
Accrual Quality, Institutional Investor and Stock Price Informativeness

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This paper examines the effect of accrual quality proxy of earnings quality on informative of stock price as estimated by stock price synchronicity. Using 1,197 firm year observations for companies listed in BSE 500 from 2006 to 2012, the authors applied pooled regression as well as panel regression using random effect model and analyzed that accrual quality enhances more informative stock price. The findings suggest that improved accrual quality lead to more informative stock prices. Moreover, this paper also analyzes the role of institutional investor in reinforcing accrual quality and stock price synchronicity association. The researchers document that accrual quality and stock price synchronicity relationship is not stronger for companies with greater institutional ownership. Therefore, the findings suggest that institutional investors do not use more sophisticated earnings quality information relative to individual investor in decision making and hence higher institutional ownership does not lead to more informative stock price.

Key Words: Accrual quality, synchronicity, Earnings quality

INTRODUCTION

This paper examines the effect of accrual quality proxy of earnings quality on stock price informativeness in Indian Stock Market and the influence of institutional investor in reinforcing relationship. Prior studies have documented the consequence of improved earnings quality on stock return and informative of stocks (Chan et al. 2006, Dimitropoulos and Asterious 2009, Cheng et al. 2013). This study examines whether improved accrual quality lead to more informative stock that are closer to their fundamental value and signals resources allocation. Specifically, 'we calibrate informative of stock using stock price synchronicity which is a commonly used measure in capital market research' (Morck et al. 2000, Jing 2007).

Many notable studies (Piotroski and Roulstone 2004, Durnev et al. 2003, Morck et al. 2000) have used stock price synchronicity to measure informative of stock price as R-square of regressing current firm return on current market return. This measure has come from long way from the work of Morck et al. (2000). The measure has been amended over time to improve it and make it more capable of capturing informative of stock price. A study by Durnev et al. (2003) introduced industry return to capture industry information and later Piotroski and Roulstone (2004) introduced lagged market and industry return recognizing delaying in the process of incorporating information. At the current moment, the measure has been accepted and used by majority of researchers as measure of stock price informativeness.

The current ongoing debate in accounting arena is whether improved earnings quality measured by various proxies such as accrual quality increases informative of stock. Cross country and country wise studies have arrived at different conclusion. Majority of cross country studies support the improved governance mechanism that enhance earnings quality and stock price synchronicity relationship (Cahan et al. 2007, Ben-Nasr 2013). However, it has been noticed that few studies document that governance mechanism does not enhance earnings quality and stock price synchronicity relationship (Assem 2011, Tudor 2010).

In terms of country wise studies, contradicting findings have also been documented. The studies have documented that improved accrual quality enhances more informative stocks (Jing 2007, Johnston 2009, and Cheng et al. 2013). These studies support that improved accrual quality leads to more informative stock price that matters in resources allocation and managerial decision. However, other studies have documented that improved accrual quality does not enhance informative stock prices (Rajgopal and Venkatachalam 2011, Teoh et al. 2007). This debate needs more empirical evidence.

The role of institutional investor in financial market, particularly of using earnings quality information to enhance more informative stock is not much explored in accounting research. The first work to investigate the role of institutional investor was that of Piotroski and Roulstone (2004) which arrived at contradicting findings at one point supporting institutional investor influence earnings and stock price synchronicity while at the other point opposes the role of institutional investor in reinforcing the relationship between earnings and stock price synchronicity. However, Jing (2007) observed that institutional investor's uses more earnings quality information relative to individual investors hence companies with higher institutional ownership have more informative stock price relative to companies with lower institutional ownership. This mixed

finding is the reason that inspired the authors to examine whether institutional investor is reinforcing accrual quality and stock price synchronicity association?

Moreover, majority of studies suggest that stronger governance mechanism improve earnings quality which in turn leads to more informative stock (Cahan et al. 2007, Haw et al. 2012, Ben-Nasr 2013). In recent years, India underwent major reforms in corporate governance and financial reporting initiated by key regulators, Ministry of Corporate Affairs, Securities and Exchange Board of India, and Institute of Chartered Accountant of India that sought to bring the level of corporate governance in India similar to the level of the developed economies (Rajagopalan and Zhang 2008, Sakar & Sakar 2012). Therefore, this study is an effort to examine whether the recent reforms in India makes improved accrual quality to lead to more informative stocks in Indian market similar with finding reported in developed economies.

The remaining part of this paper is detailed in the following order: literature review in section 2 ; section 3 highlights the research designs and methodology adopted by the current study. Section 4 discusses regression results relating to accrual quality and stock price synchronicity relation. Moreover, the paper analyzes the regression results relating to the role of institutional investor in reinforcing the relation between accrual quality and stock price synchronicity. Finally, section 5 forms the conclusion of the paper.

LITERATURE REVIEW

Cross countries studies that examined association between earnings quality and stock price informativeness have arrived at mixed findings on the influence of governance mechanism on earnings quality and stock price informativeness relationship. A study by Haw et al. (2012) using stock synchronicity as measure of informative examined association between earnings quality and stock

price synchronicity across countries. Using a large sample of companies obtained across markets they reveal that greater earnings quality increase informative of stocks in countries with better governance regulation relative to markets with weak governance regulations. Similarly, Ben-Nasr (2013) conducted a cross country empirical investigation involving panel data to examine whether political rights affect association between earnings quality, state ownership and stock price synchronicity across countries. Based on a sample 265 firms from different countries the study finds that higher accrual quality associated with lower stock price synchronicity implies that improved accrual quality enhance more informative stock price. However, Assem (2011) documented contradicting findings relating earnings quality and stock price informativeness relationship when conducting study involving five developed European capital markets. Based a sample of 235 companies from five developed European capital markets from 2003 to 2010 the study finds insignificant relationship between informative of stock and earnings quality.

