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The risk of earnings quality impairment

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Abstract

This paper reviews prior studies that provide an understanding of earnings quality concepts. It presents various definitions of earnings quality and discusses proxies used in empirical literature to measure earnings quality. Prior studies measure earnings quality by using time-series properties of earnings including earnings persistence, predictability, timeliness and volatility; relating accruals to future cash flows, associating earnings with stock market metrics such as stock prices and returns and assessing the level of discretionary accruals. The literature emphasizes that the quality of earnings is very important as the earnings figure is widely used in many contractual agreements and investing decisions.

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*Keywords:*Earnings Quality; Earnings Persistence; Predictability; Timeliness; Volatility

1. Introduction

The extant literature has not yet come to a unanimous conclusion on what earnings quality is; rather it is viewed as a conceptual term that can be defined from many different perspectives. Academic researchers have introduced and operationalized different dimensions of earnings quality construct using certain characteristics of earnings and its components. This conceptual paper describes the definitions from financial statements users' perspective and economic-based perspective, discusses various measures used in prior studies as proxies for earnings quality,

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explains the functions and limitations associated with each approach and provides examples of the application of each approach in existing studies on earnings quality.

2. Earnings Quality from Different Perspectives

The quality of earnings is usually defined in accounting studies from two different perspectives, the decision-usefulness perspectives and the economic-based perspectives. From a decision-usefulness perspective, earnings quality is regarded as being high if the earnings numbers are useful for decision making purposes. Based on this point of view, the notion of earnings quality is defined differently by different users of financial statements. For example, according to Dechow and Schrand (2004), analysts are likely to view earnings to be of high quality when the earnings numbers accurately reflect the company's current operating performance, are good indicators of future operating performance and are a good summary measure for assessing firm value. This is consistent with the objectives of financial analysts, which are to evaluate the performance of the company, assess the extent to which current earnings indicates future performance and determine whether the current stock price reflects intrinsic firm value (Dechow and Schrand, 2004). Investors are likely to have similar objectives. On the other hand, creditors and compensation committees may define high quality earnings as earnings that are easily convertible into cash flows and that reflect managers' real performance.

Financial statement users may also define earnings quality in terms of the 'absence of earnings management'. This is because the intentional manipulation of earnings by managers, within the limits possible in accounting standards, may distort the usefulness of earnings to users. Earnings that are persistent and predictable may not be of high quality if it is a result of earnings management. Managers may tend to manage earnings for a number of reasons including those related to capital market motivations, compensation and bonus as well as debt or lending contracts, which will result in low quality of earnings. According to Schipper and Vincent (2003), debt agreements based on low and defective earnings will induce unintended wealth transfers; overstated earnings used as an indicator of managers' performance in compensation contracts will result in overcompensation to managers; and low quality of earnings will provide defective resource allocation signals to investors.

Dechow and Schrand (2004) state that when earnings conform to the spirit and the rules of generally accepted accounting principles, they are of high quality in the eyes of regulators. Earnings should be free from fraud and show a true and fair view of a company's financial performance. However, accounting standard setters are also concerned with the effectiveness of the standards that they have promulgated. By focusing on the usefulness of earnings numbers to financial statements users, standard setters can evaluate quality of earnings prepared under a particular set of accounting standards.

Other than the decision-usefulness context, earnings quality has also been explained in prior research using the economics-based definition of Hicksian income (e.g. Dempster, 2008; Hodge, 2003; Schipper and Vincent, 2003). Shipper and Vincent (2003, p. 98) define earnings quality as "*the extent to which reported earnings faithfully represent Hicksian income, where representational faithfulness means correspondence or agreement between a measure or description and the phenomenon that it purports to represent*". This construct measures the quality of earnings based on its correlation with 'true earnings', which does not depend on accounting recognition rules and the implementation of the accounting rules. 'True earnings' is a neutral and context-free benchmark, yet difficult to assess as Hicksian income is not observable. However, since Hicksian earnings are not observable, the construct is not operational (Schipper and Vincent, 2003).

