduce the generalizability of results.

7.2 Conclusion and future research questions

In this study I have made an earnest attempt to empirically investigate the decision usefulness of other comprehensive income, operationalized as association tests between OCI and components and stock price, stock returns, and analysts' earnings forecasts. The results suggest that at least some components of OCI are useful, thus lending support to the decision of accounting standard setters to require public companies to report unrealized gains and losses and other unrecognized amounts under the rubric of other comprehensive income.

The Joint Implementation Committee of the FASB and IASB adopted a comprehensive income approach to performance reporting. This study could be of interest to standard setters in providing additional empirical evidence in a non-U.S. setting of reporting comprehensive income and its components. Canada adopted the International Financial Reporting Standards (IFRS) for publicly traded companies for fiscal years starting 2011. The definition of OCI now includes two

additional components to that under OCI₁₃₀: (i) Pension Adjustment, and (ii) Revaluation Surplus for assets accounted for under the Revaluation Model. The findings of this study provide a caveat against considering individual components of OCI as having similar value relevance. Some components, such as the unrealized gains and losses on available for sale securities appear to be more value relevant than others. Future empirical research could examine whether the broader definition of OCI under IFRS is decision useful.

Appendix 1: List of companies

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
105251	Aastra Technologies Ltd	4	5	4	3
14999	Ace Aviation Holdings Inc	3	4	4	3
166269	Addax Petroleum Corp	1	2	1	2
27265	Advantage Oil & Gas Ltd	3	4	0	0
19987	Aecon Group Inc	4	5	5	3
63562	Aeterna Zentaris Inc	2	3	3	2
61955	Agf Management Ltd -CI B	3	4	4	2
1186	Agnico Eagle Mines Ltd	6	6	7	6
28169	Agrium Inc	3	2	4	2
164190	Air Canada	3	4	4	0
156214	Alacer Gold Corp	3	4	4	0
152848	Alamos Gold Inc	3	4	3	2
1243	Alcan Inc	2	3	3	3
115044	Algonquin Power & Util Corp	3	4	4	0
64655	Alimentation Couche-Tard Inc	2	3	3	2
151040	Allen-Vanguard Corp	1	2	0	1
152828	Allied Pptys Real Estate Inv	2	3	0	0
122194	Altagas Ltd	3	4	4	0
66060	Angiotech Pharmaceuticals	5	6	6	5
160534	Anvil Mining Ltd	3	4	2	3
105239	Arc Resources Ltd	3	4	4	2
158765	Artis Reit	3	4	1	0
15088	Astral Media Inc -CI A	3	4	3	2
1828	Atco Ltd -CI I	3	4	4	3
162346	Atlantic Power Corp	3	4	3	0
29478	Ats Automation Tooling Sys	2	3	3	3
19997	Aurizon Mines Ltd	3	4	1	2
61781	Axcan Pharma Inc	2	3	3	3
20499	Bakbone Software Inc	5	6	6	0

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
28724	Ballard Power Systems Inc	3	4	0	1
15580	Bank Of Montreal	3	4	4	2
15582	Bank Of Nova Scotia	3	4	4	2
20440	Bankers Petroleum Ltd	3	4	0	0
2055	Barrick Gold Corp	4	5	5	3
29135	Baytex Energy Corp	3	4	2	2
2137	Bce Inc	3	4	4	2
175098	Bell Aliant Inc	3	4	0	1
108391	Bellatrix Exploration Ltd	3	4	2	0
137090	Bellus Health Inc	3	4	1	1
105576	Bennett Environmental Inc	2	2	0	0
142443	Birchcliff Energy Ltd	3	4	0	2
107144	Blackpearl Resources Inc	3	4	0	0
29552	Boardwalk Real Estate Trust	3	4	3	2
64894	Boliden Ab	3	4	2	0
14078	Bombardier Inc -Cl B	2	3	3	2
26796	Bonavista Energy Corp	3	4	1	2
13516	Breakwater Resources Ltd	3	4	3	0
2369	Brookfield Asset Management	2	3	3	2
15637	Brookfield Office Properties	3	3	0	2
16423	Brookfield Properties Corp	3	5	5	0
136684	Brookfield Renewable Pwr Fd	3	4	4	0
135124	Burntsand Inc	0	1	1	0
2526	Cae Inc	2	3	3	2
12198	Calfrac Well Services Ltd	3	4	4	2
105728	Calloway Real Estate Inv't Tr	3	4	0	2
24370	Cameco Corp	3	4	4	3
64803	Canadian Apt P'tys Reit	3	4	4	2
25948	Canadian Hydro Developers	1	2	2	2
15581	Canadian Imperial Bank	3	4	4	2

