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Properties of net income and total comprehensive income: New Zealand evidence

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Abstract

Purpose – The purpose of this paper is to investigate the properties of net income (NI) and total comprehensive income (TCI) of listed companies in New Zealand (NZ). Four properties of TCI and NI are examined: persistence, variability, predictive ability, and value relevance. Whether the value relevance of TCI depends on its reporting location is also investigated.

Design/methodology/approach – A cross-sectional research design is used with data on TCI reported by NZ listed companies in 2010 under the new disclosure requirement in IAS 1. Ordinary least squares (OLS) regressions are used with a sample of 86 firms to test for persistence, variability, and predictive ability, and 81 firms to test for value relevance of NI and TCI.

Findings – The study finds: NI is potentially more persistent than TCI and potentially explains contemporaneous stock returns better than TCI; no significant difference in the variability and predictive ability of NI and TCI; little evidence that the value relevance of TCI depends on its reporting location; other comprehensive income (OCI) has incremental ability to predict one-year-ahead CFO, although the incremental ability of OCI to predict one-year-ahead NI is not statistically significant; and OCI is not incrementally value relevant.

Practical implications – The findings would be of interest to securities analysts and other users in valuing firms and when earnings are used in contractual settings (e.g. management compensation). Further, the results would also be of potential interest to standard-setters.

Originality/value – The literature on comprehensive income is growing. However, the authors are not aware of any study that investigates the properties of NI and TCI in accordance with the new requirement to report comprehensive income in the amended IAS 1 which came into effect in NZ on January 1, 2009. The paper adds current evidence on the properties of NI and TCI under IFRS to the international literature.

Keywords New Zealand, Earnings, Income, Listed companies, Disclosure, Persistence, Variability, Predictive ability, Value relevance, Comprehensive income

Paper type Research paper

Introduction

International Accounting Standard (IAS) 1 "Presentation of Financial Statements" requires entities to report other comprehensive income (OCI) and total comprehensive income (TCI) in a statement of comprehensive income for periods starting on or after January 1, 2009 (IASB, 2009, para 10)[1]. IAS 1 allows two reporting formats:

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(1) a single statement of comprehensive income including all revenues and expenses; or

(2) two statements, a separate income statement and a statement of comprehensive income (IASB, 2009, para 81).

Most New Zealand (NZ) entities reported comprehensive income during 2010 for the first time in accordance with IAS 1[2].

This study examines the properties of net income (NI) and TCI of listed companies in NZ. There is a growing body of literature on the properties of comprehensive income (Dhaliwal *et al.*, 1999; O'Hanlon and Pope, 1999; Cahan *et al.*, 2000; Chambers *et al.*, 2007; Barton *et al.*, 2009). Most of these studies employed estimates of TCI. Further, studies investigating properties of NI and TCI under IFRS are sparse. Two studies (Cahan *et al.*, 2000; Barton *et al.*, 2009) that examine the properties of measures of firm performance in NZ relate to previous NZ GAAP before the adoption of International Financial Reporting Standards (IFRS) in NZ[3].

There have been two significant changes in NZ that are relevant to this study subsequent to the period covered in Cahan *et al.* (2000) and Barton *et al.* (2009). First, NZ firms started preparing their financial statements in accordance with IFRS in 2007[4], and adoption of IFRS impacted on the financial statement amounts of listed companies in NZ (Kabir *et al.*, 2010; Stent *et al.*, 2010). Second, the requirement to report TCI in a performance statement came into effect in NZ for the first time for periods starting on or after January 1, 2009. Under pre-IFRS NZ GAAP, components of comprehensive income were reported in a statement of changes in equity (Cahan *et al.*, 2000).

Research suggests that the disclosure of comprehensive income may matter to users depending on the reporting location (Hirst and Hopkins, 1998; Maines and McDaniel, 2000; Chambers *et al.*, 2007). Further, the relative properties of NI and TCI may vary under different sets of GAAP (e.g. US GAAP, IFRS) as the components of NI and TCI may vary under each set[5]. Hence, the results of prior studies on properties of comprehensive income may not be generalized to the current IFRS setting in NZ. This study utilizes data on comprehensive income that were reported in 2010 in accordance with the requirements of IAS 1.

Dechow and Schrand (2004) define earnings as of higher quality if they are:

- more persistent and less volatile;
- more strongly associated with future cash flows; and
- more strongly associated with contemporaneous stock price performance or market value[6].

Following Dechow and Schrand (2004), this paper investigates four properties of NI and TCI:

(1) persistence;

(2) cross-sectional variation in the income metrics;

(3) ability to predict one-year-ahead cash flows from operating activities (CFO) and NI; and

(4) associations with contemporaneous stock returns.

This paper also examines whether the value relevance of TCI depends on where it is disclosed – a single statement or two-statement format as permitted under IAS 1.

Investigating the properties of NI and comprehensive income is important because investors may want to know which metric, NI or TCI, measures firm performance better (Black, 1993). Prior research indicates that earnings are used in a variety of situations such as bonus contracts, debt covenants, and firm valuation (Dechow, 1994). Since earnings are widely used by analysts in firm valuation (Dechow and Schrand, 2004), knowledge of the properties of NI and TCI would help analysts place appropriate emphasis on the summary income metrics when valuing firms.

Investigating the properties of NI and TCI is also important from another perspective. Given the increasing use of fair value in accounting standards, there are concerns about the properties of income under fair value accounting (Barth, 2006). In particular, Enria *et al.* (2004) argued that income under fair value accounting is more volatile than under the historical cost method. Since TCI incorporates all the realised and unrealized gains and losses recognised under IFRS, comparing its properties with those of NI would provide insights into the properties of income under fair value accounting. Investigating whether the value relevance of TCI depends on its reporting location is important as IAS 1 allows the option to report TCI in a single statement or two-statement format, and the IASB (2010) recently issued an exposure draft proposing the elimination of the two-statement format of reporting TCI[7].

The sample comprises 86 firms used to test the persistence, variability, and predictive ability of NI and TCI, and 81 firms used to test value relevance of NI and TCI, drawing on 2010 data. This study finds that NI is potentially more persistent than is TCI and potentially explains contemporaneous stock returns better than TCI. These results are robust to alternative deflators and standard errors corrected for industry clusters. However, the study does not find any significant difference in the variability and predictive ability of NI and TCI and little evidence that the value relevance of TCI depends on its reporting location. Further, OCI is found to have incremental ability to predict one-year-ahead CFO, although the incremental ability of OCI in predicting one-year-ahead NI is not statistically significant. The results also indicate that OCI is not incrementally value relevant.

