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NEXUS OF FINANCIAL REPORTING QUALITY AND INVESTMENT EFFICIENCY

Irfan-Ullah [1*], Usman Ayub [1], Hashim Khan [1]

[1] *Department of Management Sciences, COMSATS University, Islamabad, PAKISTAN.*

A R T I C L E I N F O

A B S T R A C T

This paper examines the bi-directional relationship between financial reporting quality and investment efficiency. Prior studies suggest that financial reporting quality improves the investment efficiency of firms. Using firm-level data one measure of financial reporting quality namely liability side accrual quality confirms this association. Further, we find that firms involve in accruals earnings management thereby decreasing financial reporting quality in an attempt to conceal firm performance from outsiders. Our measure of investment efficiency excessively predicts financial reporting quality. This relationship can be seen for both proxies of financial reporting quality- asset side accruals quality and liability side accruals quality. Results on the two-way relationship between variables are robust even when we use total accruals quality as an alternative proxy of financial reporting quality.

Disciplinary: Management and Financial Sciences.

1. INTRODUCTION

In light of Jensen and Meckling (1976) seminal work, finance scholars perceive the company as a nexus of contractual relationships between different interested groups. These relationships exist between various stakeholders of the firm such as between shareholders (principals) and managers (agents); shareholders (principals) and shareholders (principals); and creditors (principals) and shareholders (agents). This agency relationship which makes bases of agency theory is defined as a contract between a person (principal) and another person (the agent) under which agent performs some duties on behalf of principal; and the principal pays the agent for their duties (Jensen and Meckling, 1976). As the interests of both parties are not aligned, conflict is aroused. This conflict of interest is named the agency problem.

In the neoclassical approach, managerial investment behavior is a sole determinant of marginal q (Hayashi, 1982). In other words, companies should continue to invest as long as the marginal benefits

of investment are greater than the marginal cost. However existing literature provides evidence that due to agency problems management either under-invest or over-invest to get incentives. The intuition is that outside investors usually do not take part in business operations as its responsibility is assigned to the firm's management. Due to the nature of the job, management has more information than shareholders. Information asymmetry increases when due to agency conflict managers do not disseminate important information through financial reports to investors or convey incorrect information to mislead investors (Healy & Wahlen, 1999).

Information asymmetry has two consequences. One is the adverse selection and the other is a moral hazard that leads to inefficient investments by the firm (Biddle et al., 2009). On the other hand quality financial reporting diminishes asymmetric information between managers and shareholders, thereby mitigates problems of moral hazard and adverse selection (Verdi, 2006). Biddle et al., (2009) define financial reporting quality as the accuracy of financial reports through which management conveys information to stakeholders of the firm on business activities, particularly about cash flows expected from these activities. Researchers mainly use proxies of earnings management to examine the reporting quality of firms. Earnings management is closely related to attributes of financial reporting quality. For instance, Lara et al., (2016) find that earnings management is negatively associated with earnings conservatism. Park & Shin (2004) show that more managed earnings are less persistent.

Mainly managers of firms involve in earnings management to get capital market incentives. Such as Barth et al. (1999) identified higher stock prices for firms having managed earnings. Bartov et al. (2002) find better performance for firms that meet earnings targets. According to the neoclassical approach, efficient investments are those projects that are accepted based on having positive net present (NPV), therefore it is assumed that these projects when are taken, generate cash for a firm that is increasingly firm's earnings. On the other hand, inefficient investments are not based on fundamentals and have negative consequences on firm performance. Burgstahler and Dichev (1997) document that firms mostly involve in accruals manipulation to avoid a decline in earnings. Therefore relying on empirical evidence, it can be assumed that the investment efficiency of projects affects managerial earnings management activities to achieve desired earnings targets.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Schipper and Vincent (2003) argue that stakeholders of the firm require accurate financial information for their investment decisions and low-quality information can deceive investors. Financial information serves capital markets and assists in optimal resource allocation. If earnings information is only based on judgments about future events then it has adverse effects on investors specifically and employees and other people generally (Pergola and Verreault, 2009). McNichols and Stubben (2008) identify that the investment efficiency of firms having managed earnings figures are low. Comparing to firms having unmanaged earnings, firms with managed earnings have a higher likelihood to overinvest in fixed assets.

