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Quality of Net Income vs. Total Comprehensive Income in the Context of IAS/IFRS Regulation

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Abstract

Research in accounting has thus far attempted to provide fair and useful financial performance measures for a wide range of users. Academics and professionals have also established income as the key performance measures in making economic decisions. The purpose of this study is to investigate the quality of total comprehensive income (TCI) relative to net income (NI), prepared in accordance with International Financial Reporting Standards (IAS/IFRS). Using a data set covering 2,273 firms from 22 countries in Europe, Asia and Australia between 2006 and 2010, we provided evidence that net income always dominates comprehensive income as a valuation metric. The findings indicated that NI is more value relevant than TCI in predicting the future operating cash flows and income. In addition, NI is more persistent and timely, and explains the actual operating cash flows more precise than TCI. Accruals linked to NI have also better quality than those related to TCI. However, we found that TCI is less smoothing and more conservative than NI. These results do not support the claim that income measured on a comprehensive basis is a better measure of firm performance than NI. These results raise the questions about the usefulness of mandating TCI in IAS/IFRS regulation. Our findings, therefore, should be of interest to IASB, as they provide evidence of fewer quality of the TCI. Perhaps it is time for the IASB to reconsider other comprehensive income components and focus on items included in other comprehensive income to improve the quality of the TCI metric. These results also provide evidence of net income as a primary decision-relevant metric.

Keywords: Earnings Quality; IAS/IFRS Regulation; Net Income; Total Comprehensive Income; Financial Statement Presentation

1. Introduction

The International Accounting Standards Board (IASB) revised the standard (IAS) N° 1, Presentation of Financial Statements[1] in September 2007. The main innovation carried out by the IASB is the mandating of the total comprehensive income disclosure in financial statements prepared under IAS/IFRS regulation. The recent amendment of (IAS) N° 1 has led to a vigorous debate about the pros and cons of comprehensive income performance measurement. Devalle and Magarini (2012) referred to this highly controversial debate that has started in both academic and professional circles over the definition of the best performance measure for stakeholders between comprehensive income, net income or other accounting figures. The conceptual purpose of TCI is to improve the quality of financial reporting and to provide better information about the financial performance for a wider range of interested parties. An important purpose of the statement of comprehensive income is to categorize income components in a way that is valuable to investors. The TCI is relatively recent in IAS/IFRS regulation. A limited number of studies have assessed the quality of the results in this context. However, the quality of TCI has been the research focus of numerous empirical studies, mainly under the US GAAP regulation. These studies produced mixed evidence. While some studies found that net income was a better measure of firm performance than total TCI, others suggested that fair value income produced high quality of earnings. To contribute to this debate we extend the academic literature by investigating a large set of earnings quality attributes to find out which earning metrics are the best. Our research is carried out according to IAS/IFRS norms and therefore TCI is calculated as required by the IAS No. 1. The attributes of earnings quality that we examine include the value relevance, the predictability, the substitute for cash flow, the timeliness and conservatism, the persistence, the smoothing and the quality of accruals. Our sample covers 2,273 firms during 5 years (2006-2010) across 22 countries from 22 countries in Europe, Asia and Australia.

We examine the effectiveness of TCI as a summary measure of firm performance as required by the International accounting standard (IAS) N° 1, Presentation of Financial Statements. Little empirical research has focused on the

[1] The revised IAS 1 does not become effective until annual periods beginning on or after 1 January (2009). This IASB statement established standards for reporting and presenting comprehensive income and other comprehensive income general purpose financial statement.

quality of TCI prepared in accordance with IAS/IFRS norms. Investors may find this study of particular interest to discern the usefulness of performance measures calculated under fair value principal and support the IASB decisions to amend the IAS 1. Furthermore, this study contributes to the tremendous controversy about what should be reported in the income statement. This paper helps to underline the value of the TCI and the other comprehensive income components. Although ongoing literature focuses more on the value relevance earnings attributes, this study aims to extend prior research, examining various proxies of earnings quality and adding to the earnings quality literature under IAS/IFRS regulation.

The remainder of the paper is organized as follows. First, we try to clarify the concepts of TCI. We present the concept and meanings of comprehensive income (clean surplus income and dirty surplus income). Second, we review the related research and the Hypotheses. Third, we describe the research design, including the measures for the variables used, the model specifications, and the sample and data selections process. After that, we report and discuss the descriptive statics and empirical analysis [Section V]. Finally, we summarize and conclude the paper.

Meaning of TCI under the (IAS) N° 1, Presentation of Financial Statements

As indicated by Kanagaretnam et al. (2009, p. 352) "measuring periodic performance and financial position of a business entity has always been a challenge for accounting policy makers and a major concern for users of accounting information". The recent revision of the norms IAS N° 1 has also provided motivation to explore the value added of the mandatory disclosure of the fair value income in terms of earnings quality. Financial statements prepared in compliance with IAS/IFRS norms state two core measures of overall performance: net income and total comprehensive income. The net income corresponds to the "difference between revenue realized in transactions and related historical cost occurred in a designated period of time, based on the accrual basis, realization principle and matching principle" (Liu & Liu, 2009, p. 74). This refers to the traditional conception of income measurement of financial performance. While total comprehensive income is more extensive, it should cover all changes in equity in designed period, except transactions from the owners. In other words, TCI encompasses all enrichment achieved by the company, representing "a key measure of the overall company performance" (Devalle & Magarini, 2012, p. 43). The total comprehensive is conceptually closer to economic income or Hicksian income[2] and driving from the concept of 'financial capital maintenance'[3]. The TCI measurement of financial performance refers to the up-to-date conception of income as defined by the 'Conceptual Framework for Financial Reporting' (2010)[4]: "Income is increases in economic benefits during the accounting period in the form of inflows or enhancements of assets or decreases of liabilities that result in increases in equity, other than those relating to contributions from equity participants" (Paragraph 425. a).

The IAS 1[5] states that the Total Comprehensive Income TCI is obtained via two following processes:

Dirty surplus income

TCI is the sum of net income NI and other comprehensive income OCI components, including:

a. Changes in revaluation surplus (see IAS 16 Property, Plant and Equipment and IAS 38 Intangible Assets);

b. Actuarial gains and losses on defined benefit plans recognized in accordance with paragraph 93 of IAS 19 Employee Benefits;

c. Gains and losses arising from translating the financial statements of a foreign operation (see IAS 21 The Effects of Changes in Foreign Exchange Rates);

d. Gains and losses on re-measuring available-for-sale financial assets (see IAS 39 Financial Instruments: Recognition and Measurement);

e. The effective portion of gains and losses on hedging instruments in a cash flow hedge (see IAS 39).

Clean surplus income

Total comprehensive income is the change in equity during a period resulting from transactions and other events, except for those changes resulting from transactions with owners in their capacity as owners. This means that only the changes not linked to the owners describe a clean relation between the balance sheet and income statement.

According to the standard IAS N° 1 (revised in June, 2011[6]) the entity may present a single 'statement of profit or loss and other comprehensive income', with profit or loss and other comprehensive income presented in two sections. The

[2] They both describe periodical change in the valuation of entity, but they basically disagree in terms of the treatment of the value of goodwill (Tsujiyama, 2007).

