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## Abstract

Earnings quality is a demanding attribute of firm and is valued by investors in resource allocation decisions. High earnings quality firms create value for stakeholders and poor earnings quality causes value deterioration. This study takes into account earnings quality attributes of Pakistani corporate sector and investigates impact of ownership structure and financial health on firms' earnings quality. Earnings quality has been measured by four attributes of accrual quality, earnings persistence, earnings predictability, earnings smoothness. A sample of 325 non-financial PSX listed Firms have been selected and classified into four unique categories on the basis of financial health (healthy and distressed) and ownership (family and non-family). The classification aims to determine level of earnings quality for each category. Results find significant effect of book financial position and ownership structure on earnings quality of firms. Findings reveal Earnings quality for non distressed family (NDF) firms was highest followed by non distressed non family firms (NDNF), while earnings quality for distressed family (DF) firms was poor and poorer for distressed non family (DNF) firms when firms were classified into these four categories. These results provide important implications for investors, analysts, regulators and standard setters.

**Keywords:** earnings quality, earnings persistence, predictability, smoothness, financial distress, family firms

## 1. Introduction

Earnings is one of the most important figures used by the firm's stakeholder as many decisions, including investment and financing and contractual agreements are taken on the basis of this key figure. Multiple determinants have been documented in literature for earnings quality including capital structure, information asymmetry and investment opportunities and individual characteristic of management and earnings management, accounting choice, business model, commodity risk and corporate governance ( Papadopoulos 2018, Beyer et al., 2019; Scarso, 2019; Wahyudianti et al., 2021; Khan, 2022; Anam, 2023). Different researchers consider different attributes for quality earning. For example earnings is higher quality earnings if it is persistent and predict future long run sustainable earnings in best way (Penman and Zhang, 2002; Schipper and Vincent, 2003; Dechow and Schrand, 2004 and Melumad and Nissim, 2009) if it is smooth ( Dechow and Schrand, 2004 & Francis et al., 2004) if it doesn't include non recurring or special items (Dechow and Schrand, 2004 and Mcvay, 2006; Subhani at al., 2022) conservative accounting rule or conservative application of accounting rules is used to derive it (Watts 2003a,2003b) changes in total accruals for it is small and not linked to fundamental (Deangelo, 1985; Jones, 1991;Dechow et al. 1995 and Kothari et al. 2005).

If earnings is sustainable indicator of future performance it is considered as high quality earnings (Penman and Zhang, 2002). Similarly, if the firm is able to generate sustainable earnings it is considered as high earnings quality firm (Comiskey and Mulford, 2000; Wang and Ahmad, 2015).

An earnings which is closer to cash is considered as higher quality earnings (Visvanathan, 2006) as closeness to cash is a desirable attribute and accruals are less persistent (Sloan, 1996) so earnings should include less accruals and should be more closer to cash.

Another desirable characteristic of earnings is conservatism if taken in the meanings of prudence (Basu, 1997). This conservatism implies that while estimating income and assets and expenses and liabilities caution should be exercised that earnings and assets be not overstated and expenses and liabilities be not understated.

According to Barth et al. (2008) if earnings exhibit less earnings management it is considered as high quality earnings. Managerial opportunism and business model and environment both affect earnings quality. Similarly Dechow et al., (2010) argue that fundamental performance of firm and accounting system measuring the performance both are determinants of earnings quality.

As standard setters and managers and other stakeholders have different compensation contracts with the firms tied to earnings of firm hence have different perception of earnings quality such as decision useful (Schipper and Vincent, 2003; Ball and Shivkumar, 2005), Conservatism (Basu, 1997; Hussain, 2015; Beekes et al., 2004) closeness to cash (Visvanathan, 2006) comparability (Levitt 1998), persistence (Dechow and Dichev, 2002; Namadi, 2023) transparency (Levitt 1998; Barth and Schipper, 2008) timeliness (Ball et al. 2000) and precision (Francis et al., 2006).