This study makes two contributions to the literature on the properties of NI and TCI. First, it provides evidence on the properties of NI and TCI under IFRS. Evidence on the properties of NI and TCI under IFRS is sparse as the IFRS requirement to report TCI is new. The earlier evidence on comprehensive income relates to pre-IFRS NZ GAAP and other local GAAP. Thus, this study contributes current evidence on comprehensive income under a new reporting regime (i.e. IAS 1). Second, the study provides evidence on whether the value relevance of TCI depends on the reporting location of TCI. This is of potential interest to standard-setters as the IASB has proposed the removal of the option of reporting TCI in two statements. The remainder of the paper is structured as follows. Section 2 provides a brief review of the literature, Section 3 develops the hypotheses, and Section 4 discusses the research design and methodology. Section 5 presents the findings and Section 6 concludes the paper.

2. Literature review

There is an extensive literature on the properties of firm performance measures. Early studies examined the time series properties, persistence, predictive ability

and value relevance of earnings and cash flows. Ball and Watts (1972) found that annual accounting income follows a sub-martingale process, and Watts and Leftwich (1977) provided evidence suggesting that annual income follows a random walk process[8]. Lipe's (1986) findings suggest that different components of earnings vary in persistence, while Bowen *et al.* (1986) found that current period earnings are not better predictors of future cash flows than current period cash flows. On the other hand, findings of Dechow *et al.* (1998) indicate that current earnings forecast future operating cash flows better than current operating cash flows. Barth *et al.* (2001a, b) found that cash flows and accrual components of current earnings have better predictive ability for future cash flows than do several lags of earnings. Dechow's (1994) results suggest that the association between earnings and contemporaneous stock returns is stronger than that between cash flows and contemporaneous stock returns when:

- the performance measurement interval is short;
- the absolute magnitude of accruals is large; and
- the operating cycle is long.

The literature on comprehensive income is growing. However, while most studies have used estimates of TCI, Chambers *et al.* (2007) document that estimates of TCI are subject to measurement errors[9]. Further, the findings of studies comparing the properties of NI and TCI are not consistent. One set of studies finds that NI is superior to TCI in terms of value relevance, predictive ability and conservatism. Cheng *et al.* (1993) found that operating income and NI explain security returns better than comprehensive income. O'Hanlon and Pope (1999) investigated the value relevance of dirty surplus accounting flows under UK GAAP over the period 1972-92 and document that ordinary profit and extraordinary items are associated with stock returns, but found no evidence that dirty surplus flows are value relevant. Using estimates of OCI and a sample of firms from 16 European countries during 1991-2005, Goncharov and Hodgson (2008) found that NI is better than TCI in terms of value relevance and ability to predict future cash flows from operations. Further, TCI is less conservative than NI in that TCI recognises good news on a timelier basis than NI. Barton *et al.* (2009) examined the value relevance of eight measures of firm performance in 46 countries during 1996-2005 and report that value relevance peaks for measures above the line and no individual measure of firm performance dominates other measures in all countries.

In contrast, a second set of studies found no evidence that TCI is more value relevant than NI. Using estimates of comprehensive income, Dhaliwal *et al.* (1999) did not find any evidence that comprehensive income is more strongly associated with contemporaneous returns, future cash flows and future NI than NI during 1994-1995. They, however, found that marketable securities adjustments reported by financial companies are value relevant. Cahan *et al.* (2000) examined the value relevance of comprehensive income in NZ during 1992-1997 and do not find evidence that the incremental value relevance of TCI relative to NI increased after the issuance of Financial Reporting Standard 2 in 1994. They further report that there is no evidence that individual components of OCI are incrementally value relevant over and above TCI. Isidro *et al.* (2004) document significant cross-country variation in dirty surplus flows during 1993-2001, but found little evidence that omission of dirty surplus flows from residual income value estimates would have caused significant valuation errors.

A third set of studies found that TCI and OCI are value relevant. Kubota *et al.* (2009) found that dirty surplus items have information content. Chambers *et al.* (2007) used as-reported measures of OCI and found that OCI is priced by the market in the post-SFAS 130 period. Their findings also suggest that foreign currency translation adjustments and unrealized gains and losses on available-for-sale securities were positively priced. Using a sample of cross-listed Canadian firms, Kanagaretnam *et al.* (2009) study findings suggest that components of other comprehensive income are associated with stock returns, and that aggregate comprehensive income is more strongly associated with price and stock returns than is net income. However, their results suggest that net income is a better predictor of future net income, comprehensive income and cash flows from operations than is comprehensive income. Overall, evidence on the relative value relevance of NI and TCI is mixed.

A fourth set of studies examined whether the reporting location of TCI (i.e. in a performance statement or in a statement of stockholders' equity) matters to users. Hirst and Hopkins (1998) employed an experimental research design and found that the reporting of comprehensive income in the income statement helps analysts detect earnings management. In an experiment involving MBA students, Maines and McDaniel (2000) report that participants attached significant weight to unrealised gains when they appeared in the statement of comprehensive income rather than when they appeared in a statement of stockholders' equity. However, the findings of Chambers *et al.* (2007) suggest that investors pay greater attention to OCI when they are reported in the statement of changes in equity rather than when they are reported in a performance statement. Evidence on which format of reporting TCI is desirable to users is mixed is therefore inconclusive.

Several studies have examined managers' choice of reporting location of TCI. The Lee *et al.* (2006) findings indicated that insurers with a tendency to manage income through realised securities' gains and losses, and with a reputation for poor financial reporting quality are more likely to report comprehensive income in a statement of equity. Similarly, Bamber *et al.* (2010) found that US managers with strong equity incentives and less job security are less likely to report comprehensive income in a performance statement.

While the empirical literature on comprehensive income is increasing, studies examining properties of TCI under IFRS are scarce. Two studies (Cahan *et al.*, 2000; Barton *et al.*, 2009) that examined comprehensive income in NZ used data from the pre-IFRS era. The adoption of IFRS in NZ impacted on income and other financial statement numbers of listed companies in NZ (Kabir *et al.*, 2010, Stent *et al.*, 2010). Further, in contrast to pre-IFRS NZ GAAP under which total recognised revenue and expenses were reported in a statement of changes in equity, IAS 1 requires comprehensive income to be reported in a performance statement. Prior research suggests that the reporting location of TCI matters to users (Hirst and Hopkins, 1998; Maines and McDaniel, 2000; Chambers *et al.*, 2007). Further, the components of NI and TCI are not the same under different sets of GAAP and hence the relative properties of NI and TCI may vary depending on GAAP. Thus, the results of earlier studies on properties of TCI may not be generalisable to the current IFRS setting in NZ. This paper seeks to fill this gap by examining properties of NI and TCI in NZ as required by the recently amended IAS 1.

3. Hypotheses

3.1 Persistence of NI and TCI

Total comprehensive income (TCI) is the sum of bet income (NI) and other comprehensive income (OCI). The components of OCI include:

- changes in revaluation surplus;
- actuarial gains and losses on defined benefit plans;
- gains and losses arising from translating financial statements of a foreign operation;
- gains and losses on re-measuring available-for-sale financial assets; and
- the effective portion of gains and losses on hedging instruments in a cash flow hedge (IASB, 2009, para 7).