Similar to the Hicksian income definition, Yee (2006) explains that earnings quality depends on two main elements, the 'fundamental' earnings and reported earnings. The former is a profitability figure that measures a firm's ability to make future dividend payments, while the latter is an imperfect signal or estimation of 'fundamental' earnings that a firm announces. According to Yee (2006), earnings quality is based on the ability of reported earnings to quickly and precisely reveal a firm's fundamental earnings. The more accurate and timely that reported earnings reflect shocks in the present value of expected future dividends, the higher the quality of earnings.

3. Earnings Quality Measures

Previous studies define earnings quality through certain characteristics of earnings such as persistence or sustainability, predictive ability, smoothness, conservatism, value-relevance, timeliness, earnings management or earnings manipulation and accrual quality. In general, earnings which are viewed as being of high quality are those that have a high level of persistence, are more predictable, less volatile, more timely, have lower level of earnings management and/or higher accrual quality. The following subsections discuss each of the measures, which have frequently been used in prior studies.

3.1. Earnings Management

Davidson, Stickney and Weil (1985) define earnings management as the process of taking deliberate steps, within the constraints of generally accepted accounting practice, to bring about a desired level of reported earnings. Similarly, Healy and Wahlen (1999, p. 368) note that:

> *Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some shareholders about the underlying economic performance of the company, or to influence contractual outcomes that depends on reported accounting numbers.*

According to the definitions, it is clear that earnings management is possible because of the discretion available to managers in preparing financial reports. However, it is limited to the boundaries set under a particular set of accounting standards. Thus, any changes in the amount or extent of managerial discretion allowed under the accounting standards may also change the degree of earnings management.

The extant literature on earnings management suggests that earnings management exists due to the important roles and functions played by the reported income or earnings number. As claimed by Vander Bauwhede (2001), managers may be inclined to manage earnings due to the existence of the firm's explicit and implicit contracts, the firm's relation with capital markets, the need for external financing, the political and regulatory environment or several other specific circumstances. For example, earnings numbers are normally included in management compensation and bonus contracts, debts covenants, management buyouts, proxy contests, valuation of initial public offerings (IPOs), labour union negotiations and lobbying on accounting standards and regulations.

There are numerous situations or incentives that may motivate management to become involved in earnings management. Researchers provide evidence that managers have strong incentives to manage earnings in order to maximise their bonus and compensations (e.g. Gaver and Gaver, 1998; Gaver, Gaver, and Austin, 1995; Healy, 1985; Holthausen, Larcker, and Sloan, 1995; McNichols, Wilson, and DeAngelo, 1988; Shuto, 2007; Steven, 1998; Teshima and Shuto, 2008), to avoid violation of debt covenants or to decrease the cost of debt (e.g. Carlson and Bathala, 1997; DeFond and Jiambalvo, 1994; Jaggi and Lee, 2002; Sweeney, 1994), to circumvent industry and other regulations (e.g. Collins, Shackelford, and Wahlen, 1995; Gill-de-Albornoz and Illueca, 2005; Jones, 1991; Key, 1997; Moyer, 1990; Reza, 2003), to meet the earnings forecasts and targets issued by financial analysts or management (e.g. Dutta and Gigler, 2002; Jaggi, Chin, Lin, and Lee, 2006; Kasznik, 1999; Robb, 1998) and to maximise the proceeds of IPOs (e.g. Ball and Shivakumar, 2008; Chaney and Lewis, 1998; DuCharme, Malatesta, and Sefcik, 2001; Friedlan, 1994; Jaggi et al., 2006; Teoh, Welch, and Wong, 1998).

Previous researchers have established that earnings management can be achieved through several means. The findings of their studies show that using the discretion allowed under accounting standards, managers manipulate earnings by changing firm's depreciation policy including depreciation methods and estimates (Archibald, 1969; Herrmann and Inoue, 1996; Keating and Zimmerman, 2000), adjusting the estimate of the provision for bad debts (McNichols et al., 1988), changing the useful life and/ or residual value of fixed assets through assets revaluations (Easton, Eddey, and Harris, 1993; Ervin, Keith, and Tracy, 1998; Whittred and Chan, 1992), classifying gains and losses as extraordinary items (Barnea, Ronen, and Sadan, 1976; Beattie, Brown, Ewers, and John, 1994; Choo and Peter, 1998; Godfrey and Jones, 1999; Jaggi and Baydoun, 2001), not recognising goodwill impairment or not

recognising goodwill amortisation and/or write-offs (Beatty and Weber, 2006; Henning, Shaw, and Stock, 2004; Jordan, Clark, and Vann, 2007; Sevin and Schroeder, 2005).

