Nexus of Corporate Governance, Financial Reporting Quality and Investment Efficiency

Irfan Ullah Khan[1], Shakeel Ahmed[2], Muhammad Iqbal[3] and Usman Shaukat Khan[4]

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Abstract

This paper examines the relationship between corporate governance, financial reporting quality, and investment efficiency using data from 207 non-financial firms listed on the Pakistan Stock Exchange (PSX) for a period of 9 years from 2008 to 2016. Since the Pakistan Corporate Governance Code was revised in 2012, therefore consistent with previous studies, the effect of the promulgation of the new corporate governance code on financial reporting quality is also analyzed. Thus, using the GMM model, the results of the study show that the Corporate Governance Code 2012 improves the quality of financial reporting. Owners of family firms confiscate the wealth of minority shareholders by deteriorating the quality of financial reports. Independent directors of the board and independent directors of the audit committee effectively monitor the financial reporting process. Family ownership, board independence and audit committee independence interact with the code in affecting financial reporting quality and substitute or complement each other. Inefficient investments decrease financial reporting quality. Furthermore, the new governance code has an incremental effect on the relationship between investment inefficiency and financial reporting quality.

Keywords: Corporate governance, Corporate governance code, Financial reporting quality, Investment efficiency

Introduction

Due to the incidences of financial scandals and corporate collapses around the world (e.g., Xerox, WorldCom, Enron, and Parmalat), corporate policymakers and finance researchers devoted a lot of attention to drawing an efficient corporate governance system. This includes the introduction of governance-related regulations in various countries, for instance, the Cadbury, Greenbury, and Hampel reports in the UK. Corporate governance deals with identifying mechanisms so that conflicts between owners and managers are reduced and firm performance is enhanced. These mechanisms are internal and external corporate governance mechanisms. Internal corporate governance mechanisms are stockholders, board of directors, and managerial no entrenchment. External corporate governance mechanisms are market competition, takeover, labor unions and external auditing. Due to the difficulty in the measurement of external corporate governance mechanisms, this study uses only internal corporate governance factors in a relationship with financial reporting quality.

However, researchers have two opposing views on the relationship between stockholders and financial reporting quality, such as between block holders and accruals quality (an attribute of

[1]*Department of Business Administration, University of Mianwali, Mianwali, Pakistan.*
Email: irfanullah429@yahoo.com
[2]*Department of Management Sciences, HITEC University, Taxila, Pakistan.*
Email: shakeel.ahmed@hitecuni.edu.pk
[3]*Department of Economics, University of Mianwali, Mianwali, Pakistan. Email: muhammad.iqbal@umw.edu.pk*
[4]*Department of Management Sciences, COMSATS University Islamabad (CUI), Islamabad, Pakistan.*
Email: usmanshaukatkhan@gmail.com

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financial reporting quality based on accruals earnings management). First, monitoring by block holders is one way to constrain opportunistic earnings management by managers. Block holders using various resources can monitor and discipline managers (Kang et al. 2018). Their power of monitoring and disciplining managers is based on the proportion of shares they own (Chung et al., 2002). Thus, more shareholdings reduce the likelihood of earnings management (Bos & Donker, 2004). Further, Aggarwal et al. (2011) find that institutional investors enhance the information content of accounting earnings. Thus, these investors work as effective corporate governance mechanisms.

Secondly, various studies show that the existence of controlling shareholders results in accruals management (Liu & Lu, 2007; Jiang et al., 2020). Other scholars argue that family-owned companies are more involved in accruals management (Ding et al., 2011; Chi et al., 2015). Yang (2010) asserts that in family firms, information asymmetry between principal stockholders and minority stockholders is high. Thus controlling shareholders have the opportunity to engage in accruals management to increase their benefits at the expense of minority shareholders (Hou et al. 2015). The ownership structure of a firm also affects other attributes of earnings quality. For instance, stockholders of firms decrease earnings persistence (Aksu et al., 2013). And Limpaphayom and Manmettakul (2004) explore that managerial ownership negatively affects earnings informativeness.

The corporate board is a mechanism of corporate governance that primarily works to align the interests of managers and investors (Shleifer & Vishny, 1997). Agency theory, which deals with conflicts between investors and managers, provides the basis for the board's monitoring function (Fama & Jensen, 1983). Monitoring of managers is necessary because, without it, managers do not act in the interest of stockholders. For monitoring, researchers generally prefer independent directors on the board (Wu & Li, 2015). These scholars argue that internal directors, who are employees of the firm or independent directors having affiliation with the firm, monitor managers less efficiently. Conversely, outside directors with no affiliation with company management can monitor management in a better way (Alves, 2014). However, Ianniello (2015) empirically shows that board independence does not affect earnings quality.

The audit committee is a subcommittee that works under the board of directors (Cohen & Hanno, 2000). Further, investors think that the audit committee supervises the financial reporting process (Wild, 1996). On the other hand, investors' confidence in financial reports decreases if the audit committee does not effectively perform its supervisory role (Verschoor, 1990a). However, studies show mixed evidence on the association between independent directors of audit committees and financial reporting quality. For example, independent directors of audit committees positively affect reporting quality (e.g., Klein, 2002). Conversely, Dechow et al., (1996) find that independent audit committee increases fraud cases.