Different attributes of earnings quality of firm might also be affected by the dimensions like financial health and firm ownership structure which in turn have implications for firm value. In order to suggest ways to enhance firm earnings quality for value extraction various dimension have been suggested in literature. Present study is an effort to suggest the contribution of financial health and ownership structure of firm for firm earnings quality by considering data from Pakistani corporate sector.

## 2. Literature review

Consequences of earnings quality have been dealt in a stream of literature. Cost of equity capital and earnings quality has been suggested in the empirical evidences as negatively related in general. Cost of capital has been viewed as summary indicator of investor resource allocation decision (Francis et al., 2006) as higher quality earnings should help investors in efficient allocation of resources. Low earnings quality enhances cost of debt and equity capital ( Francis et al., 2005).

They attribute higher cost to higher information risk which is derived from higher magnitude of accruals. Bhattacharya et al. (2003) Lambert et al. (2007) and Chen et al. (2007) also found similar results. However, Cohen (2008) argument regarding cost and quality association are contrary to the proponents of this relationship, so complete consensus does not exists on this issue.

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Earnings quality has positive outcome for stock prices. In the research of Francis et al. (2006) market returns are compared on one hand with expected return and on the other hand with abnormal return. They suggest that view of earnings quality as information risk proxy affect expected return. Earnings quality and information precision have been reported to have negative association, i.e. higher expected return is associated with poor earnings quality. Furthermore bid ask spread reduces as a result of higher accounting quality (Francis et al., 2006). More over large analyst forecast error arise as a result of poor earnings quality (Ashbaugh and Pincus, 2001), credit ratings and audit opinion also worsen (Francis and Krishnan, 1999; Francis et al., 2005).

### **2.1. Accruals Quality**

Accrual quality is mapping of current accruals into past present and future cashflow. Property plant and equipment and change in revenue are also considered. The absolute value of residuals from regression is accrual quality. As residuals are unexplained portion so large value of residuals is indicator of poor quality and small value indicates good quality ( Dechow and Dichev,2002; Francis et al. 2004).

Net income is the combination of both cash flow from operation and accruals. Accruals are used to recognize revenue and expenditure in accrual accounting as a result of which accounting information become more relevant however opportunistic management behavior may also manipulate accruals. In contrast to this cash flow is less manipulated however less relevant as well. Accruals are suggested as estimates of future cash flow and when accruals contain less estimation error they may be more representative of future cash flow (Dechow and Dichev, 2002). If accruals quickly convert into future cash flow they are regarded as high quality accruals.

Dechow and Dichev (2002) model was modified by McNichols (2002) by arguing that fundamental factor influencing the accruals are not controlled in that model. They extended model by including property plan equipment and change in revenue as additional explanatory variable stating them as important for current accruals expectation formation. There are mixed empirical evidences in literature about the performance and validity of both models.

### **2.2. Smoothing**

Two popular and conflicting schools of thought exist in literature regarding earnings smoothness. First propose artificial smoothing out of relevant and informative fluctuations in cash flow by managers and in this view the smoothness is regarded as negative phenomenon and indicator of poor earnings quality (Bhattacharya et al., 2003). The other view supports use of private information by the managers to smooth out value irrelevant and transitory fluctuation in cash flow. As a result, more useful and persistent earnings numbers are achieved. In this view smoothness as indicator of high quality earnings is promoted (Subramayam, 1996; Dechow and Skinner, 2000; Francis et al., 2004; Frncis et al., 2006).

Many researchers measure smoothing as ratio of standard deviation of earnings and standard deviation of cash flows (Lang et al, 2003; Leuz et al, 2003; Francis et al, 2004). As per this proxy an earnings number is of high quality which closely related to underlying cash flow and it faithfully represents the firm underlying performance (Schipper and Vincent, 2003).