These components arise from changes in interest rates and exchange rates and other random walk processes (Smithson *et al.*, 1995, cited in Chambers *et al.*, 2007). Thus, OCI is transitory[10] in nature (Chambers *et al.*, 2007), and NI is likely to be more persistent than TCI. Therefore, the first hypothesis is:

H1. NI is more persistent than TCI.

3.2 Variability of NI and TCI

One argument against fair value accounting is that it increases the volatility in financial statements[11]. Barth *et al.* (1995) found that fair value-based earnings are more volatile than historical cost-based earnings. Similarly, Hodder *et al.* (2006) found that the volatility of full fair value income is more than three times that of comprehensive income and more than five times that of net income. Since TCI incorporates more value changes than does NI, based on the evidence, NI is likely to be less volatile than TCI. Thus, the second hypothesis is:

H2. The cross-sectional variation of NI is less than that of TCI.

3.3 Predictive ability of NI and TCI

Net income under IFRS includes some gains and losses from changes in fair value, and accruals from the application of the revenue recognition and matching principles. TCI includes further accruals that reflect transitory revaluations of assets and liabilities. Accruals that arise from the application of the revenue recognition and matching principles in the NI better predict future cash flows and net income than do accruals arising from transitory valuation changes in TCI (Barth *et al.* 2001a, b; Dechow and Schrand, 2004). Hence, NI is a better predictor of future cash flows and net income than TCI (Dechow and Schrand, 2004; Kanagaretnam *et al.*, 2009). The third and fourth hypotheses are:

H3. NI predicts one-year-ahead CFO better than TCI.

H4. NI predicts one-year-ahead NI better than TCI.

3.4 Value relevance of NI and TCI

If NI is more persistent than TCI and predicts one-year-ahead CFO and NI better than does TCI, investors may view NI more favourably than TCI. Prior research suggests that investors view the persistence of earnings components as desirable[12], and that

the information content of earnings components is increasing with the components' persistence (Lipe, 1986; Penman and Zhang, 2002). Further, since TCI includes more transitory items than does NI, the earnings response coefficient of TCI is likely to be less than that of NI (Kothari and Zimmerman, 1995).

On the other hand, it can be argued that comprehensive income is consistent with accounting-based valuation theory that expresses equity price as the sum of current book value and present value of future comprehensive residual income (Linsmeier *et al.*, 1997). Linsmeier *et al.* (1997, p. 122) conclude: "Thus, for reported income to be most useful in equity price valuation, it must be comprehensive". However, the value relevance of comprehensive income depends on investors' ability to process multi-component comprehensive income (Goncharov and Hodgson, 2008). Hence, given the above discussion and the mixed empirical evidence (Cheng *et al.*, 1993; Dhaliwal *et al.*, 1999; O'Hanlon and Pope, 1999; Chambers *et al.*, 2007; Goncharov and Hodgson, 2008; Kanagaretnam *et al.*, 2009) on the relative value relevance of NI and TCI, the study does not predict the relative value relevance of NI and TCI. This is expressed in the following non-directional hypothesis:

H5. The value relevance of NI differs from TCI.

3.5 Reporting location of TCI and its value relevance

IAS 1 allows the reporting of TCI in a statement of comprehensive income or in two statements (a separate income statement and a statement of comprehensive income) (IASB, 2009). The efficient market hypothesis appears to suggest that reporting location is irrelevant as long as the information is publicly disclosed. However, the proposal of the IASB (2010) to eliminate the current option of reporting TCI in a two-statement format suggests that the reporting location matters. Further, prior research suggests that the reporting location of TCI is potentially important as it affects the perceptions of the importance of OCI and TCI disclosed (Maines and McDaniel, 2000).

The evidence regarding the preferred reporting format of TCI is mixed. Hirst and Hopkins (1998) find that reporting comprehensive income in the income statement helps analysts detect earnings management. Maines and McDaniel (2000) find that participants in an experiment attach more weight to unrealised gains when they appear in the statement of comprehensive income than when they are disclosed in a statement of stockholders' equity. However, Chambers *et al.* (2007) found that investors pay greater attention to OCI when they are reported in the statement of changes in equity rather than when they are reported in a performance statement. Thus, given the mixed evidence, this study makes no prediction on the relative value relevance of TCI when it is disclosed in a single statement rather than when it is reported in a two-statement format. The hypothesis is as follows:

H6. The value relevance of TCI differs depending on its reporting location.

4. Methodology

4.1 Data and sample

The authors hand-collected financial statement data from the 2010 annual reports of listed companies from NZX Deep Archive[13] and returns data from Datastream. They started with firms that have 2010 annual reports on NZX Deep Archive.

A total of 145 NZ listed firms had 2010 annual reports at the time of data collection. From this, they excluded firms:

- whose NI and TCI are the same (i.e. no OCI items);
- whose financial statements are presented in foreign currency;
- whose financial statement figures do not match those in the corresponding notes[14];
- whose financial statements are not consolidated;
- whose fiscal years in 2009 and 2010 are not equal in length;
- which are overseas companies; and
- which prepared their financial statements using foreign GAAP.

This process yielded a sample of 86 firms. We use these 86 firms for analyses of persistence, variability, and predictive ability of NI and TCI. Five of the sample firms do not have returns data. Hence, the authors utilize 81 firms for tests of association of NI and TCI with contemporaneous stock returns. Table I summarises the sample selection and industry distribution.

Panel A of Table I shows that TCI and NI is the same for 39 out of 145 firms. Hence, for 73.10 percent of the population TCI differs from NI. This percentage is similar to the percentage (71 percent) reported by Dhaliwal *et al.* (1999). Panel B shows the sample firms come from a wide variety of industries, with the largest number being from the consumer industry.

4.2 Models

Persistence. The following two standard models are used to assess the persistence of NI and TCI (Dechow and Schrand, 2004). The closer β is to 1, the more persistent the variable is (Dechow and Schrand, 2004):

$$NI_{t+1} = \alpha + \beta NI_t + \varepsilon_t \quad (1)$$

$$TCI_{t+1} = \alpha + \beta TCI_t + \varepsilon_t \quad (2)$$

where NI is net income and TCI is total comprehensive income. Following Dechow (1994) and Barth *et al.* (1995), both NI and TCI are deflated by the weighted average number of shares to mitigate the effects of heteroskedasticity. Since 2010 financial statements report comparative financial statement amounts for 2009, this paper employs 2009 NI and TCI to predict 2010 NI and TCI, respectively.

Variability. Following Barth *et al.* (1995), this study assesses variability by standard deviation and compares the standard deviation of NI with that of TCI in 2010.

Predictive ability. Models (3) and (4) are used to assess which income metric – NI and TCI – can predict one-year-ahead CFO better. Following prior literature (Dechow, 1994), the model having a higher adjusted R^2 will be considered to have better predictive ability. Vuong's (1989) test is used to find the significance of the difference in adjusted R^2 of the two models[15]. Similarly, models (5) and (6) are used to evaluate the relative ability of NI and TCI to predict one-year-ahead NI.

