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## EARNINGS MANAGEMENT AND FINANCIAL CRISIS: EVIDENCE FROM INDIA

### ABSTRACT

This paper attempts to examine the earnings management behavior of Indian firms during the global financial crisis in 2008 and compare with the period before and after. It uses the financial data of S&P CNX 500 companies for the period of 2007-2012. GICS, the best industry classification system among competing alternatives, has been used for computing discretionary accruals (DA). The study finds a high level of earnings management in firms during the pre-crisis period, a significant decrease during the crisis period, and an increase again in the post-crisis period. The study further examines the earnings management behavior isolating the firms into two categories – firms with positive DA and firms with negative DA. We found that earnings management in both these categories of firms decreased during the crisis period and increased in the post-crisis period for firms with negative DA. However, for firms with positive DA, our results are inconclusive.

*Key Words: earnings management, financial crisis, earnings quality, GICS, discretionary accruals*

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## INTRODUCTION

The quality of financial reporting has received immense attention over decades, especially after the revelation of a series of corporate scams like Enron in 2001 and WorldCom and Tyco in 2002. This was followed by one of the largest corporate fraud in India – the Satyam Scam in 2009. Several researchers have studied the financial reporting behavior of the management in relation to the incentives available for manipulating financial transactions that affect the reported earnings of the firm.

The literature on the management's motivation for earnings management can be broadly classified into two categories: one relating to market conditions and other on account of the agency relationship between the management and the stakeholders of the firm. Relating to market conditions, several empirical studies have shown that firms manipulate earnings upwards to avoid reporting losses, decline in earnings (Burgstahler and Dichev, 1997) or when their earnings fall short of the thresholds marginally (Degeorge, Patel, and Zeckhauser, 1999). Firms are also suspected of managing earnings upward prior to issue of securities to ensure success in the issue. In support of this hypothesis, (Teoh, Wong, and Rao, 1998) have shown that firms manage earnings upwards prior to initial public offerings. Some studies (Rangan, 1998; Teoh, Welch, and Wong, 1998) found upward earnings management in firms prior to seasoned equity offerings. On the agency relationship front, Healy (1985) found manager's incentive for income-decreasing earnings manipulation when, either the lower or upper bounds of their bonus plan are binding and, income-increasing earnings manipulation in the absence of such binding. Studies have also found managers' incentive to manipulate earnings upwards to escape from the consequences of debt-covenant violations (DeFond and Jiambalvo, 1994).

Prior studies on earnings management have investigated the firm related attributes (such as management compensation, debt-covenant agreements, or equity issues) on the motivation for earnings management. Accounting earnings are affected by the firm or industry related attributes, as well as by the economic conditions in which a firm operates. Business cycles affect the operations of the firm and accordingly affects their earnings. During the expansionary phase of business cycle, firms experience rising demands for their products/services enabling the firms to utilize the benefits of economies of scale and thereby reduced cost of sales. On the other hand, increased sales due to expansion in demand lead to increased earnings. The situation is altogether inversed during the contractionary phase of business cycle.

Since business cycles affect earnings of firms, it is expected to affect the management's motivation for manipulating the reported earnings. Johnson (1999) investigated the earnings-return relation during different phases of the business cycle and found that earnings and stock returns are more closely associated during the expansionary phase of business cycle than during the recession. In contrast, Jenkins, Kane, and Velury (2009) reports earnings to be more value relevant during the contractionary period than during expansionary periods, and attributed this completely opposite finding to the fact that (Johnson, 1999) earnings-return model did not include expected future earnings proxy.