Similarly, Cahan et al. (2007) conducted a cross country study to examine stock price synchronicity and earnings quality relationship. Their findings suggest that higher earnings quality increase the level of informative of stock price in nations with stronger governance mechanism relative to nations with weaker governance mechanism. However, Tudor (2010) finding contradicts Cahan et al. (2007) findings. The study reveals insignificant relationship between earnings quality and stock price informative in nations with greater governance mechanism indicating that level of governance mechanism does not reinforce earnings quality and stock price informativeness relationship.

Researchers have also conducted country wise studies to study whether improved accrual quality enhance informative of stock. For example, Jing (2007) examine the relationship between earnings quality measured by accrual quality, predictability, persistence, smoothness, timelines and stock price

synchronicity in US. The study finds that improved earnings quality enhances informative stocks. When evaluating earnings quality and stock price informative relationship based on each proxy individually the study finds that accrual quality show stronger influence relative to the other earnings quality proxies, indicating that accrual quality leads to more informative stocks. However, Teoh et al. (2007) using different proxies to capture earnings quality studied whether earnings quality influence stock price synchronicity. Based on US sample of companies they find accrual quality and synchronicity are positively correlated signaling that earnings do no lead to informative stocks.

Majority of country wise studies on earnings quality and stock price synchronicity have supported Jing (2007) findings that improved earnings quality matters in determining the informative of stock price. Johnston (2009) finds that stock price synchronicity and accrual quality are significantly negatively related suggesting that accrual quality enhance informative stocks. Similarly, Cheng et al. (2013) based on large sample of US firms they document that accrual quality and stock price synchronicity are significantly negative associated implying that improvement in accrual quality results to more informative stocks. Likewise, Lyimo (2014) supports Cheng et al. (2013) and Johnston (2009) findings that accrual quality magnifies the informativeness of stock prices.

Similarly, Kommunuri (2013) calibrate the relationship between accrual quality, audit specialization and stock price synchronicity for New Zealand firms and finds that accrual quality and stock price synchronicity are negatively allied. The findings suggest that improved accrual quality enhance firm specific information impounded into share price. Moreover, the study finds no significant difference between firm audited by audit specialist and non audit specialist in detecting the level of earnings management for firms. However, Rajgopal and Venkatachalam (2011) idiosyncratic return volatility which is not commonly used to measure

informative of stock price arrive at contradicting finding. Based on a sample of US companies with 95, 270 firm year observations they find that higher accrual quality leads to less informative stock price contrary with notion that improved earnings quality increase the informativeness of stock prices.

Studies investigating the role of institutional investor have arrived at different conclusion. Majority of these studies like Piotroski and Roulstone (2004), Jing (2007), and Bartov et al. (2000) have used ownership and trading volume associated with institutional investors to measure the influence of institutional investor in examine earnings quality and stock price synchronicity relationship. Bartov et al. (2000) and Jambalvo et al. (2002) ascertain that main assumption behind this is that institutional investors have power to monitor firms and uses more sophisticated earnings quality information in trading relative to individual investor hence higher institutional ownership is associated with high earnings quality firms which are more informative.

In interesting study done Piotroski and Roulstone (2004) arrive at different conclusion with regard to the role of institutional investor in increasing the informativeness of stocks. On the one hand, they document that trading volume associated by activities of institutional investor and stock price synchronicity are negatively correlated implying that institutional investor play vital of making stock price more informative. On the other hand, they document evidence that stock price synchronicity and institutional ownership are positively correlated indicating that institutional investors do not increase stock price informativeness which contradict the first findings.

Jing (2007) extended study by Piotroski and Roulstone (2004) by studying role of institutional investors in influencing earning quality and stock price synchronicity relationship using different earnings quality proxies. Jing (2007) using institutional ownership as proxy of influence of institutional investor, affirm that ownership held by

institutional investor increase the level of informativeness of stock. The finding signals that institutional investor uses more earnings quality information relative to individual investor hence leads to more informative stock price.

In summary, findings of prior studies so far have reported mixed findings on association between accrual quality and stock price synchronicity. It has also been noticed in majority of prior studies that strong governance mechanism reinforces accrual quality and stock price informativeness. Moreover, the review shows that studies investigating the role of institutional investor have arrived at different conclusion. In this study, an effort has been made to add empirical evidence in literature by examining the relationship between accrual quality and stock price synchronicity in Indian market. This study also investigates the role of institutional investor to influence accrual and stock price synchronicity.

RESEARCH DESIGN AND METHODOLOGY

Hypotheses

Majority of studies show that improved accrual quality proxy of earnings quality in developed countries has been associated with more informative stock (Jing 2007, Johnston 2009 and Cheng et al. 2013). Moreover, cross studies show that the level of governance mechanism reinforces accrual quality and stock price synchronicity relationship with developed market exhibiting stronger relationship relative to emerging market (Cahan et al. 2007; Ben-Nasr 2013). However, in recent years India has underwent major transformation in its governance mechanism similar to those of developed countries (Sakar & Sakar 2012). Therefore, we set the first key hypothesis to examine whether accrual quality increase informative of stock price below.