Apart from corporate governance factors, previous studies also show that firm performance also affects financial reporting quality. For example, past performance affects current-year accrual quality, as management is involved in accrual management to achieve desired earnings targets, and for this purpose, past earnings serve as a benchmark (Graham et al., 2005). The signaling theory suggests that profitable firms disclose firm-specific information to enhance the credibility of their financial reports. Inchausti (1997) argues that quality information increases a company's reputation and avoids the mispricing of stocks. Earnings information helps stockholders in decision-making (Wallace et al., 1994). Some researchers argue that profitable firms report information to get adverse selection incentives (Lang & Lundholm, 1993). Further, firms, in order to avoid legal liability, disclose more information (Ho & Taylor, 2007).

Previous literature on the association between corporate governance and financial reporting quality shows mixed evidence (Aggarwal et al., 2011; Alves, 2014; Ianniello, 2015; Kang et al., 2018; Jiang et al., 2020). Further, Pakistan's Corporate Governance Code 2002 was revised

in 2012, and it still needs to be clarified whether the revision of the code has brought some advancement in the corporate governance system and or financial reporting quality or not. Therefore, comprehensive research is needed to examine the interrelationship between corporate governance, financial reporting quality, and investment efficiency in both pre and post-promulgation of the Corporate Governance Code 2012 periods.

The organization of the paper is as follows: In section 2, a literature review is presented, and hypotheses are developed. In section 3, data and methodology are discussed. In section 4, the study's results are elaborated on. Section 5 is all about the conclusion and future research recommendations.

Literature Review

In this study we develop two views on the relationship between concentrated ownership and financial reporting quality. For example, the first view relates to the entrenchment effect of concentrated ownership (see, for instance, Morck et al., 1988). Since the ownership structure of the majority of Pakistani companies is concentrated, therefore shareholders, due to their control of the firm, are influential in their decisions. Due to a weak legal system, their choices to entrench minority shareholders are often less contestable (Shleifer & Vishny, 1997). Similarly, significant shareholders gain more control due to cross-shareholding, which is typical in Pakistan. This further increases the entrenchment effect of controlling shareholders (Claessens et al., 2002). Since the motive of controlling owners is to confiscate the wealth of minority shareholders, it is expected that these shareholders will allow managers to manage earnings opportunistically, leading to the deteriorating financial reporting quality of firms.

The second view is related to proprietary information. One of the characteristics of concentrated ownership is that decision rights are given to personnel knowing the firm's operations (Christie et al., 2003). Thus, by collocating decision rights with specific knowledge, concentrated ownership firms prevent the dissemination of critical information to competitors. In these firms, information flow to the public is limited, and thus, potential competition and social sanctions are avoided. Based on this argument, it is assumed that firms with concentrated ownership are associated with low financial reporting quality.

Further, the corporate governance code of Pakistan was revised in 2012. The revised code formulates higher governance standards regarding investors' protection. Particularly, it states the duties and rights of controlling stockholders of firms and illustrates rules so that all shareholders in general and minority shareholders specifically can protect their interests. Restricting controlling shareholders from pursuing their self-serving behavior by improving investors' protection rights (e.g., Leuz & Oberholzer-Gee, 2006; Claessens et al., 2000, 2002) can increase the financial reporting quality of concentrated ownership firms. However, numerous researchers such as Engel et al. (2007) and Chhaochharia and Grinstein (2007) examined the effect of country-specific corporate governance provisions such as the Sarbanes Oxley Act on firm performance. Results of these studies show that this Act has an adverse impact on performance. Further, the Act has no significant association with the performance of firms having already developed corporate governance systems.

On reviewing earlier literature, it is identified that these studies have ignored a vital area related to examining the role of concentrated ownership in diminishing asset side accruals management and liabilities side accruals management. Whether the revision of Pakistan's corporate governance code has brought some improvement in reducing earnings management has yet to be explored in previous literature. Thus, to study the overall effect of concentrated ownership on financial reporting quality measures based on earnings management and change in impact due to the revision of the Pakistan corporate governance code, the following hypotheses are developed:

H1a: Concentrated ownership negatively affects financial reporting quality.

H1b: Effect of concentrated ownership on financial reporting quality changes in the postcode period.

Various studies are conducted to examine the relationship between board independence and accruals earnings management. For example, using data from 630 UK firms, Peasnell et al. (2000) studied the association between board composition and managerial earnings management in periods prior to and post-issuance of the Cadbury report. Earnings management was measured through abnormal accruals. Results of the study show that managers are involved in earnings management to meet the benchmark in the study period. However, results of the Cadbury period indicate that firms having a high proportion of non-executive directors on the board decrease earnings management. To investigate the relationship between board characteristics and abnormal accruals, Klein (2002) studied 692 S&P firms for a period of 2 years from 1992-1993. Results show that earnings management decreases with an increase in board independence.

