**Media appearance of firms and earnings management strategy during financial crises**

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**Abstract:**

This study examines the influence of media appearance of firms on earnings management strategies of 632 firms listed on the London Stock Exchange during the financial crisis period. We find that firms that appear frequently on media are more likely to engage in earnings management activities. In addition, during the financial crisis firms with higher media attention do more real earnings management. The findings of the study contribute to the academic literature related to earnings management, firms’ media attention and financial crisis. Moreover, the findings are advantageous to investors, regulatory authorities and corporate managers, who are concerned about firms’ earnings management strategies that affect firms’ financial performance negatively.

Keyword: Media; Earnings management; Real earnings management; Financial crisis

# **1 Introduction**

Media[[2]](#footnote-2) coverage is often held responsible for creating pressure on managers when they report firm’s earnings (Chaney et al., 2011). Many firms’ bear reputational cost as media highlight the managers’ misbehavior related to reporting of earrings (Dyck et al., 2008). As media act as a sensitive external monitor, so, the managers try to manage the reporting of media news in some important corporate events (Dyck and Zingales, 2002; Ahern and Sosyura, 2014). Managers try to avoid negative news to publish in media. When a firm is under media attention the managers of the firm resort to alternative ways to meet or exceed earning target and to do that, in many occasions, they do earning management (Braam et al., 2015).Thus, it is evident in the literature that media reports firm’s value generating operating, investing and financing information to the stakeholders of the firm (Schrand and Verrecchia, 2005) and managers prefer to report a better earnings picture in the media. But there is no clear understanding about the influence of media appearance on the earnings management strategy of firms.

 Earnings predict that to what extent a firm engages in value adding activities. Because of a direct relationship between a firm’s value and future earnings, the stakeholders of the firm always want to know the actual earnings of the firm and make sure that the firm follows a fair practice of reporting of earnings (Dechow and Skinner 2000; Gore et al. 2007). Management and executives of a firm also need to be assured that earnings of the firm is not deviated from forecasted figure and if so then it should be managed appropriately for the firm’s financial benefits which in turn helps them to maintain their own perks and compensations. Previous studies show that in some situations firms engage either in real earning management (Gunny, 2005; Roychowdhury, 2006; Zang, 2006) or in accrual-based earning management (Rangan, 1998; Teoh et al 1998; Shivkumar, 2000; DuCharme et al, 2004) or trade-off among these methods after considering the cost of each (Badertscher2011; Zhang, 2012). The real earnings management is expensive and largely affects the long-run performance of firms (Graham et al., 2005; Gunny, 2010). Moreover, compared to accrual method, real earnings management is not easily detectable by auditors (Cohen and Zarowin, 2010) and it hardly gets attention from the outside stakeholders of the firms. From the above-mentioned studies, it is clear that to get a complete understanding of earnings management we need to consider the two strategies of earnings management. But most of these studies consider an event or change in corporate governance policies which can affect the earnings reporting (e.g. Cohen et al., 2008). We know that managers use media to give credible signals to the stakeholders and establish them as good firm (firms do not manage earnings) against the bad firms (firms manage earnings) (Chahine et al., 2015).So, in this study we are motivated to test the impact of media appearance of firms on the types of earnings management behavior of firms.

 Existing literature finds evidence of weaknesses of exiting accounting policies and its impact on earnings management (Cohen et al., 2008). In addition, a number of studies focus on application of accounting policies by financially instable firms (e.g. Burgstahler and Dichev, 1997; Charitou et al. 2007a; Charitou et al. 2007b; Charitou et al.,2011; Elliott and Shaw,1984; Lillien et al., 1988). But these studies fail to capture the earnings management during financial crisis. The recent financial crisis raises many questions on the earnings manipulation behavior of these poorly performed firms over years and point out a number of flaws in the existing policies. There exists doubts about the financial performance of well performed firms during the crisis. To clarify some of these doubts we need to identify the major factors that affect the firms’ earnings reporting during the crisis. The sign of the earnings news (good or bad news) determine the credibility of the managers’ earnings forecast (Hutton et al., 2003). Based on this reported earnings it is possible to distinguish the well performed firms from the others. But during the time of financial crisis when the economy declines, all firms usually struggle financially and their capital structure goes through severe changes. So, the financial crisis create a difficult situation to differentiate between the good (firms do not practice earnings management) and bad firms. Moreover, during the financial crisis the media attention towards business environment increases both for good and bad firms. We know that extensive media coverage of bad news increases the volatility of stock price, affects investors’ trading behavior (Barber and Odean 2007; Joe et al. 2009) and it increases the pressure on managers to manipulate earnings. On the other hand, non-negative media news or good news can also increase the market’s expectation. Such volatile stock price can also make the managers feel pressurize to manage earnings to maintain the reputation of the firm (Fombrun and Shanley, 1990). Thus, we believe that the change in media attention towards the good and bad firms during financial crisis affect managers’ choice of types of earnings management.

 The agency theory is widely used in the earnings management literature. But the under contextualized nature of the agency theory fails to explain different attitudes of principal and agents associated with the same risks. . The risk-neutral principals can diversify their risk (Wiseman and Gomez-Mejia 1998), whereas the risk-averse managers find it difficult to diversify their risk and are more concerned about their employment security as their income is tied with a single firm (Donaldson 1961; Williamson 1963). Especially, during the financial crisis the risk preference of the stakeholders of the firm is different. Moreover, the pressure created by media can also affect the managers to change the reference point (meeting or beating earnings target), which has a big impact on the choice of types of earnings management. Thus, to address the loss aversion concept of managers, we complement the agency theory by the prospect theory (Kahneman and Tversky, 1979). This theoretical model provides a better understanding of managers’ risk preference at a certain reference point (meeting or beating earning target) during the time of financial crises.

 To examine the relation between firms’ media appearance and earnings management strategies during the financial crisis we focus on 632 firms listed in the London Stock Exchange (LSE) for the year 2000 to 2015. The globalized nature of the firms in the UK expose them to the global financial crisis badly. The media frame the financial crisis as an international event and extensively report about the UK firms. We find that firms’ media attention and financial crisis (2008-2012) is significantly related to earnings management especially with real earnings management. The finding is consistent with the literature (Braam et al., 2015). The risk preference and loss avoidance features of the Prospect theory also support our findings. Media attention is associated with reputation cost so managers make a proper balance between risk preference (doing or not doing earnings management) and loss avoidance (personal and firm loss if not doing earnings management). In addition, we find that the firms in the AIM[[3]](#footnote-3) (Alternative Investment Market) have more media attention at the time of the financial crisis. There are 299 firms in the AIM in our sample and 160 FTSE 350 firms (The Financial Times Stock Exchange) and both do more real earnings management during financial crisis compared to stable economic condition. This finding from subsample is consistent with ‘impediments-to-trade’ (Fang and Peress, 2009) and ‘investor recognition’ (Merton, 1987) hypothesis. During financial crisis the profit driven traders are interested to eliminate the mispricing in the market. So, media attention for the FTSE 350 firms and AIMs firms create pressure on the managers to meet or beat the earnings expectation. During financial crisis investors always look for alternative market with growth potential and in our sample the AIM registered firms give immense opportunity for growth and grab more media attention as an alternative investment source. More media coverage means more investor recognition (Fang and Peress, 2009). Thus, the managers of the AIM firms are under pressure to compensate the investors for their less diversified stock even during the crisis. So, the total earnings management during the financial crisis is statistically significant in our study. Higher earnings management is attributed by real earnings management, which can be theoretically, explain by the Prospect theory along with the Agency theory.

The rationale for this study is three-fold. Firstly, we highlight one of the main reasons that drives managers to manipulate earnings. A number of accounting scandals bring about more attention towards the earnings management practices of mangers. However, the findings of existing studies are inconclusive as there is a lack of general understanding on the factors, which encourage managers to manupulate earnings. It has been widely claimed that firms’ characteristics like return on asset (ROA), firm size, and leverage have significant impact on earning management (e.g. Cohen and Zarowin, 2010). But our study highlights the impact of media appearance of firms on earnings management. Secondly, prior studies (e.g. Chahine et al. 2015; Qi et al, 2014) establish a relationship between the media appearance and earning management but these studies do not consider the time of financial crisis. However in literature, we find evidence of media coverage and the ‘quality’ of accounting information (e.g. Chaney et al., 2011). When media highlight a poor performance of any firm, the mangers are threatened of their personal benefits (Faccio, 2010). In such situation, managers switch between accrual and real earnings management strategies either to hide their wrongdoing or to report a better performance (Braam et al., 2015). These studies motivate us to assume that the media play a very influential role on firms earning management, particularly during the financial crisis as excessive pressure from media might change firms earning management behavior. Thirdly, the composite theoretical model, based on the agency theory and the prospect theory, helps explaining the risk preference and loss avoidance of the managers and in turn explains their intention behind the use of accrual and real earnings management. The theoretical model is useful in establishing the above-mentioned relationship to find impacts of media coverage on earnings management behavior of managers during the financial crisis.

 The findings from this study, thus, not only enrich the academic literature of earnings management during financial crisis but also beneficial to investors as well as the regularity authorities dealing with the corporate governance in general and mitigation of earnings management in particular for decades.

 The rest of the paper is organized as follows. Section 2 reviews the relevant existing literature. The theoretical model and the hypotheses development are discussed in Section 3. Section 4 explains the methodology and Section 5 empirical findings of this study. Section 6, concludes with scope for future research.