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
2696	Canadian National Railway Co	5	5	6	4
15055	Canadian Natural Resources	5	6	6	4
105448	Canadian Oil Sands Ltd	3	4	3	2
2698	Canadian Pacific Railway Ltd	3	4	4	2
105755	Canadian Real Estate Inv't Tr	3	4	4	2
2703	Canadian Tire Corp -Cl A	3	4	4	2
14433	Canadian Utilities -Cl A	4	5	5	4
20285	Canadian Western Bank	3	4	4	2
14301	Canam Group Inc	3	4	4	2
14042	Canfor Corp	3	4	4	2
175078	Canfor Pulp Products Inc	2	3	0	1
24727	Canwest Global Com -Nvtg	2	3	2	0
66729	Capital Power Income Lp	3	4	4	0
126634	Capstone Mining Corp	3	4	3	0
66374	Cardiome Pharma Corp	2	3	2	2
14065	Cascades Inc	6	7	7	5
2406	Catalyst Paper Corp	3	4	4	2
14062	Ccl Industries -Cl B	3	4	4	2
151563	Ccs Income Trust	0	1	1	1
112158	Celestica Inc	3	4	4	2
149417	Celtic Exploration Ltd	3	4	0	2
183791	Cenovus Energy Inc	0	1	1	0
160779	Centerra Gold Inc	3	4	0	2
105847	Certicom Corp	0	1	1	1
21864	Cgi Group Inc -Cl A	3	4	4	2
157293	Chartwell Senior Hsg Reit	5	6	6	4
20259	Chc Helicopter Corp -Cl A	0	1	1	1
143297	China Gold Intl Rsrcs Cp Ltd	2	3	0	0
165948	Chorus Aviation Inc	3	4	4	0
30369	Ci Financial Corp	3	4	4	1

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
157476	Cineplex Inc	3	4	4	3
20309	Cinram Intl Income Fund	3	4	4	2
63997	Cml Healthcare Inc	3	4	3	2
28555	Cogeco Cable Inc	3	4	4	2
20315	Cogeco Inc -Sub Vtg	3	4	3	2
14459	Cognos Inc	2	3	3	3
179424	Colossus Minerals Inc	2	3	0	0
64111	Com Dev International Ltd	3	4	4	2
120654	Cominar Real Estate Invt Tr	3	4	0	2
63673	Compton Petroleum Corp	3	4	0	2
141368	Conjuchem Biotech Inc	2	3	3	0
107107	Connacher Oil & Gas Ltd	2	3	3	2
145914	Connors Bros Income Fund	0	1	1	1
140368	Consldtd Thompson Iron Mines	3	4	2	1
3516	Corby (H.) Distillery -CI A	3	4	1	0
17080	Corel Corp	3	3	2	2
123415	Corus Entertainment Inc	3	4	4	2
20338	Cott Corp Que	6	7	6	5
20339	Counsel Corp	2	3	3	0
145812	Crescent Point Energy Corp	3	4	2	0
156093	Crew Energy Inc	3	4	0	2
133964	Cryptologic Ltd	2	3	0	3
27598	Crystallex International Cp	2	3	0	2
146543	Davis & Henderson Corp	3	4	4	2
106502	Daylight Energy Ltd	3	4	0	0
64775	Denison Mines Corp	3	4	4	2
66326	Descartes Systems Group Inc	6	7	6	6
176598	Detour Gold Corp	3	4	0	2
22049	Dorel Industries Inc	3	4	4	2
24627	Dundee Corp	4	5	5	0