Xie et al. (2003) studied the relationship between board characteristics such as structure, background, and composition and discretionary accruals (proxy of earnings management) of 282 US firms from 1992 to 1996. Results report that independent directors of the board decrease the incidence of earnings management. Yekini et al. (2015), using the UK dataset, found that board independence increases disclosure quality. Thus, independent directors of the board increase and increase financial reporting quality. Further, the Pakistan Corporate Governance Code 2012 is based on quality governance standards. For example, in the new code position of non-executive director is separated from the independent director. It is mandatory for the firm to hire one and preferably one-third of the total directors as independent directors. However, researchers highlighted that a stringent system of corporate governance only sometimes suits and sometimes excessive governance worsens firm performance (Roberts & Milgrom, 1992; Oh et al., 2018). Similarly, Gillan et al.et al. (2003) assert that a robust corporate governance system is only sometimes optimal, and then, there is a trade-off f between the costs and benefits of corporate governance.

It is also argued that previous studies did not examine the relationship between board independence and financial reporting quality measures, i.e., asset side accruals quality and liability side accruals quality. Similarly, there needs to be a study to examine the change in the effect of board independence on financial reporting quality due to the revision of Pakistan's corporate governance code. To fill the research gap, the following two hypotheses are developed:

H2a: Board independence positively affects financial reporting quality.

H2b: Effect of board independence on financial Reporting quality Changes in the postcode period.

The Audit Committee works as a sub-committee of the board and is an important corporate governance mechanism. Its main tasks include overseeing the financial reporting process of the firm. Directors of the audit committee meet with auditors of the firm to review financial statements. Therefore audit committee is essential for a firm to produce accurate financial reports. Agrawal and Chadha (2005) study various attributes of corporate governance in relation to accruals management by firms. Results show that independent directors of the audit committee decrease earnings management by firms. They also tested the relationship for other measures of accruals management and found significant results showing that independent directors of audit committees supervise the financial reporting process.

Crutchley et al. (2007) studied the association between governance characteristics and financial reporting quality by using 194 US firms from 1991 to 2002. Results show that fewer independent audit committee members manifest involvement of firms in earnings smoothing. Salehi and Shirazi (2016), studying Iranian firms, find that audit committee independence is positively associated with financial reporting quality. Further, in the revised Corporate

Governance Code 2012, the audit committee was given more autonomy, as the new audit committee will include at least one independent director and at least three non-executive directors. The chairman of the audit committee shall preferably be an independent director. At least one director of the audit committee shall have financial expertise. Whereas in the previous code, it was insisted that a significant proportion of the committee shall be comprised of non-executive directors and further that the chairman of the audit committee shall be a non-executive director. However, researchers highlighted that stringent corporate governance is only sometimes optimal, and apart from complementation, substitution may occur between governance mechanisms in affecting organizational performance (see, for example, Mendez & Garcia, 2007; Ward et al., 2009).

To examine the relationship between audit committee independence and financial reporting quality and to incorporate the effect of the Corporate Governance Code 2012 in the relationship between variables, the following two hypotheses are developed:

H3a: Audit committee independence positively affects financial reporting quality.

H3b: Effect of audit committee independence on financial reporting quality changes in the postcode period.

The signaling theory suggests that profitable firms disclose firm-specific information to enhance the credibility of their financial reports. Inchausti (1997) argues that quality information increases a company's reputation and avoids the mispricing of stocks. Earnings information helps stockholders in decision-making (Wallace et al., 1994). Some researchers say that profitable firms report information to get adverse selection incentives (Verrecchia, 1983; Lang & Lundholm, 1993). Further, firms, in order to avoid legal liability, disclose more information (Lang & Lundholm, 1993; Ho & Taylor, 2007).

As efficient investments increase the profitability of firms, managers of more efficient firms will be less involved in accrual management. On the other hand, due to underinvestment or overinvestment, managers of firms may engage in earnings management to meet targets. Thus investment efficiency is associated with financial reporting quality. To examine the relationship between investment efficiency and financial reporting quality and to incorporate the effect of the revised code in this relationship, the following hypotheses are developed:

H4a: Investment inefficiency negatively affects financial reporting quality.

H4b: Effect of investment inefficiency on financial reporting quality changes in the post-code period.

Research Methodology

Data and Sources

The sample of the study includes non-financial companies that were listed on the Pakistan Stock Exchange (PSX) from 2008 to 2016. Overall, there are 559 companies listed on the Pakistan Stock Exchange (PSX). Number of financial companies is 130. The reason for not including financial firms in the sample is that the modes of investment of these firms differ from those of nonfinancial companies (Biddle et al., 2009). For example, financial firms usually invest in loans, while non-financial firms invest in capital assets (Shahzad et al., 2019). Security and Exchange Commission of Pakistan (SECP) made it mandatory for listed firms to disclose relevant firm-specific information through annual/semi-annual reports. Therefore, most data regarding corporate governance and financial variables are extracted from yearly reports published by firms. Firm year observations with missing variables data are eliminated. This reduces our sample size to 207 firms.