# **2 Related literature**

There is no universally accepted definition of earnings management (refer, Schippers, 1989, 92; Healy and Wahlen, 1999) because managers follow several strategies to do earnings management to meet or beat their earnings target. In the UK, firms mainly shift the core expenses to nonrecurring items (Athanasakou et al 2009; Degeorge et al., 1999) or shift the income between periods through timing of reported or actual events and restructuring (Bens and Johnston, 2009). The other commonly used earnings management methods available to managers are to accelerate sales alteration in shipment schedules and delay in research and development (R&D) and maintenance expenditures. There are a number of motives for managers to engage in earnings management, but the ultimate reason is to improve the financial performance of the firm. Prior literature finds few other motives which include stock market incentives, signaling, concealing information, political cost, debt covenant constraints, compensation plan provisions, the need to issue equity capital, insider trading, managers own salary and bonus (see e.g. Watts and Zimmerman, 1986; Jones 1991; Woody 1997; Louis 2004; Burgstahler and Eames, 1998; Roman, 2009 etc.). When firms cannot meet or beat their analysts’ forecasts, in normal business practice they experience negative stock return, which badly affects mangers compensation (Matsunaga and Park 2001). Moreover, better firm reputation also create pressure on the manager to achieve firm’s earnings target (Fombrun and Shanley, 1990). In such situations, managers try to look for some alternative ways for meeting their earning targets, one of which is earnings management. But in doing so, they face constraints such as price rise of raw materials, pressure from the competing firms, decrease in sales, loss of money and downward trend in the industry to mention few, which brings them in the attention of media. Managers are motivated to overcome these bad situations for the sake of their own benefits, for instance salary increase and compensation contracts and also to maintain the reputation of the firm. They manipulate the earnings downwards or upwards (for details refer to Healy, 1985; Holthausen et al.1995). The consequence of the earnings management is that a firm’s financial report may not accurately communicate its underlying economic position. This is due to deliberate choice by manager’s financial reporting methods, estimations, and disclosures (Healy & Wahlen, 1999). However, managerial decisions to engage in earnings management are normally based on opportunistic reactions in response to incentives created by specific economic and financial conditions (e.g., economic downturn, or an unexpected fall in earnings/unexpected loss) (Bernard and Skinner, 1996). But the opportunistic reaction of managers in response to media appearance during financial crisis is required further investigation.

 The accrual earnings management is the most popular method followed by the managers under adverse situations (Chaney et al., 1998; Luez et al, 2003; Cohen et al., 2008). It provides the flexibility within the accounting rules to report earnings (Matsumoto 2002, Phillips et al. 2003, and Krull 2004; Cohen et al. 2008; Braam et al. 2015). The less expensive (compared to real earnings management) accrual method is extensively used to beat analysts' forecasts (Moehrle, 2002; Kaznik and McNichols, 2002; and Bartov, 2002). The popular accrual models are also known as stationary discretionary accrual model (e.g. Healy model, 1985), DeAngelo model, (1986), Industry model (Dechow and Sloan, 1991); or the Components model (Thomas & Zhang, 2000). However accrual earnings management has higher chance to be detected than real earnings management (Cohen et al, 2010). For this reason the existing studies show that managers prefer real methods over accrual to manipulate earnings (Bruns and Marchant 1990; Graham et al. 2005; Gunny 2010; Roychowdhury 2006; Zang 2006; Braam et al. 2015). The choice of real over accrual earnings management is mainly because of its less detectability and its timing feature (Zang, 2006; Fudenberg and Tirole, 1995). Thus, at the cost of long term performance managers opt for various methods of real earnings management[[4]](#footnote-4) (Gunny, 2010; Bartov,Givoly, and Hayn 2002; Burgstahler and Dichev 1997). Managers also prefer to use these two methods simultaneously, especially when there is an impact of change in the governance policy on the economy (Cohen et al., 2008; Cohen and Zarowin, 2010). As we find evidence of impact of media on accounting quality and selection of types of earnings management (Chaney et al., 2011; Braam et al., 2015). In literature we also find contradictory findings related to media attention and earnings management (Qi et al., 2014) We believe that media attention during the crisis is different for various types of firms and so managers follow different types of earnings management strategy.

Government and investors are always concerned about the financial performance of firms during financial crisis and still try to find out the reason responsible for declining financial performance of firms and its impact on financial losses to its investors, public and creditors. Financial distress or crisis can also involve firms in manipulation of earnings, which may be against the interest of their stakeholders. Also, financial distress can be costly for a firm if its weak financial condition brings about aggressive response from its competitors and therefore results loss in market share (Opler and Titamn 1994). So, investors, analysts, and board members of a firm are particularly interested in financial reports and earnings figures which provide critical information when investment decisions are made (Degeorge et al., 1999). Performance indicators such as dividend, cash flows and capital investments can be used for manipulating earnings as they contain firm’s financial performance information in more details.

 During the financial crisis, volatility of stock price can affect investors’ trading behavior (Chan 2003; Vega 2006) which put an additional pressure on the managers to perform well. Firms may lose the equity investment opportunity and may also struggle to pay back loans borrowed from banks or other financial institutions. Less debt portion leads to less expansion and low growth. Therefore, the capital structure of a firm undergoes a severe change within that time period. Thus, to mitigate the adverse financial situation, managers try to manipulate earnings to maintain their annual bonus and reputation (Liberty and Zimmerman 1986; Gilson 1989). Evidence suggests that during an economic boom managers are more likely to manipulate earnings than recession (Strobl 2008), but others studies indicate that during a crisis period managers actually deploy more income-decreasing earnings management techniques (Saleh and Ahmed 2005; Ahmed et al. 2008). A survey carried out recently in Europe, Asia and North America reveals that CFOs (Chief Financial Officers) cut back investments during financial crisis to avoid business risks (Campello et al. 2010). We also find evidence of either income increasing (Rosner, 2003) or decreasing (DeAngelo et al., 1994) earnings management in financially instable firms (Burgstahler and Dichev,1997; Charitou et al.,2007a; Charitou et al.,2007b; Charitou et al.,2011; Elliott and Shaw, 1984; and Lillien et al.,1988). During the financial crisis, all the firms in the economy are affected to some extent and the existing inconclusive findings fails to capture the preference on types of earnings management strategies by managers.

 During 1970s and 80s a number of studies related to the UK finds that accounting choice of firms depend on managers' incentives to choose beneficial ways of reporting earnings (Holthausen and Leftwich, 1983; Watts and Zimmerman, 1986). Since the middle of 1980s accrual earnings management remains a vital practice in the UK. However, a change was observed with the regulatory changes in the early 1990s. The introduction of Financial Reporting Standard (FRS3) and other standards issued by the Accounting Standards Board (ASB) induced a general shift among the UK based firms towards increased transparency and at the same time strict governance, restrained managerial attempts to manipulate earnings. Because of the tougher measures introduced, it is now even criticized that whether the UK firms still use income-increasing abnormal working capital accruals to achieve earnings targets in the post-FRS3 period (Peasnell et al., 2000). Vasiliki et al. (2006) argue that the UK firms are more likely to engage in earnings forecast guidance. However, there exists no association between income increasing abnormal working capital accruals and probability of meeting analyst forecast. Interestingly, Bens and Johnston (2009) establish an association between restructuring charges and earnings management while an investigation carried out by Somnath et al. (2009) discover that for a random sample, it is more likely to find a reversal of earnings change in the fourth quarter that is expected otherwise. On the other hand, Iatridis and Kadorinis (2009) find that the UK based firms with earnings reversals are more likely to manipulate earnings and also firms with low profitability and high leverage measures are more prone to earnings management. These changes in the earnings management behavior in the UK, especially during the financial crisis provide us a suitable platform to test our research question.

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 In recent times, the impact of media, both conventional and electronic has become a global phenomenon. It collects, selects, rectify and repackage necessary information to the stakeholders of the firms (Dyck et al., 2008). Media news allows investors to reduce the information collection cost and also affects the investor sentiment (Barber and Odean, 2008). Because of this immense importance of media appearance, managers are interested to manage the reporting of firm news in media in major events (Ahern and Sosyura, 2014). Good and bad earnings forecast are done in different ways for different reasons and it affects the stock price differently (Hutton et al., 2003). These earnings forecast are available on media and the users of these information try to use them to identify the good and bad firms before taking any financial decision (Chahine et al., 2015). But during the financial crisis when almost all the firms are affected by economic downtown it is very hard to distinguish between good and bad firms. Increased media attention about poor performance during crisis can increase the stock volatility which can in turn pressurize the firms’ manager to manage earnings. Less media attention during crisis give an impression of better financial performance by the firms even at crisis time and which also increase the market expectation from this firm (Humberman and Regev 2001; Chan 2003). This can generate excessive pressure on managers to maintain the reputation of the firm and they rely on earnings management. But media also acts as an external monitor (Dyck and Zingales, 2002) which always create an additional pressure on the managers when they do earnings management. Managers want to avoid any future loss when they take the risk of doing earnings management. The reference point (meeting or beating earnings target) assist the managers to determine the risk preference and also identify the associated loss to avoid. Both of these decisions of the managers are strongly influenced by the expectation and sentiment generated by the media coverage. Here comes the question of using the type of earnings management (accrual or real). Thus, we bridge the gap in the literature and establish the link between media attention and types of earnings management during the financial crisis in the UK.