### **2.3. Persistence**

Time series attribute of earnings is a construct that attempts to examine earnings quality in financial accounting literature (Sloan, 1996). According to Lipe (1990) persistence is autocorrelation in earnings. Persistent earnings are also termed as core earnings or sustainable earnings and sustainable earnings are referred to as high quality earnings. Sustainable earnings before extraordinary items are considered as as high quality earnings (Penman & Zhang, 2002) and considers unsustainable and transitory earnings as poor quality earnings

Richardson et al. (2001) attribute earning persistence as degree to which earnings which persists into coming period. The likelihood that current earnings are sustainable in future is the definition given by Benish and Vargus (2002). A recurring, more permanent less transitory and sustainable earnings and highly permanent earnings is regarded as high quality earnings (Schipper and Vincent 2003).

### **2.4. Predictability**

Earnings predictability is also a desirable attribute and closely linked to the concept of persistence. Schipper and Vincent (2003) describe predictability is also stated as capability of financial statements to improve the user ability of future value forecast of items i.e. predictive ability of past earnings for future. As per this definition the predictability suffers with variability of income therefore it is also connected with persistence and smoothing. The model measuring persistence is also used to measure the earnings predictability. According to Dichev and Tang (2009) absolute predictability can be calculated by using auto regressive regression of current earnings on previous year earnings i.e. same as above mentioned autoregressive (AR1) process. The variance of error term of AR1 regression is the inverse measure of predictability. The concept of persistence and predictability are two distinct attribute though they arise from the same AR1 regression. The variability of error term can both be high and low for the same level of persistence. If the prices of stock follow the random walk as per the assumption of efficient market the persistence will always be close to zero despite the difference of volatility. In other words if the variance of persistence is low its predictability is high. While operationalizing the concept of predictability some empirical difficulties have been pointed out (Schipper and Vincent, 2003). Frequent used of four earnings quality dimension can be inferred from review of literature. The study is intended to use these attributes by introducing a unique classification of Pakistani listed firms on the basis of ownership and financial health and then testing these earnings quality attributes for the above mentioned categories of listed firms so that the impact of the ownership and financial position aspects on the level of earnings quality may be investigated which may have further implications for corporate sector researchers and policy makers.

### **2.5. Significance of the study**

To the best of author knowledge no such study exists in literature which categorized the Pakistani listed firms into a unique classification on the basis of ownership and financial position. Similarly no such study exists which has determined the earnings quality of Pakistani firms in perspective of above mentioned dimensions. Moreover no such study has been carried out which

determines the earnings quality of firms by dividing into four unique categories of non distressed non family (NDNF) non distressed family (NDF) distressed non family (DNF) and distressed family (DF) firms.

### 2.6. Objectives of the study

This research intends to classify the Pakistani listed non financial firms, on the basis of financial health and ownership. This study further aims to investigate the level of earnings quality of firms for the above mentioned four categories of Pakistani listed non financial firms.

This study will analyze the earnings quality level of Pakistani listed firms on yearly basis so that a trend of level of earnings quality may also be drawn from the results.

The study intends to investigate the impact of firm's financial position and ownership for firm's earnings quality.

### 2.7. Hypothesis of the study

This research hypothesizes that earnings quality of financially healthy and family firms is significantly different and better than the earnings quality of financially distressed and non family firms.

## 3. Methodology

### 3.1. Financial Distress

In order to classify firms into financially healthy and financial distressed Altman's Z score has been employed. The model has appeared to be equally effective for emerging and developed markets. Following model provides the Z-score value and score below 1.75 is considered as financially distressed.

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 + 3.25 \dots \dots \dots \text{Eq.1}$$

Where:

- X<sub>1</sub> ratio of working capital and total assets
- X<sub>2</sub> ratio of retain earnings and total assets
- X<sub>3</sub> ratio of EBIT and total assets
- X<sub>4</sub> ratio of book value of equity and total liabilities
- Z overall index

### 3.2. Detection/measurement of earning quality

Earning quality is also explored in this study. Study incorporates four major earning quality attributes which are earning persistence, accrual quality, earning smoothness and earning predictability.