[3] The recognition and measurement of income and expenses, and hence profit, depends in part on the concepts of capital and capital maintenance used by the entity in preparing its financial statements. Under the concept of financial capital maintenance "a profit is earned only if the financial (or money) amount of the net assets at the end of the period exceeds the financial (or money) amount of net assets at the beginning of the period, after excluding any distributions to, and contributions from, owners during the period". (Conceptual Framework for Financial Reporting, 2010)

[4] The IASB Framework was agreed by the IASC Board in April (1989) and adopted by the IASB in April (2001). In September 2010, the IASB amended the objective of general purpose financial reporting and the qualitative characteristics of useful information. The remaining of the document from 1989 remains effective.

[5] In September (2007) The IASB has introduced the first amendment to IAS 1 'Presentation of Financial Statements'. This reform imposes the publication of the total comprehensive income in the financial statements. In June (2011) the IASB has introduced the second Amendment to IAS 1. This reform establishes the components incorporated in the 'Other comprehensive income' concept.

sections shall be presented together, with the profit or loss section presented first followed directly by the other comprehensive income section. The other comprehensive income section shall present line items for amounts of other comprehensive income in the period, classified by nature:

(a) will not be reclassified subsequently to profit or loss; and

(b) will be reclassified subsequently to profit or loss when specific conditions are met.

2. Literature Review and Hypotheses

Over the years, there has been a large controversy about what earnings metrics should be reported in the income statement. The IASB's rationale for imposing the TCI metric in 2007 is mainly driven by the need to enhance the transparency of financial statements and to provide capital markets with more pertinent accounting information relative to net income alone. Conceptually, the TCI produces better information that is useful to a wide range of users in making economic decisions, especially for capital providers. The disclosure of TCI allows users to assess possible cash flow of the company because it identifies the entire resource of value added (Keating, 1999). It supplies investors with clear insights into the future prospects of the firm and progress the predictive aptitude of its future earnings and cash flows (Goncharov & Hodgson, 2011). The TCI "can provide more objective and useful information as it is a periodical change in net assets, given that assets and liabilities held by an entity are objectively observable" (Tsujiyama, 2007, p. 3). In this way, supporters of the TCI maintain that it has provided more useful and related information, and satisfied the users with comprehensive financial information (Liu & Liu, 2009). Additionally, Goncharov and Hodgson (2011, p. 30) argued that "it captures all sources of value creation and forces managers to consider external factors that affect firm value, not just internal operating ones".

The TCI has evolved with a coherent theoretical basis in IAS/IFRS regulation. It is above all driven by the too much use of fair value measurement principle. The determination and the quality of TCI mainly depend on the use of fair value. The merits of fair value accounting generate passionate debates among academics, regulators, and investors. Investors generally maintain measurements at fair value as providing the most transparent financial reporting of an investment, thereby facilitating better investment decision-making and more efficient capital allocation between firms (SEC, 2008)[7]. However, the manner whereby these valued are attained is highly important to including fair values in financial statements (Gwilliam & Jackson, 2008). Consistent with IFRS 13[8], the fair value is obtained using two processes: mark to market vs. mark to model. These methods are associated with several challenges and limitations. The most important advantage linked to the market to market model fair value valuation is the reconciliation between accountings and market value of the entity. This reconciliation improves the value relevance of the TCI. However, the principal disadvantage related to this approach is that translated market values amplify the volatility of earnings metrics (SEC, 2008). Most prior researches show that employing mark to market accounting translates into more volatile income (Keating, 1999; Laux & Leuz, 2009; McCoy et al., 2009; Goncharov & Hodgson, 2011; Ferraro & Veltri, 2012). Moreover, the main weakness connected to the market to models is the potential discretion in estimating fair value measures. Proponents of the 'all inclusive' approach assert that it is more suitable to include both realized and unrealized gains and losses on fair value measurement in income because this information permits users to better predict future income or cash flows. However, recording unrealized gains and losses on the income statement may lead to increased income volatility (SEC, 2008).

As a result, previous empirical studies provided mixed evidence on the quality of total comprehensive income. The information produced by TCI was expected to help investors, creditors and other financial statement users in evaluating an enterprise's economic activity, and its timing and magnitude of future cash flows (McCoy et al., 2009). However, several empirical and survey-based articles have confirmed that there is no evidence of better quality of (TCI). For example, Ferraro and Veltri (2012) argued that previous research provided mixed evidence, failing to a large extent to find consistent support for the value relevance of CI/OCI and its components. Critics show that TCI fail to improve the quality of financial reporting. They consider that the current operating income approach has better reflected the permanent earnings power of a firm that results only from recurring activities as measured objectively by historical-cost and according to the realization concept (Kanagaretnam et al., 2009). They argue that other comprehensive income components are transitory in nature and therefore unrepresentative of core earnings. McCoy et al. (2009) showed that

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[6] The revision of IAS 1 results from the first stage (segment A) of the IASB's project on performance reporting. The IASB and the FASB are undertaking this project together to improve the consistency and clarity of the presentation of items of comprehensive income.

[7] SEC (2008). Report and Recommendations Pursuant to Section 133 of the Emergency Economic Stabilization Act of 2008: Study on Mark-To-Market Accounting. Reprinted on the SEC website: http://www.sec.gov/news/studies/2008/marktomarket123008.pdf

[8] In May 2011, the International Accounting Standards Board (IASB) was published the IFRS 13. The statement defines 'fair value' and establishes a set of requirements for its measurement and disclosure. The Standard defines fair value on the basis of an 'exit price' notion and uses a 'fair value hierarchy', which results in a market-based, rather than entity-specific, measurement. IFRS 13 state that fair value refers to "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". IFRS 13 tries to increase consistency and comparability in fair value measurements through a 'fair value hierarchy'. The hierarchy classifies the inputs used in valuation techniques into three levels. Level 1: inputs are quoted prices in active markets for identical assets or liabilities that the entity can access at the measurement date. Level 2: inputs are inputs other than quoted market prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3: inputs inputs are unobservable inputs for the asset or liability. Level 1 and 2 refers to market to market approach. While level 3 refers to market to models approach

other comprehensive income items could indeed be volatile and significant. Thus, the other comprehensive income enhances the instability of TCI and restraining their usefulness for predicting firm values. Also, the IAS/IFRS regulation are typically labeled as concept-based; thus, this regulation system heightens the field of other comprehensive income management.