Table 1: Sample of the Study	
Total number of firms listed on Pakistan Stock Exchange (PSX)	559
Less: financial firms	(130)
Less: firms excluded due to insufficient data	(222)
Sample of the study	207

Measurement of Variables

Description and measurement of corporate governance variables and firm related variables are given in this section. Corporate governance variables include concentrated ownership, board independence and audit committee independence. Concentrated ownership is represented by family ownership. Family ownership is a dummy variable and takes value "1" if family members own at least 50% equity ownership directly or indirectly in firm otherwise "0". Various studies (e.g. Jain & Shao, 2014 and Shahzad et al., 2019), measure family ownership through this method. Board independence is calculated as the ratio of independent directors / non-executive directors on the board to the total directors of the board (Klein, 2002). Audit committee independence is calculated as the ratio of independent directors / non-executive directors of the audit committee to the total directors of audit committee (Larcker et al.., 2007). Financial reporting quality is measured through accruals quality. Accruals quality is based on accruals earnings management. Caylor (2010) find that managers to avoid negative earnings, manipulate accounts receivables. Similarly other than accounts receivables, managers also engage in manipulation of other accruals to avoid losses (Frank & Rego, 2006). Apart from increasing earnings management, managers decrease earnings in current period by creating liability which they use as reserve for increasing future period earnings. Managers may also reduce income by decreasing earnings management to get relief from government (e.g. Beneish, 2001). To capture both increasing earnings management and decreasing earnings management by firms, we compute asset side accruals quality and liability side accruals quality of firm as follows:

$$AAQ_{i,t} = \frac{\Delta CA_{i,t}}{TA_{i,t}} * (-1) \quad (1)$$

$$LAQ_{i,t} = \frac{\Delta LA_{i,t}}{TA_{i,t}} * (-1) \quad (2)$$

In equation (1) AAQ stands for assets side accruals quality which equals the ratio of change in total current assets excluding cash and short term investments (ΔCA) to total assets (TA), multiplied by -1. In equation (2) LAQ is abbreviated for liabilities side accruals quality. It equals to the ratio of change in total liabilities (ΔLA) to total assets (TA), multiplied by -1. Total liabilities are used to measure accruals quality on the grounds that managers can decrease earnings on temporary basis in period of good days by generating long term liabilities through creating reserve. Both ratios are multiplied by -1 so that low value of it shows low accruals quality due to high accruals. i, t are subscripts which denote firm and year respectively. In both equations total assets are used to remove size effects.

Other financial variable is investment inefficiency which can be found by regressing total investment on previous year's sales growth as follows:

$$Inv_{i,t} = \beta 1 + \beta 2 SG_{i,t-1} + \sum Control_{i,t-1} + \varepsilon i, t \quad (3)$$

Investment (Inv) represents the sum of capital expenditures and research & development (R& D) expenditures less sale of property, plant and equipment; and sales growth (SG) shows difference in sales of firm in year t-2 and t-1. Sales growth serves as a proxy of growth opportunities. Biddle et al., (2009) prefer use of sales growth over tobin's Q because the later may be influenced by financial reporting quality. Further they produce same results for both Tobin's Q and sales growth. Previous literature (e.g. Biddle et al., 2009; Shahzad et al., 2019) use Tobin's q as a control variable of investment efficiency. Parameters in equation (3) are

estimated through least squares for each industry year with at least 10 observations. Negative residuals show that firm invested less than expected investment (underinvestment). On the other hand positive residuals identify that firm invested more than expected investment (overinvestment). As both positive and negative values show inefficient investments therefore absolute values of both underinvestment and overinvestment are combined to measure investment inefficiency variable (Chen et al., 2011).

Model Estimation

To test the hypotheses on the relationship between corporate governance, financial reporting quality and investment efficiency following model is proposed:

$$FRQ_{i,t} = \alpha 1 + \alpha 2Code_{i,t} + \alpha 3FamOwn_{i,t} + \alpha 4FamOwn * Code_{i,t} + \alpha 5BoardInd_{i,t} + \alpha 6BoardInd * Code_{i,t} + \alpha 7AuditInd_{i,t} + \alpha 8AuditInd * Code_{i,t} + \alpha 9Inv\_Inefficiency_{i,t} + \alpha 10Inv\_Inefficiency * Code_{i,t} + \sum Control_{i,t} + \varepsilon \quad (4)$$

In equation (4) FRQ is financial reporting quality measured as accruals quality. Two measures of accruals quality are used in this study. First is asset side accruals quality (AAQ) and second is liability side accruals quality (LAQ). Code is a dummy variable, takes value of 0 for period from 2008 to 2012 and 1 for period from 2013 to 2016. FamOwn is family ownership dummy takes value "1" for family firm otherwise "0". FamOwn*Code is interaction term of family ownership and code. BoardInd is proportion of non-executive / independent directors on the board. BoardInd*Code is interaction term of board independence and code. AuditInd is proportion of independent directors of audit committee. AuditInd*Code is interaction term of audit committee independence and code. Inv_Inefficiency is investment inefficiency measured as absolute value of residuals from equation 3. Inv_Inefficiency*Code is interaction term of investment inefficiency and code. Subscript i and t represent firm and fiscal year respectively. Where t=1, 2, 3……..9.

Generalized Method of Moments (GMM)

Ordinary least square (OLS) is a simple approach to predict marginal effect in outcome variable due to explanatory variable(s). However OLS requires strict assumptions for consistent estimation of coefficients. For example one of the assumptions of OLS is that independent variables and error term are not correlated i.e. no endogeneity. In case of endogeneity OLS results in biased and inefficient estimates. To overcome endogeneity in a relationship GMM model was developed by Hansen (1982). This study uses corporate governance as exogenous variable. However, several studies show that corporate governance is endogenously determined (Demsetz and Villalonga, 2001; Wintoki et al. 2012). Therefore to avoid endogeneity caused by dynamic nature of corporate governance, GMM model is used for analysis.