CFO is used because the recent conceptual framework jointly issued by the FASB and the International Accounting Standards Board (IASB) states that financial reporting should assist users assess the prospects for future cash flows to the entity

Panel A: derivation of sample			
Companies on NZX Deep Archive			145
Less:	NI and TCI are the same	39	
	Financial statements are presented in foreign currency	3	
	Figures in notes do not match corresponding figures in financial statements	2	
	Non-consolidated statements	1	
	Different lengths of periods in 2009 and 2010	4	
	Overseas companies	9	
	Companies that prepared their financial statements using foreign GAAP	1	
Total number of companies excluded from the sample			59
Sample for tests of persistence, variability, and predictive ability			86
Less:	Missing returns data	5	
Sample for tests of association with stock returns		81	
Panel B: industry distribution of sample firms			
Industry		*No. of firms*	
Agriculture and fishing		8	
Building materials and construction		3	
Consumer		12	
Energy processing		7	
Finance and other services		10	
Food and beverages		6	
Intermediate and durables		9	
Investment		7	
Leisure and tourism		4	
Media and telecommunications		4	
Mining		2	
Ports		5	
Property		4	
Textiles and apparel		2	
Transport		*3*	
Total		86	

Table I.
Sample

(FASB, 2010, para. OB 3 & 4). Further, the newly issued framework notes that information about the firm's financial performance during a period is helpful in assessing the entity's ability to generate future cash flows (FASB, 2010, para. OB 18). The authors also use NI as the variable to be predicted because income is widely used by analysts in firm valuation (Dechow and Schrand, 2004):

$$CFO_{t+1} = \alpha + \beta NI_t + \varepsilon_t \quad (3)$$

$$CFO_{t+1} = \alpha + \beta TCI_t + \varepsilon_t \quad (4)$$

$$NI_{t+1} = \alpha + \beta NI_t + \varepsilon_t \quad (5)$$

$$NI_{t+1} = \alpha + \beta TCI_t + \varepsilon_t \quad (6)$$

where CFO is cash flows from operating activities, NI is net income and TCI is total comprehensive income. All three variables are deflated by the weighted average number of shares. Since 2010 financial statements report comparative financial statement amounts for 2009 also, this paper uses 2009 NI and TCI to predict 2010 CFO and NI.

Value relevance of NI and TCI. Two models are used widely in the capital market-based accounting research: the returns model and the price model (Kothari and Zimmerman, 1995). Since the focus of this study is on assessing which income metric – NI or TCI – is a better measure of firm performance, this paper follows Dechow (1994) and Easton (1999), and employs the returns model. Kothari and Zimmerman (1995) argue and document that the earnings response coefficient in the returns model is biased toward zero because of the "price leads earnings" phenomenon and the consequent omitted variable problem. However, as Dechow (1994) and Easton (1999) argue convincingly, when the research objective is to assess earnings as a summary measure of firm performance, the effect of this omitted variable (i.e. events not summarized in earnings but in price) becomes the focus of investigation. Further, the price model suffers from heteroskedasticity and a scaling problem (Kothari and Zimmerman, 1995; Easton, 1999). Thus, Easton (1999, p. 411) concludes: "[. . .] the inferences from returns models are probably more reliable and should be used." The following models are used to evaluate the relative ability of NI and TCI to summarise firm performance as reflected in stock returns:

$$R_t = \alpha + \beta(NIC_t\_P_{t-1}) + \varepsilon_t \tag{7}$$

$$R_t = \alpha + \beta(TCIC_t\_P_{t-1}) + \varepsilon_t \tag{8}$$

where R_t is the stock returns over the fiscal year minus returns on the NZX market portfolio, $NIC_t_P_{t-1}$is net income to common per share deflated by beginning-of-year price, and $TCIC_t\_P_{t-1}$ is total comprehensive income to common per share deflated by beginning-of-year stock price. Following Dechow (1994) and Goncharov and Hodgson (2008), in models (7)-(8), this paper uses financial statement variables on a per share basis, deflated by beginning-of-period price. Following Dechow (1994), market-wide returns are deducted from stock returns because they have low association with realized cash flows and earnings, and this improves the power of the tests. Following prior literature (Dechow, 1994), the model having a higher adjusted R^2 will be taken to explain stock returns better, and Vuong's (1989) test is used to test the significance of the difference in the adjusted R^2 of the two models.

Kothari and Zimmerman (1995) document that both the returns and price models suffer from econometric and theoretical problems and hence suggest that researchers use both models for definitive conclusions. Hence, following Dhaliwal *et al.* (1999), this paper also assesses the relative value relevance of NI and TCI by running a price level model. However, as Kothari and Zimmerman (1995) note, the price model does not measure the information arrival during the period. Following Dhaliwal *et al.* (1999), the paper runs the following two models:

$$P_t = \alpha + \beta_1 BV_t + \beta_2 NIC_t + \varepsilon_t \tag{9}$$

$$P_t = \alpha + \beta_1 BV_t + \beta_2 TCIC_t + \varepsilon_t \tag{10}$$

where P_t is price per share at the end of the fiscal year, BV_t is book value of equity at the end of the fiscal year, NIC_t is net income available to the common shareholders,

and $TCIC_t$ is total comprehensive income available to the common shareholders. The financial statement variables are deflated by the weighted average number of shares during the fiscal year.

Reporting location of TCI and its value relevance. The following model is used to assess whether the value relevance of TCI depends on where it is reported:

$$R_t = \alpha + \beta_1(TCIC_t\_P_{t-1}) + \beta_2 TCIC_t\_P_{t-1}*SINGLE + \varepsilon_t \quad (11)$$

where SINGLE is a binary variable that takes 1 if TCI is reported in the same statement in which profit/loss is reported, 0 otherwise. All other variables are as defined in model (8). A positive and significant coefficient of β_2 would be consistent with an incremental value relevance of TCI when it is reported in the same statement in which profit/loss is reported, rather than when a two-statement format is used for reporting comprehensive income.

Given the limitations of the returns model, this paper also uses the following price model to assess the impact of reporting location of TCI on its value relevance:

$$P_t = \alpha + \beta_1 BV_t + \beta_2 TCIC_t + \beta_3 TCIC_t*SINGLE + \varepsilon_t \quad (12)$$

All variables are as defined in models (10) and (11). A positive and significant coefficient of β_3 would be consistent with an incremental value relevance of TCI when it is reported in a single statement of comprehensive income, rather than when it is reported in a two-statement format.

5. Findings

5.1 Descriptive statistics and correlation matrices

Table II reports descriptive statistics of model variables and correlation coefficients between them. In Panel A the mean (median) NI per share (NI_{t+1}) and TCI per share (TCI_{t+1}) in 2010 are \$0.118 (\$0.066) and \$0.117 (\$0.057), respectively, and are statistically significantly different from zero. The mean (median) OCI (not tabulated) in 2010 is −0.001 (0.000), which is not significantly different from zero. During 2010, the three most frequent items of OCI were cash flow hedge (50 firms), exchange difference on translating foreign operations (45 firms), and changes in property, plant and equipment revaluation reserve (18 firms). During 2010, 33 out of 86 firms reported TCI in a single statement of comprehensive income.

