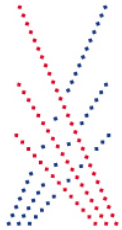

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The moderating role of negative media spotlight on the relationship between accrual based earnings management and real earnings management: Evidence from the UK listed companies

Abstract

This paper empirically tests the substitution hypothesis of a negative relationship between the amount of real earnings management and accrual based earnings management on a sample of UK firms from 2003 to 2017. I show that contrary to prediction, the higher level of accrual based earnings management is associated with higher level of real earnings management. However, this relationship is moderated by negative media spotlight; suggesting that firms with negative media coverage tend to substitute real earnings management with accrual based earnings management while firms without negative media spotlight do not. These results hold true for various robustness checks. Further analysis reveals that the moderating effect is only pronounced in firms with positive profitability; thereby suggesting that firms with losses tend to engage in both real earnings management and accrual based earnings management even in the presence of negative media limelight.

1. Introduction

Evidence suggests that managers tend to use real earnings management and accrual based earnings management as substitutes (Cohen et al, 2008; Cohen & Zarowin, 2010; Zang, 2012). The purpose of this article is to revisit this area to further our understanding of the relationship between real earnings management and accrual based earnings management by examining the influence of negative media spotlight on the financial reporting process. Hence, this article is based upon two strands in literature namely (i) earnings management and (ii) role of media spotlight in curtailing it.

Earnings management is divided into two broad categories-accrual based earnings management and real earnings management. While accrual based earnings management refers to altering the accounting methods or estimates used when presenting a given transaction in the financial statements (Dechow and Skinner 2000; Zang 2012), real earnings management is the use of managers' discretion to overstate earnings by altering underlying real transactions in a way that is often detrimental for long-term value (Roychowdhury 2006). Examples of real earnings management could include acceleration of sales, overproducing goods and having abnormally low discretionary expenses (such as maintenance, advertising or R&D expenditures). While most research on has been carried out from the accrual based earnings management (Dechow et al., 1995; Dechow et al., 2012), only after 2006, researchers turned their attention towards analyzing real earnings management too (Cohen and Zarowin 2010; and Roychowdhury 2006).

As stated earlier, the present study focuses on analyzing the effects of media coverage on earnings management in particular. In the past two decades, a great point of discussion in literature has been whether the media spotlight helps in curtailing earnings management or not (Miller 2006; Dyck et al. 2010; Chen et al. 2018a). However, to date, it is unclear whether media spotlight encourages or deters real earnings management. For example, Dyck and Zingales (2002) document that media can serve as an external monitoring mechanism. On the other hand, Dai et al. (2016) argues that media spotlight puts performance pressure on managers in the short run which may hurts firms' long-term growth. Typically, researchers in this area have focused on identifying companies with higher and lower media spotlight without differentiating whether this spotlight is negative or positive. In order to address this research caveat, I test the effect of media spotlight on real earnings management only for those set of UK firms

which are explicitly identified to have engaged in controversies linked to insider dealings and other share price manipulations from 2003 to 2017 by the Asset4 database.

My findings initially do not find support to the hypothesis that there is a negative relationship between real earnings management and accrual based earnings management. This finding implies that rather than treating accrual based earnings management and real earnings management as substitutes, the managers use both strategies that they have at their disposal in order to show higher profits when they have to. In other words, managers tend to fight tooth and nail in order to show increased earnings.

Next I show that media spotlight acts as a deterrent in real earnings management. This finding suggests that media spotlight plays a significant role in mitigating real earnings management strategies and hence not controlling for it does not give a true picture of the association between real earnings management and accrual based earnings management. I then show that negative media spotlight acts as a negative moderator in the relationship between real earnings management and accrual based earnings management.

Lastly I show that the above findings are only pronounced for the group of companies which have positive profitability. This shows that firms which are incurring losses tend to engage in both real earnings management and accrual based earnings management even in the presence of negative media limelight.