Biddle and Hilary (2006) show that financial reporting quality is negatively associated with investment-cash flow sensitivity. Further, the negative relationship between variables is more pronounced in economies where firms rely on the stock market to finance projects. Verdi (2006) studies the association between financial reporting quality and investment efficiency of firms prone to deviate from optimal investment. It is concluded that the financial reporting quality decreases overinvestment when a firm has much cash resources to invest and ownership structure is dispersed.

Similarly financial reporting quality decreases underinvestment when firms are financially constrained. Biddle et al. (2009) examine whether financial reporting quality affects the investment efficiency of the firm. Results of their study are a) reporting quality negatively affects investment when the firm has much cash resources to invest (financially unconstrained) and proportion of equity financing is high b) reporting quality increases investment when firms are financially constrained and proportion of equity financing is low and c) reporting quality is negatively related with inefficient investments as measured by firm deviation from optimal investment.

In lines with previous literature (for example, Leuz et al., 2003 use magnitude of total accruals as a proxy of accruals earnings management), we segregate total accruals into its components- asset side accruals and liability side accruals; and construct proxies of financial reporting quality separate for each category of accruals. Thus, the two hypotheses are developed

- o   H1a: Financial reporting quality based on asset side accruals positively affects investment efficiency
- o   H1b: Financial reporting quality based on liability side accruals positively affects investment efficiency

Prior literature documents that corporate insiders have different motives to manage earnings numbers and therefore misrepresent firm performance (see, e.g., Leuz et al., 2003; Shleifer and Vishny, 1997). Hope et al. (2013) assert that management of firms engages in increasing or decreasing earnings management to get consistent earnings figures, keeping in view current firm performance. Such that when firm performance is low they are motivated to involve in upward earnings management to meet benchmarks. On the other hand, when the firm is performing well, they tend to manage accruals downwards to beat the benchmark to some extent. In this way managers reserve earnings that may be reversed through upward earnings management in the future when firm performance is poor (Jackson and Liu 2010). Graham et al. (2005) survey shows that firms mostly set previous year earnings as a benchmark for the current year.

On the other hand, investment efficiency affects firm performance. In the neoclassical approach investments based on positive (negative) NPV are considered efficient (inefficient). In other words efficient (inefficient) investments when undertaken have positive (negative) effects on operating cash flows subsequently and consequently on net income. Barth et al. (1999) show that stockholders reward firms in the shape of higher share price for their consistent earnings increases and that share price fall when earning decreases. Bartov et al. (2000) reported that managers engage in earnings management when the firm generates less cash from business activities and its ROA is low. Thus based on previous literature, it can be concluded that investment efficiency is a determinant of earnings management that is managers by considering the efficiency of a firm's investments formulates a strategy to report accruals to get persistent earnings numbers consequently affecting financial reporting quality. The hypotheses are developed

- o   H2a: Investment efficiency positively affects financial reporting quality based on asset side accruals
- o   H2b: Investment efficiency positively affects financial reporting quality based on liability side accruals

3. METHODOLOGY

For collecting data, we select nonfinancial firms that were listed on the Pakistan Stock Exchange (PSX) from 2008-2018 as our target sample. As some variables of the study have lag year calculations, therefore earlier years' data of 2004 and onwards are also used in some cases. Next, firm-year observations with missing variables data are removed. Thus our sample is reduced to 290 firms. The data source used is Banker Thomson DataStream.

3.1 VARIABLES MEASUREMENT

The main variables include financial reporting quality and investment inefficiency. Several control variables are also used along with the main independent variables.

3.1.1 FINANCIAL REPORTING QUALITY

Our proxies of financial reporting quality base on the magnitude of aggregate asset side accruals and aggregate liability side accruals. Where ceteris pubis higher magnitude of accruals means that managers availed more chances to manage earnings and resulted in financial reports have low quality. Specifically, we compute asset side accruals quality and liability side accruals quality of firm as

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

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

In Equation (1) AAQ stands for assets side accruals quality which equals the ratio of absolute change in total current assets excluding cash and short term investments (abs 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 absolute change in total liabilities (abs ΔLA) to total assets (TA), multiplied by -1. Both ratios are multiplied by -1 so that low value of it shows low financial reporting quality due to high accruals. i,t are subscripts denoting firm and year respectively. In both equations, total assets are used to remove size effects.