#### 3.2.1. Accrual quality

Accruals as a measure of earnings quality have been proposed by researchers like Dechow and Dichev (2002) and it is accomplished by regressing current, last and next-period cash flow over the current accruals.

$$\frac{TCACC_{it}}{ASSTS_{it-1}} = \beta_0 + \beta_1 \frac{CFOP_{it-1}}{ASSTS_{it-1}} + \beta_2 \frac{CFOP_{it}}{ASSTS_{it-1}} + \beta_3 \frac{CFOP_{it+1}}{ASSTS_{it-1}} + \epsilon_{it} \dots \dots \dots \text{Eq.2}$$

For firm i

- TCACC<sub>i,t</sub> total current accruals in t year (CA<sub>i,t</sub> - CL<sub>i,t</sub> - Cash<sub>i,t</sub> + STDBT<sub>i,t</sub> + TP<sub>i,t</sub>);
- ASSTS<sub>i,t-1</sub> total assets in year t-1;
- CFOP<sub>i,t</sub> cash flow from operations in year t;
- CA<sub>i,t</sub> current assets in year t;
- CL<sub>i,t</sub> current liabilities in year t
- Cash<sub>i,t</sub> cash in year t;
- STDBT<sub>j,t</sub> debt in current liabilities in year t; and
- TP<sub>i,t</sub> taxes payable in year t.

Model overcomes many limitation of fundamental accounting model of Jones (1991) (Schipper and Vincent, 2003). Francis et al. (2004) finds Dechow and Dicev (2002) model as a power ful measure of earnings quality. However the model consider only one year lag and lead cash flows for working capital accruals.

#### 3.2.2. Earning persistence

A persistent earning is one which is sustainable and these persistent earnings are considered to be preferable because of their recurring nature (Francis et al., 2004). Thus higher persistence of earnings is an indicator of higher quality. Furthermore persistent earnings is also value relevant (Dechow et al., 2010). When the next period value of a variable is regressed on its present value persistence can be measured (Dechow and Schrand, 2004). The coefficient of earnings persistence is obtained when current year earnings will be regressed on last year earnings (Kormendi and Lipe, 1987).

$$\frac{Earn_{it}}{ASSTS_{it-1}} = \beta_0 + \beta_2 \frac{Earn_{it-1}}{ASSTS_{it-1}} + \epsilon_{it} \dots \dots \dots \text{Eq.3}$$

Where

- Earn<sub>i,t</sub> net earnings of firm i for year t

#### 3.2.3. Earning Predictability

Predictive ability of earnings for future earnings is referred to as predictability (Boonlert-U-Thai et al., 2006). Predictability measure is the square root of estimated error variance of persistence equation (Francis et al., 2004).

$$Pred_{i,t} = \sqrt{\sigma^2(V_{i,t})} \dots \dots \dots \text{Eq. 4}$$

Σ<sup>2</sup>(V<sub>i,t</sub>) Estimated error variance of firm I in year t.

#### 3.2.4. Earning Smoothness

The study employs ratio of standard deviation of Cashflow from operation and standard deviation of earnings for earnings smoothness measure. Both variables should be scaled by total assets (Francis et al., 2004). Bowen et al. (2003) too uses the same

equation for smoothness as follows:

$$Smooth_{j,t} = \frac{\sigma(\frac{CFO_{j,t}}{Assets_{j,t-1}})}{\sigma(\frac{Eam_{j,t}}{Assets_{j,t-1}})} \dots \dots \dots \text{Eq. 5}$$

Ratios greater than 1 indicates greater variability of cash flow as compared to earnings which implies use of accruals for earnings smoothness. Greater earnings smoothness proposes lower earnings quality and small value of smoothness indicates smaller earning smoothness and hence larger earning quality.

#### 4. Results and discussion

Following tables show the classification of about 325 non financial PSX listed firms on the basis of financial health and ownership. It provides the detail of firms by classifying them into 4 categories.