H1: Accrual quality is negatively related to Stock price synchronicity.

Prior studies have revealed that institutional investor possess information advantages relative to individual investors due to power to monitor and access to private information (Jambalvo et al. 2002, Jing 2007). Thus, the relationship between accrual quality and stock price synchronicity is influenced by level of institutional ownership attainable to institutional investor. Therefore, we formulate our second hypothesis that test whether accrual quality and stock price synchronicity are strongly negatively correlated for companies with with greater institutional ownership in relation to companies with less ownership held by institutional investors.

H2: Companies with higher institutional ownership have stronger negative relationship between accrual quality and stock price synchronicity.

Source of Data

The authors have used secondary data extracted from Center for Monitoring Indian Economy (CMIE) similar with recent study done by Purkayastha (2013). We include firms listed in BSE 500 and our sample period include seven years ranging from 2006 to 2012. We include only firms with enough information for estimating all our variables and exclude those with missing information for estimating our variables over the sample period.

Dependent Variable

The dependent variable is R-square of regressing current firm weekly return on current and lagged weekly market and industry return (Piotroski and Roulstone 2004). Similar with prior studies we include firms with more or 45 weekly returns to calibrate the value of R-square from the regression equation 1 (Jing 2007, Johnston 2009). For the firm that meet the condition of 45 weekly return observations we estimate the value of stock price synchronicity for each firm year using equation 1 below.

$$R_{i,t} = \beta_0 + \beta_1 m_{i,t} + \beta_2 m_{i,t-1} + \beta_3 id_{i,t} + \beta_4 id_{i,t-1} + \zeta_{i,t} \quad (1)$$

Where; $R_{i,t}$ Current firm return in specified time t,

$m_{i,t}$ = Compounded weekly market return index for each firm at time t,

$id_{i,t}$ = Compounded weekly return for industry for each firm at time t,

$\zeta_{i,t}$ = Represents error term from regression for firm i at time t.

In line with prior studies we transform the value of R-square from the bounded range of zero to one to continuous variable using equation 2 below (Piotroski and Roulstone 2004, Jing 2007, Johnston 2009).

$$SYN_{i,t} = \log \left\{ \frac{R_{i,t}^2}{1 - R_{i,t}^2} \right\} \quad (2)$$

Where; SYN stand for stock price synchronicity, R^2 = It is estimated as R-square of regressing equation 1 above.

The lower value of stock price synchronicity (SYN) indicates more informative stock price hence less correlated with industry and market returns (Jing 2007, Morck et al. 2000). Likewise, higher value of stock price synchronicity (SYN) indicates less informative stocks hence firm returns are more correlated to market and industry return. Therefore, lower value of stock price synchronicity indicates more informative stock and higher value of stock price synchronicity indicates less informative stock.

Independent variable: Accrual Quality

Extensive studies use accrual quality proxy of earnings quality based on the magnitude of accrual to examine the consequence of improved earnings quality in capital markets (Sloan 1996, Richardson 2003, Desai et al. 2006). We follow these prior studies to estimate the value of accrual quality for each firm year using equation 3 below.

$$AQ_{it} = \frac{(R_{it} - CFO_{it})}{AS_{it}} \quad (3)$$

Where; AQ_{it} = Accrual quality for company i at time t, E_{it} = Earnings before extraordinary item for company i at time t, CFO_{it} = stands for cash flow from operation for company i at time t, AS_{it} = Average asset for company at specified time t.

Large value of accrual (AQ) indicates poor earnings quality and small value of accrual quality (AQ) indicates high earnings quality (Richardson 2003, Desai et al. 2006). Since higher value of accrual quality show unfavorable earnings quality we negate the value of accrual quality so that small value of accrual quality represents higher earnings quality in order to conform to our ordering scheme in examining the effect of earnings quality proxies on stock price informativeness (Jing 2007).

Model specification

We follow similar model used by prior studies to examine association between stock price synchronicity and accrual quality (Jing 2007, Johnston 2009, Cheng et al. 2013). The model is presented in equation 4 below.

$$syn_{it} = \alpha_0 + \alpha_1 eq_{it} + \alpha_2 res_{it} + \alpha_3 sdroa_{it} + \alpha_4 logmv_{it} + \alpha_5 io_{it} + \alpha_6 ic_{it} + \alpha_7 nfi_{it} + \alpha_8 fsc_{it} + \psi_{it} \quad (4)$$

Where; syn = Stock price synchronicity,

eq = Accrual quality,

res = Idiosyncratic risk,

$sdroa$ = Standard deviation of return on asset,

$log mv$ = Size,

io = Institutional ownership,

ic = Industry concentration,

nfi = Number of firms in industry,

fsc = Firm specific concentration,

ψ_t = Error term from the regression equation 8,

We follow prior studies to control for possible factors

that might influence our results similar with prior studies that examine relationship between accrual quality and stock price synchronicity (Jing 2007, Johnston 2009, Cheng et al 2013). We include log of equity (logmv) in the model to control for the influence of size similar with prior studies (Johnston 2009, Cheng, 2013). Several prior studies document that large firms are market leaders therefore this leads more market wide information incorporated into stock price relative to firm specific information (Jing 2007, Johnston 2009). We speculate positive relationship between size and stock price synchronicity. Furthermore, we include sum of square residual of equation 1 to mitigate the effect of idiosyncratic risk (Johnston 2009). We project that idiosyncratic volatility and stock price synchronicity will be negatively related.