Panels B and C of Table II report the correlation coefficients between the model variables. The correlation between net income and total comprehensive income is high and positive. For example, the correlation coefficients of NI_t with TCI_t is 0.894 and NI_{t+1} with TCI_{t+1} is 0.991 in Panel B. Similarly, the correlation coefficient of $NIC_t\_P_{t-1}$ with $TCIC_t\_P_{t-1}$ is 0.963 and that of NIC_t with $TCIC_t$ is 0.990. The high correlations along with similar average magnitudes of net income and total comprehensive income reported in Panel A may introduce bias against finding any differences in the properties of net income and total comprehensive income.

The issue of multicollinearity does not arise in models (1)-(8) as these models employ bivariate regressions. The highest correlation coefficient between the variables in models (9)-(12) is 0.439, which is between BV_t and $TCIC_t$. Thus, multicollinearity poses no serious problem in the regressions in this study.

Variables	N	Mean	Median	SD
Panel A: descriptive statistics				
NI_{t+1}	86	0.118***	0.066***	0.412
NI_t	86	0.081***	0.065***	0.229
TCI_{t+1}	86	0.117**	0.057***	0.429
TCI_t	86	0.090***	0.070***	0.261
CFO_{t+1}	86	0.239***	0.143***	0.281
R_t	81	−0.30	−0.017	0.381
$NIC_t\_P_{t-1}$	81	0.001	0.047***	0.203
$TCIC_t\_P_{t-1}$	81	−0.004	0.049***	0.217
P_t	81	2.030***	1.520***	1.928
BV_t	81	1.636***	1.089***	1.583
NIC_t	81	0.122***	0.068***	0.414
$TCIC_t$	81	0.121**	0.055***	0.432
SINGLE	81	0.370***	0.000***	0.486

Panel B: correlation matrix for variables in models (1)-(6)

	NI_{t+1}	NI_t	TCI_{t+1}	TCI_t	CFO_{t+1}
NI_{t+1}	1.000				
NI_t	0.419***	1.000			
TCI_{t+1}	0.991***	0.437***	1.000		
TCI_t	0.376***	0.894***	0.399***	1.000	
CFO_{t+1}	0.524***	0.708***	0.531***	0.699***	1.000

Panel C: correlation matrix for variables in models (7)-(12)

	R_t	$NIC_t\_P_{t-1}$	$TCIC_t\_P_{t-1}$	P_t	BV_t	NIC_t	$TCIC_t$	SINGLE
R_t	1.000							
$NIC_t\_P_{t-1}$	0.313***	1.000						
$TCIC_t\_P_{t-1}$	0.264**	0.963***	1.000					
P_t	0.197*	0.372***	0.365***	1.000				
BV_t	0.146	0.300***	0.286***	0.789***	1.000			
NIC_t	0.104	0.510***	0.495***	0.541***	0.437***	1.000		
$TCIC_t$	0.086	0.500***	0.511***	0.551***	0.439***	0.990***	1.000	
SINGLE	−0.185*	−0.042	−0.014	−0.331***	−0.333***	−0.123	−0.121	1.000

Notes: Statistically significant at: *10, **5 and ***1 percent; NI_{t+1} = one-year-ahead net income per share; NI_t = current year net income per share; TCI_{t+1} = one-year-ahead total comprehensive income per share; T CI_t = current year total comprehensive income per share; CFO_{t+1} = one-year-ahead cash flows from operating activities per share; R_t = returns over the fiscal year minus retun on the NZX portfolio; $NIC_t\_P_{t-1}$ = current year net income to common per share deflated by beginning-of-year share price; $TCIC_t\_P_{t-1}$ = current year total comprehensive income to common per share, deflated by beginning-of-year share price; P_t = end-of-year share price; BV_t = book value per share; NIC_t = current year net income to common per share; $TCIC_t$ = current year total comprehensive income to common per share; and SINGLE = 1 if the TCI is reported in a single statement of comprehensive income, 0 otherwise; the first five variables in this table are those in models (1)-(6); the sample size for these models is 86. The last eight variables are those in models (7)-(12); the sample size for these models is 81 as five out of the 86 firms do not have returns data; all figures, except the ratios, are in dollars

Table II.
Descriptive statistics and correlation matrices

5.2 Properties of NI and TCI

Table III reports the results on the properties of NI and TCI. Panel A reports the results on the persistence of NI and TCI. The adjusted R^2 is 0.166 and 0.150 for model (1) and (2), respectively. Both models are significant at less than 1 percent. The persistence

Panel A: persistence of NI and TCI		
Independent variables	Model: $NI_{t+1} = \alpha + \beta NI_t + \epsilon_t$ (1)	$TCI_{t+1} = \alpha + \beta TCI_t + \epsilon_t$ (2)
Constant	0.057 (2.338**)	0.058 (1.901*)
NI_t	0.755 (2.340**)	
TCI_t		0.656 (3.057***)
N	86	86
Adjusted R^2	0.166	0.150
F-statistic	17.933***	15.945***
Panel B: variability of NI and TCI	*NI*	*TCI*
SD	0.412	0.429
N	86	86
F-statistic	1.087	
Panel C: ability of NI and TCI to predict one-year-ahead CFO		
Independent variables	Model: $CFO_{t+1} = \alpha + \beta NI_t + \epsilon_t$ (3)	Model: $CFO_{t+1} = \alpha + \beta TCI_t + \epsilon_t$ (4)
Constant	0.169 (7.376***)	0.171 (7.403***)
NI_t	0.871 > (9.176***)	
TCI_t		0.753 > (8.962***)
N	86	86
Adjusted R^2	0.495	0.483
F-statistic	84.200***	80.318***
Vuong z-statistic	1.008	
Panel D: ability of NI and TCI to predict one-year-ahead NI		
Independent variables	Model: $NI_{t+1} = \alpha + \beta NI_t + \epsilon_t$ (5)	Model: $NI_{t+1} = \alpha + \beta TCI_t + \epsilon_t$ (6)
Constant	0.057 (2.338**)	0.065 (2.255**)
NI_t	0.755 (2.340**)	
TCI_t		0.593 (2.841***)
N	86	86
Adjusted R^2	0.166	0.131
F-statistic	17.933***	13.840***
Vuong z-statistic	1.341	
Panel E: association with contemporaneous returns		
Independent variables	Model: $R_t = \alpha + \beta(NIC_t\_P_{t-1}) + \epsilon_t$ (7)	Model: $R_t = \alpha + \beta(TCIC_t\_P_{t-1}) + \epsilon_t$ (8)
Constant	−0.031 (−0.757)	−0.028 (−0.684)
$NIC_t\_P_{t-1}$	0.586 (2.924***)	
$TCIC_t\_P_{t-1}$		0.464 (2.436**)
N	81	81
Adjusted R^2	0.086	0.058
F-statistic	8.551***	5.933**
Vuong z-statistic	1.117	