Above findings provide strong motivation for studying earnings management in context of macroeconomic conditions within which firms operate. The burst of the 2008-09 Global financial crisis (GFC) and periods preceding and succeeding the crisis years forms one such unique setting to study earnings management behavior of firms' management. Indian financial market experienced moderate but continuous growth during 2002 to 2007, as reflected by NIFTY CNX500 Index that rose from around 800 in April 2002 to about 5500 in December 2007. During the period of financial crisis, the index started to fall from January 2008 and dropped to less than 2000 in October 2008. It then began to recover and started to rise only after March 2009 reaching the psychological 5000 mark in October 2010 (see Figure 1)

**Figure 1. NIFTY CNX 500 monthly close price**



Data Source: Google Finance

The recessionary phase during the GFC and the post-recessionary phase forms our motivation for the study of earnings management in Indian firms. During the recession, the economy demand shrinks, consumer spending decreases, unemployment rate increases, and

the economy is in bad shape altogether. The recession is a macroeconomic factor that affects all sectors of the economy, thus firms will be experiencing a decrease in profits or losses altogether. It will be interesting to explore the earnings management behavior of the firms during the recession and post-recession period.

The impact of the 2008 GFC on the earnings management behavior of the firms in advanced countries have been studied by several authors (Dimitras, Kyriakou, and Iatridis, 2015; Filip and Raffournier, 2014; Iatridis and Dimitras, 2013; Jahmani, Niranjana, and Toney, 2016; Persakis and Iatridis, 2015), however, there are limited studies found from developing economies. To the best of our efforts, we could not find any study on the impact of GFC on the earnings management behavior of Indian listed companies. The motivation behind this study is dearth of literature in the context of developing nations, especially India.

Remaining part of this paper is structured in the following manner. Section II reviews the related literature; Section III describes the research methodology adopted for the study followed by findings and discussion in section IV. Finally, Section V concludes the paper.

## **LITERATURE REVIEW**

Economic turbulence affects the operations, financial transactions, and thus the earnings of all the firms in the economy. Researchers have studied management's motivation for manipulating earnings upwards to report positive earnings, avoid reporting losses/decreased earnings, meet or beat analysts' expectations (Burgstahler and Dichev, 1997; Charoenwong and Jiraporn, 2009; Chen et al., 2010; Cornett, McNutt, and Tehranian, 2009; Degeorge et al., 1999). Economic downturn having negative effect on the earnings form a strong motivation for the managers to manipulate earnings upwards (Ahmad-Zaluki, Campbell, and Goodacre, 2011). Jahmani et al. (2016) compared the earnings management of S&P 500 companies during the recession and recovery periods and found that firms manage earnings in both periods but the intensity of management during recession period is more. They attribute this finding to the managements' desire to avoid reporting losses/decreased earnings.

Managerial remuneration as a motivation to alter the reported earnings has been studied extensively. Some studies (Gaver, Gaver, and Austin, 1995; Healy, 1985; Holthausen, Larcker, and Sloan, 1995) have shown that managers resort to making adjustments in the reported earnings to increase their remuneration. Watts and Zimmerman (1986), in development of their politico-contract theory, linked earnings management to personal benefit of the leaders. They argue that leaders, having their bonus plans linked to accounting

income, are likely to shift the earnings of future periods to current period in order to maximize the variable part of their remuneration. In context of Japanese firms, Shuto (2007) found positive association between discretionary accruals and executive compensation, while the study also finds income-decreasing accruals being adopted by firm managers who do not receive bonus. Carter, Lynch, and Zechman (2006) found existence of financial incentive for the CEO and finance officers to manage earnings upwards prior to passing of Sarbanes-Oxley Act of 2002, while such financial incentive for income-increasing earnings management was existent post Sarbanes-Oxley, the incentive was more for non-discretionary earnings. Gao and Shrieves (2002) found association between managerial earnings management intensity and their compensation contract design. Firms with high exposure with economic variables such as interest rate, exchange rate, and inflation are likely to experience a large decline in stock prices affecting the managerial compensation negatively. Managers of such firms are inclined towards upward earnings management in order to avoid decrease in their remuneration (Charitou, Lambertides, and Trigeorgis, 2007).