**Table 1: The Classification of Sample Firms**

Year	Healthy Firms			Distressed Firms			Total
	Family	Non family	Total	Family	Non family	Total	
2008	138	132	270	26	29	55	325
2009	141	141	282	24	21	45	327
2010	145	140	285	20	22	42	327
2011	164	129	293	16	18	34	327
2012	159	119	278	27	22	49	327
2013	164	112	276	28	23	51	327
2014	167	125	292	21	14	35	327
2015	173	118	291	17	19	36	327
2016	173	113	286	16	24	40	327
2017	163	113	276	23	28	51	327
2018	153	128	281	21	25	46	327
2019	158	126	284	17	26	43	327
2020	149	121	270	24	29	53	323
2021	146	116	262	27	34	61	323
2022	139	116	255	34	34	68	323

Source: authors' calculation

#### 4.1. Earnings quality

Four attribute of earnings as earnings persistence earnings predictability, earnings smoothness and accrual quality are characterized as the earnings quality attributes in literature (Francis et al., 2004). The extent of accruals realization of related cashflow is referred to as accrual quality. For the better predictability of future cashflow and earnings the recognition of cash flow is shifted or adjusted over time (Boonert-U-Thai et al.,2006). A persistent earnings is sustainable earnings and it is desirable (Penman and Zhang (2002) and recurring (Richardson, 2003). On the contrary the ability of current earnings to predict future earnings is termed as predictability. The use of accruals to smooth future earnings is referred to as earnings smoothness. Low value of smoothness is desirable as it signifies no involvement of management in smoothening activities.

##### 4.1.1. Results of Accrual Quality

This section tests Hypothesis that whether accruals quality is different among the four classes of firms (NDF, NDNF, DF and DNF). Table 4.2 reports the results of accrual quality Model.

**Table 2: Earnings Quality Metrics for rolling window of 10 years (Accruals Quality)**

Year	variables	NDF	DF	NDNF	DNF
2019	stdresid	0.4989	0.6270	0.5217	2.3332
2020	stdresid	0.5018	0.8716	0.6178	1.168
2021	stdresid	0.8394	1.4522	0.8791	2.6580
2022	stdresid	0.8563	1.9546	0.9103	2.7435

Source: authors' calculation

The large standard deviation of residuals in in the above table is an indication for DNF firm to have lowest accrual quality from 2019-2022, and NDF firms have the high quality of accruals in 2019-2022. The findings support the study's hypothesis and indicate that more dispersed accruals can point out more underlying variation in the firm's operations and subsequently low-quality earnings (Dechow and Schrand, 2011, Dichev et al, 2013).

##### 4.1.2. Results of Earnings Persistence

Table 4.3 provides the results relative to different earnings persistence prediction among the four classes of firms (NDF, NDNF, DF, and DNF).

**Table 3: Earnings Quality Metrics for rolling window of 10 years (Earnings Persistence)**

Year	NDF	DF	NDNF	DNF
2019	1.123	-0.2105	0.7401	-0.2186
2020	1.1928	-0.5380	0.6707	-0.2459
2021	0.9235	-0.3322	0.5972	-0.3607
2022	0.7284	-0.06519	0.5414	-0.5913

Source: authors' calculation

The results report that the coefficients on NDF firms are positive with significant value. For example, in 2019 (1.1231,  $P < 0.000$ ), 2020 (1.190,  $P < 0.000$ ), 2021 (0.92,  $P < 0.000$ ), and 2022 (0.72,  $P < 0.000$ ), which shows highly persistent earnings for NDF firms and high earnings quality. The results confirm the findings of Dechow and Schrand (2004) and Dang et al., (2020). If there is more volatility in terms of large earnings changes there would be less persistence ( Dechnow and Dicheve, 2002; Dechow and Schrand, 2010, Khuong et al., 2022).

#### 4.1.3. Results of Earnings Predictability

Earnings predictability of 4 classes of firms has been reported in the following table 4.4. Earnings predictability for these classes is hypothesized to be different among the four classes of firms (DF, DNF, NDF and NDNF). Earnings are less predictable if predictability value is large and more predictable if value is small. A highly predictable earnings is attributed as high quality earnings and earnings quality would subsequently be low if predictability is low.