Cheng et al. (1993) found evidence confirming that both operating income and net income dominate comprehensive income quality. While King et al. (1999) concluded that financial statements users assumed that comprehensive income carried additional useful information, though it was not an important financial statement item to assess firm performance. Furthermore, Dhaliwal et al. (1999) found no clear evidence that comprehensive income is more strongly associated with returns than net income, less strongly associated with the market value of equity than net income, and predicts future operating cash flows and income worse than net income. Kanagaretnam et al. (2009, p. 349) also concluded "that net income is a better predictor of future net income relative to comprehensive income". Zülch and Pronobis (2011) reached a similar conclusion. They gave "no evidence that comprehensive income has a superior predictive power for future firm operating performance than net income" (p. 12). Also, they "failed to find significant incremental predictive power of aggregated or individual components of other comprehensive income for subsequent period's firms operating performance" (p. 1). Moreover, Goncharov and Hodgson (2011) revealed that net income dominates aggregated comprehensive income as a decision-relevant metric for the general investor when used for information, valuation, and prediction purposes. Jones and Smith (2011) demonstrated that other comprehensive income exhibit negative persistence and have a weaker predictive value. Likewise, Turen and Hussiny (2012) confirmed that NI is superior to TCI for evaluating Gulf Cooperation Council Insurance firms' performance based on stock return, stock price and operating cash flow prediction. Lately, Devalle and Magarini (2012) have established evidence that that total comprehensive income has not led to an undisputable rise in value relevance compared with net income. Devalle (2012) examined whether the use of the comprehensive income instead of the net income significantly increases the explanatory power of the value relevance models. The results, however, did not yield evidence that employing the comprehensive income as the overall economic performance measure increases the value relevance of accounting data.

Alternatively, proponents of the all-inclusive concept argue that income measured on a comprehensive basis measure firm performance is better than other summary income measures because it includes all changes in the net assets of a firm during a period from no owner sources "is the only measure that captures all sources of value creation and appropriately distinguishes between value creation and value distribution" (Chambers et al., 2007, p. 561). The IASB believes that items presented in the profit or loss section and other comprehensive income include important and interrelated information about the financial performance of an entity. In this context, Cahan et al. (2000) found that comprehensive income is more value relevant than net income. Similarly, Biddle and Choi (2006) established that comprehensive income as defined by SFAS 130 is the dominant income metric for explaining equity returns. Choi and Zang (2006) investigated the ability of the current period TCI to predict the subsequent period NI and whether financial analysts appear to use such information in making their earnings forecasts. The evidence suggests that comprehensive income can predict subsequent period net income, over and above current period net income. Results also show that TCI is associated with analysts' earnings forecast revisions and forecast errors. Chambers et al. (2007) found that other comprehensive income components (unrealized gains and losses on the marketable securities and foreign currency translation adjustments) are priced positively by investors (value relevant) in the post-SFAS 130 environment. Using a sample of 697 Standard and Poor (SandP) firms with the fiscal year ending on December 31, 2006, Mitra and Hossain (2009) found that some other comprehensive income components are significantly associated with stock returns. Fernández and Arana (2010) also discovered that the market impact is more evident if comprehensive income rather than the more traditional measure of net income is used. In the same way, Jones and Smith (2011) found that other comprehensive income are value relevant.

As shown previously, the quality of TCI was a controversial topic for academic research. However, we found out that there has been little empirical research supporting the claim that income measured on a comprehensive basis is a better measure of firm performance than net income measures. In other words, previous empirical research on the quality of TCI generally sways in favor of traditional 'net income' performance measure. Taking previous studies (e.g., Cheng et al., 1993; Dhaliwal et al., 1999; Kanagaretnam et al., 2009; Zülch & Pronobis, 2011; Goncharov & Hodgson, 2011; Turen & Hussiny, 2012; Devalle & Magarini, 2012; Devalle, 2012) into account, we make the assumption that net income better reflects the earnings attributes quality than total comprehensive income. The following premise is expected to be empirically verified:

Hypothesis: The net income provides better earnings quality attributes more than total comprehensive income in IAS/IFRS regulation.

3. Method

This section describes the major steps of the research methodology. First, we clarify the concepts of earnings quality and outline the empirical models. Then, we describe our sample and data. Finally, the results are tabulated and presented.

3.1 Earnings quality

High-quality of earnings is important to the proper functioning of equity markets. The IASB classifies the qualitative characteristics[9] of useful financial information into fundamental and enhancing qualitative characteristics: "If financial information is to be useful, it must be relevant and faithfully represents what it purports to represent. The usefulness of financial information is enhanced if it is comparable, verifiable, timely and understandable" (Conceptual Framework for Financial Reporting, 2010). Consistent with this broad classification, various proxies of these qualitative characteristics were widely tested in academic research on 'earnings quality'. Research on earnings quality has grown dramatically over the past two decades (Defond, 2010). The term earning quality in itself has no recognized meaning and has been used with different interpretations. In this context, Dechow et al. (2010) stated that higher quality earnings offer more information about the features of the financial performance of a firm relevant to a specific decision made by a specific decision-maker. These researchers used different measures such as indications of 'earnings quality'[10], persistence, accruals, smoothness, timeliness, loss avoidance, and investor responsiveness, as well as external indicators such as restatements and SEC enforcement releases.

In order o compare the quality of the net income and the total comprehensive income, we build on the existing literature, which expresses the quality of earnings in terms of earnings attributes. While prior studies usually tend to focus on one or two earnings attributes at a time, we estimate various proxies. These properties include value relevance, predictability, substitute of cash flow, persistence, timeliness, conservatism, smoothing, and the quality of accruals. We describe the properties of earnings quality we include in our analyses subsequently.

3.2 Model specification

We follow the prior literature and define quality in terms of earnings attributes. We add to the ongoing TCI/NI debate by investigating a set of earnings attributes. For each earnings attribute, we estimate two separate models for each type of income. The models are tested for a sample covering 2,273 firms from 2006 to 2010 across 22 countries around the globe. A number of models are constructed in undertaking our research agenda, and the following section outlines the models used to test the earnings attributes.

3.2.1 Value relevance[11]

This attribute refers to the fundamental qualitative characteristics intended by the IASB that make the income provided in financial statements useful to users. A choice exists between two perspectives in order to assess the value relevance earnings metrics. The 'measurement perspective' examines the association between earnings metrics and market data, while the 'signaling perspective' tests changes in market value following announcements of earnings metrics. This study adopts the measurement perspective in order to investigate whether NI or TCI is the most value relevant. Therefore, the value relevance feature designs the ability of earnings to explain the market value of the entity (Dhaliwal et al., 1999; Cahan et al., 2000). We evaluate the ability of NI and TCI to summarize firm performance as reflected in price[12] and stock returns[13]. Better degree of association between earnings metrics with the price and stock returns indicates more value relevant earnings metrics.

Following Ohlson (1995), Dhaliwal et al. (1999), Barton et al. (2010), Goncharov and Hodgson (2011), we test whether TCI or NI better summarizes firm performance using the subsequent models:

M 1.1: $MVE_{it,} = \alpha_0 + \alpha_1 NI_{it} + \alpha_2 BV_{it} + \omega_{it,}$

M 1.2: $MVE_{it,} = \beta_0 + \beta_1 TCI_{it} + \beta_2 BV_{it} + \lambda_{it}$

M 2.1: $RETURN_{it,} = \alpha_0 + \alpha_1 NI_{it,} + \alpha_2 VARNI_{it} + \omega_{it,}$

M 2.2: $RETURN_{it,} = \beta_0 + \beta_1 TCI_{it,} + \beta_2 VARTCI_{it} + \lambda_{it}$

Where MVE is the market value of equity 9 months after the fiscal year end (t); BV is a book value of equity at a time (t); NI is net income for the period from (t); TCI is total comprehensive income; RETURN is the stocks return for the period from (t); and ω and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All variables are normalized by the market value of equity at a time (t-1), following Cahan et al. (2000), Devalle and Magarini (2012), and Devalle (2012).[14]

[9] The qualitative characteristics recognize the types of information that are expected to be most useful to users for making decisions about the reporting entity.