# **3 Theoretical framework and hypotheses development**

Earnings management has been attributed to a number of different factors and managers undertake it under several different situations. One of the reasons for earnings management is the principal (shareholders) and agent (management) conflict, which is explained by the agency theory in the prior literature. The theory explains that the shareholders and firms’ managers have different goals and their attitude towards managing risk is also different. The principals are risk-neutral and so they manage to diversify their risks (Wiseman et al. 1998). As managers’ income is tied up with one firm, their perception of risk is different than the principal (Willaimson 1963). Most of the time it is impossible and very expensive for the principal to verify the actual behavior of managers. The managers have more access to their firms’ operating information as they control the day-to-day financial operations. So, it gives managers the opportunity to manipulate earnings for their own benefits and in this way they conceal the true financial information from shareholders. The earnings management also allows the mangers to maintain their reputation in the financial market by constantly meeting or beating earnings targets. But the risks associated with meeting or beating earnings target vary depending upon the managers preference for the reference points. Graham et al., (2005) suggest that managers feel less (or high) pressure when they have to meet (or beat) earnings target. The loss avoidance choice also varies depending on the extent of better and positive earnings signals that managers can reveal to the market. So, the reference point (meeting or beating earnings target) affects the manager’s selection of the types of earnings management, which allow them to control the risk aversion and loss avoidance according to the need of the situation. For example, when firms are exposed to media for their bad performance during the financial crisis, mangers may want to just meet their earnings target, to avoid high risk of losing job in future. But they may also want to beat the earnings target to avoid the cut in their future compensation pack, for instance. So, the managers’ earnings management decision are driven by the intensity of loss avoidance. In many cases, managers may not prefer to wait till the end of financial year to do earnings management mainly by accrual methods (Cohen and Zarowin 2010) as it allows them to avoid their expected risks to some extent. They may choose a regular and continuous year-wide real earnings management for risk aversion and loss avoidance. This strategy is also hard to be detected by auditors (Cohen and Zarowin 2010). Because of the under contextualized nature of agency theory, it is difficult to explain the varying risk taking attitudes of managers and shareholders and the distinct risk preference of managers. In addition, the agency theory highlights the normative view of choice behavior of managers and it ignores the motivation behind the problem framing (Kahneman and Tversky,1979). So, from a behavioral point of view, we bring in the prospect theory (developed by Kahneman and Tversky, 1979) to explain the reason for earnings management by managers under media attention. Prospect theory is used by a number of studies including Wasiuzzaman et al. (2015) in the context of earnings management.

 The prospect theory states that people often take decisions based on perceived gains rather than perceived losses without considering the final or ultimate outcome (Kahneman and Tversky, 1979). In other words, gain in short time is seen as more preferable than the predicted final outcome in the long run. Therefore, in order to satisfy their stakeholders whose preferences are consistent with the prospect theory, managers often try to report earnings that meet or exceed the earnings targets to attain more rewards. Although the prospect theory explains the choice of manipulation of earnings management under uncertainty, it allows the auditors in detecting the earnings management in a competitive environment because it takes the problem framing into consideration (Burton, 2011). As media attention creates a pressure on managers, they complement or supplement two types of earnings management for a better combination of loss aversion and loss avoidance at different reference point. So by complementing the risk aversion feature of agency theory with the loss aversion feature of prospect theory, we provide a robust theoretical framework to explain the earnings management behavior of managers when they have a possibility to be exposed to media.

Firms have always relied on media to exhibit their financial performance to the broader audience (prospective investors) and shareholders. Investors and shareholders do not have access to inside information and often rely on the published information in media. Chaney and Faccio (2011) document in one of their studies related to politically connected firms that media have incremental scrutiny beyond country, regularity and firm specific ownership characteristics. Baarm et al. (2015) show that how the media attention of the politically connected firms pressurizes their managers to choose the type of earnings management. Media often highlight two types of earnings news, good news and bad news. Good news are almost always associated with increased stock price, employees’ better performance, increased bonuses etc. But as the traders try to exploit the mispricing it generate more pressure on the managers to keep on maintaining high returns in future to avoid any personal loss. On the other hand, negative earnings news are mostly associated with the uncertainty of firms’ operation, motivating managers to delay the disclosure of bad news (Li 2006; 2008; Bloomﬁeld 2008; Brown et al. 2009; Ertimur et al. 2011). Graham et al. (2005) also document similar results from his survey, which proves that top-level executives acknowledge that they prefer to delay bad-news disclosures. Despite the negative news appearance in the media, if a firm still performs well and yields high earnings at the end of stipulated period, media often speculate the firm’s success and raise question about its profitable business. Therefore, managers are under pressure to give proper explanation to these questions raised and circulated. Moreover, managers prefer to pay extra premium for their non-diversified stock to attract more investors which force them to generate more short term earnings and in this way they can avoid the job loss. In such situation managers decide the reference point (to meet or beat earnings target) and accordingly take a decision about the extent of loss avoidance and risk aversion activities they prefer to take. Without attracting further media attention, managers do earnings management to achieve their reference point. To summarize, media play a very important role for firms when it comes to earnings management. Based on the above discussion, our first hypothesis is as follows:

#### Hypothesis 1: All else equal, firms which appear more in media do more earnings management

As media coverage affects the volatility in the stock market and also the trading behavior (Barber and Odean 2007; Joe et al. 2009), so, any sensitive news in media during crisis can generate immense pressure on the mangers. A negative financial review in media can greatly damage the reputation of a firm and result in irreversible damage (Dyck et al., 2008). A positive earnings news during the time of financial crisis demonstrate excellent performance by the firm and is highly related with the reputation of the managers and the firm. Such strong reputation bring in new challenge for the managers to maintain the earnings even at the time of financial crisis and keep on meeting the expectation of the stakeholders of the firm. Managers prefer to frame the problem either negatively (meeting earnings target) or positively (beating earnings target) and accordingly develop the matrix of risk preference and loss avoidance to address the problem. This problem framing is consistent with the prospect theory. Firms, which appear frequently in media, are particularly prone to media even during a financial crisis period. By earnings management, managers response to the market sentiment created by media especially during crisis. An increase in earnings management can slow, delay or soften large write-offs on assets or write-ups on liabilities for a balance sheet and can also minimize the impact on income statements in short run. Such activities could also affect the liquidity position of the firms during crisis which in other way would affect the earnings and reputation of the firm and the manager. Therefore, we predict the following:

#### Hypothesis 2: All else equal, firms, which appear more in media during a financial crisis, do more earnings management.

Prior studies document that in well-developed capital markets, media play the role of external monitor (see Miller 2006; Dyck et al. 2008; Joe et al. 2009). By distributing information from intermediaries and undertaking the original investigation, media carry out the role of a watchdog against accounting fraud (Miller, 2006). Joe et al. (2009) argue that media exposure forces target agents to take corrective actions and increases shareholders wealth. Thus, media can create excessive pressure on managers, which force them to think how to deal with loss avoidance and risk aversion at various reference points and in most of the time they resort to manage earnings (Braam et al. 2015). Instead of relying completely on the year-end accrual earnings management, managers prefer to complement it with real earnings management for meeting or beating (reference points) the earnings target. In accrual earnings management, the chance of being detected is quite high (Cohen and Zarowin 2010) which is also associated with high risk of future job security (Zhang 2006). During the financial crisis, most managers are concerned about the short-term performance of the firms at the cost of long-term performance to maintain their personal benefits. In most situations, managers swap between accrual and real to securely avoid the risks and minimize the associated loss (Zhang, 2012). So, we assume that at the time of financial turmoil managers prefer to do real earnings management as it help them to get a short-term gain and avoid the risk of being detected of their wrong doings, mainly when they are highly exposed to the media. Based on the above discussion, our next hypothesis is as follows:

#### Hypothesis 3: All else equal, firms, which appear more in media do more real earnings management than accrual-based earnings management during a financial crisis.

# **4 Methodology**

## 4.1 Sample Selection

We collect all the active listed firms on the London Stock Exchange from Datastream. We exclude the firms that belong to banking and financial industry because their financial valuation ratios are not comparable with those of non-financial firms. In addition after calculating all the measures of earnings management, we find many firms have missing information of earnings management variables. So, the sample size reduce to 771 firms after deleting financial and other firms without earnings management measures.. Our study focuses on financial crisis period, which starts from 2008. To capture the impact of the financial crisis we need to have firms incorporated at least 3 years before the financial crisis and so we drop firms with an incorporation date sometime on or after 2005. The final sample consists of 632 firms for the year 2000 to 2015.

*Media News*

For each of these 632 firms we manually search the media information (news articles that documents news about the firm) from Dow Jones Factiva database, which includes news release that reveal firms good and bad news. We recorded number of articles with the sample firm in their headlines. The full text news content in Factiva is collected from The Wall Street Journal, The New York Times, Business Wire and Public Relation Newswire, Magazines, Blogs, Podcasts, and Websites, Other Sources, Reports around the world. So, we manage to capture all media appearance of all the firms in our sample. In addition, we also manually extract the number of articles where negative sentiment regarding the earnings is published about the sample firms

## 4.2 Earning management measures and Variable description

4.2.1 Accrual Measures

The literature related to earnings management uses accrual measures as a proxy of earnings management. For example, Healy (1985) and DeAngelo (1986) use total accruals and the change in total accruals respectively. However, a sophisticated approach is use by Jones (1991) to estimate accruals, which decompose total accruals into non-discretionary accruals (or NDAs) and the discretionary accruals (or DACs).

To measure the normal level of accrual-based earnings management, we use the cross sectional model of discretionary accruals as described by Dechow et al. (1995). The equation is estimated as follows:

$\frac{TA\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\frac{∆SALES\_{i,t}}{Assets\_{i,t-1}}+Κ\_{3 }\frac{PPE\_{i,t}}{Assets\_{i,t-1}}+ε\_{i,t}……(1)$

where,

$TA\_{i,t}=EBXI-CFO$

where,

 EBXI is the earnings before extraordinary items and discontinued operations

CFO is the operating cash ﬂows (from continuing operations) taken from the statement of cash ﬂows

$ Assets\_{i,t-1}$ is the total assets,

 $∆Sales\_{i,t} $is the change in sales from the previous year,

 $PPE\_{it}$ is the gross value of property, plant and equipment.

To estimate ﬁrm-speciﬁc normal accruals (NA it ) the coefﬁcient estimates are used

$$NA\_{i,t}= \hat{Κ\_{1 }} \frac{1}{Assets\_{i,t-1}}+\hat{Κ\_{2 }}\frac{(∆SALES\_{i,t-}∆AR\_{i,t})}{Assets\_{i,t-1}}+\hat{Κ\_{3 }}\frac{PPE\_{it}}{Assets\_{i,t-1}}……..(2)$$

where,

 $∆AR\_{i,t}$ is the change in accounts receivable from the preceding year.