Zheng (2003) claims that the purpose of earnings management, as stated in Healy and Wahlen's (1999) definition, indicates that managed earnings are of lower quality than unmanaged earnings. Consistently, previous studies on earnings quality (e.g. Barth, Landsman, and Lang, 2008; Chen, Dhaliwal, and Trombley, 2007; Van Tendeloo and Vanstraelen, 2005) use the term 'earning quality' to denote the absence of earnings management. In addition, Levitt (1998) mentioned that when earnings management is on the rise, the quality of financial reporting is on the decline.

Prior studies have adopted a variety of approaches to measuring the degree of earnings management. Healy (1985), DeAngelo (1986) and Jones (1991) are among the early studies that use abnormal accrual models to detect earnings management. Dechow et al. (1995) explain the development of these early models and give detailed descriptions and provide comparisons between the models. Dechow et al. (1995) found that among Healy (1985), DeAngelo (1986), Jones (1991), modified Jones model and industry model, the modified version of Jones (1991) model is the most powerful method of detecting earnings management.

Many of the existing studies refer to Jones (1991) model as a basis for assessment of the level of earnings management. In the Jones (1991) model, the concept of discretionary accruals is used to indicate the quality of earnings. The main idea in the Jones (1991) model is that accruals are likely to be the result of managerial discretion and changes in the firm's economic environment (Hermanns, 2006). Basically, the model estimates firms' abnormal accruals (discretionary) based on certain economic and accounting fundamentals using time-series regression. In the model, Jones relates total accruals to the change in sales and the level of gross property, plant and equipment. The residuals of the model are considered as abnormal or discretionary accruals as they are not explained by the firm's economic conditions. The regression model is as follows:

$$TA_{it} / A_{it-1} = \alpha_i(1 / A_{it-1}) + \beta_{1i}(\Delta REV_{it} / A_{it-1}) + \beta_{2i}(PPE_{it} / A_{it-1}) + \varepsilon_{it} \quad (1)$$

where:

TA_{it}	:	total accruals in year t for firm i;
ΔREV_{it}	:	revenues in year t less revenues in year t-1 for firm i;
PPE_{it}	:	gross property, plant, and equipment in year t for firm i;
A_{it-1}	:	total assets in year t-1 for firm i;
ε_{it}	:	error term in year t for firm i.

According to Jones (1991), revenue is included in the model because it is an objective measure of the firm's operations before managers' manipulations. It is expected that total accruals, which includes changes in accounts receivables, inventories and accounts receivables rely on the extent of changes in revenue (Jones, 1991). While revenues are included to control for firms economic environment, the gross, property and equipment is included to control for the portion of total accruals related to nondiscretionary depreciation expense. The prediction error in the model, εit, measures the level of discretionary accruals.

3.2. Accrual Quality

A seminal study by Dechow and Dichev (2002) introduced a model for earnings quality based on the notion that the function of accruals is to adjust the recognition of cash flows over time, so that it better reflects firm performance. This model relates total current accruals (TCA), measured by changes in working capital, to lagged, current and future cash flows from operations, and has been used in the existing studies as a proxy for earnings quality (Aboody, Hughes, and Liu, 2005; Francis, LaFond, Olsson, and Schipper, 2004; Francis, Schipper, and Vincent, 2003; Myers, Myers, and Omer, 2003; Van der Meulen, Gaeremynck, and Willekens, 2007). In the model, the total current accrual is measured by changes in working capital, since related cash-flow realisations generally occur within one year, which is as follows:

$$TCA_{i,t} / A_{i,t-1} = \alpha_{0,i} + \alpha_{1,i}(CFO_{i,t-1} / A_{i,t}) + \alpha_{2,i}(CFO_{i,t} / A_{i,t}) + \alpha_{3,i}(CFO_{i,t+1} / A_{i,t}) \quad (2)$$

where:

$TCA_{i,t}$	:	firms i's total current accruals in year t;
$A_{i,t}$	:	firms i's average total assets at the beginning and at the end of fiscal year t;
$CFO_{i,t}$	:	cash flows from operations in year t, calculated as net income before extraordinary items minus total accruals.