[10] Dechow et al. (2010) provides detailed review of the earnings quality research.

[11] According to the Conceptual Framework for Financial Reporting (2010) "Relevant financial information is capable of making a difference in the decisions made by users. Information may be capable of making a difference in a decision even if some users choose not to take advantage of it or are already aware of it from other sources"

[12] Our research design for price level regressions follows the recognized theoretical research of Ohlson (1995) that expresses the investor's firm value as a function of a firm's book value and abnormal or residual earnings.

[13] Kothari and Zimmerman (1995) show that researchers should estimate both return and price models: Our empirical results confirm that price models "earnings response coefficients are less biased. However, return models have less serious econometric problems than price models. In some research contexts the combined use of both price and return models may be useful"

[14] According to Devalle (2012), the price regression model is likely to be affected by scale effects which can be mitigated by deflating all variables by the market value of the previous period

The value relevance is assessed by comparing the adjusted (R^2) between models that regress earnings measures with price and returns. On the other hand, we use the explanatory power of observed earnings metrics for the market value of equity to investigate their usefulness for investors. Following Dhaliwal et al. (1999), Zülch and Pronobis (2011), and Goncharov and Hodgson (2011), we utilize Vuong's[15] tests to delineate the statistical significance of the difference in explanatory power across aggregate income specifications.

3.2.2 Predictive value

This construct captures the ability of income to predict the value of cash components of earnings. The predictive power of income numbers is an attribute of high relevance for analysts as it reduces their forecast risks (Zülch & Pronobis, 2011). The predictability implies that the presented earnings must provide information that can be used as a good predictor in the firm valuation process (income or cash). On the other hand, the usefulness of income concept is connected to its function in guiding investment policies by estimating future value of equity. Investors tend to view performance measures that are more useful in predicting the future cash flows as being more desirable (Barton et al., 2010, IASB 2010).

First, we evaluate the predictive power of the two income numbers with regard to future operating cash flows. Second, we estimate the predictability of earnings metrics with regard to future net income and future comprehensive income. Our proxy for earnings measure's predictability is the adjusted R^2 for the first order autoregressive models:

M 3.1: $OCF_{it+1} = \alpha_0 + \alpha_1 NI_{it} + \omega_{it,}$

M 3.2: $OCF_{it+1} = \beta_0 + \beta_1 TCI_{it} + \lambda_{it}$

M 4.1: $NI_{it+1,} = \alpha_0 + \alpha_1 NI_{it} + \omega_{it,}$

M 4.2: $TCI_{it+1,} = \beta_0 + \beta_1 TCI_{it} + \lambda_{it}$

Where OCF is annual net cash flow from operating activities; NI is net income for the period from (t); TCI is total comprehensive income for the period from (t); and ω and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All variables are scaled by the total assets at a time (t).

The resulting adjusted R^2 from the regressions (M 3.1) and (M 4.1) are compared to the adjusted R^2 from the regressions (M 3.2) and (M 4.2), respectively. Again, differences in coefficients are tested for significance using Vuong's diagnostic statistic.

3.2.3 Persistence

Dechow et al. (2010) showed that firms with more persistent earnings have more sustainable earnings that will make it more useful. Earnings are assumed to be persistent when they are sustainable. Ohlson (1995) suggested that the decrease in the persistence of earnings is related to the increase in the number of special items. Thus, earnings persistence captures the permanent component of earnings. The persistence is allied with better earnings quality for the reason that transitory earnings components are supposed not value relevant. In fact, as pointed by Ali and Zarowin (1992) employing transitory components of earnings renders the previous period's earnings a poor proxy for the current period's expected earnings and, therefore, the change in earnings is a poor proxy for unexpected earnings.

We follow Francis et al. (2004) and Barton et al. (2010) in measuring earnings metric persistence as the slope coefficient (α_1 and β_1) in the first-order autoregressive models [M 4.1 and M 4.2] was previously formulated. Values of slope coefficient close to 1 designate highly persistent earnings metric, while values close to 0 indicate highly transitory earnings metric. Higher persistence is expected to lead to higher valuation earnings quality.

3.2.4 Substitute for cash flow

Barton et al. (2010) argued that earnings mapping more closely to operating cash flows are of higher quality. We measure each performance measure's ability to substitute for operating cash flows, as the explanatory power of the following models:

M 5.1: $OCF_{it} = \alpha_0 + \alpha_1 NI_{it} + \omega_{it,k}$

M 5.2: $OCF_{it} = \beta_0 + \beta_1 TCI_{it} + \lambda_{it}$

Where OCF is annual net cash flow from operating activities; NI is net income for the period from (t); TCI is total comprehensive income for the period from (t); and ε and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All variables are scaled by the total assets at a time (t).

3.2.5 Timeliness and conservatism

Managers look forward to obtain required accounting information at any time in the decision-making process. As indicated by the Framework for the Preparation and Presentation of Financial Statements (1989, p. 147):

If there is undue delay in the reporting of information it may lose its relevance. Management may need to balance the relative merits of timely reporting and the provision of reliable information. To provide information on a timely basis

[15] The Vuong's (1989) test is a log likelihood ratio test that gives evidence of which of the competing models better explains the data. The test is archived to investigate whether the difference in adjusted R^2 of non-nested models is significant at conventional levels.

it may often be necessary to report before all aspects of a transaction or other event are known, thus impairing reliability. Conversely, if reporting is delayed until all aspects are known, the information may be highly reliable but of little use to users who have had to make decisions in the interim.

In addition, timeliness captures the earning's ability to reflect quickly both good and bad news concerning the firm's performance (stocks return or cash). Conservatism is defined in the Basu's (1997) works as the degree to which current-period accounting income asymmetrically integrates economic losses, relative to economic gains. Conservatism reflects the ability of accounting earnings to reflect quickly the economic losses (measured as negative stock returns or negative cash). Kothari et al. (2009) suggested that managerial incentives to suppress bad news control managerial disclosure behavior and direct managers towards suppressing bad news and leaking good news early. In other words, managers have incentives to release good news rapidly and to hold up the disclosure of bad news. As a result, conservative earnings are likely viewed as more reliable (Barton et al., 2010). Consistent with prior research, we test timelines and conservatism by running the following Ball and Sivakumar's (2005) regression on the two earnings measures separately.

M 6.1: $NI_{it} = \alpha_0 + \alpha_1 NEG_{it,} + \alpha_2 OCF_{it} + \alpha_3 (NEG* OCF)_{it} + \omega_{it,}$

M 6.2: $TCI_{it} = \beta_0 + \beta_1 NEG_{it} + \beta_2 OCF_{it} + \beta_3 (NEG* OCF)_{it} + \lambda_{it}$

Where NI is net income for the period from (t); TCI is total comprehensive income for the period from (t); NEG is a dummy variable, which takes the value of 1 if operating cash flows are negative and 0 otherwise; OCF is annual net cash flow from operating activities; NEG*OCF is the interaction variables referring to the bad news (loss related to the cash flows); and ε and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All continuous variables are scaled by the total assets at the time (t).