In computation of normal accrual we have adjusted the reporting of revenue from accounting discretion arising from credit sales. DA (discretionary accruals), is the difference between total accruals and the ﬁtted normal accruals. The equation that estimates DA is as follows:

$$DA\_{i,t}=\frac{TA\_{i,t}}{Assets\_{i,t-1}}-NA\_{i,t}………(3)$$

Following the equation in the first stage estimation, the second alternative measures of discretionary accruals is

$$\frac{TA\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\frac{(∆SALES\_{i,t-}∆AR\_{i,t})}{Assets\_{i,t-1}}+Κ\_{3 }\frac{PPE\_{i,t}}{Assets\_{i,t-1}}+ε\_{i,t}…….(4)$$

To calculate the level of normal accruals$ NA\_{i,t}$, we use the coefﬁcient obtained from Equation (3). Finally, we compute the absolute value of these two discretionary accruals to proxy the accrual-based earnings management and refer them as *ACC \_1*, *ACC\_2*.

## 4.2.2 Real Earnings Management Measures

Based on the literature of real earnings management (Dechow et al., 1998; Gunny, 2005; Roychowdhury, 2006; Zang, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010), we develop the proxies for the normal level of activities. Following Roychowdhury (2006), the first proxy for real earning management is the abnormal levels of cash ﬂow from operations (CFO). Firms’ managers temporarily offer sales discount, give credits to increase the sales volume. This type of act signals more real earnings management. As a linear function of sales and the change in sales, we measure the normal cash flow from operation (CFO). The cross-sectional regression model is as follows:

$\frac{CFO\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\frac{SALES\_{i,t}}{Assets\_{i,t-1}}+Κ\_{3 }\frac{∆SALES\_{i,t}}{Assets\_{i,t-1}}+ε\_{i,t}………(5)$

The abnormal cash flow from operation is the difference between actual cash flow and normal level of cash flow in which the predicted value can be obtained from Equation (5). The abnormal cash flow from operation is defined as REM\_1.

The second proxy for real earning management reports lower cost of goods sold through increased production. By increasing the production unit more than necessary, managers can spread the fixed cost over the large number of units, thus lowering the fixed cost per unit. Thus, the total cost per unit declines unless the reduction in fixed cost per unit is not offset by any increase in marginal cost per unit. This decline of cost of goods sold however can report higher operating margins. At a given level of sales, reduction in the cash flow from operation leading to higher unnecessary production increases the annual production cost relative to sales. We consider the production cost asthe sum of cost of goods sold (*COGS*) and change in inventory. The following linear function of sales represents COGS

$\frac{COGS\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\frac{SALES\_{i,t}}{Assets\_{i,t-1}}+ε\_{i,t}………(6)$

In the next equation, we find the inventory growth, which is a linear function of the lagged change in sales.

$\frac{∆INV\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\frac{∆SALES\_{i,t}}{Assets\_{i,t-1}}+Κ\_{3 }\frac{∆SALES\_{i,t-1}}{Assets\_{i,t-1}}+ε\_{i,t}………(7)$

where $ ∆$*INV* is the change in inventory and rest of the terms has been explained earlier.

Normal level of production cost is estimated from Equations (6) and (7) as follows:

$\frac{PROD\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\frac{SALES\_{i,t}}{Assets\_{i,t-1}}+Κ\_{3 }\frac{∆SALES\_{i,t}}{Assets\_{i,t-1}}+Κ\_{4 }\frac{∆SALES\_{i,t-1}}{Assets\_{i,t-1}}+ε\_{i,t}…..(8)$

The abnormal production costis the difference between actual production costs over normal level of production cost, which is estimated from Equation (9). We define REM\_2 to represent the abnormal production cost. The higher or positive value of *REM\_2* indicates more real earnings management. Higher value of production cost indicates overproduction that reduces COGS.

The last proxy for real earnings management is through reducing abnormal discretionary expenses (DISX). Discretionary expenses include advertising expenses, research and development expenses (R&D) and SG&A expenses. Reduction of such discretionary expenses (DISX) increases current period earnings leading to higher current period cash flows. The following equation represents the normal level of discretionary expenses.

$$\frac{DISX\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+Κ\_{2 }\_{ }\frac{SALES\_{i,t}}{Assets\_{i,t-1}}+ε\_{i,t}……(9)$$

If the sales numbers are increased significantly in the current year, the above model would provide much lower residuals. The following model is used to measure the normal level of discretionary expenses as a function of lagged sales.

$$\frac{DISX\_{i,t}}{Assets\_{i,t-1}}=Κ\_{1 }\frac{1}{Assets\_{i,t-1}}+ Κ\_{2 }\frac{SALES\_{i,t-1}}{Assets\_{i,t-1}}+ε\_{i,t}……. (10)$$

The abnormal discretionary expenses are the difference between actual discretionary cost and normal level of discretionary cost, which is obtained from Equation (10) and we define the variable as REM\_3 to represent the abnormal discretionary expenses. The lower or negative value of *REM\_3* indicates firms are engaging more in real earnings management.

The managers can use one or the combination of real earnings management proxies. For a comprehensive measure of real earnings management, we combine the three real earnings management variables and develop two single variables *REM\_PROXY1* and *REM\_PROXY2*. Following literature (Cohen and Zarowin, 2010; Zang, 2012) *REM\_PROXY1* is defined as [(-) 1 *REM\_3* +*REM\_2*] and *REM\_PROXY2* is defined as [(-) 1REM\_3+ (-) 1REM\_1]. The higher value of *REM\_PROXY1* or *REM\_PROXY2* indicates more real earnings management. We report the results corresponding to *REM\_PROXY1* and *REM\_PROXY2* as well as *REM\_1*, *REM\_2* and *REM\_ 3* as the individual variables. However, in the robustness test we use AEM Dummy and REM dummy. Here, AEM dummy is equal to one if a firm's accrual-based earnings management measure, i.e., DA1 or DA2 is above industry-year median, and zero otherwise (Cohen & Zarowin, 2010). REM dummy is an aggregated dummy variable of real earnings management that is equal to one if one of the individual real earnings management measures is above the industry-year median, and 0 otherwise (Cohen & Zarowin, 2010).

##

## 4.2.3 Independent and other key control variables

To test the impact of media the independent variable is Log of Media. We count the number of articles of each firms for each of the year to define the variable. The other independent variable is crisis. Crisis is 1 during the year 2008-2012 and 0 otherwise. The interaction variable Log (Media)\* Crisis is the main independent variable to test the impact of media appearance during crisis on earnings management.

Firm’s characteristics play an important role in earnings management. In all the equations, to control for the firm’s relative size we include industry-adjusted log value of total assets (Asset). There is a less chance of being default by large firms and they can increase their future cash flows and enjoy lower yield and debt. Firm size can have positive association with earnings management because the larger firms have more pressure to meet or beat the expectation (Barton and Simko 2002). For more sophisticated internal control systems, audited by high quality auditors, and high risk of being detected for manipulating accounting information, size may have negative association with earning management. Leverage is calculated as total debt divided by total assets. It is expected to be positively related to earnings management measures because managers manipulate earnings before applying for the debt. Prior literature establishes that high leveraged firms have paid most of the higher spread. Tangibility is calculated by dividing PP&E by total asset. ROA is the return on assets. It informs investors or other outsiders that how firm is using its asset for generating profit. Higher ROA is better for the firms as they earn more money with less investment. To maintain a steady ROA managers can do earnings management in time of crisis. The variable SHARES can be defined as the natural logarithm of the number of shares outstanding (Barton and Simko 2002; Zang 2006). In order to achieve the required per share earnings target, a firm requires to engage in more earnings management activity. This higher target can either encourage firms to increase their earnings management activities (Zang, 2006) or discourage any earnings management practice altogether because higher target is considerably more difficult to achieve (Barton and Simko, 2002). We also control for the book-to-market ratio denoted as M\_B. This variable give an indication of firm’s position in the market. Reputation is an important economic asset which generate future rent for the firm, especially when there exist asymmetric information among the actors of the firm (Hsu, 2004). So, we control for reputation and the variable is the difference between the incorporation date (establish date) and the base date (the date the firm is listed on London Stock Exchange). We also control for industry and year effect.

## 4.3 Empirical model

The following model is used to empirically test our research question:

$$Earnings Management\_{it}=β\_{0}+β\_{1}Log(Media)\_{i(t-1)}+β\_{2}X\_{it}^{'}+δ\_{t}+γ\_{i}+ε\_{it}………….. (1)$$

where, the main dependent variables are earnings management measures (as described before). We use one year lagged value of the media variable to control any endogeneity effect of the variable. X is vector of control variables. $δ\_{t}$ and $γ\_{i}$ are the year and firm specific fixed effects.

$β\_{1}$ provides us the information about the effect of media on earnings management during financial crisis. To control for the variations in proﬁtability, earning target, growth, capital structure, information asymmetry, size and reputation, we have included ROA, Shares, M\_B, Leverage, Tangibility, and Reputation respectively in the model. Note that it is impossible to capture the impact of all the variables that can have an impact on earnings management in one study. But following the literature (e.g. Healy and Wahlen, 1999; Fields et al., 2001) we have considered most the variables in our model.

# **5 Empirical Findings**

5.1 Descriptive Statistics

Figure 1 reports the media exposure of the UK firms during the period of 2000-2015. Compared with FTSE 250 and AIM market FTSE 100 firms and the firms in the Main market get more media attention throughout the period. In addition, in this figure we find that the media attention is higher during the time of financial crisis (2008-2012) against the other years in the sample for all firms in the sample.

Insert Figures 1 and 2 about here

Figure 2 reports the trend of negative sentiment in media. By negative sentiment we mean negative news about the firm reported in media. We count the negative word in all the text document reported in Factiva. In continuation of the first figure we find that media report more negative news during the financial crisis and they were more for firms in Main market and for firms in FTSE 100 compared with others in the sample. This could be another reason for the media attention towards the AIM’s firms during crisis. Less negative news were reported in media about firms in AIM.

Insert Table 1 about here

Table 1 reports the percentage of media attention in different industry included in our sample. Though consumer services is getting highest media attention but the negative sentiment is highest in the oil and gas industry and is also quite considerable in the health care industry.