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
20007	Dundee Precious Metls -CI A	3	4	4	0
66376	Dundee Real Estate Inv Trust	4	7	7	1
128559	Dundeewealth Inc	2	3	3	2
27934	Eacom Timber Corp	1	1	0	0
20529	Eastern Platinum Ltd	3	4	3	2
16426	E-L Financial Corp Ltd	0	2	4	0
26539	Eldorado Gold Corp	3	4	4	2
25792	Emera Inc	5	6	6	4
14312	Empire Co Ltd -CI A	2	3	3	1
6135	Enbridge Inc	4	5	5	3
11781	Encana Corp	3	4	4	2
151930	Enercare Inc	3	4	3	0
28903	Enerflex Systems Income Fund	2	3	2	2
20214	Enerplus Corp	4	5	5	3
27013	Ensign Energy Services Inc	3	4	3	2
160768	Equinox Minerals Ltd	3	4	4	2
136807	European Goldfields Ltd	3	4	4	2
137377	Exfo Inc	3	4	3	0
13992	Extendicare Reit	3	4	4	0
108815	Fairborne Energy Ltd	2	3	0	2
16428	Fairfax Financial Holdings	1	3	5	1
4669	Finning International Inc	3	4	4	3
22970	First Capital Realty Inc	4	5	5	3
108768	First Majestic Silver Corp	3	4	3	0
106464	First Quantum Minerals Ltd	3	2	4	2
28485	Firstservice Corp -Svtg	6	7	7	6
146153	Flint Energy Services Ltd	5	6	6	4
20465	Fnx Mining Co Inc	2	3	3	2
144990	Fording Canadian Coal Trust	0	1	1	1
14390	Fortis Inc	3	4	4	2

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
28803	Forzani Group Ltd -Cl A	2	3	3	3
14070	Fp Resources Ltd	0	1	1	0
178997	Franco-Nevada Corp	2	3	3	0
160790	Fraser Papers Inc	1	2	2	2
106528	Freehold Royalties Ltd	3	4	0	2
141641	Fronteer Gold Inc	3	4	4	0
64636	Gabriel Resources Ltd	3	4	0	2
156556	Galleon Energy Inc	3	4	0	2
123455	Gammon Gold Inc	3	4	1	2
23496	Gennum Corp	3	4	4	2
183231	Genworth Mi Canada Inc	0	2	1	0
14049	Gerdau Ameristeel Corp	5	6	5	4
111486	Gildan Activewear Inc	3	4	1	2
157655	Gmp Capital Inc	3	4	4	0
15037	Goldcorp Inc	3	4	4	2
20488	Golden Star Resources Ltd	3	4	4	2
160410	Grande Cache Coal Corp	2	3	0	0
23504	Great Basin Gold Ltd	3	4	4	2
106709	Great Canadian Gaming Corp	5	6	6	4
16431	Great-West Lifeco Inc	3	4	4	2
164169	Groupe Aeroplan Inc	3	4	3	1
61356	Gsi Group Inc	0	1	1	1
20475	Guardian Cap Grp Ltd -Cl A	2	3	3	2
140372	Guyana Goldfields Inc	3	4	0	0
64196	H&R Real Estate Invt Tr	4	5	5	1
15533	Harry Winston Diamond Corp	3	4	4	2
151772	Harvest Energy Trust	1	2	2	2
15050	Heroux-Devtek Inc	3	4	4	3
20484	High River Gold Mines Ltd	2	3	2	2
163690	Highpine Oil &Gas Ltd	1	2	0	2