Following prior research (Ball & Shivakumar, 2005; Barth et al., 2008, Barton et al., 2010), our timeliness metrics, good news (positive cash flows) and bad news (negative cash flows), are the adjusted R^2 from the regressions (M 5.1) and (M 5.2). Larger values of explanatory power indicate earnings metrics that capture changes in the firm's economic performance in a more timely way. Furthermore, we measure conservatism as he slope coefficient (α_3 and β_3) of the independent variables 'bad news' related to the operating cash flows. Larger values of the slope coefficient indicate earnings measures that capture changes in the firm's economic performance sooner relative to cash flows.

3.2.6 Smoothing

Beaver (1970) argued that smoothing means minimizing the deviations of reported income from some standard defined in terms of normal income. Low fluctuation and income stability can promise earnings quality. Thus, managers are inclined to use private information to smooth out momentary fluctuations. Insiders attempting to smooth earnings will lead to a less timely and less informative earnings number (Dechow et al., 2010). Therefore, a smoothed result is assumed lower quality (Leuz et al., 2003).

The chosen metric for earnings smoothing is the variability of annual change NI and TCI scaled by total assets (Lang et al., 2006; Barth et al., 2008). Less volatile earnings metrics provide evidence of earnings management. To compare the smoothness of NI and TCI, we estimate the following models (Barth et al., 2008):

M 7.1: $VARNI = \alpha_{0+} \alpha_1 AUDIT_{it} + \alpha_2 NUMEX_{it} + \alpha_3 XLIST_{it} + \alpha_4 TURN_{it} + \alpha_5 GROWTH_{it} + \alpha_6 EISSUE_{it} + \alpha_7 LEV_{it} + \alpha_8 DESSUE_{it} + \alpha_9 OCF_{it} + \alpha_{10} SIZE_{it+} + \alpha_{11} CLOSE_{it} + \varepsilon_{it}$

M 7.2: $VARTCI = \beta_{0+} \beta_1 AUDIT_{it} + \beta_2 NUMEX_{it} + \beta_3 XLIST_{it} + \beta_4 TURN_{it} + \beta_5 GROWTH_{it} + \beta_6 EISSUE_{it} + \beta_7 LEV_{it} + \beta_8 DESSUE_{it} + \beta_9 OCF_{it} + \beta_{10} SIZE_{it+} + \beta_{11} CLOSE_{it} + \lambda_{it}$

Where VARNI is annual change in net income divided total assets; VARTCI is annual change in total comprehensive income divided total assets; AUDIT is 1 if the firm's auditor is PwC, KPMG, Arthur Andersen, Ernst and Young, or Deloitte and Touche, and 0 otherwise; NUMEX is the number of exchanges on which the company's shares are listed; XLIST is 1 if the company is cross listed on a U.S. stock exchange and 0 otherwise; TURN is sales divided total assets; GROWTH is annual change in sales; EISSUE is annual change in total common equity; LEV is total liabilities divided by book value of equity; DESSUE is annual change in total liabilities; OCF is annual net cash flow from operating activities divided by total assets; SIZE is natural logarithm of the total assets; CLOSE is the percentage of closely held shares reported by Thomson; and ε and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements.

We calculate variance for the residual coefficients to estimate the variability of NI and TCI. We interpret a smaller variance as evidence of the earnings smoothing, and employ an F-test to examine whether there was any change in the variance of the residuals from the model (7.1) and (7.2).

3.2.7 Quality of accruals

Residuals from accrual models represent management discretion or estimation errors, both of which reduce decision usefulness. Following Dechow and Dichev's (2002) model, we run changes in working capital on past, present, and future cash-flow realizations. The discretionary part of current accruals is estimated as the residual from the following cross-sectional regressions:

M 8.1: $ACCNI = \alpha_0 + \alpha_1 OCF_{it-1} + \alpha_2 OCF_{it} + \alpha_3 OCF_{i+1} + \varepsilon_{it}$

M 8.2: $ACCTCI = \beta_0 + \beta_1 OCF_{it-1} + \beta_2 OCF_{it} + \beta_3 OCF_{i+1} + \lambda_{it}$

Where ACCNI is total accruals linked to net income (calculated as net income less cash flow from operations); ACCTCI is total accruals related to total comprehensive income (calculated as total comprehensive income less cash flow from operations); OCF is the annual net cash flow from operating activities; and ε and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All variables are divided by the total asset at a time t.

We calculate the accrual quality as the standard deviation of the estimated residuals for each earnings metrics.

3.3 Sample selection

We begin our sample selection by identifying available countries that apply the IAS/IFRS regulation during the period 2005-2010, in the Thomson One Banker Analysis databases (Version January 2012). The initial sample consists of 9,121 firms from 22 countries. We exclude financial services company such as banks and financial institutions because they do not exercise similar accounting standards regulations (SIC code 6000-6999).

Financial firms are subject to specifics financial reporting rules that can influence the earnings' quality. Furthermore we eliminate firms that do not apply IAS/IFRS from 2005 to 2010. This process yields a possible sample of 2,273 companies from Europe, Asia, and Australia. More specifically, our sample covers 18 European countries (Belgium, Bulgaria, Cyprus, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherland, Norway, Portugal, Spain, Finland, Switzerland, Sweden, and United Kingdom). These countries approved a resolution requiring all listed firms to apply IFRS for fiscal years beginning on or after January 1, 2005. Also, our sample covers 3 countries from Asia (China, Hong-Kong, and Turkey) and Australia. The three last countries required the IAS/IFRS regulation at the beginning of the year 2005, while China mandated IFRS conversion for publicly traded companies starting from January 1, 2007 with imposing information relating to the retrospective accounting from 2006. The sample period began in 2006 and ended in 2010, covering five successive years. Table 1 provides the details of this process.

Tableau 1. Sample selection

Country	Initial Sample	Less Deleted Firm-Years		Final samle
		Non Financial Firms	Non IAS/IFRS Firms	
Germany	399	28	142	229
Australia	1197	37	1059	101
Belgium	172	25	87	60
Bulgaria	272	66	21	185
China	917	115	783	19
Cyprus	160	49	37	74
Denmark	382	62	271	49
Spain	146	24	83	39
Finland	254	33	79	142
France	829	138	376	315
United kingdom	919	59	671	189
Greece	288	31	75	182
Hong-Kong	1110	218	847	45
Ireland	142	22	87	33
Italy	284	62	102	120
Luxembourg	38	19	11	8
Norway	321	17	204	100
Netherland	156	31	55	70
Portugal	136	36	62	38
Sweden	374	9	198	167
Switzerland	286	88	139	59
Turkey	339	80	210	49
Total	**9121**	**1249**	**5599**	**2,273 firms**

The final sample consists of 2,273 public firms from 22 countries in Europe, Asia, and Australia, with data available on Thomson one-Company Analysis. Accounting and market data regarding companies have been collected for the years 2006 to 2010.