Notes: Statistically significant at: *10, **5, and ***1 percent; NI_{t+1} = one-year-ahead net income per share; NI_t = current year net income per share; TCI_{t+1} = one-year-ahead total comprehensive income per share; TCI_t = current year total comprehensive income per share; CFO_{t+1} = one-year-ahead cash flows from operating activities per share; R_t = company stock returns over the fiscal year minus returns on the NZX market portfolio; $NIC_t\_P_{t-1}$ = current year net income to common per share deflated by beginning-of-year price; $TCIC_t\_P_{t-1}$ = current year total comprehensive income to common per share deflated by beginning-of-year price; figures in parentheses are t-statistics; t-statistics in Panel A and D are White (1980) heteroskedasticity-consistent

Table III.
Results on properties of NI and TCI

coefficients of NI and TCI are 0.755 and 0.656, respectively. Thus, NI is potentially more persistent than TCI. These results are consistent with Barton *et al.* (2009) who found TCI is less persistent than NI. Un-tabulated results show that the results remain similar when NI and TCI are deflated by alternative size measures. The persistence coefficients are 1.312 and 0.801 for NI and TCI, respectively, when both NI and TCI are deflated by total assets. The corresponding coefficients are 1.986 and 1.768, respectively, when deflated by market capitalisation at the end of the last fiscal year. These results are consistent with *H1*.

Panel B shows the variability of NI and TCI. The standard deviation of NI and TCI is 0.412 and 0.429, respectively. Thus, consistent with *H2*, the variability of TCI is higher than that of NI. However, the difference in variability is not significant at the 10 percent level. Further, untabulated results show that the results are sensitive to deflators. When NI and TCI are deflated by total assets at the end of the year, the standard deviation of NI (1.758) is higher than that of TCI (1.413) and the difference is significant at less than 5 percent. When NI and TCI are deflated by market capitalisation at the end of the previous fiscal year, the standard deviation of NI and TCI is 0.677 and 0.654, respectively. However, the difference in variability is not significant at 10 percent. Thus, overall the results do not support *H2*.

Panel C reports the results on the ability of NI and TCI to predict one-year-ahead CFO. The models are significant at less than 1 percent. The adjusted R^2 is 0.495 when NI is the independent variable and 0.483 when TCI is the independent variable. The Vuong (1989) *z*-statistic, however, indicates that the difference in adjusted R^2 is not significant. Further, the results in Panel C are sensitive to which deflator is used. When CFO, NI and TCI are deflated by total assets, model (3) is not significant at 10 percent but model (4) is significant at less than 10 percent, although TCI in model (4) is not significant at 10 percent. Again, when CFO, NI and TCI are deflated by market capitalisation, the predictive ability of TCI is slightly higher than that of NI. Further, contrary to results of prior studies (Barth *et al.* 2001a, b; Goncharov and Hodgson, 2008), the coefficients of NI and TCI are negative and significant. Thus, overall the results do not support *H3*.

Panel D reports the results on the ability of NI and TCI to predict one-year-ahead NI. The models are significant at 1 percent. The adjusted R^2 is 0.166 when NI is the independent variable and 0.131 when TCI is the independent variable. The Vuong (1989) *z*-statistic is not, however, significant at the 10 percent level. Further, untabulated results show that the results are sensitive to deflators. When models (5) and (6) are re-estimated after deflating the dependent and independent variables by total assets, NI in model (5) is significant at less than 1 percent and the adjusted R^2 is 0.908. TCI in model (6) is significant at less than 1 percent and the adjusted R^2 is 0.962. When market value is used as the deflator, the predictive ability of TCI is slightly higher than that of NI. Thus, overall the results do not support *H4*.

Panel E shows the association of NI and TCI with stock returns. Both models are significant at the less than 1 percent level. The earnings response coefficients (0.586 for $NIC_t\_P_{t-1}$ and 0.464 for $TCIC_t\_P_{t-1}$) are significant at less than 1 percent. The coefficient of $TCIC_t\_P_{t-1}$ is lower than that of $NIC_t\_P_{t-1}$. This is consistent with TCI incorporating more transitory items than NI (Kothari and Zimmerman, 1995)[16]. Further, the adjusted R^2 is 0.086 when $NIC_t_P_{t-1}$is the independent variable and 0.058 when $TCIC_t\_P_{t-1}$ is the independent variable. The explanatory power of $NIC_t\_P_{t-1}$ is about 48 percent higher than that of $TCIC_t\_P_{t-1}$ though the Vuong (1989) *z*-statistic for

the difference in adjusted R^2 is not significant at the 10 percent level. The result of Vuong's test is to be interpreted with caution as the sample size here is small and the Vuong statistic is sensitive to sample size[17]. The results in Panel E are consistent with Barton *et al.* (2009) and Goncharov and Hodgson (2008). Barton *et al.* (2009) found that TCI is less value relevant in 39 (including NZ) of their 46 sampled countries. The results are similar when we use raw returns instead of market adjusted returns as the dependent variable in models (7) and (8).

The results of models (9) and (10) are reported in Table IV. Both models are significant at less than 1 percent. The coefficient of NIC_t (1.130) is slightly less than that of $TCIC_t$ (1.133). The adjusted R^2 are, however, similar (0.661 for model (9) vs 0.666 for model (10))[18]. The Vuong (1989) *z*-statistic is not significant at conventional levels.

5.3 Reporting location of TCI and its value relevance

Table V reports the results of running models (11) and (12) testing the impact of reporting location of TCI on its value relevance. Although model (11) is significant, not one of the

Independent variables	Model: $P_t = \alpha + \beta_1 BV_t + \beta_2 NIC_t + \epsilon_t$ (9)	Model: $P_t = \alpha + \beta_1 BV_t + \beta_2 TCIC_t + \epsilon_t$ (10)
Constant	0.531 (3.389***)	0.543 (3.471***)
BV_t	0.832 (6.513***)	0.825 (6.446***)
NIC_t	1.130 (2.169**)	
$TCIC_t$		1.133 (2.187**)
N	81	81
Adjusted R^2	0.661	0.666
F-statistic	79.018***	80.642***
Vuong *z*-statistic	0.746	

Notes: Statistically significant at: *10, **5, and ***1 percent; P_t = stock price at the end of the fiscal year; BV_t = book value of equity per share at the end of the fiscal year; NIC_t = net income to common per share; $TCIC_t$ = total comprehensive income to common per share; White (1980) heteroskedasticity-consistent t-statistics are in parentheses