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
20487	Home Capital Group Inc -CI B	2	3	3	2
118227	Hub International Ltd	2	3	3	3
107781	Hudbay Minerals Inc	3	5	4	4
28711	Hummingbird Ltd	0	1	1	1
13994	Husky Energy Inc	3	4	4	2
140910	Hydrogenics Corp	3	4	4	0
62337	Iamgold Corp	3	4	4	2
14333	Igm Financial Inc	3	4	4	2
30312	Imax Corp	6	7	7	5
5903	Imperial Oil Ltd	3	4	4	2
64091	Indigo Books &Music Inc	2	3	1	2
129472	Industrial Alliance Ins &Fin	3	4	4	2
14350	Inmet Mining Corp	3	4	4	2
149700	Innvest Real Estate Inv't Tr	2	3	0	2
162491	Intact Financial Corp	3	4	4	0
66319	Inter Pipeline Fund	3	4	4	2
148130	Interoil Corp	1	2	2	2
24943	Intertape Polymer Group Inc	2	3	2	1
15038	Intl Forest Products -CI A	4	5	5	3
6180	Ipsco Inc	1	0	2	2
117829	Isotechnika Pharma Inc	2	3	0	0
30893	Iteration Energy Ltd	2	3	0	2
64879	Ivanhoe Energy Inc	3	4	0	2
63139	Ivanhoe Mines Ltd	5	6	6	4
28852	Jaguar Mining Inc	3	4	0	1
16474	Jean Coutu Group	2	3	3	2
107938	Jura Energy Corp	1	2	0	0
143403	Just Energy Group Inc	2	3	3	0
154135	Keyera Corp	3	4	0	2
61743	Kingsway Financial Svcs Inc	2	3	3	2

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
8644	Kinross Gold Corp	3	4	4	3
105661	Kirkland Lake Gold Inc	2	3	0	0
63128	Labopharm Inc	3	4	3	2
64260	Labrador Iron Ore Royalty Cp	3	3	0	0
6557	Laidlaw International Inc	1	2	2	2
152012	Lake Shore Gold Corp	3	4	4	3
16432	Laurentian Bank Of Canada	3	4	4	2
65806	Legacy Hotels Real Estate	0	1	1	1
174133	Legacy Oil Plus Gas Inc	1	2	0	0
6672	Leon's Furniture Ltd	3	4	4	2
20561	Linamar Corp	2	3	2	2
28378	Lions Gate Entertainment Cp	1	2	2	2
6771	Loblaw Companies Ltd	3	4	4	3
25750	Lorus Therapeutics Inc	2	3	0	0
108297	Lundin Mining Corp	3	4	4	2
137609	Macdonald Dettwiler & Assoc	3	4	4	2
4763	Magellan Aerospace Corp	1	2	2	0
6946	Magna International Inc	3	4	4	2
31602	Major Drilling Grp Intl Inc	2	3	3	2
65018	Manitoba Telecom Svcs Inc	3	4	0	2
124042	Manulife Financial Corp	3	4	4	2
2675	Maple Leaf Foods Inc	3	4	4	2
65441	Martinrea Intl Inc	2	3	3	2
20570	Mdc Partners Inc	6	7	6	5
148455	Mega Brands Inc	1	3	3	1
108250	Mercator Minerals Ltd	3	4	0	2
13971	Methanex Corp	3	4	4	2
21894	Metro Inc -Cl A	3	4	4	2
155458	Mi Developments Inc	3	4	4	2
64779	Minefinders Corp Ltd	3	4	0	2

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
1096	Morguard Corp	4	5	5	2
29407	Mosaid Technologies Inc	2	3	3	2
30927	Mullen Group Ltd	3	4	0	0
107505	Nal Energy Corp	3	4	1	2
15620	National Bank Canada	3	4	4	2
26511	Neo Material Technologies	3	4	3	0
28080	Nevsun Resources Ltd	2	3	3	2
106112	New Gold Inc	3	4	3	3
20650	Newalta Corp	3	4	1	1
2697	Nexen Inc	3	4	4	2
107590	Niko Resources Ltd	2	0	3	2
14313	Norbord Inc	4	5	5	0
14102	Nordion Inc	3	4	4	0
23170	Norsat Intl Inc	2	3	2	1
7980	Nortel Networks Corp	3	4	4	3
6930	North American Palladium	3	4	0	2
23994	North West Co Inc	2	3	3	3
154058	Northbridge Financial Corp	0	1	1	1
119394	Northcore Technologies Inc	2	2	0	0
107637	Northern Dynasty Mineral Ltd	2	3	3	0
7984	Northgate Minerals Corp	3	4	4	2
64625	Northland Power Inc	3	4	4	3
8009	Nova Chemicals Corp	1	2	2	2
20600	Novagold Resources Ltd	3	4	4	2
162701	Novelis Inc	1	2	1	1
154774	Nuvista Energy Ltd	3	4	2	2
106179	Nuvo Research Inc	3	4	0	1
260651	Oceanagold Corp	3	4	3	0
107685	Oilexco Inc	1	2	2	2
20245	Oncothyreon Inc	1	2	1	1