3.4 Data and measurements' variables

All accounting and market data was obtained by accessing Thomson one-Company Analysis databases. Following Goncharov and Hodgson (2011), firm-years with missing accounting or market data and firms in financial distress, signaled by a negative amount of book value of equity, were disqualified. To avoid problems with outliers we use 'multivariate's outliers test' (Hadi, 1994), and drop observations identified by this test. The IASB required firms to disclose total comprehensive income in financial statement under IAS/IFRS regulation since 2009. Thus, a majority of countries did not disclose the total comprehensive income figure during the research period (2006-2010). Therefore, we use the proxy based on the IASB clean surplus approach. TCI is defined as the changes in shareholders' net equity that do not emanate from transactions with shareholders (dividends, share repurchases, or offerings). Hence, the total comprehensive income is obtained by the following formula: book value of equity from the current year less the book value of equity from the previous year plus the current year distributed dividends plus share repurchases minus share offerings. We use the following proxy for total comprehensive income following Goncharov and Hodgson (2011) and Devalle and Magarini (2012):

$$TCI = [BVE_{it} - BVE_{it-1} + (DIVID + PURCH - SALE)]$$

Where TCE is the book value of equity; DIVID is dividend paid; PURCH is purchase of common and preferred stocks; and SALE is the sale of common and preferred stocks.

3.5 Distribution of Firms by Standard Industrial Classification

Table 2 summarizes the distribution of firms by Standard Industrial Classification. Results show that the largest number of firms in most countries is in the manufacturing sector (SIC codes 20–39).

Table 2. Distribution of Firms by Standard Industrial Classification (SIC code)

Standard Industrial Classification	SIC Code	Number of firms	Percentage
Manufacturing industry	20-39	1065	46.85%
Services	70-89	492	21.64%
Transportation and public utilities	40-49	247	10.86%
Mining	10-14	156	6.863%
Wholesale trade	50-51	123	5.41%
Retail trade	52-59	86	3.78%
Construction	15-17	81	3.56%
Agriculture, forestry and fishing	01-09	23	1.011%
	Total	**2,273 Firms**	**100%**

4. Results

This section is devoted to the analysis of research results. We describe the descriptive statistics and then report the regression analysis.

4.1 Descriptive statistics

Table 3 Panel 1 reports the descriptive statistics for the dependent and independent variables referring to regression models formulated below. Table 3 Panel 2 provides the supplementary analysis for the descriptive statistics referring to the NI and TCI. As can be seen, the overview documents that the majority of companies have positive operating cash flows, a positive net income, and a positive comprehensive income. Moreover, our statistical analyses provide evidence that the value of TCI is higher than NI. The mean value of TCI scaled by the total asset is 0.026 while the mean value of TCI deflated by total asset is 0.020; hence the mean difference of other comprehensive income is 0.0063. It suggests that the value of other comprehensive income component is an overall positive. The Student Paired test and the Wilcoxon signed-rank test show that the mean difference between reported NI and TCI is statically significant at the 0.01 two-tailed levels, p-value= 0.000. Also, the standard deviation of the TCI variable is very large compared to the standard deviations of the NI (0,101 and 0.133, respectively). The Fisher test shows that the difference is statically significant at p-value= 0.000. These results indicate that the fair value earnings is more volatile TCI than the historical cost earnings NI. However, descriptive analysis shows that the median value of TCI scaled by the total asset is lower than the median value of TCI scaled by the total asset (0.023 and 0.029, respectively). The added descriptive analysis indicates that more than 50.09%/5074 firm-years observations of the sample exhibit that TCI is greater than NI. While 46.80%/4740 firm-years observations of the sample reveal that TCI is smaller than NI. Therefore, these results suggest that in 50.09% of the sample the value of the other comprehensive income is positive. The test of equality of matched pairs (Two-sided test) indicates that the difference is significant at the 0.01 (two-tailed levels, P=0.000). On the other hand, the revaluation of other comprehensive income items refers to probably gains and profits. Furthermore, results show that the frequency of loss net income of 2955 firm-years observations/27.53% is lower than the frequency of loss total comprehensive income of 3131 firm-years observations/30.40%. These results are explained by the fact that the financial crisis for the period between 2008 and 2010 breaks down the overall profitability of the companies.

Table 3. Descriptive Statistics

Panel 1: Descriptive Statistics for variables used to estimate earnings attributes

Variables[16]	Mean	Q25	Median	Q75	Standard deviations
NI	0.020	-0.007	0.029	0.066	0.101
TCI	0.026	-0.007	0.023	0.075	0.133
MVE	1.400	0.564	0.954	1.517	1.475
RETURN	0.064	-0.258	0.0263	0.294	0.505
BVE	1.061	0.401	0.707	1.301	1.057
VARNI	0.0002	-0.023	0.002	0.025	0.078
VARTCI	0.0002	-0.040	0.0002	0.039	0.144
OCF	0.053	0.004	0.058	0.110	0.109
SIZE	2.399	1.708	2.320	3.048	1.040
GROWTH	0.069	-0.059	0.060	0.191	0.309
EUSSUE	0.071	-0.048	0.050	0.163	0.317
DESSUE	0.088	-0.093	0.033	0.201	0.348
TURN	0.833	0.375	0.737	1.141	0.641
LEV	1.466	0.489	1.105	2.005	1.417
CLOSE	0.472	0.416	0.472	0.566	0.195
ACCNI	-0.037	-0.076	-0.034	0.006	0.089
ACCTCI	-0.031	-0.086	-0.034	0.131	0.019

Where NI is net income for the period from (t) divided by total assets; TCI is total comprehensive income for the period from (t) divided by total asset; MVE is market value of equity 9 month after the fiscal year end (t); BVE is book value of equity at time (t); RETURN is stock return for the period from (t); VARNI is annual change in net income divided total assets; VARTCI is annual change in total comprehensive income divided total assets; TURN is sales divided total assets; GROWTH is annual change in sales; EISSUE is annual change in total common equity; LEV is total liabilities divided by book value of equity; DESSUE is annual change in total liabilities; OCF is annual net cash flow from operating activities divided by total assets; SIZE is natural logarithm of the total assets; CLOSE is the percentage of closely held shares reported by Thomson; ACCNI is total accruals linked to net income scaled by total assets; and ACCTCI is total accruals related to total comprehensive income scaled by total assets

[16] To avoid problems with outliers we use the test of *Hadi* (1994) "multivariate's outliers test".

Panel 4. Descriptive Statistics for paired Comparison analysis

Comparison		Nbr	%	Equality of matched pairs test
				Two-sided test
TCI vs. NI	TCI<NI	4740	46.80	Ho: median of TCI - NI = 0 vs.
	TCI= NI	314	3.1	Ha: median of TCI - NI != 0
	TCI>NI	5074	50.09	Pr (#positive >= 5074 or #negative >= 5074)
	TOTAL	10128	100	= min (1, 2*Binomial (n = 9814, x >= 5074, p = 0.5)) = 0.000

Earnings	Nbr	Mean	Frequency of loss	%	Frequency of nil profits	%	Frequency of profits	%
NI	10128	0.0201	2955	27.53	11	0.102	7765	72.36
TCI		0.0264	3131	30.40	13	0.126	7152	69.43

Earnings	Nbr	Median	Mean	Wilcoxon test		Student test (Paired test)		Standard deviations	Fisher test	
				Z	P	t	f		f	P
NI	10731	0.029	0.0201	z = 3.952***	Prob > |z| = 0.000	10.924***	0.000	0.101	0.5762***	0.000
TCI	10296	0.023	0.0264					0.133		

Notes: *** Denotes p-value < 0.01. ** Denotes p-value < 0.05 * Denotes p-value < 0.1.