This study has two important contributions to the literature. First, my results provide new evidence on the relationship between accrual-based and real earnings management to achieve their earnings targets by contradicting with the findings of Cohen & Zarowin (2010), Ewert & Wagenhofer, (2005) and Zang (2012). In particular, my results add to this literature by showing that the firms which are not under media spotlight use accrual based earnings management and real earnings management as substitutes and this complementarity is reversed with the presence of negative media spotlight.

Second, I add new empirical evidence to the continuing debate about the role of the media in the UK. Researchers in this area have used 'number of news articles' as proxy for media spotlight. The present study has a sharper focus and measures the media spotlight by a dummy variable equal to 1 if a firm is identified to have engaged in controversies linked to insider dealings and other share price manipulations from 2003 to 2017 by the Asset4 database. To the best of my knowledge, this proxy has not yet been tested not been tested elsewhere in earnings management studies.

This paper proceeds as follows. Section 2 gives a literature review and develops the hypotheses. Section 3 describes the data and methodology in detail. Section 4 discusses the main results as well as the robustness checks, while Section 5 concludes.

2. Literature review

2.1 Is there a substitution effect between real earnings management and accrual based earnings management?

According to Healy and Wahlen (1999)

"earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers."

As stated earlier there are two broad categories of earnings management namely accrual based earnings management and real earnings management. The difference between real earnings management and accrual based earnings management lies in the fact that while the former is aimed at obscuring the true

economic performance of the company by making amendments to accounting methods or estimates within the generally accepted accounting principles (Dechow & Skinner, 2000), the latter is done by altering the execution of real business transactions.

Real earnings management is thought to be costlier as compared to accrual based earnings management (Graham et al. 2005). However, managers prefer it because it is more difficult to detect than accrual-based earnings management (Badertscher, 2011; Graham et al., 2005; Gunny, 2010).

For the above reasons, evidence suggests that mangers tend to use real earnings management and accrual based earnings management as substitutes to each other. For example, an early survey evidence from Graham et al. (2005) suggests that managers tend to prefer real earnings management over accrual based earnings management in order to meet earnings targets. On the other hand, Braam et al. (2015) show that managers of politically connected firms are more inclined towards using accrual based earnings management as opposed to real earnings management. Consistent with these findings, I state my first hypothesis more formally as follows:

H_1= All other things remaining constant, there is a negative association between accrual based earnings management and real earnings management.

2.2 Effect of media on earnings management

Media is considered to be an important information intermediary in the capital markets as it has the ability to reach a broad set of audience and investors (Chen et al, 2018). On the one hand, Chen et al. (2018) argue that being under media spotlight enhances monitoring by drawing the attention of market participants to managerial opportunism and irregularities. It also exposes the managers to the risk that engaging in opportunistic earnings management could be broadcasted by the media to the capital market which in turn would result in increased litigation risk. On the other hand, they argue that media spotlight could put short term pressure on the management to perform well by engaging in earnings management.

In their recent article, Chen et al. (2018) explore the effect of media coverage on earnings management to shed light on the media's role for the US dataset. They show that media coverage is inversely related to both accruals based earnings management and real earnings management. While they measure media spotlight as the total number of news articles about a firm in a given fiscal year, I argue that this proxy may not reflect the very nature of media spotlight-whether it is positive or negative. The news articles published by media could be focused on an array of events such as product news, services news and earnings news; the first two of these have nothing to do with earnings management really. Therefore, contrary to Chen et al. (2018), I adopt a narrower focus by specifically analyzing those firms which are under negative media spotlight due to share price manipulation and controversies as identified by Asset4 database.

According to Chen et al. (2018), media serves as an external monitor of firm financial reporting. Therefore, it should have negative impact on earnings management activities. When a firm is exposed to high media coverage, managers risk that their opportunistic earnings management behaviors will be detected and broadcast by the media to the capital market. This in turn could lead to negative market consequences, such as stock price drops and increased risk of firm litigation. In line with this, Joe et al. (2009) show that after the media publishes negative news about a firm's corporate governance weakness, many firms try to improve the quality of their governance (e.g., replacing the CEO and board chairman, increasing outside board members).