Table IV.
Results of the price models

Independent variables	Model: $R_t = \alpha + \beta_1 (TCIC_t\_P_{t-1}) + \beta_2 (TCIC_t\_P_{t-1}*SINGLE) + \epsilon_t$ (11)	Model: $P_t = \alpha + \beta_1 BV_t + \beta_2 TCIC_t + \beta_3 (TCIC_t*SINGLE) + \epsilon_t$ (12)
Constant	−0.027 (−0.668)	0.490 (3.227***)
$TCIC_t\_P_{t-1}$	0.306 (0.903)	
$TCIC_t\_P_{t-1}*SINGLE$	0.434 (0.889)	
BV_t		0.834 (6.518***)
$TCIC_t$		1.063 (2.274**)
$TCIC_t*SINGLE$		2.377 (1.764*)
N	81	81
Adjusted R^2	0.061	0.671
F-statistic	3.577**	55.422***

Notes: Statistically significant at: *10, **5, and ***1 percent; single is 1 if TCI is reported in the same statement in which profit/loss is reported, 0 otherwise; All are variables are as defined in Tables III and IV; White (1980) heteroskedasticity-consistent t-statistics are in parentheses

Table V.
Effect of reporting location of TCI on its value relevance

model variables is significant at conventional levels. Model (12) is significant at less than 1 percent and both BV_t and $TCIC_t$ are positive and significant. However, $TCIC_t$*SINGLE, the variable of interest, is positive and significant at 10 percent. Thus, while the returns model provides no evidence that the value relevance of total comprehensive income depends on the reporting location, the price model provides only weak support for the hypothesis that the value relevance of total comprehensive income is higher when it is reported in a single statement. Overall, these results provide little support for the hypothesis that the value relevance of TCI depends on the reporting location.

5.4 Correction for industry cluster effects

One potential limitation of the regression analyses above is that observations from each industry cluster might be correlated as a result of an unobserved industry cluster effect. To assess whether the results reported above are sensitive to industry cluster effects, the fixed effects transformations are used to eliminate the unobservable industry effect (Wooldrige, 2002). In fixed effects transformation, the industry average of each model variable is deducted from the relevant variable of each firm belonging to that industry and the regression models are re-estimated using the industry-demeaned data. The regressions, however, do not contain any intercept as it is eliminated when the industry average is deducted from the firm-level data (Wooldrige, 2002). The standard errors are corrected for loss of degrees of freedom as one industry average is calculated and deducted from the firm-level data for each industry (Wooldrige, 2002). This section reports the (untabulated) results of regressions after correcting for any unobserved clustering effect. When models (1) and (2) are re-estimated using the industry-demeaned data, the persistence coefficient of NI is 0.836, while that of TCI is 0.766. Both coefficients are significant at less than 1 percent. Thus, net income is potentially more persistent than total comprehensive income.

In predictive ability analysis, the adjusted R^2 of model (3) is 0.491 and that of model (4) is 0.450. The adjusted R^2 of model (5) is 0.211 and that of model (6) is 0.175. Thus, net income has potentially greater predictive ability than total comprehensive income.

In model (7), the coefficient of $NIC_t\_P_{t-1}$ is 0.556 and the adjusted R^2 is 0.087. In model (8) the coefficient of $TCIC_t\_P_{t-1}$ is 0.458 and the adjusted R^2 is 0.065. Thus, the earnings response coefficient for net income is potentially higher than that for total comprehensive income and net income is potentially more highly associated with contemporaneous returns than total comprehensive income. In price models, the adjusted R^2s are similar (0.687 for model (9) and 0.698 for model (10)). In the re-estimated model (11), the coefficient of $TCIC_t\_P_{t-1}$*SINGLE is not significant at 10 percent. Similarly in model (12), the coefficient of $TCIC_t$*SINGLE is not significant at 10 percent.

5.5 Marginal contribution of OCI

Up to this point, this study has compared NI with TCI as summary performance measures. This section reports the un-tabulated results of the incremental predictive ability and value relevance of OCI over and above those of NI. To assess the incremental contribution of OCI, TCI is decomposed into NI and OCI. Following Biddle *et al.* (1995), the incremental contribution of OCI is assessed by the statistical significance of the coefficient of OCI.

When both NI and OCI are used as independent variables to predict one-year-ahead CFO, NI is positive and significant at less than 1 percent and OCI is positive and significant at less than 10 percent. The adjusted R^2 is 0.511. When both NI and OCI are used to predict one-year-ahead NI, NI is positive and significant at less than 1 percent but OCI is not significant. The adjusted R^2 is 0.156 and the model is significant at less than 1 percent.

A returns model is estimated by including $NIC_t\_P_{t-1}$ and $OCIC_t\_P_{t-1}$ as independent variables and market-adjusted returns as the dependent variable, to see whether $OCIC_t\_P_{t-1}$ has any incremental information content. $OCIC_t\_P_{t-1}$ is other comprehensive income to common per share deflated by beginning-of-year share price and $NIC_t\_P_{t-1}$ is as defined in model (7). $NIC_t\_P_{t-1}$ is positive and significant at less than 1 percent but $OCIC_t\_P_{t-1}$ is not significant at 10 percent. The overall model is significant at less than 1 percent and the adjusted R^2 is 0.093. A price model is also estimated in which BV_t, NIC_t and $OCIC_t$ are used as independent variables and end-of-period price is used as the dependent variable to assess whether $OCIC_t$ is incrementally value relevant. $OCIC_t$ is other comprehensive income to common per share. BV_t and NIC_t are as defined in model (9). BV_t is significant at less than 1 percent and NIC_t is significant at less than 5 percent, but $OCIC_t$ is not significant at 10 percent. The adjusted R^2 is 0.664. Thus, the results suggest that other comprehensive income is not incrementally value relevant.

6. Conclusions

This paper examines properties of NI and TCI of listed companies of NZ. Four properties are examined: persistence, variability, predictive ability, and value relevance. The authors also examine whether the value relevance of TCI depends on its reporting location. This paper utilizes data on comprehensive income that NZ listed companies reported in 2010 under the new requirement to report comprehensive income under IAS 1. The sample in this study comprises 86 firms used to test the persistence, variability, and predictive ability of NI and TCI, and 81 firms used to test value relevance of NI and TCI.

This study finds that NI is potentially more persistent than TCI and potentially explains contemporaneous stock returns better than TCI. These results are robust to alternative deflators and standard errors corrected for industry clusters. It, however, finds no significant difference in the variability and predictive ability of NI and TCI. The authors find little evidence that the value relevance of TCI depends on its reporting location. Further, the study finds that OCI has incremental ability to predict one-year-ahead CFO, although the incremental ability of OCI to predict one-year-ahead NI is not statistically significant. The results also indicate that OCI is not incrementally value relevant.