3.1.2 INVESTMENT INEFFICIENCY

The investment inefficiency variable is measured as the residuals of a model that predicts the investment of the firm as a function of its growth opportunities (e.g., Biddle et al. 2009). Negative residuals show that the firm invested less than expected investment (underinvestment). On the other hand, positive residuals identify that firm invested more than expected investment (overinvestment). Absolute values of both underinvestment and overinvestment are combined with the investment inefficiency variable. Estimated model is

$$Inv_{i,t} = \beta 1 + \beta 2 SG_{i,t-1} + \varepsilon i, t \tag{3}.$$

Investment (*Inv*) represents the sum of capital expenditures and research and development (R&D) expenditures less sale of property, plant, and equipment (PPE) in the current year, and sales growth (*SG*) shows the change in sales in the previous year. Sales growth serves as a proxy of growth opportunities for the firm (Biddle et al., 2009). Equation (3) model is estimated through least squares for each industry group based on the Standard Industrial Classification (SIC) system each year with at least 10 observations in a given year from 2008-2018.

3.1.3 CONTROL VARIABLES

A list of all control variables used in each equation is given in Table 1.

Table 1: Control variables, its calculation, and studies on it.

Ser	Model	Variable	Method	Sources
1	Investment Efficiency	Size	Natural log of total assets	Shahzad et al. (2019); Houcine (2017), Lara et al. (2016) and Biddle et al. (2009)
2		Leverage	Total debt divided by total assets	Shahzad et al.., (2019), Lara et al. (2016) and Biddle et al.(2009)
3		Growth	The market value of stockholders equity divided by book value of stockholders equity	Shahzad et al. (2019) and Houcine (2017)
4		Tangibility	PPE divided by total assets	Shahzad et al.., (2019), Lara et al.., (2016) and Biddle et al..,(2009)
5		Financial slack	Cash and cash equivalent divided by PPE	Houcine (2017), Lara et al.., (2016) and Wang et al., (2011)
6		CFOSales	Cash flows from operations divided by total sales	Houcine (2017), Lara et al.., (2016) and Biddle et al. (2009)
7		StdCFO	SD of operating cash flow divided by total assets for the previous five years	Lara et al. (2016) and Biddle et al. (2009)
8		StdSales	SD of sales divided by total assets for the previous five years	
9		StdInv	SD of total investment including capital expenditure and R& D expenditure for the previous five years	Houcine (2017) and Lara et al. (2016)
10		Loss	Dummy variable. It takes value "1" for the loss by the firm in the previous year and "0" otherwise	Shahzad et al. (2019), Lara et al. (2016) and Biddle et al. (2009)
11		Age	Natural log of the difference between the year of establishment of firm and current year	Shahzad et al. (2019), Houcine (2017) and Lara et al. (2016)
1	Financial reporting quality	Size	Same calculation as for Investment efficiency model	Hope et al. (2013), Wang (2006), Abdul Rahman & Ali (2006) and Bartov et al. (2000)
2		Leverage	Same calculation as for Investment efficiency model	
3		Growth	Same calculation as for Investment efficiency model	
4		CFOSales	Same calculation as for Investment efficiency model	Abdul Rahman & Ali (2006) and Bartov et al. (2000)
5		Loss	Same calculation as for Investment efficiency model	Wang (2006) and Cheng & Warfield (2005)
6		Age	Same calculation as for Investment efficiency model	Wang (2006), Anderson & Reeb (2003a)

3.2 MODELS

Effect of financial reporting quality on investment efficiency is given as

$$IE_{i,t+1} = \beta_1 + \beta_2 FRQ_{i,t} + \beta_3 Control\ Variables_{i,t} + \varepsilon_{i,t} \qquad (4).$$

Effect of investment efficiency on financial reporting quality is given as

$$FRQ_{i,t+1} = \alpha_1 + \alpha_2 IE_{i,t} + \alpha_3 Control\ Variables_{i,t} + \varepsilon_{i,t} \qquad (5).$$

IE is investment inefficiency defined as residual from parsimonious investment Equation (3). FRQ is financial reporting quality based on the magnitude of assets side accruals or liabilities side accruals calculated from Equations (1) and (2) respectively. Control variables of the respective equation and its calculation are given in Table 1. Subscripts i and t are used to denote firm and year respectively. The dependent variable is based on the future year and independent variables correspond to current year observations of the firm. The terms β and α are regression coefficients.

