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Empirical Proxies of Earnings Quality: A Review

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Abstract – Quality of financial reporting has been discussed in the literature from three major perspectives, namely earnings management/ earnings quality, financial restatements, and timeliness, as well as their combined indices. However, the degree of earnings management, which captures the earnings quality of the reported earnings has been found to be one of representative ways to examine the quality of financial reporting in the literature. There is, however, no single definition of the term earnings quality. It is multidimensional. The present paper is an attempt to explore all the proxies of earnings quality used in extant research. The following discussion is therefore, not a summary of existing formal theory rather it reflects an accumulation of proxies of earnings quality taken from different studies.

Key Words – Earnings Quality, Earnings Management, Accruals, Earnings Persistence

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INTRODUCTION

Earnings quality has been an important topic of research in accounting. However, there is no universal and single definition to measure earnings quality. Several studies assert that earnings quality is a multidimensional concept and researchers have used different proxies of earnings quality in their studies. The studies involving quality of earnings highlight the importance of appropriate proxies for earnings quality. These studies have used a wide range of earnings quality measures, including both accounting based measures; earnings persistence, predictability timeliness, earnings management, and earnings smoothness; and market based measures, as, earnings response coefficients and conservatism. 'Quality' is contingent on the decision context.

According to Statement of Financial Accounting Concept No 2, issued by Financial Accounting standards Board, the primary determinants of accounting information quality are relevance and reliability, and these two dimensions make accounting information useful for decision making. Findings in the study by Barua (2006) support the assertion that FASB's earnings quality attributes make accounting information useful for decision making and that investors, in general, prefer relevance to reliability dimension of earnings. This is because explanatory power of earnings were found to be higher for relevance as compared to reliability dimension of earnings. Consistent with the focus on decision usefulness adopted by the FASB and by academic researchers, it can be said that earnings quality and, more generally, financial reporting quality are of concern to capital market participants who make their decisions regarding investments based on reported earnings. That is why the quality of earnings is directly associated with a firm's cost of capital.

Graham and Dodd used the term 'Earnings quality' as early as in 1934 in their book 'Security Analysis'. Later in 1968, Ball and Brown related accounting income to stock prices. Thereafter, there have been evidences of academic accounting researchers having used equity market responses to earnings to mean quality. Later Comisky (1971) in his paper stated that the particular set of accounting alternatives used by a firm add a unique 'quality dimension' to the earnings. The author in his study of eleven steel companies that switched to straight-line from accelerated method of charging depreciation found that quality of earnings and price-earnings ratio reduced after the switch. Thus, the researcher defined earnings quality in terms of accounting alternatives i.e. more conservative the accounting alternatives were, the higher was the quality of earnings.

Lev (1989) used the term 'quality' as a descriptive characteristic of earnings. He argued that one explanation for low R2s in earnings returns model is that "No serious attempt is being made to question the quality of the reported earnings numbers prior to correlating them with returns". Studies conducted after Lev (1989) have discussed the relationship between quality characteristics of earnings and equity valuation decision models. Dechow et al. (2010) observed that over the time earnings attributes that were found to indicate

quality in one decision model were treated commonly as measures of quality in others.

Schipper and Vincent (2003) classified earnings quality constructs as: (a) constructs associated with time series properties of earnings (b) constructs derived from the relations among income, accruals and cash (c) constructs derived from qualitative concepts in FASB's conceptual framework and (d) constructs derived from implementation decision. However, they did not consider these four categories of earnings quality constructs to be mutually exclusive or exhaustive.

The concept of earnings quality has multidimensional orientation. Review of literature provides mixed evidence across the earnings quality proxies. This implies that each individual proxy measures distinct features of decision usefulness of earnings. Research in accounting uses different definitions for earnings quality, which includes persistence (Penman and Zhang, 2002), predictability of future performance (Cohen, 2003), smoothness and the relationships of accruals with cash flows (Dechow and Dichev, 2002). Dechow et al. (2010) in their review of more than 300 studies of attributes of earnings could get to no single conclusion on the meaning of earnings quality.

Different empirical measures used in academic research have focused on accruals quality to assess earnings quality. Measures developed by Dechow and Dichev (2002), Mc Nichols (2002), and Jones 1991 (modified) are most widely used in academic research. Jones (1991) focused on the discretionary portion of total accruals to capture earnings management rather than the discretionary portion of a single accrual account because total accruals capture a larger portion of manager's manipulations. Thus, Jone's intent was to separate discretionary accruals from non discretionary accruals, whereas Dechow and Dichev's (2002) characterized the link between current accruals and cash flows in the immediately adjacent periods. They recognized that accruals may arise following some cash flows and in anticipation of others, and developed a model that reflects estimation errors in anticipating cash flows. Dechow and Dichev defined the quality of accruals and earnings as the magnitude of these errors.