Moreover, we follow prior studies to include standard deviation of return on asset (sdroa) over eight year rolling window to control for volatility of firms and predict negative association between accrual quality and stock price synchronicity (Jing 2007, Johnston 2009, and Cheng et al. 2013). Similar with prior studies Piotroski and Roulstone (2004), Jing (2007) we control for ownership (io) by including log of 1 plus percentage institutional ownership. We predict positive relationship between institutional ownership and stock price synchronicity similar with previous studies (Jing 2007, Johnston 2009).

We also include Herfindhal index of the industry in the model to control for industry concentration (ic) in line with prior studies (Jing 2007, Johnston 2009). We also follow prior studies to we control for firm specific concentration by including the ratio sales relative to industry sales and speculate positive association with stock price synchronicity (fsc) (Jing 2007, Johnston 2009). Moreover, we include number of firm in industry (nfi) to control for industry effect and we do not speculate any relationship between number of firm in industry and stock price synchronicity (Jing 2007, Johnston 2009).

EMPIRICAL FINDINGS

Descriptive Statistics for key variables

Table 1 reports result of descriptive statistics relating to variables used to study relationship between accrual quality and stock price synchronicity. We used raw data with 1,197 firm year observations to compute the descriptive statistics. The mean (median) value of stock price synchronicity over the sample period is -0.437 (-0.3426). This value is marginally lower when compared to mean (median) value of -1.644 (-1.631) reported by Johnston (2009) using USA data signaling more informative stock in US relative to India as previous documented by Morck et al. (2000). The mean (median) value of accrual quality is 0.0312 (0.0253) which is marginally lower compared to mean (median) accrual quality of 0.09 (0.07) reported by Desai et al. (2006). The larger difference of accrual quality reported by current study and that reported by Desai et al. (2006) is attributable from sample poor performing companies used in their study involved in restatement of financial statement in US due to fraudulent accounting or erroneous financial reporting while our sample comprised of good performing companies currently in BSE 500.

Moreover, idiosyncratic risk has average of 0.024 and median of 0.0199, while the average of firm volatility is 4.032. Also, we find size with average of 4.612 and median of 4.518 similar with mean value of 4.341 and median value of 4.459 reported by Jing (2007). Moreover, institutional ownership average of 0.208 and median of 0.216 which is closer to average of 0.293 and median of 0.324 reported by Johnston (2009). This shows that level of institutional ownership in US is 30% while in India the level of institutional ownership is slightly lower at 21%. The average level of industry concentration is 3.17 and its median is 3.295 while average firm specific concentration value is 0.056 with median of 0.026. Moreover, the average number of firm in industry is 3.158 with median of 3.295 which is lower compared the mean of 4.975 reported by Johnston (2009) in

study conducted in US. Similarly, Piotroski and Roulstone (2004) reported mean of 5.087 for the number of firm in the industry in US. This reveals that the number of firm in industry in US is larger than the one we use in our study.

Table 2 present results of descriptive statistics for companies with lower and greater institutional ownership. As it may be seen from table 2 we report the mean difference for two samples. Companies with greater institutional ownership tend to have lower stock price synchronicity with a difference of 0.76 at 99%. This result suggests that institutional ownership matters in making stock price informative. This is consistency with prediction that institutional investors use extra sophisticated information relative to individual investor. Moreover, the average difference on accrual quality is 0.0094 at 5% indicating greater institutional ownership matters when it comes to earnings quality. This finding suggests that institutional investors prefer firms with higher earnings quality than firm with poor earnings quality. In term of size, we find out that companies with greater institutional ownership are large as compared with companies with small institutional ownership with mean difference coefficient of 0.3612. Also we find there mean difference on firm specific concentration between the two samples with significant statistical mean difference coefficient of 0.0251 at 1%.

Pairwise Correlation

We report pairwise correlation among variables of interest in table 3. As predicted in the formulation of hypothesis, stock price synchronicity is negatively correlated to accrual quality with correlation of -0.125 at 5% level. Our finding is similar with prior study conducted by Jing (2007) who report negative correlation between stock price synchronicity and accrual. We also document that both idiosyncratic risk and industry concentration are negatively significantly correlated to accrual quality. However, accrual quality is positively correlated to size and institutional ownership. Moreover, we find that

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Table 1, Descriptive statistics Full sample

WHOLE SAMPLE								
variable	μ	δ	p50	Min	Max	Kurtosis	Skewness	N
sync	-0.437	0.527	-0.343	-2.913	0.611	2.127	-1.151	1,197
acr	0.031	0.082	0.025	-0.141	0.317	0.194	0.305	1,197
res	0.024	0.016	0.019	0.002	0.135	5.017	1.786	1,197
sdrao	4.032	3.489	3.135	0.127	26.676	9.086	2.537	1,197
logmv	4.612	0.638	4.518	2.799	6.622	-0.042	0.533	1,197
io	0.208	0.113	0.216	0.001	0.567	-0.725	0.072	1,197
ic	3.07	0.181	3.049	2.739	3.562	-0.463	0.123	1,197
nfi	3.158	0.495	3.295	1.386	3.784	0.714	-0.997	1,197
fsc	0.056	0.079	0.026	0	0.507	7.975	2.674	1,197