4. RESULTS

4.1 DESCRIPTIVE STATISTICS

Table 2, descriptive statistics of investment inefficiency (raw form), its components underinvestment and overinvestment; and asset side accruals quality (AAQ), liability side accruals quality (LAQ) and control variables are provided. Summarized results show that 63% of firms belong

to underinvestment groups while the remaining 37% belong to the overinvestment group. The average total assets are 18410 million Rs. On average, sample firms finance 57 % of their total assets by debt. Sample firms include both young and old firms. The minimum value of firm age is 3 years and the maximum value of age is 158 years during the study period 2008-2018.

Table 2: Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	SD	Observations
INV INEFFICIENCY RAW	0.002	-0.015	1.834	-0.758	0.1	2290
UNDERINVESTMENT	0.04	0.034	0.758	0	0.039	1443
OVERINVESTMENT	0.075	0.037	1.834	0	0.127	847
AAQ	-0.088	-0.057	0	-2.762	0.112	2290
LAQ	-0.101	-0.068	0	-0.697	0.101	2290
ASSETS	18410.61	4372.879	666477.2	71.801	50203.71	2290
LEVERAGE	0.573	0.56	3.739	0.007	0.306	2290
GROWTH	1.819	0.773	248.223	-127.809	8.033	2290
TANGIBILITY	0.473	0.472	0.985	0	0.221	2290
SLACK	0.072	0.022	0.888	0	0.112	2290
CFOSALE	-0.073	0.049	2.882	-103.73	3.009	2290
STDCFO	0.094	0.077	0.637	0.003	0.07	2290
STDINV	551.893	101.981	23461.9	0	1590.268	2290
STDSALE	0.361	0.257	6.384	0.003	0.384	2290
LOSS	0.237	0	1	0	0.425	2290
AGE	39.128	34	158	3	20.403	2290

Inv Inefficiency Raw is the signed residuals from Equation (3). Underinvestment is a negative residual from Equation (3) multiplied by -1. Overinvestment is positive residuals from Equation (3), Assets are reported in million Rs. Age is in years

4.2   CORRELATION ANALYSIS

Table 3 provides Pearson correlations between investment inefficiency (based on future year observations) and other variables (based on current year observations). Among variables, a maximum correlation exists between firm size and SD of investment. Its correlation coefficient is 0.62 which is greater than -0.7 and less than 0.7. So there are no chances of multicollinearity between explanatory variables and unbiased regression estimates can be obtained through regression analysis in the next step. The first measure of financial reporting quality- asset side accruals quality (AAQ) has an insignificant positive correlation with investment inefficiency. The second measure of financial reporting quality- liability side accruals quality (LAQ) has a significant negative correlation with investment inefficiency.

Table 3: Pearson correlations between investment inefficiency (based on future year observations) and other variables (based on current year observations).

	INV INEFFICIENCY	AAQ	LAQ	SIZE	LEVERAGE	GROWTH	TANGIBILITY	SLACK	CFOSALE	STDCFO	STDINV	STDSALES	LOSS
AAQ	0.006												
LAQ	-0.043**	0.472***											
SIZE	-0.001	0.066***	0.013										
LEVERAGE	-0.05	-0.032	-0.211***	-0.073***									
GROWTH	0.072***	-0.017	-0.026	0.114***	-0.03								
TANGIBILITY	0.012	0.334***	0.056***	-0.028	0.248***	-0.155***							
SLACK	0.033	-0.085***	0.049**	0.189***	-0.341***	0.145***	-0.421***						
CFOSALE	0.004	0.127***	0.113***	0.222***	-0.317***	0.124***	0.043**	0.184***					
STDCFO	0.017	-0.212***	-0.156***	-0.111***	-0.044**	0.115***	-0.222***	0.185***	0.005				
STDINV	-0.014**	0.112***	0.042**	0.629***	0.013	0.074***	0.135***	0.047**	0.195***	-0.095***			
STDSALES	0.003	-0.239***	-0.171***	-0.204***	0.078***	0.074***	-0.202***	0.087***	-0.068***	0.326***	-0.150***		
LOSS	-0.068***	0.092***	0.035*	-0.154***	0.416***	-0.127***	0.264***	-0.245***	-0.261***	-0.067***	-0.055***	-0.090***	
LNAGE	0.02	-0.004	0.034	0.077***	-0.053**	0.077***	-0.059***	0.021	0.014	-0.083***	0.031	-0.092***	-0.064***

Inv Inefficiency is the absolute value of residuals from Equation (3).
*,** and *** show significance at 10%, 5% and 1% significance level.