This model captures both intentional and unintentional accrual estimation error by management, which is the inverse measures of earnings quality (Hermanns, 2006). In other words, the estimation error indirectly measures the extent to which accruals map into cash realization, where a poor match indicates low quality.

Since the Dechow and Dichev (2002) approach provides a direct link between income and accruals, this model does not have the same problems as the earnings management approach introduced by Jones (1991), which requires the assumption that certain underlying accounting fundamentals remain constant and unmanipulated. However, Dechow and Dichev (2002) model is also subject to some limitations. Schipper and Vincent (2003) highlight that the model does not distinguish non-manipulative estimation errors from intentional earnings management and requires the assumption that working capital accruals lag or lead cash receipts by no more than one year.

McNichols (2002) suggests future research should include the change in revenues and property, plant and equipment (PPE) as additional explanatory variables in the Dechow and Dichev (2002) model, in order to distinguish the unintentional accrual estimation error from those that are intentional. However, inclusion of the new explanatory variables would require the same assumptions as in the Jones (1991) model.

Based on the McNichols (2002) discussion of the Dechow and Dichev (2002) model, Francis et al. (2005) examine the market pricing of accruals quality by investors. Their results show that the market requires less return from firms with better accruals quality than from firms with poor accruals quality.

Doyle, Ge and McVay (2007) examine the relationship between accrual quality and internal controls and find that firms with weak internal control over financial reporting generally have lower accruals quality. This supports their theory that a good internal control system is a key foundation for high quality financial reporting. A later study by Krishnan, Srinidhi and Su (2008) suggests that inventory policy affects earnings variability and accruals quality. They find that accruals quality is systematically worse for FIFO firms than for LIFO firms after controlling for correlated omitted variables and known firm attributes.

3.3. Earnings Persistence

Earnings quality is also defined in previous studies and accounting text books in terms of persistence and sustainability (e.g. Ahmed, Billings, and Morton, 2004; Beneish and Vargus, 2002; Chan, Chan, Jegadeesh, and Lakonishok, 2006; Penman and Zhang, 2002; Richardson, 2003; Richardson, Sloan, Soliman, and Tuna, 2005; Sloan, 1996). Revsine, Collins and Johnson (2002) state that earnings are considered to be of high quality when they are sustainable; and Bodie, Kane and Marcus (2002) defined quality of earnings as the extent to which we might expect the reported level of earnings to be sustained. Focusing on investors' perception of earnings quality, Ayres (1994) notes that one view of earnings quality relates to the overall permanence of earnings. That is, high quality of earnings reflect earnings that can be sustained for a long- period. Similarly, in an empirical study that investigates the joint effects of accounting conservatism and investment on the quality of earnings, Penman and Zhang (2002) define high-quality earnings to be 'sustainable earnings' as often referred to in financial analysis. They explain that when an accounting treatment produces unsustainable earnings, it indicates that the earnings figures are of poor quality.

Earnings persistence is often measured in previous research (Ali and Zarowin, 1992; Francis et al., 2004; Lev and Thiagarajan, 1993) using the time-series approach, estimated as the slope coefficient estimate, β1 from the following autoregressive model of order one (ARI) for annual split-adjusted earnings per share:

$$X_{i,t} / A_{i,t-1} = B_{0,i} + \beta_{1,i} X_{i,t-1} + \varepsilon_{i,t} \qquad (3)$$

where:

$X_{i,t}$: firm i's earnings per share during year t;
$X_{i,t-1}$: firm i's earnings per share during year t-1;
$\varepsilon_{i,t}$: error term.

An estimate of β_1 closer to 1 implies highly persistent earnings, while a value of β_1 close to 0 implies highly transitory earnings.