Nbr: Number of observations
Note: Variables were previously defined.

4.2 Results for earnings attributes

These research questions focus on the quality of TCI next to NI. We draw our estimation methods for various earnings attributes including: value relevance, predictability, substitute of cash flow, persistence, timeliness, conservatism, smoothing, and the quality of accruals. This research uses a pooled ordinary least squares (OLS)[17] regression to investigate the earnings metrics attributes. We have run all regression models by the application of robust standard errors (White, 1980) in order to control for heteroscedasticity within our sample. Table 4 reports regression results for the earnings quality attributes.

4.2.1 Results for the value relevance models

As a robustness analysis, the price and return models have been estimated. Table 4 Panel 1 lists the results for the market value and stock returns regression models. The first value relevance test is an OLS regression of market value on book value and earnings metrics. The second value relevance test is an OLS regression of stock returns on earnings metrics and their variations. Results show that the slope coefficients of the independent variables NI and TCI referring to market value and stock return models are statistically significant at p-value <0.01. The coefficient analysis suggests that both NI and TCI are significantly and positively associated with market value of equity and the stocks returns. Moreover, we find that the adjusted R^2 using TCI models (1.2 and 2.2) is smaller than the adjusted R^2 using net income models (1.1 and 2.1). In other words, NI better explains both the market value and the stock returns of equity than TCI. This finding is supported by the results of the Vuong's z statistics. The Vuong's (1989) test indicated that the difference in adjusted R^2 is significant at the 0.01 (two-tailed levels). Therefore, the NI is more strongly associated with the market value of equity and return better than TCI. Similarly, the NI appears to provide more value relevant information for the investors. This finding does not support the claim that TCI is a better measure of firm performance than NI, approving our hypothesis and previous studies (Cheng et al., 1993; Dhaliwal et al., 1999).

4.2.2 Results for the predictability and persistence models

Table 4 panel 2 reports the results of the estimation of models that test the association of net income vs. comprehensive income with future operating cash flow and operating net income. Results indicate that the slope coefficients on current NI and TCI variables referring to the predictability of future cash flow models (3.1. and 3.2) are positive and significant at p-value <0.01. The slope coefficients on current NI and TCI variables referring to the predictability of earnings models (4.1. and 4.2) are positive and significant at p-value <0.01. These results suggest that NI combined with TCI strongly predict both the future cash flows and future earnings. Furthermore, results indicate that the adjusted R^2 using NI variables are larger than the adjusted (R^2) using TCI variables. This result is validated for two types of predictability models, future cash flow models (3.1 and 3.2) and future earnings models (4.1 and 4.2). The Vuong's (1989) test shows that the magnitude of the difference in adjusted (R^2) is significant at the 0.01 (two-tailed levels). The results support the conclusions that NI is strongly more predictive than TCI with reference to both future cash flow and future income. In addition, results indicate that the slope coefficient on current net income referring to model 4.1/ α_1=0.684 is much higher than the slope coefficient on current total comprehensive income 4.1/α_1=0.427. Consequently, NI indicates highly persistent performance measure than TCI. The results support our hypothesis and previous reserach (e.g., Kanagaretnam et al., 2009; Barton et al., 2010; Zülch & Pronobis, 2011).

4.2.3 Results for the substitute for cash flow models

Table 4 Panel 3 indicates that both NI and TCI are associated positively and significantly with current cash flows. The slope coefficient of NI is equal to α_1=0.597, while the slope coefficient of TCI is β_1=0.328. In other words, both NI and TCI explain strongly the current cash flows from operating activities. Also, as seen in Table 4 Panel 3, the adjusted R^2 value using M 5.1 regression model (R^2=0.3334) is higher than using M 5.2 regression model (R^2=0.1582). The Vuong's test indicated that the difference in adjusted R^2 is significant at conventional levels (Vuong's Z-Statistic=19.516 at p-value=0.000). Thus, NI is the closest earnings metric to current year's operating cash flows. The results corroborate our hypothesis and are consistent with Barton et al.'s (2010) study.

4.2.4 Results for the timeliness and conservatism models

Table 4 Panel 4 displays multivariate's analysis for the timeliness and the conservatism earnings attributes. Results suggest that adjusted R-squared value using 6.1 model (R^2=0.3347) is consistently higher than using 6.2 model (R^2=0.1612). We conclude that superior explaining power of NI for the ability to reflect quickly both good and bad news about the firm's performance timeliness than NI. The Vuong's tests are indicated that the difference of the coefficient of determination (R^2) is statistically significant at the 1%-level (Z-Statistic=24.239; p-value=0.000). Consequently TCI is less timely than NI. These results support our hypothesis. Nevertheless, the results show that total comprehensive income appears to have the lowest slope coefficient value of bad news, indicating that NI is less conservative in comparison with TCI. Even so, our hypothesis has been rejected as a consequence of the results.

4.2.5 Results for the smoothing models

Low values of variability of earnings indicate that insiders exercise accounting discretion to smooth reported earnings.

[17] To investigate whether our findings are sensitive to the econometric analyses or not, we provide robustness checks by running all models using a panel estimates method. Unreported outputs suggest that both the two analyses methods provide the same major conclusions.

Table 4. Multivariate's analysis

Panel 1: Value relevance

Models	**M (1.1)**			**M (1.2)**			**Vuong's**
	α_1 **t**	**α_2** **t**	**adjR^2**	**β_1** **t**	**β_2** **t**	**adjR^2**	
Price models	1.258*** 11.84 (0.000)	0.474*** 21.97 (0.000)	0.1545	0.786*** 8.72 (0.000)	0.469*** 20.84 (0.000)	0.1377	Vuong Z-Statistic = 2.9689*** p-value= (0.003)
Nbr	8096			7812			
Fisher	325.52***			280.00***			
Models	**M (2.1)**			**M (2.2)**			**Vuong's**
	α_1 **t**	**α_2** **t**	**adjR^2**	**β_1** **t**	**β_2** **t**	**adjR^2**	
Return models	0.4975 16.77 (0.000)	0.3312 8.99 (0.000)	0.0783	0.367 13.80 (0.000)	0.076 3.12 (0.000)	0.0413	Vuong Z-Statistic = 8.6706*** p-value= (0,000)
Nbr	9095			8461			
Fisher	293.79***			130.92***			

Notes: *** Denotes p-value < 0.01. ** Denotes p-value < 0.05 * Denotes p-value < 0.1

Nbr: Number of observations

Where M 1.1: $MVE_{it,} = \alpha_0 + \alpha_1 NI_{it} + \alpha_2 BV_{it} + \omega_{it,}$; (M 1.2): $MVE_{it,} = \beta_0 + \beta_1 TCI_{it} + \beta_2 BV_{it} + \lambda_{it}$; (M 2.1): $RETURN_{t,} = \alpha_0 + \alpha_1 NI_{it,} + \alpha_2 VARNI_{it} + \omega_{it,}$; (M 2.2): $RETURN_{it,} = \beta_0 + \beta_1 TCI_{it,} + \beta_2 VARTCI_{it} + \lambda_{it}$; MVE is market value of equity 9 months after the fiscal year end (t); BV is book value of equity at a time (t); NI is net income for the period from (t); TCI is total comprehensive income; RETURN is the stocks return for the period from (t); and ω and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All variables are normalized by the market value of equity at a time (t-1)