Irfan-Ullah, Usman Ayub, Hashim Khan

Table 4 provides Pearson correlations between proxies of financial reporting quality (based on future year observations) and other variables (based on current year observations). Here maximum correlation exists between leverage and loss. Its correlation coefficient value is 0.41 which is greater than -0.7 and less than 0.7. This value can be justified for no multicollinearity between independent variables and therefore no issues will be raised in regression analysis. Investment inefficiency is negatively correlated with both asset side accruals quality and liability side accruals quality. However the correlation between investment inefficiency and liability side accruals quality is only significant.

Table 4: Pearson correlations between proxies of financial reporting quality (based on future year observations) and other variables (based on current year observations).

	AAQ	LAQ	INV INEFFICIENCY	SIZE	LEVERAGE	GROWTH	CFOSALE	LOSS
LAQ	0.445***							
INV INEFFICIENCY	-0.033	-0.090***						
SIZE	0.085***	0.028	0.035*					
LEVERAGE	-0.024	-0.190***	0.036*	-0.073***				
GROWTH	-0.024	-0.060***	0.063***	0.114***	-0.03			
CFOSALE	0.027	0.060***	-0.033	0.222***	-0.317***	0.124***		
LOSS	0.073***	0.006	-0.033	-0.154***	0.416***	-0.127***	-0.261***	
LNAGE	-0.019	0.047**	-0.005	0.077***	-0.053**	0.077***	0.014	-0.064**

*,** and *** show significance at 10%, 5% and 1% significance level

4.3 RESULTS

Table 5 (first three columns) reports results on regression analysis performed to test H1a. Model has adjusted R-square of 6.9%. Low adjusted R-square may be due to a small number of data periods and independent variables. Further, it seems that in the Pakistani context there are other variables also that affect the investment efficiency of firms not included in this study. On the part of slope coefficients, results do not reject our assumed null hypothesis that financial reporting quality (asset side accruals quality) does not affect positively investment efficiency (β= -0.003, t= -0.268). Results on testing H1b are provided in Table 5 (last three columns). The model has adjusted R-square of 7%. Coefficient on liability side accruals quality (LAQ) is negative and significant at 10% significance level (β = -0.022, t= -1.64). In the earlier analysis, we find an insignificant negative coefficient value for asset side accruals quality (AAQ) in relationship with investment inefficiency (Inv Inefficiency). On part of liability side accruals quality (LAQ) significant negative relationship shows that in contrary to asset side accruals, investors in Pakistan weight to liability side accruals while making investment decisions. This makes firm ease in raising funds for launching efficient projects.

For testing hypothesis H2a which assumes the negative effect of investment inefficiency (Inv Inefficiency) on asset side accruals quality (AAQ), AAQ is regressed on Inv Inefficiency, and results are reported in Table 6 (first three columns). The model has adjusted R-square of 24.7%. Inv Inefficiency has significant negative coefficient value (β = -0.268, t= -5.077). Thus increase in investment inefficiency (Inv Inefficiency) negatively affects financial reporting quality (AAQ) of the firm. In other words, when investment efficiency is low, managers mask true underlying firm performance by managing asset side accruals leading to inferior financial reporting quality.

Table 5: Effect of Financial Reporting Quality on Investment Efficiency
(dependent variable: investment inefficiency.)