Notes: This table presents result descriptive statics of firm characteristics of the full sample used to investigate relationship between stock price synchronicity and accrual quality. N=number of observation, p50=median, μ =mean, δ =standard deviation. sync stands for stock price synchronicity, acr stands for accrual quality, res stands for idiosyncratic volatility, sdrao stands for return volatility, logmv stands for size, io stands for institutional ownership, ic stands for industry concentration, nfi, stands for number of firm in industry and finally fsc stands for firm specific concentration.

Table 2, Descriptive statistics for firms with higher and lower institutional ownership

DESCRIPTIVE STATISTICS										
Variable	HIGH INSTITUTIONAL OWNERSHIP				LOW INSTITUTIONAL OWNERSHIP				DIFFEREN t-value	
	μ	p50	δ	N	μ	p50	δ	N		
sync	-0.399	-0.298	0.496	598	-0.475	-0.374	0.555	599	0.076**	2.497
acr	0.036	0.027	0.077	598	0.026	0.024	0.085	599	0.0094**	2.012
res	0.022	0.019	0.014	598	0.027	0.021	0.018	599	-0.0047***	-5.02
sdrao	3.784	3.098	3.479	598	4.283	3.222	3.485	599	-0.498**	-2.475
size	4.793	4.716	0.609	598	4.432	4.317	0.615	599	0.3612***	10.204
io	0.303	0.293	0.062	598	0.112	0.118	0.061	599	0.1911***	54.148
ic	3.077	3.071	0.171	598	3.064	3.045	0.189	599	0.013	1.246
nfi	3.178	3.296	0.446	598	3.139	3.296	0.539	599	0.0394	1.38
fsc	0.069	0.033	0.091	598	0.043	0.019	0.064	599	0.0251***	5.552

idiosyncratic risk and return volatility are positively correlated. Number of firm in industry is also positively correlated to idiosyncratic risk. However, idiosyncratic risk is negatively correlated with size, institutional ownership and firm specific concentration. Number of firm in industry is also positively correlated to return volatility. However, return volatility is negatively correlated to size,

institutional ownership, industry concentration, and firm specific concentration. Furthermore, we find that and industry concentration are positively correlated to synchronicity. We also find that both idiosyncratic risk and industry concentration are negatively correlated to accrual quality.

Furthermore, size is positively correlated to firm

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Table 3, Pairwise correlation

SIMPLE PAIRWISE CORRELATION									
variable	syn	acr	res	sdrao	logmv	io	ic	nfi	fsc
Syn	1								
acr	-0.125**	1							
res	-0.126**	-0.156**	1						
sdrao	-0.079**	0.031	0.0716**	1					
Logmv	0.078**	0.149**	-0.263**	-0.089**	1				
io	0.087**	0.065**	-0.129**	-0.094**	0.322**	1			
ic	0.134**	-0.063**	-0.051	-0.108**	0.062**	0.041	1		
nfi	-0.074**	0.03	0.171**	0.1511**	-0.081**	-0.008	-0.723**	1	
fsc	0.1854**	-0.052	-0.285**	-0.255**	0.5947**	0.2736**	0.2210**	0.354**	1

Notes: The table reports the pairwise correlation among variables for the full sample. ** donates statistical significance at 5% level

specific concentration, institutional ownership, and industry concentration. However, size and number of firm in industry are negatively correlated. We document that firm specific concentration and institutional ownership are positively correlated. We also find that industry concentration is positively correlated to firm specific concentration and negatively correlated to number of firm in industry. At last we find that number of firm in industry and firm specific concentration has positive correlation. The overall findings show that the correlation coefficient between accrual quality and other control variable is less than cut off coefficient of 0.8 which implies that there is no serious problem of multi-collinearity between accrual quality and control variables (Field 2006).

Heteroskedasticity and Multi-collinearity

This section discusses results of heteroskedasticity and multi-collinearity tests done to make sure that our results are not influence by problem of heteroskedasticity and multi-collinearity.

We employed Breusch-Pagan test for heteroskedasticity as results depicted in table 4 for assessing the problem of heteroskedasticity of independent variable which is accrual quality and

control variables. We obtained a chi-square value of 23.55 which far beyond chi-square value of 3.84, thus we rejected the null hypothesis of constant variance. Therefore, we follow Gujarati (2003, 428) assertion that when the sample is large the problem of heteroskedasticity may be eliminated by using white heteroskedasticity corrected standard error OLS estimator. We employed OLS with standard error robust in STATA statistical package which eliminate double counting within- firm variance similar with prior studies.

In this present study we employed variance inflation factor to detect presence of multi-collinearity among our explanatory variables. We report the results of multi-collinearity test in table 5 below. Gujarati (2003) affirm that problem of multi-collinearity makes OLS estimator unable to furnish correct

Table 4, Heteroskedasticity Results

Ho: Constant variance
Independent variables: acr, res, sdrao, logmv, io, ic, nfi, fsc
chi2(8) = 23.55
Prob > chi2 = 0.0027

Notes: This table presents results of heteroskedasticity test using Breusch-Pagan test.

estimation due the reason that some coefficient becomes statistically insignificant. We find that the variance inflation factors of accrual quality and other control variable is far away from the cut-off of 10 which provide enough evidence that our explanatory variables are free from problem of serious multi-collinearity (Hair, et al 1995, Gujarat 2003).