Insert Table 2 about here

In Table 2 we report the detail descriptive statistics for the full sample and also for the subsample in AIM and FTSE350. The mean, median and standard deviation of the final sample is 4.69, 4.37 and 1.74 respectively. The statistics are quite higher for FTSE350 when compared with AIM firms. Table 3 describe the correlation among all the variables used in this study. We find that the accrual earnings management and the real earnings management measures are negatively and significantly correlated with each other. This indicate that the managers are using any of the accrual or real measures to do earnings management. The findings are consistent with the literature (Braam et al., 2015). We have also checked the multicollinearity of all the variables and found that VIF is around 5 and no variable has VIF more than 10. So, the variables in our data do not suffer from multicollinearity.

Insert Table 3 about here

5.2 Multivariate Analyses

Table 4 test the validity of our first hypothesis which examine the impact of media appearance on total earnings management behavior of the sample firms. We have used Equation (1) without crisis and the interaction variable of media and crisis. From the Pooled OLS with firm fixed effect, we find that the total earnings management (Total EM) is positively and significantly ($β\_{1}$=0.0372, at 5% significance level) related to media appearance (proxy by Log of Media). In addition, the negative coefficient of the two accrual measures give an indication that the firms prefer to do less accrual earnings management when the media attention is extensive.

Insert Table 4 about here

As discussed before, the correlation table shows that managers choose to use any types of earnings management whenever they need to do so to meet or beat their target. So, very often it is really hard to identify the type of earnings management preferred by the managers. We try to capture this in Table 5 and use the Equation 2 to estimate the model.

$$Earnings Management\_{it}=β\_{0}+β\_{1}Log(Media)\_{i(t-1)}+β\_{2}Crisis\_{it}+β\_{3}X\_{it}^{'}+δ\_{t}+γ\_{i}+ε\_{it}……………….. (2)$$

Insert Table 5 about here

We can observe that the total earnings management is positive and significant ($β\_{1}$=0.0264 at 5% significance level) at the time of crisis but we cannot identify the preference of the type of earnings management from this table. It seems from the Table 5 that during the financial crisis, managers are doing both accrual-based (Dependent variable DA1 and DA2) and real (Dependent variable RM1 and RM2) earnings management. As positive coefficient of RM1 (or RM3) means less real earnings management and negative RM2 means more real earnings, the results contradict our Hypothesis 2 based on theory. But as the total earnings management is increasing, it is not clear from the table whether managers are doing more real than accrual-based earnings management or vice-versa.

We suspect that when we include the crisis variable in the model (Equation 1), the model suffers from endogeneity due to the reverse causality of Media variable. Thus, we use advance econometric modelling to identify the preference of earnings management and the result is reported in Table 6. We run 2SLS regression model with firm fixed effect and use the negative sentiment as an instrument for Media variable in the first stage. The fitted value [ $\hat{Log(Media)}\_{it}] $from the first stage is then used in the second stage as an independent variable with other variables. The First stage F-state is 16.38 which provides evidence that the model does not suffer from weak instrumentation.. We have also included the interaction term between Media and Crisis as show in Equation 3.

$$Earnings Management\_{it}=β\_{0}+β\_{1}\hat{Log(Media)}\_{it}+β\_{2}Crisis\_{it}+β\_{3}(Media\*Crisis)\_{it}+β\_{4}X\_{it}^{'}+δ\_{t}+γ\_{i}+ε\_{it}……………….. (3)$$

Insert Table 6 about here

In addition to the other variables, we have also used real and accrual-based earnings management dummy (see variable definition in Appendix) as shown in Table 6.

From the estimates in Table 6, we see that RM2 is positive and statistically significance

($β\_{2}$=0.1327 and significance at 5% level) which is greater than the coefficient of DA1 ($β\_{2}$=0.5531 and significance at 10% level). This supports our Hypothesis 2. We can also see that during the financial crisis when the media attention increases mangers prefer not to do accrual earnings management which is indicated by the negative co-efficient of Media\*Crisis ($β\_{3}$=-0.0791 and -0.0813 respectively for DA1 and DA2, significance at 10% level) in Table 6. We argue that during crisis more media attention created a high chance of detection of wrong earnings reporting by the firms and it is also hard for the managers to wait till end of the financial year to do earnings management. So, the managers prefer to adjust the reference point (meet or beat earnings target) and accordingly work out a better risk preference and loss avoidance strategy and prefer real earnings management as indicated by the negative co-efficient of RM1 in Table 6 ($β\_{3}$=0.1266 and significance at 10% level)..This supports our Hypothesis 3.

As the endogeneity affects both dependent and independent variable due to reverse causality, the 2SLS estimator may suffer from weak instruments. Moreover, although news articles may publish on daily basis, we aggregate the number of media articles at the yearly level as our earnings management variables are calculated on yearly basis. In fact firms publish their financial reports at least quarterly, but not daily. So, we think that there is problem of simultaneity where both earnings management and media attention occurs in the same year (as we do not have information about the date of news publication and earnings management). In such situation problem, following Wintoki et al. (2012) we employ system GMM estimator that combines a regression in differences with one in level (Arellano and Bover 1995; Arellano and Bond 1995; Blundell and Bond 1998). For comparable results with our previous results, we use two-step system GMM.

In the first step, a first difference of the model is estimated to address the problem of time invariant unobserved heterogeneity. The equation in first difference form is;

$ΔEarnings Management\_{it}=β\_{0}+β\_{1}\hat{ΔLog(Media)}\_{i(t-k)}+β\_{2}ΔCrisis\_{it}+β\_{3}Δ(Media\*Crisis)\_{it}+β\_{4}ΔX\_{it}^{'}+ε\_{it}……………..….. (4)$, k >0

In the second step, we use a GMM framework in which the lagged values of the explanatory variables are used as instruments for the exogenous regressors.

Insert Table 7 about here

In Table 7, we report the findings from the two step dynamic system GMM estimation. Earnings Management variables, Media and Crisis are treated as endogenous, all other firm-level variables are treated as predetermined and treated as strictly exogenous in this model. Hansen J test is done for the exogeneity of the subset of instruments. The positive and significant co-efficient of Media\*Crisis (2.15%) with respect to total earnings management establish that during the financial crisis when media attention is more, overall the firms are doing more earnings management. The results from Table 6 and Table 7 support our second and third hypotheses explained before.

5.3 Robustness Test

In this section we analyze the data from a different perspective. Figure 1 and 2 show that during 2008-2012, the media attention was at its peak except AIM registered firms. In fact the media attention increases around 2010. From our previous discussion, we see that the financial crisis triggers the real earnings management in the presence of high media exposure of the UK firms. When we plot a contour graph (Figure 3) of All Media and Negative Media documents against Year in the 3rd Axis for the full sample (632 firms), we find that in general for all the firms the news with negative sentiment is very prominent and positively correlated with the overall media attention during 2008-2012. Previous studies identifies that industry peers suffer a negative shock when a target firm restates its accounting information (Gleason et al. 2008). So we want to look at our previous results (shown in Table 6) in details by considering industry in the construction of earnings management measures of our model.

Insert Figure 3 about here

Following the literature we generate accrual and real earnings management proxy (explained in the variable description section) and also accrual and real industry year dummy (Cohean and Zarowin, 2010; Braam et al., 2015). Positive value of real earnings proxy means higher real earnings management. In Table 8 we observe higher media attention leads to higher real earnings management as the coefficient of the media variable is positive and significant and is higher than the accrual measures. The crisis is also positive and significant and possess a higher value for real earnings management measures. The main independent variable Media\*Crisis is statistically significant for both accrual and real measures but the accrual measures are negative and real measures are positive. The findings from the Probit regression in Table 8 are consistent with our main findings stated in the previous section.

Insert Table 8 about here

In figure 1 we observe that all the listed firms in the UK market are under more media attention during the time of financial crisis compare with the other times. This is prominent in case of firms in FTSE250 and in AIM. So, we believe that higher media attention during financial crisis generate pressure on managers for all firms to maintain the reputation of the firm and to avoid the auditors, media and other watchdogs they prefer to do real earnings management during crisis. We find the evidence in Table 9.

Insert Table 9 about here

This table reports that firms in AIM and FTSE 350 prefer more real earnings management than accrual earnings management at the time of crisis. The findings are consistent with the findings related to the full sample.

# **6 Conclusion**

This study examine the influence of media appearance on the earnings management behavior of the managers. The study extend the existing study by critically discussing the above relation at the time of financial crisis. The findings from our study conclude that media appearance of firms has a significant impact on earnings management, particularly during the financial crisis. In this study, we consider a sample of 632 firms listed in the London Stock Exchange over a period of 2000-2015. Firms in the sample are spread over both in Main market and AIM. We also examine the preference of the type of earnings management for the overall sample and also for the firms in FTSE 350 and AIM. We find that managers of firms with more media attention are under more pressure to meet or beat the earnings target and so they do more earnings management. During the time of financial crisis the media attention increase substantially and that generate additional pressure on the managers to maintain reputation by achieving the financial target and so they do earnings management. But as media act as an external monitor and more media attention is associated with high chance of being caught by the auditor for any wrong doing, so, managers make a proper combination between risk preference and loss avoidance and do more real earnings management compared to accrual. FTSE 350 and AIM firms are more in media attention during crisis compared to other time. Thus, they do more real earnings management at the time of crisis. Our findings enrich the earnings management literature as it highlights the importance of media attention during crisis. The outcome of the study will assist the corporate governance policy makers to assess the depth of firms’ earnings management behavior. In future we plan to extend the study by incorporating media tone to a cross country set-up.

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**Figure 1**

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**Notes:**

**Figure 2**

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**Notes:**

**Figure 3**

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Notes: Contour plot of All media and Negative Media documents against Year in the 3rd Axis. Number of firms included is 632. In the X-axis “negative sentiment” means number of documents about the sample firm report negative words or statements (according to Dow Jones News Analyses, Factiva). The number of all media documents for sample firms is plotted on Y-axis. To accommodate all the observation we divided ‘All Media’ by 1000 and Negative Sentiment by 10.