Debt-covenants form another strong reason for managerial earnings manipulation during the economic downturn. In such cases, managers are interested in the short-term survival of the firm (Charitou et al., 2007). Since debt-covenants are based partially on the earnings of the firm (Dichev and Skinner, 2002), chances of violation are reduced through income-increasing earning management (Iatridis and Kadorinis, 2009; Sweeney, 1994). Firms with limited scope to avoid debt-covenant violations may purposefully report losses by managing earnings downwards to obtain concession from lenders. Although, banks have the option to refuse concession and insist upon liquidation for the recovery of debt, they generally prefer to restructure debt by providing concessions, allowing more time for principal and interest payment, or reducing the interest rate (Asquith, Gertner, and Scharfstein, 1994) because during economic downturn firms' assets would probably have low realizable value (Shleifer and Vishny, 1992).

Financially distressed firms are more prone to the negative consequences of the financial crisis than the non-distressed firms (Mac an Bhaird, 2013). As such Managers of firms facing financial difficulties tend to increase the earnings through the use of income increasing accruals (DeFond and Jambalvo, 1994). Agrawal and Chatterjee (2015), in their study examined 150 financially distressed Indian firms and found association between the intensity of distress and level of earnings management. Their results show higher earnings management among less distressed firms as compared to more distressed firms. During the crisis period, financially distressed firms are likely to get support from the government. To

qualify for such government support, firms may indulge in income-decreasing earnings management. Consistent with this argument, Jones (1991) found that firms manage earnings downwards to report losses or earnings decreases during import relief investigations. Firms may also report losses in order to portray serious financial difficulty and obtain concessions from the employees. In support of this argument DeAngelo and DeAngelo (1991) showed that firms report lower earnings during union renegotiations.

Crisis being temporary in nature, earnings reported during such period is of less value relevance (Ball and Shivakumar, 2005). Cimini (2015) found that earnings management in the majority of European countries has decreased post financial crisis of 2008. Also, during the period of crisis, due to poor performances reported by almost all the firms, the market is more tolerant towards lower earnings reported by firms (Ahmad-Zaluki et al., 2011). Consequently, firms have less incentive to engage in earnings management during the crisis period.

Based on the existing literature, the impact of financial crisis on earnings management behavior of firms is unclear. Some argue that the incentive to engage in earnings management is more during economic crisis while there are studies that show less inclination of the firms towards earnings management during the crisis period. Thus, the paper hypothesizes:

***Hypothesis 1:*** *Earnings Management among Indian firms decreases during the crisis period.*

***Hypothesis 2:*** *Earnings Management among Indian firms increases during the post-crisis period.*

## METHODOLOGY

### Sample selection and data description

We used S&P CNX 500 companies as of December 31, 2016 to draw our sample for the study. In the first step, we screened out 98 financial companies from the composition of the index, thus left with 402 non-financial companies to be considered for inclusion in our sample. Due to non-availability of data for computing earnings management measure, further 46 companies were eliminated, leaving 356 companies in our sample. The study period ranges from the financial year (FY) ending 2007 to 2012. Table 1 lists the industry wise concentration of firms in the sample whereas Table 2 shows the year-wise distribution of firms.

**Table 1. Industry wise distribution of sample firms**

GICS Industry Classification	GICS 2-digit Code	Number of Firms
Energy	10	13
Materials	15	65
Industrials	20	78
Consumer Discretionary	25	76
Consumer Staples	30	28
Health Care	35	36
Information Technology	45	28
Utilities	55	16
Real Estate	60	16
Total		356

Note: Authors' computation

**Table 2. Year wise distribution of sample firms**

Year	No. of firm-years
2007	226
2008	272
2009	279
2010	299
2011	305
2012	324
Total	1,705

Note: 1703 in case of our second metric of earnings management JM2 due to unavailability of required data for two firms (one each in 2011 & 2012).

In this study, we empirically examine the impact of the 2008 GFC on earnings management behavior of S&P CNX 500 companies. For this purpose, the study period has been divided into three sub-periods: FY ending 2007 and 2008 are classified as pre-crisis period; 2009 and 2010 are classified as the crisis period as NIFTY CNX 500 Index experienced falling trend during this time span; and 2011 and 2012 are classified as post-crisis period.