Table 5 Multi-collinearity test	
Variable	VIF
nfi	2.43
ic	2.15
fsc	2.03
logmv	1.77
res	1.16
io	1.14
acr	1.09
sdaroa	1.08
Mean VIF	1.61

Notes: This table reports result of multi-collinearity test using variance inflation factor

Regression results

Effect of accrual quality on stock price synchronicity whole sample

We first examine relationship between accrual quality and stock price synchronicity. We report the results of standard error robust pooled OLS on estimating the relationship between stock price synchronicity and accrual quality and some control variables in table 6. We find significance negative (-0.2197) relationship between accrual quality measure of earnings quality and stock price synchronicity at 1% level of significance. Our findings suggest that improved accrual quality matters and makes stock price more informative and support our first hypothesis. This finding is similar with prior studies conducted by Jing (2007), Johnston (2009) and Cheng et al. (2013) in USA.

Moreover, we document that stock price synchronicity is negatively associated with idiosyncratic (-0.22) as projected in research design and methodology section. Our findings are similar with prior findings documented by Johnston (2009) in US who find similar relationship. We also find that industry concentration, number of firm in industry, and firm specific concentration has positively relationship with stock price synchronicity. However, document that size, institutional ownership and return volatility exhibits insignificant correlation with stock price synchronicity. Similarly, Johnston (2009) finds with insignificant relationship between institutional ownership and stock price synchronicity. However, contrary to our expectations we find size exhibits insignificant association with stock price synchronicity, Johnston (2009), Jing (2007) and Cheng et al. (2013) find significant positive relationship between size and stock price synchronicity. This may be interpreted that large companies disclosure more information relative to small firm therefore investors use this information for trading hence increase informativeness of stock. Moreover, our study document significant constant value of -0.608. However, prior studies assessing the effect of accrual quality on stock price informativeness disregard the significant constant values as it lack theoretical value. Johnston (2009) reported a significant constant value of -2.56 at 1% level of significance. Similarly, Cheng et al. (2013) and Jing (2007) findings reveal a significant constant value of -0.052 and -0.054 at 1% level of significance when examine the same.

We also run year by year pooled regression to examine accrual quality and stock price synchronicity association over the years. The results provide a clear picture of the ability of accrual quality to influence stock price synchronicity in annual basis as presented in table 7. The results show on year basis that accrual quality and stock price are negatively associated implying that earnings quality matters in making stock price more informative. However, it needs to be noticed that the relationship is significant in 2007, 2008, and 2010.

In addition, we report untabulated empirical results of panel regressing using random effect model relating stock price synchronicity on accrual quality. The results reveal that stock price synchronicity and accrual quality are significantly negatively related (-0.094). This finding supports our original findings that document that improved accrual quality enhances more informative stocks. Our overall finding in general support that improvement in accrual quality is increase informative of stocks.

Stock price synchronicity and accrual quality association for higher and lower institutional ownership.

We portioned our sample into two groups above the median to represent higher institutional ownership and below the median to represent low institutional ownership to examine whether the relationship between stock price synchronicity and accrual quality proxy of earnings quality compelling for firms with greater institutional ownership. The

Table 6 Stock price synchronicity on accrual quality association			
$syn_{it} = \beta_0 + \beta_1 acr_{it} + \beta_2 res_{it} + \beta_3 sdaroa_{it} + \beta_4 logmv_{it} + \beta_5 io_{it} + \beta_6 ic_{it} + \beta_7 nfi_{it} + \beta_8 fsc_{it} + \psi_i$			
Variable	Coefficient	t-value	P-value
Constant	-0.608***	-6.21	0
acr	-0.219***	-4.1	0
res	-0.220***	-3.94	0
sdaroa	-0.056	-0.95	0.342
logmv	-0.09	-1.4	0.161
io	0.075	1.4	0.163
ic	0.350***	4.47	0
nfi	0.267**	3.24	0.001
fsc	0.303***	4.32	0
Adj. R-square%	7.11		
N	1,197		

Notes: The value attached to coefficient ***, ** and * represent levels of significance at 1%, 5% and 10%.

Table 7, Stock price synchronicity and accrual quality: Year wise association from 2006 to 2012							
$syn_{it} = \beta_0 + \beta_1 acr_{it} + \beta_2 res_{it} + \beta_3 sdaroa_{it} + \beta_4 logmv_{it} + \beta_5 io_{it} + \beta_6 ic_{it} + \beta_7 nfi_{it} + \beta_8 fsc_{it} + \psi_i$							
YEARS							
	2006	2007	2008	2009	2010	2011	2012
Variable	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
Constant	0.026	-0.816***	-0.397*	-0.916***	-0.257	-0.586	-0.698**
acr	-0.157	-0.265***	-0.232**	-0.089	-0.36**	-0.178	-0.281
res	-0.541***	-0.122	-0.210*	-0.015	-0.363**	-0.089	-0.233
sdaroa	0.0263	0.260*	-0.065	0.065	-0.056	-0.081	-0.404*
logmv	-0.055	0.353**	0.023	-0.071	-0.445**	-0.375**	0.022
io	-0.082	0.18	0.069	0.119	-0.029	-0.01	0.239
ic	-0.071	0.191	0.599***	0.206***	0.275	0.381**	0.409**
nfi	0.022	-0.063	0.335*	0.106	0.172	0.229	0.339*
fsc	0.1717	0.071	0.195	0.398**	0.367*	0.479*	0.185
Adj. R-Square	10.85	11.36	10.76	2.66	8.45	7.09	12.65
N	159	160	171	175	178	177	177