Another stream of studies on earnings persistence introduced by Sloan (1996), decomposes earnings into two underlying components; accruals and cash flows. He analyses the characteristics of information (about future earnings) contained in those two components of current earnings and investigates the extent to which this information is reflected in stock prices. Sloan (1996) argues that the accrual and cash components of earnings are both relevant to financial statement users, but the former is less reliable, and therefore that the accrual component of earnings is less persistent than the cash flow component. This signifies that there is a negative association between the magnitude of the accrual component of earnings and the persistence of current earnings, and thus earnings quality.

The different persistence of the accrual and cash components of earnings observed in Sloan (1996) inspired subsequent studies to further investigate the implication of accruals for earnings quality (Zheng, 2003). For example, Johnson, Khurana and Reynolds (2002) modified the Sloan (1996) model and introduced a cross-sectional model to examine the impact of audit tenure on the persistence of the accrual component of earnings.

3.4. Earnings Predictability

A number of studies measure earnings quality by assessing the ability of earnings to predict future cash flows (Barragato and Markelevich, 2008; Cohen, 2004; Doyle, Lundholm, and Soliman, 2003; Francis et al., 2004; Greenberg, Johnson, and Ramesh, 1986; Van der Meulen et al., 2007). Barragato and Markelevich (2008) define high-quality earnings as an earnings stream that is a better predictor of future operating cash flows. They claim that their definition of earnings quality frequently appears in financial analysts' reports and treatises of financial statement analysis, which supports the view that financial statements should provide information that is useful in assessing the amounts, timing and uncertainties of prospective cash inflows.

Earlier, there were arguments that current earnings may not be a good predictor of future cash flows compared to current cash flows because of the managerial discretion involved in measuring earnings. To clarify this matter, Greenberg et al. (1986) empirically examine whether current earnings or current cash flows are the better predictor of future cash flows. This is done by comparing the coefficient of determination (R2) from regressions using either cash flows or earnings as the variable. Their results show higher R2 from the earnings regression, which suggest that current earnings are the better predictor of future cash flows. Similarly, Dechow, Kothari and Watts (1998) report that the forecasting model using current earnings yields smaller variations for forecast errors than the model based on cash flows. On the other hand, Barth, Cram and Nelson (1999) find that disaggregating earnings into cash flows and aggregate accruals significantly increases the adjusted R2 for forecasting future cash flows.

Earnings predictability is a similar construct to earnings persistence as both relate to the time-series behavior of earnings. However, Schipper and Vincent (2003) note that there is a possible situation where persistence and predictability may not be consistent. Volatile earnings might be high quality in terms of high persistence (i.e. earnings follow random walk), but low in quality in terms of low predictability (i.e the magnitude of a typical shock to earnings is large).

3.5. Value Relevance

In much of the accounting research into financial reporting quality, earnings quality is measured by its value-relevance to investors in relation to equity valuation (e.g. Cheng, Hsieh, and Yip, 2007; Lang, Raedy, and Wilson, 2006; Lang, Raedy, and Yetman, 2003; Leuz, Nanda, and Wysocki, 2003). These studies relate earnings directly to stock prices or market returns. The association (the slope coefficient or the explanatory power of the model) between earnings and stock market performance suggests that earnings are both relevant and reliable to investors (Barth,

Beaver, and Landsman, 2001). Generally, earnings is considered to be higher in quality if it is more value- relevant. As claimed by Bao and Bao (2004):

> *Theoretically, if quality of earnings is improved, then the association between firm value and reported earnings should also be improved. If quality of earnings is impaired, then the association between firm value and reported earnings should also be impaired.*

Among others, studies investigating the effect of changes in accounting standards have found that earnings quality is significantly affected by the change indicated in value relevance models. For example, Cheng et al. (2007) examine whether the choice of accounting treatment of the transition obligation under SFAS106 affects firm value, and whether the quality of earnings is improved after the implementation of the standard. They found that although the total value relevance of both earnings and book value is not affected by the choices allowed under the new accounting standard, earnings quality under the immediate recognition method has been severely undermined by the one-time charge of the transition obligation. The study concludes that, by transforming the accounting standard from the cash basis to accrual basis, SFAS 106 is proved to have resulted in higher quality of earnings.