**Table 4: Earnings Quality Metrics for rolling window of 10 years (Earnings Predictability)**

Square root of Error Variance	NDF	NDNF	DF	DNF
2019	0.09409	0.23314	0.6865	0.7462
2020	0.09365	0.17412	0.4438	0.4316
2021	0.08428	0.10287	0.3698	0.3531
2022	0.11574	0.15393	0.1456	0.1625

Source: authors' calculation

The results reveal significant differences among the four classes of firms. DNF firms have large coefficient values in 2019 (0.7462), 2020 (0.4316), 2021 (0.3531) and 2022 (0.1625) and therefore earnings are less predictable. Values of predictability for NDF are smallest as compared to DNF and DF and in turn has high quality earnings. In addition, NDNF firms and DF stand between DNF and NDF firms, as having predictability as moderate. This finding point out least likelihood of higher earnings quality for DF and DNF firms and NDF firms however have the highest degree of earnings quality. Similar findings have been reported by the Dichev and Tang, (2009) Dechow and Schrand (2010), Perotti and Wagenhofer (2014) and Shahzad et al., (2023)

#### 4.1.4. Results of Earnings Smoothness

Lower smoothness is an indication of higher earnings quality. Hence NDF firms expected to have lower smoothness.

**Table 5: Earnings Quality Metrics for rolling window of 10 years (Earnings Smoothness)**

Ratio of sd. (CFO <sub>i,t</sub> ) and sd. (Earn <sub>i,t</sub> )	DNF	NDNF	DF	NDF
2019	3.503627	0.211245	1.995121	1.126462
2020	2.247124	0.179420	1.918112	1.073176
2021	1.507817	1.297871	1.892314	1.020341
2022	1.812874	1.482396	1.780093	0.939369

Source: authors' calculation

As Table 5 indicates, smaller value for NDF and larger for DNF firms . This is in line with this study's expectations. Wang (2006) and Ali et al. (2007) findings support result current study stating that family firms level of information quality and transparency greater as compared to non family firms in the context of US firms. However, there are various other studies outside the US which also demonstrate the same results. For example studies of Prencipe et al. (2008) and Cascino et al. (2010) in Italian context and study of Ling (2010) in Taiwanese context exhibit similar results of superior reporting quality for family firms. Gaio & Rapose (2011) and Menicucci & Menicucci (2020) report similar results for earnings smoothness.

## 5. Conclusion and Recommendations

This study has taken into account the Pakistani non financial listed firms and attempts to determine the earnings quality level of these firms. The study has taken various measures of earnings quality. As high quality earnings is desirable and valued by the investors and is considered in the resource allocation decision so detecting and improving the level of earnings quality of firms is imperative. This study has considered the earnings quality attributes of persistence, predictability, accrual quality and smoothness. On the basis of availability of data and listing in stock exchange the study has attempted to incorporate maximum number of firms

for investigation. About 325 non financial listed firms have been selected in this research. The study has taken the sample for the period of 15 years from 2008-2022. Level of earnings quality has been measured on the basis of above mentioned four attributes on yearly basis. Moreover the study has introduced a unique classification of firms on the basis of financial health and firms' ownership. On the basis of these two factors firms have been categorized in financially distressed non family, distressed family, non distressed non family and non distressed family firms. It has been hypothesized that the earnings quality of family owned firms should be better as compared to non family as families have more effective control and can exert influence for improving earnings quality. Similarly the earnings quality of financially sound firms should be better as compared to financially distressed firms. Hence the earnings quality of non distressed family firms should be best and that of distressed non family firms should be worst. When tested for earnings quality attribute of persistence, predictability, accrual quality and smoothness for ten year window period the earnings quality of non distressed family firms was best followed by non distressed non family firms and earnings quality of distressed family firms was poor and poorer for distressed non family firms.

It can be inferred from the above results that in order to improve the earnings quality of firms, which has implications for value creation, the financial position should be improved first and then the family ownership also play its part in safeguarding the earnings quality of firms. Moreover for the improvement of corporate sector the financial position and ownership aspects should also be incorporated in policy making.

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