### Earnings management measure

Widely used earnings management measures in accounting research are based on different variants of the earnings management model proposed in Jones (1991). This model requires classification of companies into industries for computation of discretionary accruals (DA), the proxy for earnings management. Bhojraj, Lee, and Oler (2003) in their study has shown the importance of selecting industry classification on empirical findings and Hrazdil and Scott (2013) extended their work in earnings management studies and concluded that

Global Industry Classification Standard (GICS) is the best against other three competing alternatives such as Standard Industrial Classification (SIC), North American Industry Classification System (NAICS), and Fama–French classification. In this study, we use 2-digit GICS code for industry classification - distinctive from other studies in this area.

The original model of Jones (1991) did not allow for discretionary revenue management, and Dechow, Sloan, and Sweeney (1995) suggested modification in the model by subtracting changes in receivables from the changes in revenues in the original Jones Model. Further, the original Jones Model used time-series data to compute firm-specific discretionary accruals which created problems of non-stationarity in the data, data unavailability, and survivorship biasness. To overcome these problems, DeFond and Jiambalvo (1994) suggested cross-sectional approach to compute industry-year specific DA as against firm specific DA as a proxy of earnings management.

The objective of our study is to test if firms' earnings management behavior is unusual during GFC as compared to normal period. We employ the standard techniques from earnings quality literature for this purpose. Our first metric of earnings management is based on the modified Jones Model developed by Dechow et al. (1995). The only difference in this model compared to the Jones Model is that change in receivables is deducted from the change in sales revenue. The idea behind such deduction is that manipulating cash sales is comparatively difficult and thus it is the credit sales that are more susceptible to managements' manipulation. Following equation is estimated cross-sectionally, with at least 20 observations in the same industry (defined as two-digit GICS code) from the companies listed on BSE:

$$TAC_t = \alpha_0 + \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \Delta AdjREV_t + \alpha_3 PPE_t + \varepsilon_t \quad (1)$$

Where:

$TAC_{it}$	Total accruals (Net Income <i>minus</i> Cash flow from operations) of firm 'i' in year 't' scaled by lagged total assets;
$TA_{it-1}$	lagged total assets of firm 'i';
$\Delta AdjREV_{it}$	change in sales revenue less change in receivables of firm 'i' in year 't' over year 't-1' scaled by lagged total assets;
$PPE_{it}$	property, plant, and equipment (gross) of firm 'i' in year 't' scaled by lagged total assets.



The residuals from Equation 1,  $\varepsilon_i$  is the measure of discretionary accruals. The variance of this residual is taken as an inverse measure of accruals quality (Dechow and Dichev, 2002; Francis et al., 2005). Following Filip and Raffournier (2014), standard deviation of this measurement error, JM1, is taken as the first measure of earnings management for the study. Consistent with Dechow and Dichev (2002), a high value of JM1 reflects low accruals quality and a high level of earnings management.

Our second metric is based on Kothari, Leone, and Wasley (2005) who suggested inclusion of a performance measure, return on assets (ROA), in the modified Jones Model to control for impact of firms' performance on the unexpected accruals. We estimate the following model cross-sectionally, with at least 20 observations in the same industry from the companies listed on BSE:

$$TAC_t = \alpha_0 + \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \Delta AdjREV_t + \alpha_3 PPE_t + \alpha_4 ROA_t + \varepsilon_t \quad (2)$$

Where:

$\Delta ROA_{it}$  Return on Assets of firm i in year t computed as Net Income over lagged total assets;

All other variables are as defined in the previous model. Accordingly, following Filip and Raffournier (2014) again, our second metric of earnings management JM2 is the standard deviation of the residuals from Equation 2. Again, a high value of our metric JM2 reflects low accrual quality and thus a high level of earnings management.