Another set of studies compares the value relevance of earnings under different accounting standards. For example, Harris, Lang and Moller (1994) compare the associations of earnings reported under foreign and US GAAP. Another study by Joos and Lang (1994) investigates the financial statement effects of differences in accounting measurement practices in France, Germany, and the United Kingdom, and find evidence of significant differences in financial ratios and stock market valuation based on accounting data. Hung (2001) investigates the effect of accrual accounting in different accounting standards on the value relevance of financial statements across 21 countries. Using a sample of 17,743 firm-year observations during the period 1991-1997, the findings show that the use of accrual accounting negatively affects the value relevance of accounting performance measures (earnings and ROE) for countries with weak shareholder protection. Moreover, for countries with strong shareholder protection, accrual accounting does not negatively affect the value relevance of earnings.

3.6. Timeliness

Timeliness of earnings is often regarded as one of the characteristics of high quality financial reporting. According to Abdullah (2006), timelier reporting is associated with higher accounting quality as users are able to use the information for such purpose as valuation and evaluation. More timely information (including earnings) is more relevant and thus more useful for financial statements users. Based on this idea, a number of studies use timeliness as one of the qualities of desirable earnings. In Francis et al. (2004), which examines the association between cost of equity and earnings quality, the quality of earnings is represented by seven different attributes including timeliness.

A number of studies have examined factors associated with the timeliness of earnings. Bushman, Chen, Engel and Smith (2004) examine the relationship between governance mechanisms and three different proxies for earnings timeliness. They find evidence of a positive association between timeliness and the proportion of outside board members. Abdullah (2006) studies the roles of the composition of board of directors, audit committee and the separation of the roles of the board chairman and the chief executive officer on the timeliness of reporting in Malaysia. Abdullah (2006) found that board independence and the separation of the roles of board chairman and CEO are significantly associated with timelier reporting. The study also shows that the 1997 financial crisis had adversely affected the timeliness of reporting, implying that during difficult periods, companies tend to take a longer time to prepare their audited financial reports.

In Beekes, Pope and Young (2004), timeliness is defined as the length of time taken to reflect information in earnings. Similarly, Raonic, McLeay and Asimakopoulos (2004, p. 120) state that:

> *Reported earnings may be considered to be timely when they fully reflect the information that has been incorporated by the market in its pricing of a firm's equity. Earnings are less timely if value changes that are recognised by the market in the present period are not incorporated in the accounting computations until sometime in the future.*

4. Conclusions

Using different approaches to defining earnings quality, the extant literature emphasizes that the quality of earnings is very important to users of financial information as well as to practitioners, regulators and accounting researchers. This is because reported earnings are considered to be the premier information in financial statements. According to Salvato and Moores (2010), high quality accounting information on attributes such as earnings is essential for firms to access equity and debt markets. The informative function of earnings means that it is often used as a basis to describe the financial performance of a firm. For example, the earnings numbers and various ratios or metrics derived from it are widely used in compensation agreements and debt agreements (Schipper and Vincent, 2003). Earnings are also used by analysts to evaluate firms' previous and current performance and forecast firms' future ability to create additional wealth to shareholders.

According to Schipper and Vincent (2003), the importance of earning quality can be explained from at least two perspectives, the contracting perspective and investment perspective. From the contracting perspective, low quality of earnings may result in unintentional wealth transfers. For instance, firms that reward managers based on earnings may overcompensate the managers if earnings are overstated. From an investing perspective, poor quality of earnings is problematic as it can mislead investors, resulting in misallocation of resources (Myers et al., 2003; Schipper and Vincent, 2003). High earnings quality would also increase the attractiveness of stocks to outside investors and increase market liquidity (Young and Guenther, 2003), lower cost of debt (Salvato and Moores, 2010), reduce cost of capital (Leuz and Verrecchia, 2000; Salvato and Moores, 2010), and promote more efficient capital allocation (Biddle, Hilary, and Verdi, 2009; Bushman, Piotroski, and Smith, 2011). Thus, it is very important for the reported earnings to be high in quality.

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