Notes: The values attached to the coefficient *** represents 1% level of significance, ** 5% significance level and * 10% significance level.

second column of table 8 depicts results of pooled regressing with standard error robust of stock price synchronicity on accrual quality for the two samples. The results on column two of table 8 reveal that negatively accrual quality and stock price synchronicity are significantly negatively related with accrual quality coefficient value of -0.194 at 5% significance level for companies with greater institutional ownership. We also report the results of pooled regression using standard error robust of stock price synchronicity on accrual quality proxy of earnings quality on column four of table 8 for firms with lower institution ownership. The coefficient of accrual quality is -0.244 implying accrual quality and stock price synchronicity are statistically significant negative related at 1% significance level. Since, the coefficient of accrual quality for firm with higher institutional ownership is lower negative number (-0.195) relative to that of lower institutional ownership which is larger negative number (-0.244), we reject our hypothesis stated in alternative form

that there is stronger negative relationship between accrual quality and stock price synchronicity for firms with higher institutional ownership. In short, institutional investors do not use more accrual quality information relative to individual investor in decision relating to resources allocation hence institutional ownership do not lead to more informative stock prices. Moreover, our findings are not supported by prior study conducted by Jing (2007) who find compelling negative relationship between accrual quality and stock price synchronicity for companies with greater institutional ownership.

CONCLUSION

This study empirically examines the effect of accrual quality proxy of earnings quality on stock price synchronicity in Indian market and the role of institutional investor to reinforce accrual quality and stock price synchronicity relationship. The

**Table 8. Relation between Accrual quality and stock price synchronicity:
Higher institutional ownership and Lower institutional ownership**

$syn_{it} = \beta_0 + \beta_1 acr_{it} + \beta_2 res_{it} + \beta_3 sdaroa_{it} + \beta_4 logmv_{it} + \beta_5 io_{it} + \beta_6 ic_{it} + \beta_7 nfi_{it} + \beta_8 fsc_{it} + \psi_i$						
	HIGH INSTITUTIONAL OWNERSHIP			LOW INSTITUTIONAL OWNERSHIP		
variable	Coefficient	t-value	p-value	Coefficient	t-value	p-value
acr	-0.194**	-2.49	0.013	-0.244***	-3.24	0.001
res	-0.219**	-3.02	0.003	-0.280***	-3.47	0.001
sdaroa	0.037	0.45	0.652	-0.076	-0.88	0.377
logmv	-0.251**	-2.55	0.011	0.005	0.05	0.956
io	0.346**	2.57	0.01	-0.275*	-1.68	0.094
ic	0.534***	5.23	0	0.206*	1.75	0.08
nfi	0.608***	6.02	0	-0.035	-0.26	0.791
fsc	0.415***	4.09	0	0.171*	1.75	0.081
constant	-1.075***	-7.49	0	-0.255*	-1.72	0.087
Adj. R-square %	11.13			8.49		
N	598			599		

Notes: This represents results of pooled OLS regression using standard error robust. The values attached to the coefficient ***, ** and * represent levels of significance at 1%, 5% and 10%.

researchers were inspired to examine the relationship due to mixed findings documented by prior research, recent corporate governance reforms India underwent in recent and finally presence of few studies done in emerging market.

First, the study ascertains the association between accrual quality and stock price synchronicity and we affirm that accrual quality and stock price synchronicity are significantly negatively allied. The findings reveal that improved accrual quality proxy of earnings quality enhances more informative stocks in Indian market. The findings are similar with prior studies conducted in developed economies that document that improved earnings quality increase informative of stocks (Jing 2007, Johnston 2009 and Cheng et al. 2013).

Next, the study investigated the role of institutional investors to influence accrual quality and stock price synchronicity relationship. The result shows that the relationship is stronger negative number for companies with lower institutional ownership relative to companies with greater institutional ownership. The findings suggest that level institutional investor does to not reinforce the relationship between accrual quality and stock price synchronicity in Indian market. The study's findings are not supported by prior findings documented by Jing (2007) who found that institutional investor influence earnings quality and stock price informativeness hence leading to more informative stock prices. Moreover, we conducted additional analysis using different measure of informativeness and we documented that our results are the same.

The findings have economic value to analyst and other users of earnings quality information that they may use accrual quality to identify firms that incorporate more firm specific information (informative stock) which represents stock closer to fundamental value. This will enable them to allocate resources more efficiently in capital market. Moreover, the findings also show that in emerging market institutional investor does not play vital use of using sophisticated earnings quality information relative to individual investor in resources

allocation.