## RESULTS AND DISCUSSION

The values of the two earnings management measures used in the study for pooled sample, individual years, and three sub-periods for pre-crisis, during-crisis, and post-crisis periods are reported in Table 3. Both measures depict similar trend with a sharp fall during the year 2009. The highest value for JM1 (0.5190) is in the year 2011 and for JM2 (0.3212) in the year 2008, whereas the lowest values for both (JM1 = 0.1480 and JM2 = 0.1313) are in 2010. These observations indicate that the accruals quality has increased sharply during the crisis period and thus a lower level of earnings management during this period, consistent with our first hypothesis.

**Table 3. Earnings management measures (period-wise)**

Period	N	JM1	N	JM2
Pooled	1705	0.2939	1703	0.2294
2007	226	0.2539	226	0.2341
2008	272	0.3132	272	0.3212
2009	279	0.1495	279	0.1397
2010	299	0.1480	299	0.1313
2011	305	0.5190	304	0.1705
2012	324	0.1790	323	0.2960
Pre-Crisis (2007-2008)	498	0.2795	498	0.2734
During-Crisis (2009-2010)	578	0.1467	578	0.1788
Post-Crisis (2011-2012)	629	0.2825	627	0.2574
Difference Pre-crisis & During-Crisis		0.1328*** (225.00)		0.0946*** (103.70)
Difference Post-crisis & During-Crisis		0.1358*** (50.66)		0.0787*** (83.79)
Difference Pre-crisis & Post crisis		0.0030 (1.09)		0.0160*** (16.94)

Note: \*, \*\* and \*\*\* indicate  $p \leq 0.10$ ,  $p \leq 0.05$  and  $p \leq 0.01$  respectively; t-statistics are shown within brackets.

We then use bootstrapping technique to generate 10,000 samples of 100 firm-year observations with replacement for each of the sub-periods and compute our earnings management metrics. The average values of these metrics for each of the sub-periods are reported in Table 3. Our preliminary findings are confirmed by comparing the mean values of JM1 and JM2 which are the lowest (JM1 = 0.1467 and JM2 = 0.1788) for the crisis period (2009-2010): much less than their corresponding values in the pre-crisis (2007-2008) and post-crisis (2011-2012) period. The highest values of these indicators are during the pre-crisis period with JM1 = 0.2795 and JM2 = 0.2734. The mean value of JM1 dropped from 0.2795 in (2007-2008) to 0.1467 in (2009-2010) and then increased to 0.2825 in (2011-2012). Similarly, for JM2, the mean value dropped to 0.1788 in the crisis period from its value 0.2734 in the pre-crisis period and in the post-crisis period, the value increased to 0.2574. The independent-samples *t-test* results indicate that all of these differences between two sub-periods taken at a time are significant at usual levels, with the exception of the difference between the mean of JM1 for pre-crisis and post-crisis period (*t-value 1.09 i.e., less than 2*). These results support both our hypothesis – H1 that the earnings management during the crisis period, among Indian firms, have decreased and H2 that the earnings management among Indian firms have increased post crisis.

The managerial motivation for upward and downward earnings management are guided by different factors. For example, managers may expect bonus cut on account of low earnings of the firm and may likely indulge in income-increasing earnings manipulation activities to avoid such bonus cuts. On the other hand, if the earnings are much below(above) the benchmark earnings level (upper bound of the bonus plan) over which excess earnings earn (do not earn) bonus, managers are more likely to indulge in income-decreasing earnings manipulation activities (Healy, 1985).

The impact of financial crisis on firms with negative DA might be different from those with positive DA. To verify this, we divided our sample into two sub-samples: SS-P with positive DA and SS-N with negative DA and repeated the analysis. A firm-year observation with positive (negative) residuals from both of the models (Equations 1 and 2) are defined as positive (negative) discretionary accruals. The results are presented in Table 4.