However, as discussed earlier, in their analysis, Chen et al. (2018) do not distinguish between positive media coverage or negative media coverage. Thus the effect of negative media coverage on real earnings management remain an open question till date. Therefore, I do not hypothesize the direction of the

relationship between media coverage and real earnings management and state my second hypothesis is as follows.

H_2= All other things remaining constant, media coverage has an effect on the amount of real earnings management.

2.3 Moderating role of media coverage on the relationship between real earnings management and accrual based earnings management

Kothari et al. (2016) argue that real earnings management is harder to be detected as compared to accrual based earnings management because real earnings management involves managerial decisions that can be justified as sound given their interpretation of the economic circumstances. In line with this argument, Cohen et al. (2008) show that firms replace accruals earnings management with more difficult-to-detect real earnings management after the enactment of Sarbanes and Oxley Act(SOX) in 2002. Cohen and Zarowin (2010) show similar findings for firms faced with greater auditor scrutiny of accruals and lower ability to manipulate accruals.

Moreover, accrual based earnings management is less costly as compared to the real earnings management; therefore, the managers have a lower need to rely on the costlier real earnings management. Thus, according to the substitution hypothesis, the accrual based earnings management and real earnings management should have a negative relationship. While there is substantial evidence in the literature regarding the relationship between accrual based earnings management and real earnings management, how that influence is affected by the interplay of negative media spotlight is still not known. Thus, with regards to the role of media, I hypothesize that in the presence of media spotlight, managers would substitute relatively less costly, yet more detectable, accrual based earnings management for real earnings management than similar but non-media spotlight firms. I therefore introduce negative media spotlight as a moderator and test the following hypothesis:

H_3= All other things remaining constant, media spotlight has a moderating effect on the relationship between real earnings management and accrual based earnings management.

3. Data and methodology

3.1 Data

I retrieve data on the list of non-financial and non-utility companies (and their control firms) which were under media spotlight due to controversies linked to insider dealings and other share price manipulations from the Asset4 database. The initial number of firm year observations is 10,036 but since I exclude firm-year observations with missing data for any of the variables in the regression analysis, the final sample consists of 1,826 firm-year observations corresponding to 31 event firm years and 1,795 control firm years. Table 1 shows the distribution of these firms- year wise and industry wise.

From Table 1 Panel A, it appears that most of the firms under negative media spotlight are from year 2006 and 2007 which was just before the world financial crisis. The number of firms under media spotlight substantially declined after 2008 which could be because of the shift of media's attention from non-financial firms to financial firms.

Panel B on the other hand reveals that most of the firms under negative media spotlight belong to the technology sector. This is consistent with the notion that technology companies have historically remained more prone to earnings manipulation as compared to other sectors in the economy.

Table 1 Distribution of sample firms

Panel A. Sample by year

Year	**0**	**1**	**Total**
2003	98	1	99
2004	156	3	159
2005	221	6	227
2006	224	9	233
2007	200	7	207
2008	122	1	123
2009	110	0	110
2010	110	1	111
2011	105	0	105
2012	99	0	99
2013	92	1	93
2014	75	1	76
2015	81	0	81
2016	65	0	65
2017	37	1	38
Total	1,795	31	1,826
Panel B. Sample by industry			
Industry	**0**	**1**	**Total**
Aerospace and defense	32	2	34
Alternative energy	17	0	17
Automobiles and parts	23	0	23
Beverages	3	0	3
Chemicals	34	0	34
Construction and materials	54	2	56
Electronic and electrical equipment	52	1	53
Fixed line telecommunications	51	0	51
Food and drug retailors	7	0	7
Food producers	84	0	84
General industrial	68	1	69
General retailor	136	1	137
Health care equipment and services	42	0	42
Household goods and home construction	14	0	14
Industrial engineering	68	6	74
Industrial metals and mining	38	0	38
Industrial transportation	54	0	54
Leisure goods	10	1	11
Media	89	0	89
Mining	122	0	122
Mobile telecommunication	17	1	18