Descriptive Statistics

Table 2 provides descriptive statistics of variables used in estimation models. Statistics show that firms have higher average liability side accrual quality (LAQ) than asset side accrual quality (AAQ). AAQ has negative mean value that is -.033 and LAQ has positive mean value that is .029. Similarly AAQ has negative median value (-0.023) while LAQ has positive median value (0.021). Family ownership (FamOwn) is a dummy variable. Its mean value is 0.705. Similarly its median value is 1. It shows that dataset includes mostly family firms' data. Mean value of independent directors of the board (BoardInd) and independent directors of audit committee (AuditInd) are 0.649 and 0.861 respectively. Median value of independent directors of the board (BoardInd) and independent directors of audit committee (AuditInd) are 0.714 and 1 respectively. Thus proportion of independent directors on each of board and audit committee on average are greater than 50% of total strength of board and audit committee respectively.

This may be due to that corporate governance code 2012 increases requirement of both board independence and audit committee independence and this study also includes data of firms in post code 2012 period.

Mean value of investment inefficiency (Inv_Inefficiency) 0.051. It has 0 minimum and 1.834 maximum values. 0 value of Inv_Inefficiency shows efficient investment. Values of Inv_Inefficiency greater than 0 correspond to inefficient investments. Code is a dummy variable. Mean value of code is 0.443. While its median value is 0. It shows that 44.3 % of total observations comprise on post code 2012 period extended from 2013 upto 2016. Among control variables mean value of total assets is 17102 million Rs. Total assets have highest standard deviation. It shows that data sample include both small and large firms. Mean value of leverage is 0.56 while its median value is 0.580. This shows that on average more than 50% of firms assets are financed with debt. Mean value of MTB ratio is greater than 1, while its median value is 0.731. This shows that on average sample includes undervalued stocks.

Correlation Matrix

Table 3 depicts correlation matrix between independent variables and control variables. Results show that there are no chances of multicollinearity between explanatory variables as the correlation coefficient between any two variables is not less (greater) than -0.7 (0.7). Further value of VIF is less than 2. So unbiased results can be estimated due to no multicollinearity between independent variables. Among variables maximum correlation exists between asset side accruals quality (AAQ) and liability side accruals quality (LAQ) that is -.554 which is also less than 1. Therefore both variables are not perfect substitute to each other and can be used separately in model.

Dummy variable family ownership (FamOwn) is insignificantly negatively correlated with measures of financial reporting quality that is asset side accruals quality (AAQ) and liability side accruals quality (LAQ). Independent board (BoardInd) is positively correlated with asset side accruals quality (AAQ) and negatively correlated with liability side accruals quality (LAQ). However correlation between independent board (BoardInd) and asset side accruals quality (AAQ) is only significant.

Independent directors of audit committee (AuditInd) are positively correlated with asset side accruals quality (AAQ) and liability side accruals quality (LAQ). However correlation between variables is not significant. Both family ownership (FamOwn) and independent board (BoardInd) are negatively and independent audit committee (AuditInd) is positively correlated with investment inefficiency. However none of the correlations are significant. Correlation analysis shows association between two variables and makes no prediction about effect of a variable on another variable. Therefore to explore effect of explanatory variables on dependent variable, regression analysis through GMM model is conducted. Results on estimating equation

Table 2: Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Ob.
AAQ	-0.033	-0.023	1.413	-0.640	0.134	0.654	13.402	1863
LAQ	0.029	0.021	0.639	-0.697	0.148	-0.169	5.700	1863
FamOwn	0.705	1.000	1.000	0.000	0.456	-0.899	1.807	1863
BoardInd	0.649	0.714	1.000	0.000	0.215	-0.940	3.328	1863
AuditInd	0.861	1.000	1.000	0.000	0.186	-1.169	4.538	1863
Inv_Inefficiency	0.051	0.035	1.834	0.000	0.084	9.361	146.304	1863
Code	0.443	0.000	1.000	0.000	0.497	0.229	1.052	1863
FSize	17102.132	3956.713	589565.348	78.104	45996.192	6.092	47.385	1863
LEV	0.560	0.580	0.999	0.007	0.218	-0.199	-0.644	1863
MTB	1.603	0.731	83.091	0.247	4.416	9.128	123.055	1863

on financial reporting quality measures that is asset side accruals quality (AAQ) and liability side accruals quality (LAQ) by applying GMM model are presented in table 4 and 5.

Note: AAQ is asset side accruals quality which is defined as the negative of change in current assets excluding cash and short term investment deflated by total assets. LAQ is liability side accruals quality, which is defined as the negative of change in total liabilities deflated by total assets. FamOwn is family ownership, which is defined as a dummy variable coded 1 for family firms, 0 otherwise. BoardInd is board independence, which is defined as the ratio of independent directors / non-executive directors of the board to total directors of the board. AuditInd is audit committee independence, which is defined as the ratio of independent directors / non-executive directors of the board to the total directors of the board. Inv_Inefficiency is investment inefficiency, which is defined as absolute of residuals estimated by regressing investments on previous year sales growth. Code is corporate governance code 2012, which is a dummy variable coded 1 for years 2013 upto 2016, 0 otherwise. FSize (Firm size) is a natural log of total assets. LEV (Leverage) is ratio of total debt to total assets. MTB is market value of equity divided by book value of equity.