However, McNichols (2002) pointed out that linking the approach taken by Dechow and Dichev (2002) with that of Jones (1991) had the potential to strengthen both approaches to improve upon the errors associated with Jone's measure of discretionary accruals and Dechow and Dichev's measure of earnings quality. Mc Nichols's measure of accruals quality combines the two models, which separates accruals based on their relationship with cash flows by regressing working capital accruals on cash from operations in the current period, previous period and future period as well as the change in revenues and property, plant and equipment.

Standard setters have effectively made the choice to have an accrual system of accounting rather than a cash based system. The basic assumption of the standard setters' choice is that accrual earnings is a better measure of fundamental performance than cash receipts and payments. Quality of earnings is often considered to be higher than the quality of cash flows because accruals result in earnings which are more persistent, less volatile, more strongly related with future cash flows and current stock prices than cash flows (Ghosh and Moon, 2010). However, accruals involve accounting choices and judgments. Consequently, the quality of earning is anticipated to vary through the use of accruals depending on the incentives and the nature of business contracts.

Further, the extent to which a firm's accruals map into cash flows is affected, not only by discretionary reporting choices made by managers (discretionary factors), but also by the firm's operating environment and its business model (innate factors). This distinction is important because managers have little control over the innate factors, at least in short run.

Cohen (2003) used standard deviation of residual accruals as a measure of firm's accrual quality and observed that there was no evidence that firms choosing to provide high quality financial information necessarily enjoyed a lower cost of equity capital.

Francis et al. (2004) identified seven earnings attributes in their study, namely, accruals quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism. The first four are accounting based and last three are market based attributes. They concluded that among the accounting based attributes, accruals quality had the largest effect.

Taking a large sample of firms for the period 1970–2001, Francis et al. (2005) provided evidence that both innate and discretionary accruals quality affected the cost of capital, although innate accruals quality had a larger impact on cost of capital than discretionary accrual quality. The authors used Dechow and Dichev (2002) measure of accruals quality augmented with the fundamental variables from modified Jones (1991) model, namely property, plant and equipment and change in revenue to capture quality of accruals.

Moerman (2005) explored the effect of financial reporting quality characteristics like, timeliness, abnormal accruals and earnings volatility on the bid- ask spreads. Taking a sample of traded syndicate loans, the author documented that the high quality financial reporting reduced the information costs associated with debt agreements and also increased the efficiency of the secondary trade.

Ecker et al. (2006) observed that returns based representation of earnings quality are most appropriate in research settings that analyze changes in financial reporting quality, either because of a change in reporting or because of a voluntary reporting or disclosure decision. The authors used earnings quality in terms of precision by using Dechow and Dichev (2002) model.

Barua (2006) used a summary measure of earnings quality based on the FASB's qualitative characteristics by applying factor analysis on fifteen variables representing different components of two primary dimensions of earnings quality: relevance and reliability to arrive at a final measure of earnings quality. The author tested the association between earnings quality and the expected rate of return and documented a negative relationship between earnings quality and measure of implied cost of capital.

Liu and Wysocki (2007) provided evidence that operating volatility is the primary driver of the documented empirical relation between accruals quality and cost of capital. The study claimed that accruals quality became a significant determinant of cost of capital, when operating volatility variables were excluded from the regression, but displayed either insignificant or inconsistent associations with various cost of capital measures when operating volatility variables were included in cost of capital regressions. The researchers used Dechow and Dichev (2002) model for accruals quality.

Barth et al. (2008) provided evidence that accounting quality improved after the firms adopted International accounting standards (IAS), and also the firms applying IAS had higher accounting quality than the firms that did not apply IAS. The authors used three commonly used measures of abnormal accruals i.e. Dechow and Dichev (2002), Teoh et al. (1998) and Jones (1991) model as measure of earnings quality. However, inconsistent with results of previous studies, the study by Rudra and Bhattacharjee (2012) showed that with the adoption of IFRS, earnings management increased leading to poor earning quality.

Francis et al. (2008) examined the relationship between voluntary disclosure, earnings quality and cost of capital in a single analysis. The authors observed a complementary relationship between voluntary disclosure and earnings quality and a significant negative relationship between voluntary disclosure and cost of capital unconditional on earnings quality. The authors took three measures of earnings quality, namely, accruals quality, earnings variability and absolute value of abnormal accruals and then derived a final measure of earnings quality by applying factor analysis on the three underlying earnings quality measures.