**Table 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Industry | All Media | Percentage |   | Negative | Percentage |
| Basic Materials | 755820 | 14.41 |  | 1769 | 9.71 |
| Consumer Goods | 600929 | 11.46 |  | 1994 | 10.95 |
| Consumer Services | 1301398 | 24.81 |  | 2702 | 14.83 |
| Health Care | 368166 | 7.02 |  | 2611 | 14.34 |
| Industrials | 620860 | 11.84 |  | 2020 | 11.09 |
| Oil & Gas | 890673 | 16.98 |  | 5448 | 29.91 |
| Technology | 165514 | 3.16 |  | 61 | 0.33 |
| Telecommunications | 379156 | 7.23 |  | 1383 | 7.59 |
| Utilities | 162173 | 3.09 |   | 226 | 1.24 |

**Table 2: Descriptive Statistics**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | Full Sample (Number of firms=632) |   | AIM (Number of firms=299) |   | FTSE 350 (Number of firms=160) |  | Diff in means test |
|   | Mean | p50 | SD | Min | Max |   | Mean | p50 | SD | Min | Max |   | Mean | p50 | SD | Min | Max |   | Diff | t-stat |
| Log (Media) | 4.69 | 4.37 | 1.74 | 0.00 | 11.24 |   | 3.75 | 3.81 | 1.03 | 0.00 | 7.46 |  | 6.28 | 6.14 | 1.55 | 0.00 | 11.24 |  | -253 | (-80.35) |
| Negative | 18.11 | 4.00 | 53.04 | 1.00 | 702.00 |  | 2.43 | 1.00 | 2.59 | 1.00 | 14.00 |  | 19.67 | 4.00 | 55.38 | 1.00 | 702.00 |  | -17.24 | (-2.92) |
| DA1 | -0.01 | -0.02 | 0.39 | -6.61 | 13.96 |  | 0.01 | -0.01 | 0.49 | -6.61 | 13.96 |  | -0.03 | -0.02 | 0.11 | -1.23 | 0.76 |  | 0.04 | (3.49) |
| DA2 | -0.01 | 0.00 | 0.32 | -6.53 | 8.36 |  | -0.01 | 0.00 | 0.40 | -6.53 | 8.36 |  | -0.01 | -0.01 | 0.10 | -1.25 | 0.75 |  | 0.001 | (0.16) |
| RM1 | 0.01 | 0.03 | 0.64 | -17.65 | 8.33 |  | -0.04 | 0.02 | 0.79 | -17.65 | 8.04 |  | 0.09 | 0.04 | 0.27 | -0.48 | 8.33 |  | -0.13 | (-7.45) |
| RM2 | -0.02 | 0.02 | 0.29 | -3.56 | 1.77 |  | -0.02 | 0.03 | 0.35 | -3.56 | 1.77 |  | -0.01 | 0.01 | 0.19 | -1.11 | 0.68 |  | -0.13 | (-1.42) |
| RM3 | -0.01 | -0.04 | 0.52 | -3.89 | 6.36 |  | 0.01 | -0.06 | 0.62 | -3.89 | 6.36 |  | -0.07 | -0.02 | 0.26 | -1.33 | 2.56 |  | 0.08 | (3.31) |
| Reputation | 9.98 | 3.00 | 21.77 | -40.00 | 111.00 |  | 9.01 | 3.00 | 17.59 | -21.00 | 111.00 |  | 11.79 | 3.00 | 27.87 | -40.00 | 80.00 |  | -2.78 | (-3.83) |
| Size | 11.46 | 10.93 | 2.71 | 4.14 | 19.26 |  | 9.73 | 9.72 | 1.52 | 4.14 | 19.11 |  | 14.28 | 14.03 | 1.65 | 9.76 | 19.26 |  | -4.55 | (-110.23) |
| Leverage | 0.39 | 0.07 | 6.58 | -86.56 | 278.10 |  | 0.29 | 0.00 | 7.22 | -86.56 | 278.10 |  | 0.57 | 0.40 | 5.32 | -82.71 | 87.08 |  | -0.29 | (-1.69) |
| Shares | 10.68 | 10.34 | 2.63 | 1.39 | 18.79 |  | 9.10 | 9.22 | 1.68 | 1.39 | 17.92 |  | 13.26 | 13.06 | 1.71 | 6.74 | 18.79 |  | -4.16 | (-94.21) |
| M\_B | 1.90 | 0.96 | 5.10 | 0.01 | 217.69 |  | 2.13 | 0.95 | 6.02 | 0.01 | 217.69 |  | 1.52 | 0.98 | 3.03 | 0.02 | 57.12 |  | 0.62 | (4.64) |
| Tangibility | 0.22 | 0.13 | 0.24 | 0.00 | 2.55 |  | 0.17 | 0.08 | 0.21 | 0.00 | 2.55 |  | 0.31 | 0.25 | 0.25 | 0.00 | 0.96 |  | -0.14 | (23.10) |
| ROE | -4.17 | 9.99 | 362.36 | -11519.79 | 17560 |   | -26.18 | 3.23 | 442.34 | -11519.79 | 17560 |   | 30.16 | 17.45 | 170.27 | -395.82 | 7206.45 |   |  -56.35 |  (-5.86) |

Notes:

Table 3

Correlation Matrix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| DA1 | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DA2 | 0.83\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| RM1 | -0.09\*\*\* | -0.04\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| RM2 | -0.06\*\*\* | -0.04\*\* | -0.29\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |  |
| RM3 | -0.06\*\*\* | -0.14\*\*\* | -0.23\*\*\* | -0.53\*\*\* | 1.00 |  |  |  |  |  |  |  |  |  |
| Proxy RM | -0.11\*\*\* | -0.10\*\*\* | -0.12\*\*\* | 0.13\*\*\* | 0.66\*\*\* | 1.00 |  |  |  |  |  |  |  |  |
| Log (Media) | -0.03\*\* | 0.01 | 0.06\*\*\* | 0.02 | -0.03 | 0.03 | 1.00 |  |  |  |  |  |  |  |
| Reputation | -0.01 | -0.00 | 0.01 | 0.06\*\*\* | -0.04\* | 0.02 | -0.06\*\*\* | 1.00 |  |  |  |  |  |  |
| Size | -0.04\*\*\* | 0.04\*\*\* | 0.17\*\*\* | -0.01 | -0.04 | 0.02 | 0.81\*\*\* | -0.00 | 1.00 |  |  |  |  |  |
| Leverage | -0.01 | 0.00 | -0.01 | 0.00 | -0.01 | -0.01 | 0.03\*\* | 0.00 | 0.03\*\* | 1.00 |  |  |  |  |
| Shares | -0.04\*\*\* | 0.03\*\* | 0.06\*\*\* | 0.09\*\*\* | -0.10\*\*\* | 0.00 | 0.78\*\*\* | 0.05\*\*\* | 0.91\*\*\* | -0.04\*\*\* | 1.00 |  |  |  |
| M\_B | 0.03\*\* | -0.05\*\*\* | -0.04\*\*\* | -0.11\*\*\* | -0.00 | 0.16\*\*\* | -0.00 | -0.01 | 0.00 | -0.00 | -0.16\*\*\* | 1.00 |  |  |
| Tangibility | -0.10\*\*\* | 0.03\* | -0.03\* | 0.04\*\* | -0.05\*\* | 0.04 | 0.18\*\*\* | 0.10\*\*\* | 0.27\*\*\* | 0.04\*\*\* | 0.32\*\*\* | -0.01 | 1.00 |  |
| ROE | 0.04\*\* | 0.05\*\*\* | 0.02 | -0.05\*\*\* | -0.07\*\*\* | -0.13\*\*\* | 0.01 | 0.00 | 0.02 | 0.01 | 0.06\*\*\* | 0.00 | -0.00 | 1.00 |

Notes:

**Table 4: Multivariate Regression**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | DA1 | DA2 |   | RM1 | RM2 | RM3 | Total EM |
|   | Accrual-based EM |   | Real EM |
| Log (Media) (t-1) | -0.0187\*\*\* | -0.0268\*\*\* |  | -0.0197\*\* | 0.0155\*\* | 0.000 | 0.0372\* |
|  | (-0.004) | (-0.004) |  | (-0.007) | (-0.006) | (-0.015) | (0.014) |
| Reputation | 0.0013\*\*\* | 0.0003 |  | -0.0093\*\*\* | 0.0064\*\*\* | 0.0054\*\*\* | -0.0031\*\*\* |
|  | (0.000) | (0.000) |  | (0.000) | (0.000) | (-0.001) | (-0.001) |
| Size | 0.011 | 0.0220\*\*\* |  | 0.0431\*\*\* | -0.0662\*\*\* | 0.0513\*\* | 0.0415 |
|  | (-0.006) | (-0.006) |  | (-0.009) | (-0.008) | (-0.018) | (-0.028) |
| Leverage | -0.0014 | -0.0004 |  | -0.0016 | 0.0040\* | -0.0075 | -0.0066 |
|  | (-0.001) | (-0.001) |  | (-0.001) | (-0.002) | (-0.005) | (-0.006) |
| Shares | 0.0072 | 0.0166\* |  | -0.0300\* | 0.0464\*\*\* | -0.0548\*\* | 0.0071 |
|  | (-0.008) | (-0.007) |  | (-0.013) | (-0.012) | (-0.017) | (-0.028) |
| M\_B | 0.0018 | -0.0033 |  | -0.0042 | -0.0023 | -0.0066 | -0.0205 |
|  | (-0.002) | (-0.004) |  | (-0.005) | (-0.003) | (-0.009) | (-0.022) |
| Tangibility | -0.1516\* | 0.018 |  | 0.1083 | -0.1467\* | 0.2484\* | 0.010 |
|  | (-0.061) | (-0.080) |  | (-0.068) | (-0.069) | (-0.098) | (-0.114) |
| Log (ROE) | 0.0288\*\*\* | 0.0292\*\*\* |  | 0.0368\*\*\* | -0.0307\*\*\* | -0.0005 | 0.0326\* |
|  | (0.006) | (0.006) |  | (0.004) | (0.004) | (0.005) | (0.013) |
| Industry effect | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Year effect | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Intercept | -0.2287\*\*\* | -0.3594\*\*\* |   | 0.8846\*\*\* | -0.3728\*\*\* | -0.2412 | -0.9974\*\*\* |
|  | (-0.060) | (-0.068) |  | (-0.063) | (-0.094) | (-0.154) | (-0.209) |
| Observations | 7188 | 7177 |  | 7201 | 5586 | 2468 | 1969 |
| R-squared | 0.4537 | 0.352 |   | 0.6285 | 0.6057 | 0.5715 | 0.7735 |

Notes: Robust Standard Errors are in parentheses. Pooled OLS with firm fixed effect.