Oil and gas producers	89	0	89
Oil equipment and services	35	0	35
Personal goods	33	0	33
Pharmaceuticals and biotechnology	104	2	106
Software and computer services	89	0	89
Support Services	217	2	219
Technology hardware and equipment	122	11	133
Travel & leisure	91	1	92
Total	1,795	31	1,826

3.2 Empirical models

To test the first hypothesis outlined in Section 2, I examine the correlation coefficient between the accrual based earnings management and the level of real earnings management. Specifically, I estimate the following regression model:

$$\text{Real earnings management}_{i,t} = \alpha_o + \beta_1 \text{Jones } 1991_{i,t} + \sum_{i=1}^{i} \text{controls} + e_{i,t} \quad \text{Eq (1)}$$

Where

Real earnings management = Amount of real earnings management measured by abnormal cash flows from operations; and

Jones 1991 = a proxy for calculating accrual based earnings management.

To test H_2 and H_3 I run the following regression:

$$\text{Real earnings management}_{i,t} = \alpha_o + \beta_1 \text{Jones } 1991_{i,t} + \beta_1 \text{Media spotlight}_{i,t} + \beta_3 \text{Jones } 1991_{i,t} * \text{Media spotlight}_{i,t} + \sum_{i=1}^{i} \text{controls} + e_{i,t} \quad \text{Eq (2)}$$

Where

Media spotlight = a dummy variable coded 1 if the firm is under media spotlight due to controversies and 0 otherwise.

The control variables in Eq (1) and Eq (2) include firm characteristics such as growth (measured by change in sales), size (measured by natural log of total assets), leverage (measured by debt over equity), percentage of independent directors, audit quality (measured by natural log of audit fee and non-audit fee), performance (measured by return on equity). All control variables are defined in Appendix A.

For Eq (1) and (2), I use the abnormal levels of cash flow from operations as proxy for real earnings management[1] and Jones (1991) proxy for accrual based earnings management. The details of each of the two variable are outlined below.

[1] Roychowdhury (2006) develops 2 more proxies for real earnings management, namely discretionary expenses and overproduction. However, I exclude these two because both of these are reflected in the amount of abnormal cash flows from operations (Chen et al, 2018).

3.2a. Abnormal levels of cash flow from operations

Managers can artificially inflate reported earnings by accelerating sales using aggressive price discounts and/or more lenient credit terms, which results in abnormally low cash flow (but higher profits as the number of units sold would increase) from operations in the current period. For the normal levels of cash flows for each industry in each year, Roychowdhury (2006) estimates the following cross sectional model:

$$\frac{\mathrm{CFO}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} = \beta_1 \frac{1}{\mathrm{TotalAssets}_{i,t-1}} + \beta_2 \frac{\mathrm{Revenues}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} + \beta_3 \frac{\Delta\mathrm{Revenues}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} + e_{i,t} \qquad \text{Eq (3)}$$

Where

$\mathrm{CFO}_{i,t}$= Cash flow from operations

$\Delta\mathrm{Revenues}_{i,t}$ = Change in revenues

The parameter estimates from the above equation are then plugged into the following equation to obtain the error term.

$$e_{i,t} = \frac{\mathrm{CFO}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} - \beta_1 \frac{1}{\mathrm{TotalAssets}_{i,t-1}} - \beta_2 \frac{\mathrm{Revenues}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} - \beta_3 \frac{\Delta\mathrm{Revenues}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}}$$

The error term is the deviation from the normal level of cash flows and is termed as the abnormal cash flows. Lower abnormal CFO is consistent with upward real earnings management; therefore, to make interpretation easy, I multiply this measure by -1 after reporting the descriptive statistics.