Variable	Coefficient	t-Statistic	Variable	Coefficient	t-Statistic
AAQ	-0.003	-0.268	LAQ	-0.022	-1.649
SIZE	-0.018	-2.751		-0.019	-2.905
LEVERAGE	-0.043	-3.966		-0.045	-4.413
GROWTH	0.002	2.433		0.002	2.404
TANGIBILITY	-0.009	-0.355		-0.01	-0.43
SLACK	0.095	5.176		0.096	5.356
CFOSALE	-0.018	-2.864		-0.017	-2.756
STDCFO	-0.016	-0.716		-0.014	-0.659
STDINV	0.001	-2.55		0.001	-2.505
STDSALE	-0.001	-0.337		-0.001	-0.431
LOSS	-0.003	-0.908		-0.003	-0.784
LNAGE	0.035	1.406		0.036	1.464
C	0.113	1.251		0.111	1.253
Adjusted R-squared	0.069			0.07	
F-statistic	1.568			1.579	
Prob(F-statistic)	0			0	
Firm fixed effect	Yes			Yes	
Correction for Heteroscedasticity	Yes			Yes	

Results on testing H2b are presented in Table 6 (last two columns). The model of liability side accruals quality (LAQ) in relation to investment inefficiency (Inv Inefficiency) has adjusted R-square of 16.7 %. Coefficient on Inv Inefficiency is negatively and significantly associated with LAQ ($\beta =$ -0.134, t= -3.29). Thus increase in investment inefficiency (Inv Inefficiency) negatively affects financial reporting quality (LAQ) of the firm. In other words, when investment efficiency is low, managers mask true underlying firm performance by managing liability side accruals leading to inferior financial reporting quality.

Table 6: Effect of investment inefficiency (Inv Inefficiency) on AAQ and effect of AAQ on Inv Inefficiency.

	Dependent variable: AAQ		Dependent variable: LAQ	
Variable	Coefficient	t-Statistic	Coefficient	t-Statistic
INV INEFFICIENCY	-0.097	-5.078	-0.135	-3.3
SIZE	0.019	1.206	0.04	4.552
LEVERAGE	-0.028	-1.294	-0.068	-1.615
GROWTH	0	-0.575	-0.004	-2.334
CFOSALE	-0.011	-0.639	0.007	0.427
LOSS	0.009	1.917	0.011	1.489
LNAGE	-0.026	-0.93	-0.075	-3.207
C	-0.13	-0.777	-0.125	-1.431
Adjusted R-squared	0.247		0.167	
F-statistic	3.55		2.552	
Prob(F-statistic)	0		0	
Firm fixed effect	Yes		Yes	
Correction for Heteroscedasticity	Yes		Yes	

4.4 ROBUSTNESS CHECKS

To check the generalizability of the results we perform robustness analysis. It is accomplished by re-examining the relationship between financial reporting quality measured through another proxy and investment efficiency. Our new measure of financial reporting quality uses the magnitude of total accruals as a proxy of earnings management (Leuz et al., 2003). It is computed as

Irfan-Ullah, Usman Ayub, Hashim Khan

$$TAQ_{i,t} = \frac{Abs\ TAC_{i,t}}{Abs\ TA_{i,t}} * (-1) \qquad\qquad (6).$$

TAQ is total accruals quality. *TAC* is total accruals in absolute form. *TA* is the absolute value of total assets. To make the measure of financial reporting quality consistent, the ratio is multiplied by -1 so that a low value of it shows low financial reporting quality due to the high use of accruals. Total assets are used in the denominator to control for differences in firm size. No changes are made in investment inefficiency measures. Models estimated are

$$IE_{i,t+1} = \alpha_1 + \alpha_2 TAQ_{i,t} + \alpha_3 ControlVariables_{i,t} + \varepsilon_{i,t} \qquad (7)$$

$$TAQ_{i,t+1} = \alpha_1 + \alpha_2 IE_{i,t} + \alpha_3 ControlVariables_{i,t} + \varepsilon_{i,t} \qquad (8)$$

TAQ is total accruals quality calculated using Equation (6). All other variables in Equations (7) and (8) are the same as in their respective Equations (4) and (5).

Table 7: Effect of TAQ on investment inefficiency and effect of investment inefficiency (Inv Inefficiency) on TAQ.