\*, \*\*, \*\*\* indicate significance at 5%, 10% and 0.1% respectively.

**Table 5: Multivariate Regression**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | DA1 | DA2 |   | RM1 | RM2 | RM3 | Total EM |
|   | Accrual-based EM |   | Real EM |   |
| Log (Media)(t-1) | -0.0187\*\*\* | -0.0268\*\*\* |  | -0.0197\*\* | 0.0155\*\* | -0.0000 | 0.0372\* |
|  | (0.004) | (0.004) |  | (0.007) | (0.006) | (0.015) | (0.014) |
| Crisis | 0.0238\* | 0.0196\* |  | 0.0244\* | -0.0306\* | 0.0136 | 0.0264\* |
|  | (0.012) | (0.008) |  | (0.006) | (0.015) | (0.039) | (0.011) |
| Reputation | 0.0013\*\*\* | 0.0003 |  | -0.0093\*\*\* | 0.0064\*\*\* | 0.0054\*\*\* | -0.0031\*\*\* |
|  | (0.000) | (0.000) |  | (0.000) | (0.000) | (0.001) | (0.001) |
| Size | 0.0110 | 0.0220\*\*\* |  | 0.0431\*\*\* | -0.0662\*\*\* | 0.0513\*\* | 0.0415 |
|  | (0.006) | (0.006) |  | (0.009) | (0.008) | (0.018) | (0.028) |
| Leverage | -0.0014 | -0.0004 |  | -0.0016 | 0.0040\* | -0.0075 | -0.0066 |
|  | (0.001) | (0.001) |  | (0.001) | (0.002) | (0.005) | (0.006) |
| Shares | 0.0072 | 0.0166\* |  | -0.0300\* | 0.0464\*\*\* | -0.0548\*\* | 0.0071 |
|  | (0.008) | (0.007) |  | (0.013) | (0.012) | (0.017) | (0.028) |
| M\_B | 0.0018 | -0.0033 |  | -0.0042 | -0.0023 | -0.0066 | -0.0205 |
|  | (0.002) | (0.004) |  | (0.005) | (0.003) | (0.009) | (0.022) |
| Tangibility | -0.1516\* | 0.0180 |  | 0.1083 | -0.1467\* | 0.2484\* | 0.0100 |
|  | (0.061) | (0.080) |  | (0.068) | (0.069) | (0.098) | (0.114) |
| Log (ROE) | 0.0310\*\*\* | 0.0308\*\*\* |  | 0.0295\*\*\* | -0.0217\*\*\* | 0.0016 | 0.0393\* |
|  | (0.006) | (0.007) |  | (0.003) | (0.004) | (0.006) | (0.015) |
| Industry Effect | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Year Effect | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Intercept | -0.2287\*\*\* | -0.3594\*\*\* |   | 0.8846\*\*\* | -0.3728\*\*\* | -0.2412 | -0.9974\*\*\* |
|  | -0.06 | -0.068 |  | -0.063 | -0.094 | -0.154 | -0.209 |
| Observations | 7188 | 7177 |  | 7201 | 5586 | 2468 | 1969 |
| R-Squared | 0.4537 | 0.3520 |   | 0.6285 | 0.6057 | 0.5715 | 0.7735 |

Notes: Robust Standard Errors are in parentheses. Pooled OLS with firm fixed effect.

\*, \*\*, \*\*\* indicate significance at 5%, 10% and 0.1% respectively

**Table 6: Multivariate Regression**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | DA1 | DA2 |   | RM1 | RM2 | RM3 | Total EM |
|   | Accrual-based EM |   | Real EM |
| Log (Media) | 0.2236\* | 0.2346\*\* |  | 0.3838\* | -0.0596 | -0.1799 | 0.2252 |
|  | (0.115) | (0.119) |  | (0.206) | (0.124) | (0.185) | (0.192) |
| Crisis | 0.5531\* | 0.5664 |  | 0.8288 | 0.1327\*\* | -0.1797 | 0.3916 |
|  | (0.282) | (0.391) |  | (0.507) | (0.053) | (0.302) | (0.323) |
| Media\*Crisis | -0.0791\* | -0.0813\* |  | -0.1266\* | 0.0014 | 0.0223 | 0.0611 |
|  | (0.042) | (0.044) |  | (0.075) | (0.046) | (0.045) | (0.048) |
| DA\_dummy |  |  |  | -0.0654\* | -0.0292 | 0.0303 | 0.0025 |
|  |  |  |  | (0.034) | (0.022) | (0.043) | (0.043) |
| RM\_dummy | -0.0012 | 0.0136 |  |  |  |  | 0.0483 |
|  | (0.017) | (0.017) |  |  |  |  | (0.037) |
| Reputation | 0.0007 | 0.0008 |  | 0.0013 | 0.0002 | 0.0016\*\*\* | 0.0016\*\*\* |
|  | (0.001) | (0.001) |  | (0.001) | (0.000) | (0.000) | (0.000) |
| Size | -0.0874\* | -0.1053\*\* |  | -0.1674\* | 0.1294\*\* | 0.1293 | -0.2288 |
|  | (0.050) | (0.051) |  | (0.089) | (0.057) | (0.148) | (0.161) |
| Leverage | -0.0086\*\* | -0.0073\* |  | -0.0137\*\* | -0.0030 | -0.0834\* | 0.0016 |
|  | (0.004) | (0.004) |  | (0.007) | (0.004) | (0.046) | (0.051) |
| Shares | -0.0264 | -0.0175 |  | -0.0374 | -0.0818\*\*\* | -0.0289 | 0.0979 |
|  | (0.022) | (0.023) |  | (0.039) | (0.021) | (0.061) | (0.072) |
| M\_B | 0.0027 | 0.0044 |  | 0.0159\*\*\* | 0.0026 | 0.0491 | -0.0996\* |
|  | (0.004) | (0.004) |  | (0.006) | (0.004) | (0.047) | (0.052) |
| Tangibility | -0.1047\*\*\* | 0.0138 |  | -0.0307 | 0.0060 | 0.3307\*\*\* | 0.0614 |
|  | (0.033) | (0.034) |  | (0.064) | (0.033) | (0.103) | (0.123) |
| Log (ROE) | 0.0034 | 0.0044 |  | 0.0248 | -0.0503\*\*\* | -0.0302\* | 0.0754\*\*\* |
|  | (0.010) | (0.011) |  | (0.018) | (0.013) | (0.016) | (0.019) |
| Industry | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Year | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Intercept | 0.1153 | 0.1519 |   | 0.3576 | -0.3907\*\* | -0.3644 | 0.3909 |
|  | (0.145) | (0.150) |  | (0.286) | (0.198) | (0.533) | (0.573) |
| Observations | 801 | 800 |  | 801 | 705 | 273 | 252 |
| First stage F-Stat | 16.38 | 16.38 |   | 16.38 | 16.38 | 16.38 | 16.38 |

Notes: 2SLS with firm fixed effect. Negative sentiment is used as an instrument for Media variable. Robust Standard Errors are in parentheses. \*, \*\*, \*\*\* indicate significance at 10%, 5% and 1% respectively.

**Table 7: Dynamic System GMM models two step (SE corrected following Windmeijer, 2005)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | DA1 | DA2 |   | RM1 | RM2 | RM3 | Total EM |
|   | Accrual-based EM |   | Real EM |
| DA1 (t-1) | 0.3391\*\*\* |  |  |  |  |  |  |
|  | (0.027) |  |  |  |  |  |  |
| DA2 (t-1) |  | -0.1138\*\*\* |  |  |  |  |  |
|  |  | (0.022) |  |  |  |  |  |
| RM1 (t-1) |  |  |  | -0.0554\*\*\* |  |  |  |
|  |  |  |  | (0.015) |  |  |  |
| RM2 (t-2) |  |  |  |  | 0.6406\*\*\* |  |  |
|  |  |  |  |  | (0.021) |  |  |
| RM3 (t-1) |  |  |  |  |  | 0.2860\*\*\* |  |
|  |  |  |  |  |  | (0.004) |  |
| TEM (t-1) |  |  |  |  |  |  | 0.0434\*\*\* |
|  |  |  |  |  |  |  | (0.006) |
| Log (Media) | -0.0042\*\*\* | -0.0023\*\*\* |  | 0.0093\*\*\* | 0.0007 | 0.0079\*\*\* | 0.0066\*\*\* |
|  | (0.000) | (0.001) |  | (0.001) | (0.000) | (0.001) | (0.000) |
| Crisis | -0.0325\*\*\* | -0.0688\*\*\* |  | -0.0032 | 0.0210\*\* | 0.0233\*\*\* | -0.1204\*\*\* |
|  | (0.007) | (0.009) |  | (0.008) | (0.007) | (0.006) | (0.011) |
| Log (Media) \* Crisis | 0.0068\*\*\* | -0.0130\*\*\* |  | 0.0009 | -0.0022 | -0.0050\*\*\* | 0.0215\*\*\* |
|  | (0.001) | (0.002) |  | (0.001) | (0.001) | (0.001) | (0.002) |
| Firm Level Control Variables | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Industry Effect | Yes | Yes |  | Yes | Yes | Yes | Yes |
| Year Effect | Yes | Yes |   | Yes | Yes | Yes | Yes |
| Observations | 6805 | 6788 |   | 6816 | 5084 | 2213 | 1712 |
| Number of firms | 622 | 622 |  | 623 | 532 | 268 | 227 |
| Arellano-Bond AR(1) p-value | 0.000 | 0.000 |  | 0.000 | 0.038 | 0.000 | 0.000 |
| Arellano-Bond AR(2) p-value | 0.221 | 0.169 |  | 0.621 | 0.212 | 0.709 | 0.648 |
| Hansen overid. (p-value) | 0.409 | 0.804 |  | 0.199 | 0.087 | 0.359 | 0.107 |
| Diff- in-Hansen (p-value) | 0.209 | 0.035 |   | 0.52 | 0.222 | 0.604 | 0.127 |

Notes: All control variables are used as before but not shown; Earnings Management variables, Media and Crisis are treated as endogenous, all other firm-level variables are treated as predetermined and treated as strictly exogenous. AR1 and AR2 are the Arellano–Bond testswith an auto-regressive model of order one and AR2 is the Arellano–Bond test with an AR(2) error process, Hansen J is the test of over-identification and Diff-in-Hansen J is the test for the exogeneity of a subset of instruments. Two-step robust standard errors are used to compute the Student-t. \*, \*\*, \*\*\* indicate significance at 10%, 5% and 1% respectively.