3.2b. Discretionary accruals measured by Jones (1991)

This models posits that the relationship between total accruals, discretionary accruals and non-discretionary accruals can be expressed as follows:

Total accruals = Discretionary accruals + Non-discretionary accruals Eq (4)

The total accruals are calculated as follows:

$$\mathrm{TotalAccruals}_t = \mathrm{EBEXI}_t - \mathrm{OPCASH}_t$$

where:
EBEXI_t is Earnings before extraordinary and abnormal items in year t; and
OPCASH_t is Operating cash flow in year t.

According to Jones (1991), the growth in sales controls a firm's non-discretionary working capital, while the level of property, plant, and equipment acts as a control for the firm's non-discretionary depreciation expense. Accordingly, he takes the total accruals as the dependent variable and the level of property plant and equipment and changes in the revenue as the independent variables. The data are drawn from a broad range of firm sizes and is therefore scaled by the lag of total assets. This is expressed as follows:

$$\frac{\mathrm{TotalAccruals}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} = \alpha_o + \beta_1 \frac{1}{\mathrm{TotalAssets}_{i,t-1}} + \beta_2 \frac{\Delta\mathrm{inRevenues}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} + \beta_3 \frac{\mathrm{PropertyPlant\&Equip}_{i,t}}{\mathrm{TotalAssets}_{i,t-1}} + e_{i,t} \qquad \text{Eq (5)}$$

where:

$\mathrm{TotalAccruals}_{i,t-1}$ is the total accruals in the beginning of the period of firm i.

$\frac{\Delta \text{inRevenue}_{i,t}}{\text{TotalAssets}_{i,t-1}}$ is change in sales revenue of firm i scaled by $\text{TotalAssets}_{i,t-1}$;
$\frac{\text{PropertyPlant\&Equip}_{i,t}}{\text{TotalAssets}_{i,t-1}}$ is gross property, plant and equipment of firm i scaled by $\text{TotalAssets}_{i,t-1}$;
$\alpha_o, \beta_1, \beta_2$ and β_3 are the OLS parameters to be estimated; and
$e_{i,t}$ is the residual.

All firms listed on the London Stock Exchange are first classified in their respective industries based on 29[2] sectors classification by Industry Classification Benchmark (ICB). Next, Eq (5) is estimated in cross sectional form for all firms in a specific industry in the specific year[3]. The OLS estimates of parameters estimated in Eq (5) are then plugged in the regression for each firm to get its error term. The equation takes the following form:

$$e_{i,t} = \frac{\text{TotalAccruals}_{i,t}}{\text{TotalAssets}_{i,t-1}} - \alpha_o - \beta_1 \frac{1}{\text{TotalAssets}_{i,t-1}} - \beta_2 \frac{\Delta \text{inRevenues}_{i,t}}{\text{TotalAssets}_{i,t-1}} - \beta_3 \frac{\text{PropertyPlant\&Equip}_{i,t}}{\text{TotalAssets}_{i,t-1}}$$

The error term is the discretionary portion of the accruals (discretionary accruals) and serves as a proxy for accrual based earnings management.

3.3 Descriptive statistics

To deal with the effect of outliers, I winsorize all continuous variables at 1 percent tails. Table 2 presents the summary statistics of each dependent variable and regressor in the regression analysis.

[2] Initially there were 41 industry sectors but after applying various data cleaning filters I am left with 29 industry sectors.

[3] I exclude industry-year portfolios with less than fifteen observations from the calculation of both proxies of earnings management.