Moreover, this study provides a new piece of evidence to the capital market research literature as follows. First, it is comprehensive study that examines the effect of accrual quality proxy of earnings quality on stock price synchronicity in India. Therefore, it adds new insights on the effect of improved accrual quality on informative of stock. Second, the findings of this paper add to the new insight to the contemporary debate on the role of earnings quality to enhance informed stock price.

However, this study suffers from few limitations. First, the use of secondary data extracted from database maintained by Centre for the Monitoring of Indian Economy may contain posting errors. Second, the study does not ascertain the association between accrual and stock price synchronicity as causal relationship.

Based on the study, it is recommended that future research must consider broader proxies of earnings quality such as timelines, value relevance, persistence, and smoothness when studying association between accrual quality and stock price informativeness to understand more about the nature of the association.

REFERENCES

- Chan, C. K., Jegadeesh, N., and Lakonishok, J. (2006). Earnings Quality and Stock Returns. *Journal of Business*, 79(3), 1041-82.
- Dimitropoulos, P., and Asterious, D. (2009). The value relevance of financial statement and their impact on stock prices evidence from Greece. *Managerial Auditing Journal*, 24(3), 248-265.
- Cheng, A., Johnston, J., and Zhou, L. (2013). Earnings quality and stock price synchronicity: Industry wide and firm specific information. Working Paper City University of Hong Kong Available at SSRN: (accessed 15th June 2014).
- Morck, R., Yeung, B., and Yu, W. (2000). The information content of stock markets: Why do emerging markets have synchronous stock price movement? *Journal of Financial Economics*, 58(1), 215-260.
- Hsin, C., and Liao, Y. (2003). Stock price synchronicities in emerging markets. Paper presented in EFMA Helsinki meeting.
- Jin, L., and Myers, S. (2006). R-square around the world. *Journal of Financial Economics*, 79, 257-292.
- Durnev, A., Morck, R., Yeung, B., and Zarowin, P. (2003). Does

greater firm-specific returns variation mean more or less informed stock pricing? *Journal of Accounting Research*, 41(5), 797-836.

Piotroski, J., and Roulstone, D. (2004). The influence of analysts, Institutional investors and insiders on the incorporation of market, industry, and firm specific information in to stock prices. *The Accounting Review*, 79 (4), 1119-1151.

Cahan, S., Liu, G., and Sun, J. (2007). Investor protection, income smoothing and Earnings informativeness. *Journal of International Accounting Research*, 7(1), 1-24.

Ben-Nasr, H. (2013). State ownership, political institutions, and stock price informativeness: Evidence from privatization. Working Paper HEC Montreal Canada.

Assem, T. (2011). Income smoothing across Europe: The informativeness explored. Master Thesis Erasmus University

Tudor, A. (2010). Income smoothing and Earnings informativeness. Master Thesis Erasmus University

Jing, Z. (2007). Earnings quality, analyst, institutional investor and stock price synchronicity. PhD Dissertation Hong Kong Polytechnic University (Accessed 4th Nov. 2013).

Johnston, J. A. (2009). Accruals quality and price synchronicity. PhD Dissertation Louisiana state university (Accessed 10th December 2013).

Rajgopal, S., and Venkatachalam, M. (2011). Financial reporting quality and idiosyncratic return volatility. *Journal of Accounting and Economics*, 51(1-2), 1-20.

Teoh, H.S., Yang, Y., and Zhang, Y. (2007). R-square: Noise or firm specific information measure. Working paper University of California.

Rajagopalan, N., and Zhang, Y. (2008). Corporate governance reforms in China and India: Challenges and opportunities. *Business Horizon*, 51(1), 55-64.

Sarkar, J., and Sarkar, S. (2012). Corporate Governance in India. Sage India Publisher.

Haw, I., Hu, B, Lee, J., and Wu, W. (2012). Investor protection and price informativeness about future earnings: International evidence. *Review of Accounting Studies*, 17, 389-419.

Lyimo, G. (2014). Accrual quality and stock price informativeness: Evidence from India. *Research Journal of Finance and Accounting*, 5(12), 88-95.

[21] Kommunuri, J. (2013). Audit firm industry specialization, discretionary accrual and stock price synchronicity. Master Thesis Auckland University of Technology.

Bartov, E., Radhakrishman, S., and Krinsky, I. (2000). Investor sophistication and pattern in stock return after earnings announcement. *The Accounting Review*, 75, 43-63.

Jiambalvo, J., Rajgopal, S., and Venkatachalam, M. (2002). Institutional ownership and extent to which stock prices reflect future earnings. *Contemporary Accounting Research*, 19(1), 117-146.

Purkayastha, S. (2013). Diversification strategy and firm performance: Evidence from Indian manufacturing firms. *Global Business Review*, 14 (1), 1-23.

Sloan, R. (1996). Do stocks prices fully reflect information in accruals and cash flows about future earnings. *The Accounting Review*, 71, 289-315.

Richardson, S. A. (2003). Earnings quality and short seller. *Accounting Horizon*, 17, 49-61.

Desai, H., Krishnamurthy, S., and Venkataraman, K. (2006). Do short sellers target firm with poor quality, Evidence from earnings restatement. *Review of accounting studies*, 11, 71-90.

Gujarati, D. N. (2003). Basics econometrics, 4th ed. New York, McGraw-Hill Higher Education

Hair, J., Anderson, R., Tatham, R., and Black, W. (1995). Multivariate data analysis: New Jersey: Prentice-Hall.

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