Ewert and Wagenhofer (2005), also through their model confirmed the importance of tighter accounting standards in improving the earnings quality. Their model established that tighter accounting standards improved the association between reported earnings and market price reactions. Variability of reported earnings was used as a proxy for earnings quality.

Ghosh and Moon (2010) observed a non-monotonic (curvilinear) relationship between debt financing and earnings quality for a large sample of US non-financial firms for the period 1992-2004. The researchers used accruals quality as a proxy for earnings quality, based on the measures developed by Dechow and Dichev (2002), Mc Nichols (2002) and Francis et al. (2005).

Bhattacharya et al. (2012) tested for evidence of a direct link between the cost of equity capital and information risk and an indirect link in which information asymmetry is a mediator variable that is influenced by earnings quality and that in turn influences the cost of equity. Earnings quality was used as a proxy for information risk.

Bhattacharya, Desai and Venkataraman (2013) examined the association between earnings quality and information asymmetry for a large sample of NYSE and NASDAQ firms for the period 1998-2007. Taking accruals quality as a proxy for earnings quality, they demonstrated that poor earnings quality was significantly and incrementally associated with higher information asymmetry.

The researchers have also examined the association between CSR activities and Earnings quality/ earnings management. Socially responsible firms that spend efforts and resources on CSR activities are likely to constrain earnings management and thus providing investors with more transparent and reliable financial information.

Dhaliwal et al. (2011) observed that CSR disclosure by superior CSR performers attracted institutional investors and was associated with increased analyst coverage, improved forecast accuracy, and a reduction in forecast dispersion. The authors used absolute value of abnormal accruals from the modified Jones (1991) model to proxy for earnings quality.

Dhaliwal et al (2012) examined whether the disclosure of Stand–Alone Corporate Social Responsibility (CSR) reports was associated with improved earnings forecast accuracy by financial analysts. The authors used absolute value of firm's scaled accruals averaged over three years to measure firm level financial transparency. They also used accruals quality measure developed by Dechow and Dichev (2002) and Jones (1991) model. The results revealed that issuance and disclosure of standalone CSR reports was

associated with lower analyst forecast errors or greater analyst forecast accuracy.

Kim et al. (2012) provided evidence that CSR practices were negatively associated with a firm's earnings management. They observed that more socially responsible firms had a better quality of financial reporting. They used discretionary accruals as a proxy for earnings management. They have used cross sectional version of the modified Jones Model due to its superior specification and less restrictive data requirements. The authors also used accruals quality as proposed by Dichow and Dichev (2002), as a measure of financial reporting quality and got the similar results as with discretionary accruals.

Researchers, financial market participants and policy makers have also explored the association of earnings quality with ownership structure and corporate governance. There is well established literature associating corporate governance with earnings quality. Mouna Njaha and Anis Jarbouib (2013), for example, investigated as to what extent the institutional investor's control behavior could affect the acquiring firm's accounting policy and also analysed the acquiring firm's major determinants of earnings management. The authors used discretionary accruals as a proxy for earnings management.

Hyejeong Shin and Su-In Kim (2018) examined the impact of corporate governance on earnings quality and investors' reactions to low-quality earnings. The researchers used earnings accuracy as a measure of earnings quality, whereas, earnings accuracy was determined as an earnings gap between unaudited earnings that firms initially file with regulators in the natural experimental setting in Korea and the audited earnings. The results of the study reported that the firms where sophisticated investors and independent Board monitor the management's behavior are more likely to report accurate earnings.

Following Dechow et al. (2010), the researchers have used two measures of earnings quality; accounting based measures (earnings management and earnings persistence) and market based measure (earnings informativeness). The results reported that foreign shareholders served a positive role in enhancing corporate's earnings quality.

Demirkan and Demirkan (2014) explored whether the earnings quality of firms involved in joint venture alliances and contractual alliances differed from the firms that were not involved in alliances. The researchers used both the accounting based and market based measures of earnings quality. Further, in the accounting based measures of earnings quality, the researchers used earnings persistence, earnings smoothness, accruals quality, discretionary accruals and absolute discretionary accruals as proxy for earnings quality. Results of the study reported that the unstructured reporting of contractual alliances is associated with decline in reporting quality across a number of dimensions.

CONCLUSION

It has been observed from the above discussion that varied proxies of earnings quality have been used in accounting research. This further confirms that earnings quality is multidimensional. It has been observed that Dechow and Dichev (2002) measure has been widely used in research to measure earnings quality. Also earnings quality related research has used both accounting based (where earning quality is measured using accounting information only) and market based attributes (where earnings quality is based on the relation between market data and accounting data).

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