Table 2 Descriptive statistics

VARIABLES	mean	sd	min	max	p25	p75	p50	skewness	kurtosis
Abnormal cash flows from operations	0.00532	0.407	-3.814	6.487	-0.0974	0.0431	-0.0357	6.603	97.41
Jones 1991	0.0513	0.648	-3.453	9.308	-0.0445	0.0524	0.00506	9.426	115.7
Ch in revenues	517,079	6.28E+06	-1.20E+08	1.10E+08	-12,700	387,897	76,700	-0.581	162.4
Ln(total assets)	14.85	1.627	9.534	19.59	13.69	15.89	14.67	0.3	2.961
Leverage	73.23	693.2	-25,131	9,794	13.86	95.31	46.46	-24.62	985.1
Percentage of independent directors	57.16	21.42	0	100	44.44	72.73	57.14	-0.515	3.348
Ln (non-audit fee)	11.95	3.623	0	17.35	11.51	13.84	12.84	-2.403	8.448
Ln(audit fee)	14.03	1.424	0	18.28	13.12	14.92	14	-0.54	7.983
Return on equity	26.73	149	-573.9	3,821	6.93	23.73	15.06	15.47	312.6

Table 3 lays down the pairwise correlation of all variables. The matrix shows that Jones 1991 has a positive relationship with real earnings management and media spotlight has a negative relationship with real earnings management and this is later on in the multiple regression analysis.

Table 3 Correlation matrix

		a	b	c	d	e	f	g	h	i	j
a	Abnormal cash flows from operations	1									
b	Jones 1991	0.7037	1								
c	Media spotlight	-0.0139	-0.0085	1							
d	Ln(total assets)	0.0525	-0.0165	0.0347	1						
e	Percentage of independent directors	0.0575	0.0188	0.0283	0.0733	1					
f	Leverage	-0.0073	0.008	0.0042	-0.0072	-0.0184	1				
g	Ln(non-audit fee)	0.0347	0.0023	0.0168	0.2091	0.0089	-0.0137	1			
h	Ln(audit fee)	0.0676	-0.0022	0.0496	0.7652	0.1835	-0.0147	0.2625	1		
i	Ch in revenues	0.0071	-0.012	-0.007	0.1189	-0.0175	0.0094	0.0425	0.0777	1	
j	Return on equity	-0.1768	0.018	0.0013	-0.0701	0.0061	-0.0015	-0.0179	-0.0152	0.0061	1

4. Discussion of results

Table 4 reports the findings of hypothesis 1 which states that accrual based earnings management has a negative relationship with real earnings management. The coefficient on the Jones 1991 proxy is positive and significant, with p-values less than or equal to 0.01. This implies that higher discretionary accruals are associated with higher real earnings management too. These findings are not consistent with those reported by Cohen et al. (2008), Cohen and Zarowin (2010) and Zang (2012). I argue that this complimentary relationship reflects the fact that when managers decide to engage in earnings management, they utilize every possible strategy at their disposal to achieve their objective. These findings are in line with Huang et al. (2018) who argue that this complementarity arises if managers channel-stuff but do not adequately provide for estimated returns or overproduce inventory but do not increase their inventory obsolescence reserves.

I then test the relationship between negative media spotlight and real earnings management and accrual based earnings management, respectively. The results show a negative relationship between negative media spotlight and real earnings management. These results confirm the findings of Chen et al. (2018) and provide support to the argument that media acts like an external watchdog for the financial reporting process.

However, the analysis of accrual based earnings management reveals that when firms are under find that when firms are under media spotlight, the risk of detection increases, therefore media spotlight firms are more likely to resort to less harmful accrual based management strategies.

To probe and to reconcile these differing findings, I add an interaction term. The results suggest that the association between accrual based earnings management is actually negative for firms under media spotlight. To interpret, as the discretionary accruals go up, the real earnings management also go up by 0.4457 but for firms under negative media spotlight, the real earnings management goes down by 0.4457-0.4503=0.0046. I argue that firms under negative media spotlight are more likely to substitute real earnings management for accrual-based earnings management than non-media spotlight firms because it is less harmful as compared to real earnings management.

These findings suggest that it is important to control for the moderating role of negative media spotlight as it allows us to see the difference of impact of jones 1991 for media spotlight firms and non-media spotlight firms.

Overall, I find that the results in Table 4 provide support for H2 and H3 but not H1.