Table 4 reports the mean values of the sub-samples separately for the three sub-periods. The results confirm our previous finding that the firms' accruals quality has improved during the crisis with  $JM1 = 0.1379(0.1001)$  down from  $0.2766(0.2045)$  in the pre-crisis period for sub-sample SS-P (SS-N). Corresponding values of  $JM2$  are  $0.1237(0.2605)$  and  $0.0855(0.2110)$ , respectively, for SS-P and SS-N. All of these differences are also statistically significant at usual levels. In the post-crisis period the value of our earnings management metrics have increased as compared to those in the crisis period, with the exception of  $JM1$  for sub-sample SS-P which has decreased; however, they are lower than their corresponding values in the pre-crisis period.

**Table 4. Results for positive and negative discretionary accruals firms**

	N	JM1	JM2
<b>A. Positive discretionary accruals [Sub-sample: SS-P]</b>			
Pre-crisis	163	0.2766	0.2605
During-crisis	173	0.1379	0.1237
Post-crisis	239	0.1229	0.2273
Difference of Pre-crisis & During-crisis		0.1386***	0.1373***
		<b>(-310.12)</b>	<b>(-287.56)</b>
Difference of Post-crisis & During-crisis		-0.0151***	0.1036***
		<b>(-42.3)</b>	<b>(-101.98)</b>
Difference of Pre-crisis & Post During-crisis		0.1537***	0.0331***
		<b>(-428.37)</b>	<b>(-32.89)</b>
<b>B. Negative discretionary accruals [Sub-sample: SS-N]</b>			
Pre-crisis	237	0.2045	0.2110
During-crisis	318	0.1001	0.0855
Post-crisis	305	0.1508	0.1648
Difference of Pre-crisis & During-crisis		0.1045***	0.1255***
		<b>(-203.71)</b>	<b>(-198.84)</b>
Difference of Post-crisis & During-crisis		0.0507***	0.0793***
		<b>(-138.63)</b>	<b>(-208.68)</b>
Difference of Pre-crisis & During-Post crisis		0.0538***	0.0462***
		<b>(-91.19)</b>	<b>(-64.08)</b>
<b>C. Difference in Difference</b>			
Pre-crisis & During-crisis		0.0341***	0.0118***
		<b>(50.19)</b>	<b>(14.12)</b>
Post-crisis & During-crisis		-0.0657***	0.0243***
		<b>(-129.4)</b>	<b>(22.35)</b>
Pre-crisis & Post During-crisis		0.0999***	-0.0131***
		<b>(144.667)</b>	<b>(-10.545)</b>

Note: \*, \*\* and \*\*\* indicate  $p \leq 0.10$ ,  $p \leq 0.05$  and  $p \leq 0.01$  respectively; t-statistics are shown within brackets.

These results indicate that the management refrain from managing the earnings in the period of economic slowdown as during such period their activities are subject to high monitoring from the auditors and other stakeholders (Chia, Lapsley, and Lee, 2007). Consistent with Ahmad-Zaluki et al. (2011), our results indicate lesser incentive for earnings management in the crisis period during such period poor performance of the firms are acceptable by the market and thus the management have lesser incentive to manage the earnings. Our results contradict with the findings of Persakis and Iatridis (2015) that the earnings quality decreases (earnings management increases) during the financial crisis. Similarly, Jahmani et al. (2016) using data for S&P 500 companies found higher level of

earnings management during the recessionary phase of business cycle. The contradictory results can be attributed to the fact that these findings are based on study conducted on companies listed in advanced economies, while our study is in Indian context, a developing country. These results also signify that earnings management in developing countries follows somewhat similar trend during different phases of business cycle as our results are consistent with previous studies conducted on sample from developing countries (Ahmad-Zaluki et al., 2011; Chia et al., 2007). However, further investigation is required to prove the generalization of this pattern among the developing nations.