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
14326	Onex Corp	3	4	4	2
61870	Open Text Corp	5	6	6	4
13453	Oppenheimer Holdings Inc	3	4	4	0
160191	Opti Canada Inc	3	4	0	2
107710	Osisko Mining Corp	3	4	1	1
105222	Pacific Rubiales Energy Corp	3	4	1	1
20670	Pan American Silver Corp	3	4	4	2
20676	Paramount Resources Ltd	3	4	4	2
66318	Pason Systems Inc	3	4	4	2
19985	Patheon Inc	3	4	0	2
130618	Pembina Pipeline Corp	3	4	4	2
20683	Pengrowth Energy Corp	3	4	0	2
20684	Penn West Petroleum Ltd	3	4	0	3
152692	Perpetual Energy Inc	3	4	0	0
29769	Petrobank Energy Res Ltd	3	4	3	2
15150	Petro-Canada	1	2	2	0
278317	Petrominerales Ltd	2	3	0	0
106156	Peyto Exploration &Develpmt	3	4	4	2
121154	Pinetree Capital Ltd	1	2	0	0
8626	Placer Dome Inc	0	1	1	1
16582	Potash Corp Sask Inc	3	1	4	2
8702	Power Corp Canada	3	4	3	2
15607	Power Financial Corp	3	4	4	2
20695	Precision Drilling Corp	3	4	3	0
155099	Primaris Retail Reit	3	4	4	2
160820	Progress Energy Resources Cp	3	4	1	0
107928	Progress Energy Trust	0	1	1	1
148394	Progressive Waste Solutions	3	4	4	0
106519	Provident Energy Ltd	4	5	4	3
15803	Qlt Inc	5	6	5	4

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
266305	Quadra Fnx Mining Ltd	3	4	4	0
8870	Quebecor Inc -CI B	3	4	4	1
155224	Questerre Energy Corp	2	3	0	1
105857	Red Back Mining Inc	2	3	3	2
9034	Reitmans (Canada) -CI A	3	4	3	3
65986	Research In Motion Ltd	5	0	6	5
28661	Richelieu Hardware Ltd	3	4	4	2
108071	Riocan Reit	3	4	2	2
65605	Ritchie Bros Auctioneers Inc	5	4	6	4
9215	Rogers Communications -CI B	3	4	4	3
151118	Rona Inc	3	4	0	2
15633	Royal Bank Of Canada	3	4	4	2
65808	Rubicon Minerals Corp	2	3	3	1
4599	Russel Metals Inc	2	3	2	1
65613	Saputo Inc	2	3	3	2
136266	Savanna Energy Svcs Corp	3	4	3	2
20743	Sceptre Investment Counsel	2	3	3	2
11787	Sears Canada Inc	3	4	2	2
28415	Semafo Inc	3	4	2	2
14353	Shaw Communications Inc-CI B	3	4	3	2
9647	Shawcor Ltd -CI A	3	4	4	2
63075	Sherritt International Corp	3	4	4	2
146139	Shoppers Drug Mart Corp	3	4	4	2
108233	Shore Gold Inc	2	3	0	2
120334	Sierra Wireless Inc	5	6	5	4
26768	Silver Standard Res Inc	3	4	4	2
105861	Silver Wheaton Corp	3	4	4	2
108326	Silvercorp Metals Inc	2	3	2	1
62359	Sino-Forest Corp	3	4	4	2
14352	Snc-Lavalin Group Inc	4	5	5	3