Table 3: Correlation Matrix and Variance Inflation Factor

Variable	AAQ	LAQ	FamOwn	BoardInd	AuditInd	Inv_Inefficiency	FSize	LEV	MTB	VIF
AAQ	1.000									1.007
LAQ	-0.554***	1.000								1.086
FamOwn	-0.008	-0.023	1.000							1.205
BoardInd	0.060***	-0.006	-0.182***	1.000						1.125
AuditInd	0.032	0.016	-0.137***	0.290***	1.000					1.103
Inv_Inefficiency	-0.078***	0.196***	-0.018	-0.005	0.020	1.000				1.001
FSize	0.016	0.086***	-0.289***	0.017	0.065***	0.009	1.000			1.104
LEV	0.007	0.171***	0.142***	-0.012	-0.021	-0.007	-0.122***	1.000		1.028
MTB	-0.019	0.034	-0.222***	-0.023	0.016	0.026	0.099***	-0.014	1.000	1.059

Note: : This table shows Pearson correlation between variables and values of variance inflation factor. *** denote significance at 0.01 level.

Estimation results on examining the effect of corporate governance and investment inefficiency on financial reporting quality

This section provides estimation results for examining the effect of corporate governance and investment inefficiency on various proxies of financial reporting quality, such as the quality of asset-side accruals and liability-side accruals.

Estimation results on examining the effect of corporate governance and investment inefficiency on asset side accruals quality

Table 4 shows estimation results of asset side accruals quality (AAQ) regressed on corporate governance variables, investment inefficiency (Inv_Inefficiency), their interactive variables, and control variables. As the regression equation includes both categorical and continuous variables and the standardized coefficient of a categorical variable cannot be interpreted as it does not make sense to change a categorical independent variable by one standard deviation, therefore following previous literature (e.g., Wang, 2006; Biddle et al.,2009; Chen & Zhang, 2014; Yasser et al., 2017), unstandardized coefficients are estimated to bring consistency in results. The size of the coefficients and the t-statistics of some variables are larger. This more

significant effect is potentially due to the use of instrumental variables to remove endogeneity (Hermalin & Weisbach, 1991). The j-statistic of the model is 172.654, and its p-value is 0.450. An insignificant p-value shows that our null hypothesis, that is, instruments are valid, does not reject.

Further, one of the features of the dynamic generalized method of moments is that it includes the lag of the dependent variable as a regressor. Hence, AAQ(-1) is incorporated as a determinant of AAQ. Among independent variables, AAQ(-1) is negatively and significantly correlated with AAQ (β=-0.176, t= -37.202). This shows that accruals managed in one period are reversed in the next period due to the nature of accounting adjustments. Code is a dummy variable that shows the effect of corporate governance code 2012 on asset side accruals quality. Code variable positively affects asset side accruals quality (β= 0.169, t= 6.805). Significant t value on code shows that enforcement of the Corporate Governance Code 2012 increases transparency in financial reporting quality measured through asset side accruals quality (Chen & Zhang, 2014).

On the part of corporate governance variables, results show that the dummy variable family ownership (FamOwn) positively affects asset side accruals quality during the sample period (β= 8413.905, t= 15.374). This indicates that family ownership works as an incentive alignment factor and increases financial reporting quality measured as asset side accruals quality (AAQ). These results are similar to those found by other studies on the association between concentrated ownership and financial reporting quality (Yeo et al., 2002 and; Bos & Donker, 2004). A positive relationship between family ownership and asset side accruals quality supports agency theory, which suggests that family ownership works as a corporate governance mechanism, thereby diminishing the opportunistic behavior of managers. The positive correlation between family ownership (FamOwn) and asset side accruals quality (AAQ) decreases in the postcode period as the coefficient on interactive term family ownership and code (FamOwn*Code) decreases to 0.054. Thus corporate governance code and family ownership work as substitutes in relationship with financial reporting quality (Dalton et al., 2003).

Independent board (BoardInd) positively affects asset side accruals quality (β= 0.013, t= 1.88). t value is significant at a 5% significance level. Positive and considerable t value shows that independent directors of the board work as a monitoring mechanism (Chen et al., 2006 and; Alves, 2014). A positive relationship between board independence and asset side accruals quality supports agency theory, which suggests that board independence works as a corporate governance mechanism, thereby diminishing the opportunistic behavior of managers. The positive correlation between BoardInd and AAQ becomes negative in the postcode period. Such as, the coefficient of BoardInd *Code is -.044, which is significant at a 1% level. Thus monitoring effect of the independent board decreases due to the revised corporate governance Code 2012. Independent audit committee (AuditInd) is positively and insignificantly correlated with asset side accruals quality (β= 0.006, t= 0.473). Thus, we cannot confidently reject our null hypothesis that independent directors of audit committees do not positively affect financial reporting quality measured through asset side accruals quality. The positive correlation between AuditInd and AAQ becomes negative in the postcode period. Such as, the coefficient of AuditInd*Code is -0.064, which is significant at a 1% level. Interrelation between both board independence and code; and audit committee independence and code in their effect on asset side accruals quality show that corporate governance mechanisms work as substitutes (Aguilera et al., 2008 and Tosi, 2008).