Panel 2: Predictability and persistence

Models	M (3.1)				M (3.2)				Vuong's
	α_1	t	P	Adj R^2	β_1	t	P	Adj R^2	
	0.555	30.76	0.000	0.2272	0.307	20.51	0.000	0.1208	Vuong Z-Statistic = 14.305
Nbr	8372				8045				p-value= (0.000)
Fisher	946.18				420.59				
	M 4.1				**M (4.2)**				**Vuong's**
	α_1	t	P	Adj R^2	β_1	t	P	Adj R^2	
	0.684	39.64	0.000	0.3625	0.427	22.29	0.000	0.1679	Vuong Z-Statistic = 20.354
Nbr	84				7983				p-value= (0.000)[18]
Fisher	1571.58				0.1679				

Notes: *** Denotes p-value < 0.01. ** Denotes p-value < 0.05 * Denotes p-value < 0.1.
Nbr: Number of observations

Where M 3.1: $OCF_{it+1} = \alpha_0 + \alpha_1 NI_{it} + \omega_{it,}$; (M 3.2): $OCF_{it+1} = \beta_0 + \beta_1 TCI_{it} + \lambda_{it}$; (M 4.1): $NI_{it+1,} = \alpha_0 + \alpha_1 NI_{it} + \omega_{it,}$; (M 4.2): $TCI_{it+1,} = \beta_0 + \beta_1 TCI_{it} + \lambda_{it,}$; and OCF is annual net cash flow from operating activities. Other variables are previously defined. All variables are scaled by the total assets at time (t).

Panel 3: Substitute for cash flow

Models	M (5.1)				M (5.2)				Vuong's
	α_1	t	P	Adj R^2	β_1	t	P	Adj R^2	
	0.597	45.08	0.000	0.3334	0.328	25.48	0.000	0.1582	Vuong Z-Statistic = 19.516
Nbr	10657				10193				p-value= (0.000)
Fisher	2032.53^{***}				648.98^{***}				

Notes: *** Denotes p-value < 0.01. ** Denotes p-value < 0.05 * Denotes p-value < 0.1.
Nbr: Number of observations

Where M 5.1: $OCF_{it} = \alpha_0 + \alpha_1 NI_{it} + \omega_{it}$; (M 5.2): $OCF_{it} = \beta_0 + \beta_1 TCI_{it} + \lambda_{it}$; OCF is annual net cash flow from operating activities; NI is net income for the period from (t); TCI is total comprehensive income for the period from (t); and ω and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All variables are scaled by the total assets at time (t).

[18] P-value indicates the two-tailed significance level for the difference in the explanatory power of a model and the explanatory power of the basic model based on Vuong's likelihood ratio test.

Panel 4: Timeliness and conservatism

Models	M (6.1)				M (6.2)				Vuong's
	α_1 t	α_2 t	α_3 t	R^2	α_1 t	α_2 t	α_3 t	R^2	
	-0.001 NS -0.52 (0.604)	0.519 32.77 (2.33)	0.093 2.33 (0.020)	0.3347	0.005 1.30 (0.194)	0.423 19.84 (0.000)	0.193 3.71 (0.000)	0.1612	Z =24.239 (0.000)
Nbr	10643				10179				
Fisher	845.98				327.61				

Notes: *** Denotes p-value < 0.01. ** Denotes p-value < 0.05 * Denotes p-value < 0.1.

Nbr: Number of observations

Where M 6.1: $NI_{it} = \alpha_0 + \alpha_1 NEG_{it,} + \alpha_2 OCF_{it} + \alpha_3 (NEG^* OCF)_{it} + \omega_{it,}$; (M 6.2): $TCI_{it} = \beta_0 + \beta_1 NEG_{it} + \beta_2 OCF_{it} + \beta_3 (NEG^* OCF)_{it} + \lambda_{it}$; NI is net income for the period from (t); TCI is total comprehensive income for the period from (t); NEG is a dummy variable, which takes the value of 1 if operating cash flows are negative and 0 otherwise; OCF is annual net cash flow from operating activities; (NEG*OCF) interaction variables referring to the bad new (loss related to the cash flows); and ω and λ equals other information about future abnormal earnings reflected in the firm's equity value but currently not in the firm's financial statements. All continuous variables are scaled by the total assets at the time (t).

Panel 5: Smoothing

Models	M (7.1)		M (7.2)		Fisher Test
	Nbr	$\sigma^2(\Delta NI^*)$	**Nbr**	$\sigma^2(\Delta TCI^*)$	
	8464	0.00078	7974	0.0021436	f = 0.3657*** 2*Pr (F < f) = 0.0000

Notes: *** Denotes p-value < 0.01. ** Denotes p-value < 0.05 * Denotes p-value < 0.1.

Nbr: Number of observations

The findings in Table 4 Panel 4 reveal that the variance of residual from the model (7.1) [$\sigma^2(\Delta NI^*)$=0.0007] is lower than the model (7.2) [$\sigma^2(\Delta TCI^*)$ = 0.002]. Therefore, TCI is less smoothing than NI. The Fisher test indicated that the difference of the variance of residuals is significant at the two-tailed levels. These results do not support our hypothesis.

4.2.6 Results for the quality of accruals models

Our results show that the standard deviation of residuals from model 8.1 is less [$\left(\sqrt{\sigma^2(\hat{\varepsilon}_{NI})}\right)$ = 0.05279] than model 8.2 [$\left(\sqrt{\sigma^2(\hat{\varepsilon}_{TCI})}\right)$ = 0.07821]. The Fisher test shows that the magnitude of the difference is significant. Results suggest that the accruals linked to NI is strongly less manipulated than those related to TCI. The results agree with our hypothesis.

5. Conclusion

This main goal of this study was to compare the quality of NI and TCI under IAS/IFRS norms. To achieve this goal, we tested various earnings attributes and estimated pooled data regressions using a sample of 2,273 firms from 22 countries from 22 countries in Europe, Asia, and Australia between 2006 and 2010. Prior studies concluded that TCI declined to enhance the quality of performance reporting (Cheng et al., 1993; Dhaliwal et al., 1999; Kanagaretnam et al., 2009; Zülch & Pronobis, 2011; Goncharov & Hodgson, 2011; Turen & Hussiny, 2012; Devalle & Magarini, 2012; Devalle, 2012). In line with prior studies, our study provided evidence that net income offers better earnings quality than total comprehensive income. We found that NI is more associated with stocks price and return than TCI, as it better predicts future operating cash flows and future income than TCI. In addition, the results revealed that NI better explains the actual operating cash flows, is more persistent and timely, and has the better quality of accruals than TCI. However, we found that TCI is less smoothing and more conservative than NI.

Overall, our results did not support the assertion that income measured on a comprehensive basis provides better earnings quality attributes than TCI. All things being equal, these findings should be of interest to standard-setters because the results suggest that the IASB should focus on items included in other comprehensive income in order to improve the quality of TCI. Therefore, this study illustrates that the debate about TCI needs more analysis and research.

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