Effect of TAQ on Investment Efficiency $IE_{i,t+1} = \alpha_1 + \alpha_2 TAQ_{i,t} + \alpha_3 ControlVariables_{i,t} + \varepsilon_{i,t}$			Effect of Investment Efficiency on TAQ $TAQ_{i,t+1} = \alpha_1 + \alpha_2 IE_{i,t} + \alpha_3 ControlVariables_{i,t} + \varepsilon_{i,t}$		
Dependent variable- Investment inefficiency			Dependent variable- Total accruals quality		
Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
TAQ	-0.0002	-0.915	INV INEFFICIENCY	-8.375	-1.662
SIZE	-0.019	-2.734	SIZE	-0.299	-0.604
LEVERAGE	-0.043	-4.000	LEVERAGE	2.497	1.217
GROWTH	0.002	2.431	GROWTH	-0.133	-0.862
TANGIBILITY	-0.010	-0.404	CFOSALE	-0.580	-0.522
SLACK	0.095	5.146	LOSS	-1.771	-2.894
CFOSALE	-0.018	-2.835	LNAGE	1.497	0.643
STDCFO	-0.019	-0.815	C	-5.861	-0.662
STDINV	0.000	-2.500			
STDSALE	-0.001	-0.319			
LOSS	-0.004	-0.975			
LNAGE	0.035	1.321			
C	0.115	1.272			
Adjusted R-squared		0.070			0.134
F-statistic		1.576			2.193
Prob(F-statistic)		0.000			0.000
Firm fixed effect		Yes			Yes
Correction for Heteroscedasticity		Yes			Yes

Overall, results on the relationship between TAQ and investment inefficiency (Inv Inefficiency) are similar to those found through other measures of financial reporting quality (e.g AAQ and LAQ) and Inv Inefficiency. Table 7 (first three columns) reports results on examining the effect of TAQ on Inv Inefficiency. The model has adjusted R-square of 7 %. Consistent with AAQ, TAQ makes insignificant negative relationship with Inv Inefficiency (β= -0.0002, t= -0.915). Table 7 (last three columns) provides results on studying the effect of Inv Inefficiency on TAQ. The model has adjusted R-square of 13.4%. Coefficient on Inv Inefficiency is negative and significant at 10% significance level (β= -8.37, t= -1.66). Thus increase in Inv Inefficiency negatively affects financial reporting quality (TAQ) in the form of high use accruals.

5. CONCLUSION

This research explores the two-way relationship between financial reporting quality and investment efficiency in the Pakistani context. Financial reporting quality affects investment efficiency in two ways. First, it helps firms in reducing underinvestment by raising funds for investment at a low cost. Second financial reporting quality works as a monitoring tool and avoids firms overinvesting. One of the measures of financial reporting quality used in past literature is based on accruals earnings management. Mostly, researchers use various estimation models such as the Jones model to capture discretionary accruals as a proxy of earnings management. However, these models are criticized by researchers due to measurement error in model estimation. Accruals appearing in the income statement are also reflected in assets and liabilities accounts of the balance sheet. Due to these facts, our measures of earnings management vis-a-vis financial reporting quality are aggregate of asset side accruals and aggregate of liability side accruals.

Asset side accruals quality does not make a significant association with investment efficiency. These results can be seen in the perspective that investors in Pakistan do not consider asset side accruals to judge the financial reporting quality of the firm. On the other hand liability side accruals quality positively affects investment efficiency. Thus investors consider liability side accruals while making investment decisions which leads to the efficient investment of firms. Shahzad et al., (2019) using the same context for different periods examine among others association between financial reporting quality and investment efficiency. Results show that financial reporting quality is positively associated with current year investment efficiency. In our study, we find that financial reporting quality positively affects future year investment efficiency. Thus it is evidenced that financial reporting quality affects both current and future year investment decisions of firms. On the other hand findings on the effect of investment efficiency on financial reporting quality show that managers engage in earnings management keeping in view the current year performance of the firm.

6. DATA AND MATERIAL AVAILABILITY

Data can be made available by contacting the corresponding author.

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Irfan Ullah is a PhD scholar at the Department of Management Sciences, COMSATS University Islamabad, Pakistan. He got his Master's degree in Finance, from International Islamic University Islamabad, Pakistan. His research interests include Corporate Governance, Earnings Management, Financial Reporting Quality and Assets Mispricing.

Dr. Usman Ayub is an Assistant Professor at the Department of Management Sciences, COMSATS University Islamabad, Pakistan. His research interests are Portfolio Theory, Asset Pricing, Corporate Finance, Fuzzy Sets, Artificial Neural Networks and Islamic Finance.

Dr. Hashim Khan is an Assistant Professor at the Department of Management Sciences, COMSATS University Islamabad, Pakistan. He is interested in Corporate Governance, Earnings Management, Financial Reporting Quality and Corporate Fraud.