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
157793	Southgobi Resources Ltd	2	3	1	0
28649	Southwestern Resources Corp	0	1	1	1
9373	St Lawrence Cement Grp -Cl A	0	1	1	2
29985	Stantec Inc	3	4	4	2
133289	Sun Life Financial Inc	3	4	4	2
15070	Suncor Energy Inc	3	3	4	0
65614	Superior Plus Corp	3	4	4	0
31616	Sxc Health Solutions Corp	3	4	2	2
14316	Talisman Energy Inc	3	4	4	2
26914	Tanzanian Royalty Explor Cp	3	4	0	0
25092	Taseko Mines Ltd	3	4	3	2
10385	Teck Resources Ltd	3	4	3	3
62475	Tekmira Pharmaceuticals Corp	2	3	0	2
121933	Teknion Corp	0	1	1	1
2408	Telus Corp	3	4	4	0
14372	Tembec Inc	3	4	0	1
174838	Teranet Income Fund	0	1	1	0
20747	Tesco Corp	1	2	2	2
29476	Theratechnologies Inc	3	4	4	2
122266	Thompson Creek Metals Co Inc	3	4	3	1
15704	Thomson-Reuters Corp	4	5	5	3
166366	Tim Hortons Inc	5	6	4	3
136705	Timberwest Forest Corp	3	4	0	0
20809	Timminco Ltd	2	3	2	3
62465	Tlc Vision Corp	0	1	1	1
151282	Tmx Group Inc	3	4	3	1
15020	Toromont Industries Ltd	3	4	4	2
15706	Toronto Dominion Bank	4	5	5	3
13997	Torstar Corp -Cl B	3	4	4	2
14391	Transalta Corp	3	4	4	2

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
28059	Transat A T Inc	3	4	4	0
10671	Transcanada Corp	3	4	4	2
15083	Transcontinental Inc -Cl A	3	4	4	2
150764	Transforce Inc	3	4	0	1
14010	Transglobe Energy Corp	3	4	2	0
64107	Trican Well Service Ltd	3	4	4	2
163697	Trilogy Energy Corp	3	4	0	0
140674	Trinidad Drilling Ltd	4	5	5	1
165864	Tristar Oil & Gas Ltd	1	2	2	1
15123	Trizec Properties Inc	1	2	2	2
108611	Turbo Power Systems Inc	2	3	0	0
13970	Tva Group Inc -Cl B	2	3	2	2
149563	Uex Corp	2	3	0	1
19696	Uni-Select Inc	4	5	0	0
65324	Uranium One Inc	3	4	3	2
20838	Uts Energy Corp	2	3	0	2
29955	Valeant Pharmaceuticals Intl	6	7	6	0
22079	Van Houtte Inc	0	1	1	1
132558	Vector Aerospace Corp	2	3	3	2
181671	Ventana Gold Corp	1	2	0	0
66277	Veresen Inc	3	4	4	0
30075	Vermilion Energy Inc	3	4	0	2
62556	Viterra Inc	3	4	3	1
30863	Wescast Industries -Cl A	1	2	1	1
14330	West Fraser Timber Co	3	4	4	2
65261	Westaim Corp	3	4	3	2
118837	Western Coal Corp	2	3	1	0
122017	Westjet Airlines Ltd	3	4	3	2
11443	Weston (George) Ltd	3	4	4	2
108831	Westport Innovations Inc	2	3	3	0

GVKey	Company Name	Ohlson regressions	Valuation regressions	Returns regression	Analysts' Forecasts regressions
108718	Vasogen Inc	0	1	0	1
115628	Husky Injection Molding Sys	0	1	0	1
11790	Rothmans Inc	0	1	0	1
117941	Tundra Semiconductor Corp	0	1	0	1
140937	Cryocath Technologies Inc	0	1	0	1
149033	Aurelian Resources Inc	0	1	0	1
158589	Duvernay Oil Corp	0	1	0	1
165575	Synenco Energy Inc	0	1	0	1
20434	First Calgary Petroleums Ltd	0	1	0	1
29464	Nventa Biopharmaceuticals	0	1	0	1
66401	Westshore Terms Investmnt Cp	3	4	0	2
20391	Gold Eagle Mines Ltd	0	1	0	0
26233	Biowest Therapeutics Inc	0	1	0	0
183667	Petrobakken Energy Ltd	0	1	0	0
183683	Dollarama Inc	0	1	0	0
128121	Wi-Lan Inc	3	4	0	2
20860	Winpak Ltd	3	4	4	2
25291	World Color Press Inc	0	1	1	0
31519	Yamana Gold Inc	3	4	4	2
155313	Yellow Media Inc	3	4	4	2
7469	Zarlink Semiconductor Inc	5	6	6	5
26264	ZI Corp	4	5	5	3
		1074	1464	1097	675

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