Apart from corporate governance variables, the investment inefficiency (inv_inefficiency) variable measures the level of inefficient investments. GMM results show that inv_inefficiency negatively affects AAQ (β= -0.018, t= -10.688). This indicates that firms involved in increasing earnings management through asset-side accruals hide poor performance due to inefficient

investments, thereby deteriorating financial reporting quality (Yoon & Miller, 2002). The correlation between inv_inefficiency and AAQ becomes positive in the postcode period. The coefficient of inv_inefficiency*Code is .022, which is significant at a 1% level. Thus positive effect of code supersedes the negative impact of investment inefficiency on asset side accruals quality, and the resultant coefficient of interactive variable Inv_Inefficiency*Code becomes positive.

On the part of control variables, firm size (FSize) and leverage (LEV) are negatively and significantly related to AAQ, while MTB ratio (MTB) is positively associated with AAQ. However, the coefficient of MTB is close to 0 (0.003). It means that market to book ratio has negligible positive effect on asset side accruals quality. The impact of control variables is consistent with earlier studies. For instance, higher agency cost of large firms allows managerial discretions which decrease financial reporting quality (Jensen & Meckling, 1976). The negative effect of leverage may be due to the fact that managers of firms are involved are involved in earnings management to avoid debt covenant violations (Efendi et al., 2007; Elayan et al., 2008). Further, Krishnan & Parsons (2008) empirically show that growth firms increase financial reporting quality.

Estimation results on examining the effect of corporate governance and investment inefficiency on liability side accruals quality

Table 5 shows the estimation results of liability side accruals quality (LAQ) regressed on corporate governance variables, investment inefficiency (inv_inefficiency), their interactive variables, and control variables. The size of the coefficients and the t-statistics of some variables are larger. This more significant effect is potentially due to the use of instrumental variables to remove endogeneity (Hermalin & Weisbach, 1991). The j-statistic of the model is 196.345, and its p-value is 0.237. An insignificant p-value shows that our null hypothesis, that is, instruments are valid, does not reject.

Further, one of the features of the dynamic generalized method of moments is that it includes the lag of the dependent variable as a regressor. Hence, LAQ(-1) is incorporated as a determinant of LAQ. Among independent variables, LAQ(-1) is significantly negatively correlated with LAQ (β=-0.015, t= -4.590). This shows that the liability side accruals quality of firms is not persistent. Code is a dummy variable that shows the effect of corporate Governance Code 2012 on liability side accruals quality. Code variable positively affects liability side accruals quality (β= 0.074, t= 2.728). Significant t value on code shows that enforcement of the Corporate Governance Code 2012 increases transparency in financial reporting quality measured through liability side accruals quality (Chen & Zhang, 2014).

The dummy variable of family ownership (FamOwn) negatively affects liability side accruals quality (β=-5275.009, t= -9.977). Negative correlations show that family-owned firms are entrenched (Yang, 2010 and; Ding et al., 2011). These firms might create long-term liabilities on good days, thereby hiding the actual financial position of the firm, resulting in a decrease in financial reporting quality measured through liability side accruals quality (e.g., Beneish, 2001). The coefficient on the interactive terms of family ownership and code (FamOwn*Code) is 0.0340, which is significant at the 1% level. Thus, the negative correlation between family ownership (FamOwn) and liability side accruals quality becomes positive in the code period. It shows that the liability side accruals quality of family firms increases due to code. This, family ownership and code work as complements in relation to liability side accruals quality (Aguilera et al., 2008)

Independent board (BoardInd) positively affects liability side accruals quality (β= 0.0592, t= 5.047). The positive effect of independent directors of the board on liability side accruals quality is consistent with the results of earlier studies (e.g., Klein, 2002; Peasnell et al., 2005; Yekini et al., 2015). The positive correlation between BoardInd and LAQ becomes negative in

the postcode period. Such as, the coefficient of BoardInd*Code is -0.036, which is significant at a 5% level. Independent audit committee (AuditInd) is positively and significantly correlated with liability side accruals quality (β= 0.197, t= 10.577). This prediction is in line with previous studies (for example, Salehi & Shirazi..,2016). The coefficient of AuditInd*Code is -0.194, which is significant at a 1% level. Thus the positive correlation between AuditInd and LAQ becomes negative in the postcode period. This shows that both board independence and audit committee independence work as substitutes in relation to code in affecting liability side accruals quality (Aguilera et al., 2008)

Investment inefficiency (Inv_Inefficiency) positively affects liability side accruals quality (β= 0.038, t= 21.261). This shows that firms keeping in view low firm performance due to inefficient investments become more conservative in using liability side accruals. The coefficient of Inv_Inefficiency*Code is -0.021, which is significant at a 1% significance level. Thus, the correlation between Inv_Inefficiency and LAQ becomes negative in the postcode period. On the part of control variables, firm size (FSize) and leverage (LEV) are significantly positively related to LAQ (Lee & Choi, 2002 and Chen & Zhang, 2014), while MTB ratio (MTB) is significantly negatively related to LAQ (Krishnan & Parsons, 2008). However, the coefficient of MTB is close to 0 (-0.003). It means that market to book ratio has negligible adverse effect on liability side accruals quality.