The literature on comprehensive income is growing (Dhaliwal *et al.*, 1999; O'Hanlon and Pope, 1999; Lee *et al.*, 2006; Chambers *et al.*, 2007; Goncharov and Hodgson, 2008). While two studies (Cahan *et al.*, 2000; Barton *et al.*, 2009) have previously investigated the properties of NI and comprehensive income in NZ, those studies were conducted prior to the new IFRS regime in NZ. Adoption of IFRS affects financial account numbers in NZ (Kabir *et al.*, 2010; Stent *et al.*, 2010). Further, IAS 1 changes the reporting location of comprehensive income in NZ from a statement of changes in equity to a performance statement. Prior research (Maines and McDaniel, 2000)

suggests that location of comprehensive income reporting may affect the weight users attach to comprehensive income. Hence, results of prior research may not be generalisable to the current IFRS setting in NZ. This study addresses this gap and further investigates whether the value relevance of TCI depends on its reporting location, because IAS 1 allows the option of reporting TCI either in a single statement of comprehensive income or in a two-statement format (IASB, 2009), and the IASB (2010) proposes the elimination of the option of the two-statement format. The results suggest that the IASB (2010) proposal to require the reporting of TCI in a single statement may not enhance the value relevance of TCI.

This study adds current evidence on the properties of NI, TCI and OCI under IFRS to the international literature on comprehensive income. The results may be of potential interest to securities analysts who use firm fundamentals to value a firm and other users who use earnings in different contractual settings. The results may also be of potential interest to the IASB.

The main limitation of this study is the small size of the sample. Thus, the results may lack generalizability to other samples and statistical power. The small sample, however, reflects the small number of firms listed in NZ. It further reflects that a the time of the study, only one year of data are available for all the listed companies in NZ after the implementation of the new requirement of comprehensive income reporting under IAS 1. Further, due to the small sample size, the study could not investigate whether the results vary across industries. Some industries (e.g. financial institutions, agriculture and fishing) are markedly different from other industries, as firms belonging to the former industries have to include some fair value gains and losses in NI. Thus, the results documented here may not be equally applicable to all industries. Future research may investigate this issue.

Notes

1. OCI incorporates items of income and expense that are not recognised in profit or loss under IFRS (IASB, 2009, para 7). TCI is the change in owners' equity from non-owner sources (IASB, 2009, para 7). TCI is the sum of profit/loss and OCI (IASB, 2009, para 7).
2. During the pre-IFRS era, NZ entities reported a similar amount, called "total recognized revenues and expenses" in a separate Statement of Movements in Equity in accordance with Financial Reporting Standard 2 (Cahan *et al.*, 2000).
3. Cahan *et al.* (2000) cover the 1992-1997 period, while Barton *et al.* (2009) cover 1996-2005.
4. NZ allowed adoption of IFRS from 2005 (ASRB, 2004, para 20). Following this option, some NZ listed companies early adopted IFRS (Kabir *et al.*, 2010).
5. For example, upward revaluation of property, plant and equipment (PPE) and intangibles is an other comprehensive income item under IAS 1 (IASB, 2009). But US GAAP do not permit upward revaluation of PPE and intangibles (Bellandi, 2009).
6. Dechow and Schrand (2004) note limitations of the above criteria. First, managed earnings could be both persistent and predictable. Second, actual cash flows can be a noisy metric of value. Third, from the perspective of faithful representation, variability of earnings is not bad if it reflects the underlying variation of the operation of the company. However, variability in earnings may be induced by accounting also. Fourth, using contemporaneous association between earnings and stock price assumes that the market is efficient and stock price quickly reflects all publicly available information. Despite these limitations, the accounting literature supports the use of these attributes as indices of high earnings quality. Prior research shows

that persistence of earnings components is a desirable attribute from the perspective of equity valuation (Lipe, 1986). The conceptual framework for financial reporting issued jointly by the FASB and the IASB argues that accounting information should assist users assess the amount, timing and uncertainty of future cash flows to the entity (FASB, 2010, para OB 3). Earnings are used in a variety of contractual settings and widely used by analysts in firm valuation (Dechow, 1994; Dechow and Schrand, 2004). These make the ability to predict future cash flows and net income desirable attributes of accounting information. Further, the newly issued conceptual framework focuses on the information needs of investors (FASB, 2010, para OB2 and BC1.16) and stipulates relevance as one of the two fundamental qualitative characteristics of financial information (FASB, 2010, para QC5). Association of the income metrics with contemporaneous stock returns is one way to operationalise the relevance criterion to investors (Barth *et al.*, 2001).

7. In its exposure draft on presentation of items of other comprehensive income issued in May 2010, the IASB (2010) proposes to change the title of the statement of comprehensive income to "statement of profit or loss and other comprehensive income". It further proposes, inter alia, to eliminate the currently available option of reporting TCI in two statements. Instead it proposes to require the reporting of TCI in a single statement with two sections – profit/loss and OCI. It also proposes to require the disclosure of items of OCI that are recycled to profit/loss separate from items of OCI that are not.
8. The sequence $\{Y_t\}$ follows a sub-martingale process if $E(Y_{t+1}|Y_0, \ldots, Y_t) \geq Y_t$ for all t. E is an expectation operator. The random walk model is a sub-class of the sub-martingale process (Ball and Watts, 1972).
9. Most studies on comprehensive income used estimates of TCI because accounting standards did not require disclosure of TCI during the study periods.
10. Ohlson (1999) defines transitory earnings as possessing three characteristics: (a) unpredictability, (b) forecast irrelevance, and (c) value irrelevance.
11. Barth *et al.* (1995, p. 579) note that American bankers made this argument at the time of the FASB public hearing before promulgating SFAS 115.
12. However, if NI is managed to give it a more persistent look than TCI, investors may not view persistence as desirable (Barton *et al.*, 2009; Dechow and Schrand, 2004).
13. NZX Deep Archive is a subscription database service of the NZ Stock Exchange.
14. In case of one company, the net income figure reported in the income statement is different from that reported in the earnings per share note. In case of another company, the number of shares at the beginning of 2010 is not the same as that at the end of the 2009. Hence, these two companies are excluded from the sample on the ground of lack of reliability of figures.
15. Vuong's (1989) test is used to assess the statistical significance of the difference in the explanatory powers of two non-nested regression models. Dechow (1994) describes how the Vuong (1989) statistic is derived. After Dechow (1994), this test has been widely used in the accounting literature. The authors, however, note that Vuong's (1989) test is sensitive to sample size. This limitation is relevant to this study as the sample size is small.
16. Kothari and Zimmerman (1995, p. 178) argue that the earnings response coefficient will be smaller when earnings contains transitory items than when it does not. When earnings contains both a random walk component and a zero-mean transitory component, the earnings response coefficient will be the weighted average of the coefficient of the random walk component of earnings and that of the transitory component.
17. Dhaliwal *et al.* (1999, Table 2) reported that the Vuong (1989) statistic for the difference in the adjusted R^2 of 4.20 percent and 3.81 percent is significant; their sample size is 11425.

18. Dhaliwal *et al.* (1999) reported an adjusted R^2 of 0.528 and 0.521 for these models, and thus, the explanatory powers of models (9) and (10) are comparable to those of Dhaliwal *et al.* (1999).

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