Comparing pre-crisis period and post-crisis period, we find that earnings management has decreased significantly in the post-crisis period with mean value of JM1(JM2) equals 0.1229(0.2273) down from 0.2766(0.2605) in the pre-crisis period for sub-sample SS-P. For sub-sample SS-N, these values are 0.1508(0.1648) down from 0.2045(0.2110) in the pre-crisis period. These results also confirm our previous findings that post-crisis earnings management is lower than those in the pre-crisis period. This possibly could be because the economy is in recovery phase and the managers may be following wait and watch strategy to ensure themselves of the intensity of monitoring activities by the stakeholders and auditors.

Panel C of Table 4 reports the results of Difference in Difference (DID) test for firms with positive discretionary accruals and negative discretionary accruals. We notice that for the first pair (pre-crisis & during-crisis), the values are positive and significant for both our metrics of earnings management, JM1 and JM2, indicating that the earnings management is more in firms with positive DA (i.e., firms that manage earnings upwards) than those with negative DA (i.e., firms that manage earnings downwards). For the other two pairs the two metrics give contradictory results.

Extending the test further, we conducted the mean difference test and DID test for non-crisis and crisis period for the firms with positive and negative DA. The non-crisis period for this purpose was defined as pre-crisis and post-crisis period taken together. The results (not reported) of the independent-sample t-test for the mean difference show significant decrease in the earnings management during the crisis period similar to the results reported in Table 4. However, the difference in difference test results are inconclusive as the two metrics JM1 and JM2 give contradictory results. JM1 shows more earnings management in firms with positive DA while JM2 finds more earnings management in firms with negative DA.

## CONCLUSION

This paper examines the earnings management behavior of S&P CNX 500 companies during the period of 2007-2012. The objective of the study is to explore if earnings management behavior is unusual during the 2008 GFC and thus we divided our period of study in three sub-periods, that is, pre-crisis, during-crisis and post-crisis periods. We estimated the discretionary accruals using two variants of the cross-sectional modified Jones model used in Dechow et al. (1995) and Kothari et al. (2005). For this purpose, we have used 2-digit GICS code for industry classification. The standard deviation of discretionary accruals estimated from these models formed the two measures of earnings management for the study.

Both the metrics of earnings management JM1 and JM2 showed similar pattern during this period. Their values dropped sharply in the year 2009, continued to drop further in 2010 and then increased in 2011. Independent-samples t-test results confirmed this pattern and we found earnings management during the crisis period to be significantly lower than the period before and after the crisis period. The results also suggest an increase of earnings management post-crisis; however, it is lower than those in the pre-crisis period.

We further investigated firms with positive and negative DA separately and found that the results for firms that manage earnings upward (sub-sample SS-P) were inconclusive for the post-crisis period as one of the measures of earnings management JM1 dropped significantly while the other metric JM2 shows a significant increase during the same period. All other statistics for these firms were similar to our previous findings. For firms that manage earnings downwards (sub-sample SS-N), the results confirm our previous findings that earnings management in firms have decreased in the crisis period and increased again post-crisis; however, it still remained lower than those in the pre-crisis period.

The results of this study have several interpretations. Firstly, the decreases in the earnings management noted during the crisis period may be because the market already perceives poor performance from the firms during such periods and thus accepts the lower earnings or even losses reported by the firms. Secondly, if such decrease is due to high level of monitoring exercised by the auditors and other stakeholders during the crisis period, it has policy implication and the government should introduce regulations such that the high monitoring of managerial activities is exercised by these stakeholders at all times. Thirdly, as our results are consistent with findings of studies based on developing economies and contradicts with the findings of studies based on developed nations, it can be concluded that the results from studies based on developed nations cannot be generalized for the

developing nations. It further opens up scope for future research to test if the results can be generalized for the developing and the developed economies separately. Fourthly, the decreases in discretionary accruals shall not be cherished assuming earnings management has decreased, as the management may resort to other means of earnings management such as real activities manipulation as a substitute (Zang, 2012) depending upon the costs associated with accrual based earnings management. Future research may focus on firms shifting to real activities manipulation as an alternative means to manage earnings during the crisis period.

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