Table 4: Regression of asset side accruals quality on corporate governance variables and investment inefficiency

$$FRQ_{i,t} = \alpha 1 + \alpha 2Code_{i,t} + \alpha 3FamOwn_{i,t} + \alpha 4FamOwn * Code_{i,t} + \alpha 5BoardInd_{i,t} + \alpha 6BoardInd * Code_{i,t} + \alpha 7AuditInd_{i,t} + \alpha 8AuditInd * Code_{i,t} + \alpha 9Inv\_Inefficiency_{i,t} + \alpha 10Inv\_Inefficiency * Code_{i,t} + \sum Control_{i,t} + \varepsilon$$

Variable	Coefficient	t-statistic
AAQ(-1)	-0.176***	-37.202
Code	0.169***	6.805
FamOwn	8413.905***	15.374
FamOwn*Code	0.054***	8.151
BoardInd	0.013*	1.885
BoardInd*Code	-0.044***	-4.320
AuditInd	0.007	0.473
AuditInd*Code	-0.064**	-2.507
Inv_Inefficiency	-0.018***	-10.688
Inv_Inefficiency*Code	0.022***	12.282
FSize	-0.016**	-2.540
LEV	-0.245***	-23.765
MTB	0.003***	11.892
J-statistic 172.654	p value	0.450

Note: Two types of variables that is with and without interactive terms are estimated. While variables without code interaction show effect over whole sample period, the variables with code interaction show effect of variables in post code period. *, **, *** denote significance at 0.10, 0.05 and 0.01 level respectively

Table 5: Regression of liability side accruals quality on corporate governance variables and investment inefficiency

$$FRQ_{i,t} = \alpha 1 + \alpha 2Code_{i,t} + \alpha 3FamOwn_{i,t} + \alpha 4FamOwn * Code_{i,t} + \alpha 5BoardInd_{i,t} + \alpha 6BoardInd * Code_{i,t} + \alpha 7AuditInd_{i,t} + \alpha 8AuditInd * Code_{i,t} + \alpha 9Inv\_Inefficiency_{i,t} + \alpha 10Inv\_Inefficiency * Code_{i,t} + \sum Control_{i,t} + \boldsymbol{\varepsilon}$$

Variable	Coefficient	t-statistic
LAQ(-1)	-0.015***	-4.590
Code	0.074***	2.728
FamOwn	-5275.009***	-9.977
FamOwn*Code	0.034***	5.941
BoardInd	0.059***	5.047
BoardInd*Code	-0.036***	-2.199
AuditInd	0.197***	10.577
AuditInd*Code	-0.194***	-7.512
Inv_Inefficiency	0.038***	21.261
Inv_Inefficiency*Code	-0.021***	-10.536
FSize	0.070***	15.379
LEV	0.547***	65.062
MTB	-0.003***	-12.671
J-statistic 196.345	p value	0.237

Note: Two types of variables that is with and without interactive terms are estimated. While variables without code interaction show effect over whole sample period, the variables with code interaction show effect of variables in post code period. *, **, *** denote significance at 0.10, 0.05 and 0.01 level respectively

Conclusion

Results of the study show that effect of revised code on financial reporting quality is positive. Previous literature shows that concentrated ownership works as corporate governance mechanism. However it may cause agency problems between major shareholders and minority stockholders (e.g. Johnson et al., 2000; Yang 2010). Examining effect of ownership concentration on reporting quality it is proved that family owned firms of Pakistan are mostly entrenched and that these firms expropriate wealth of minority shareholders by deteriorating quality of financial reports of firms (Abdullah et al. 2012). Similar to evidence of complementation and substitution effects of governance mechanisms provided by previous studies, family ownership has differential positive or negative effect on reporting quality of firms after the revision of code. Thus family ownership and code interact in relationship with financial reporting quality and substitute or complement each other.

Monitoring role of independent board and independent audit committee prevails in Pakistani firms. On the other hand findings on board independence and audit committee independence in relationship with financial reporting quality after revision of the code show that board independence and audit committee independence work as substitute in relation with code. On the other hand management compensation hypothesis assumes that managers use accounting procedures in a way to increase their compensation. Other studies show that managers modify financial reports to increase their personal benefits (e.g. Adams et al., 2009; Holthausen et al.,

1995; and Gaver et al., 1995). Jiraporn et al., (2008) show that managers hide poor firm performance from shareholders and decrease financial reporting quality. Thus inefficient investments decrease financial reporting quality of the sample firms. However despite low performance, reporting quality increases after promulgation of code. Thus improved corporate governance has incremental effect on the relationship between investment inefficiency and financial reporting quality.

It will be interesting if in future research new proxies of accruals quality based on various asset side accruals and liability side accruals could be used. Other types of concentrated ownership should be included in the study. Variable of investment inefficiency can be broken down into underinvestment and overinvestment to reexamine relationship between investment inefficiency and other variables used in this study. Further study should be conducted targeting financial sector.

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