**Table 8: Robustness Checks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Industry-Year Median (Dummy) |   |   |   |
|  | DA1 | DA2 |   | Proxy 1 | Proxy 2 |   | Proxy 1 | Proxy 2 |
|   | Accrual-Based EM(Absolute) |   | Real EM Proxy |   | Real EM |
|  | 1 | 2 |  | 3 | 4 |  | 5 | 6 |
| RM Proxy 1 (t-1) |  |  |  |  |  |  | 0.1958\*\*\* |  |
|  |  |  |  |  |  |  | (0.004) |  |
| RM Proxy 2 (t-1) |  |  |  |  |  |  |  | 0.2188\*\*\* |
|  |  |  |  |  |  |  |  | (0.007) |
| DA1 Absolute-Industry median (t-1) | 0.9096\*\*\* |  |  |  |  |  |  |  |
|  | (0.009) |  |  |  |  |  |  |  |
| DA2 Absolute-Industry median (t-1) |  | 0.9161\*\*\* |  |  |  |  |  |  |
|  |  | (0.009) |  |  |  |  |  |  |
| RM Proxy 1-Industry median (t-1) |  |  |  | 0.4787\*\*\* |  |  |  |  |
|  |  |  |  | (0.018) |  |  |  |  |
| RM Proxy 2-Industry median (t-1) |  |  |  |  | 0.2002\*\*\* |  |  |  |
|  |  |  |  |  | (0.009) |  |  |  |
| Log (Media) | 0.0015\*\*\* | 0.0016\*\*\* |  | 0.0054\*\*\* | 0.0034\*\*\* |  | 0.0038\*\* | -0.0007 |
|  | (0.000) | (0.000) |  | (0.000) | (0.000) |  | (0.001) | (0.001) |
| Crisis | 0.0098\*\*\* | 0.0052\*\* |  | 0.0801\*\*\* | 0.0579\*\*\* |  | 0.1051\*\*\* | 0.0335\*\*\* |
|  | (0.002) | (0.002) |  | (0.009) | (0.011) |  | (0.011) | (0.009) |
| Log (Media)\* Crisis | -0.0027\*\*\* | -0.0022\*\*\* |  | 0.0124\*\*\* | 0.0046\* |  | 0.0190\*\*\* | 0.0059\*\*\* |
|  | (0.000) | (0.000) |  | (0.002) | (0.002) |  | (0.002) | (0.002) |
| Firm Level Control Variables | Yes | Yes |  | Yes | Yes |  | Yes | Yes |
| Industry Effect | Yes | Yes |  | Yes | Yes |  | Yes | Yes |
| Year Effect | Yes | Yes |  | Yes | Yes |  | Yes | Yes |
| Observations | 6967 | 6967 |   | 5272 | 5801 |   | 1713 | 2212 |
| Number of firms | 625 | 625 |  | 548 | 571 |  | 227 | 268 |
| Arellano-Bond AR(1) p-value |  |  |  |  |  |  | 0.000 | 0.022 |
| Arellano-Bond AR(2) p-value |  |  |  |  |  |  | 0.217 | 0.723 |
| Hansen overid. (p-value) |  |  |  |  |  |  | 0.201 | 0.179 |
| Diff- in-Hansen (p-value) |  |  |   |  |  |   | 0.467 | 0.421 |

Notes: Same as Table. Probit Regression for Column 1- 4. Dynamic System GMM models two-step (SE corrected following

Windmeijer, 2005) for Column 5-6. All the firm level control variables are included as Table 6.

**Table 9: Robustness Checks- Dynamic System GMM models two step (SE corrected following Windmeijer, 2005)**

|  |  |  |  |
| --- | --- | --- | --- |
|   | FTSE 350 (Number of firms=160)  |   | AIM (Number of firms=299) |
|   | DA1 | DA2 | RM1 | RM2 | RM3 |   | DA1 | DA2 | RM1 | RM2 | RM3 |
|   | Accrual-based EM | Real EM |   | Accrual-based EM | Real EM |
| DA1 (t-1) | 0.4476\*\*\* |  |  |  |  |  | 0.0563\*\*\* |  |  |  |  |
|  | (0.004) |  |  |  |  |  | (0.010) |  |  |  |  |
| DA2 (t-1) |  | 0.2540\*\*\* |  |  |  |  |  | -0.0617\*\*\* |  |  |  |
|  |  | (0.004) |  |  |  |  |  | (0.006) |  |  |  |
| RM1 (t-1) |  |  | 0.8508\*\*\* |  |  |  |  |  | -0.0383\*\*\* |  |  |
|  |  |  | (0.004) |  |  |  |  |  | (0.008) |  |  |
| RM2 (t-2) |  |  |  | 0.8942\*\*\* |  |  |  |  |  | 0.6343\*\*\* |  |
|  |  |  |  | (0.004) |  |  |  |  |  | (0.012) |  |
| RM3 (t-1) |  |  |  |  | 0.9490\*\*\* |  |  |  |  |  | 0.2671\*\*\* |
|  |  |  |  |  | (0.003) |  |  |  |  |  | (0.000) |
| Log (Media) | -0.0015\*\*\* | 0.0000 | 0.0018\*\*\* | -0.0009\*\*\* | 0.0004\*\*\* |  | -0.0054\*\*\* | -0.0028\*\*\* | 0.0050\*\* | -0.0003 | 0.0023\*\*\* |
|  | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |  | (0.001) | (0.001) | (0.002) | (0.001) | (0.000) |
| Crisis | -0.0883\*\*\* | -0.1141\*\*\* | 0.0028 | 0.0079\*\*\* | 0.0021 |  | 0.0148 | -0.0951\*\*\* | 0.1009\*\*\* | 0.1221\*\*\* | -0.1181\*\*\* |
|  | (0.002) | (0.002) | (0.002) | (0.002) | (0.003) |  | (0.018) | (0.017) | (0.021) | (0.014) | (0.002) |
| Log (Media)\* Crisis | -0.0132\*\*\* | -0.0162\*\*\* | -0.0017\*\*\* | 0.0005\* | 0.0013\*\* |  | -0.0033 | -0.0224\*\*\* | -0.0207\*\*\* | 0.0271\*\*\* | 0.0266\*\*\* |
|  | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |  | (0.004) | (0.004) | (0.005) | (0.003) | (0.000) |
| Firm Level Control Variables | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes | Yes |
| Industry Effect | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes | Yes |
| Year Effect | Yes | Yes | Yes | Yes | Yes |  | Yes | Yes | Yes | Yes | Yes |
| Observations | 1977 | 1977 | 1977 | 1694 | 637 |  | 2869 | 2861 | 2877 | 1891 | 962 |
| Number of firms | 160 | 160 | 160 | 151 | 61 |  | 291 | 291 | 292 | 230 | 137 |
| Arellano-Bond AR(1) p-value | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 |  | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |
| Arellano-Bond AR(2) p-value | 0.651 | 0.416 | 0.921 | 0.611 | 0.201 |  | 0.184 | 0.764 | 0.38 | 0.397 | 0.885 |
| Hansen overid. (p-value) | 0.352 | 0.388 | 0.307 | 0.339 | 0.698 |  | 0.037 | 0.071 | 0.140 | 0.182 | 0.565 |
| Diff- in-Hansen (p-value) | 0.470 | 0.985 | 0.535 | 0.495 | 0.991 |  | 0.218 | 0.296 | 0.114 | 0.608 | 0.917 |

Notes: All control variables are used as before but not shown; Earnings Management variables, Media and Crisis are treated as endogenous, all other firm-level variables are treated as predetermined and treated as strictly exogenous. AR1 and AR2 are the Arellano–Bond testswith an auto-regressive model of order one and AR2 is the Arellano–Bond test with an AR(2) error process, Hansen J is the test of over-identification and Diff-in-Hansen J is the test for the exogeneity of a subset of instruments. Two-step robust standard errors are used to compute the Student-t. \*, \*\*, \*\*\* indicate significance at 10%, 5% and 1% respectively.

Appendix

Variable definition

1. Corresponding Author [↑](#footnote-ref-1)
2. We use Factiva database to identify the media appearance of the firms. Factiva database collect information from more than 32,000 sources including newspapers, journals, live newswires etc. around the world. [↑](#footnote-ref-2)
3. “AIM is the most successful growth market in the world. Since its launch in 1995, over 3,600 companies from across the globe have chosen to join AIM. Powering the companies of tomorrow, AIM continues to help smaller and growing companies raise the capital they need for expansion”(Source: London Stock exchange). [↑](#footnote-ref-3)
4. see Roychowdhury (2006) for measures of real earnings management use to enhance firm’s credibility and reputation with stakeholders. [↑](#footnote-ref-4)