Table 4 Main findings

VARIABLES	(1) Main findings	(2) Industry fixed effects	(3) Individual fixed effects
Jones 1991	0.4452***	0.4457***	0.4476***
	(0.0520)	(0.0520)	(0.0097)
Media spotlight		-0.0595***	-0.0598
		(0.0168)	(0.0501)
Jones 1991* Media spotlight		-0.4503***	-0.7643*
		(0.1257)	(0.3995)

Ln(total assets)	0.0122	0.0119	-0.0490**
	(0.0078)	(0.0079)	(0.0199)
Percentage of independent directors	-0.0002	-0.0002	-0.0003
	(0.0003)	(0.0003)	(0.0005)
Leverage	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
Ln(non-audit fee)	0.0007	0.0008	-0.0023
	(0.0015)	(0.0015)	(0.0022)
Ln(audit fee)	0.0062	0.0065	0.0002
	(0.0052)	(0.0052)	(0.0103)
Ch in revenues	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
Return on equity	-0.0004**	-0.0004**	-0.0001**
	(0.0002)	(0.0002)	(0.0000)
Profit dummy	-0.0789***	-0.0790***	-0.0530**
	(0.0191)	(0.0191)	(0.0223)
	(0.0312)	(0.0316)	
Constant	-0.2415**	-0.2437**	0.7119**
	(0.0975)	(0.0976)	(0.2887)
Industry fixed effects	Yes	Yes	
Individual fixed effects			Yes
Observations	1,826	1,826	1,826
R-squared	0.6118	0.6126	0.6366
Number of id	330	330	330

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.1 Further analysis and robustness checks

4.1.1 Robustness check 1- use additional controls

In Table 5, I repeat the main analysis by adding additional control variables (Whether block holder, board size, financial crisis)[4] now. These variables were initially not added in the main analysis as that would decrease the number of observations. The findings of these additional variables are consistent with the main results in Tables 4, indicating that the results are robust to the inclusion of more controls.

Table 5 Robustness checks with additional controls

VARIABLES	(1) Industry fixed effects	(2) Firm fixed effects
Jones 1991	0.4511***	0.4566***
	(0.0536)	(0.0109)
Media spotlight	-0.0566***	-0.0473
	(0.0170)	(0.0597)

[4] The details of each of these variables is outlined in Appendix A.

Jones 1991* Media spotlight	-0.6562***	-0.9006**
	(0.1561)	(0.4326)
Ln(total assets)	0.0119	-0.0070
	(0.0107)	(0.0317)
Percentage of independent directors	-0.0004	-0.0006
	(0.0004)	(0.0008)
Leverage	0.0000	0.0000
	(0.0000)	(0.0000)
Ln(non-audit fee)	0.0005	-0.0014
	(0.0021)	(0.0035)
Ln(audit fee)	0.0052	0.0020
	(0.0058)	(0.0135)
Ch in revenues	0.0000	0.0000
	(0.0000)	(0.0000)
Return on equity	-0.0002	-0.0001*
	(0.0002)	(0.0001)
Profit dummy	-0.0979***	-0.0378
	(0.0196)	(0.0313)
Whether block holder	-0.0423	-0.0495
	(0.0357)	(0.0454)
Board size	-0.0006	0.0024
	(0.0026)	(0.0063)
Financial crisis	0.0475*	0.0280
	(0.0250)	(0.0522)
Constant	-0.1393	0.1097
	(0.1346)	(0.4605)
Observations	1,299	1,299
R-squared	0.6587	0.6858
Number of id	294	294

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.1.2 Robustness check 2- unwinsorized data

Next following O'Callaghan (2018), I re-run the main analysis on the unwinsorized data. Table 6 shows that the results are qualitatively similar to those reported in the main findings.

Table 6 unwinsorized data

	(1)	(2)	(3)	(4)
VARIABLES	Main	Robustness check1	Robustness	Robustness

	findings	additional control variables	check2 fe	check3 fe
Jones 1991	0.4457***	0.4511***	0.4476***	0.4566***
	(0.0520)	(0.0536)	(0.0097)	(0.0109)
Media spotlight	-0.0595***	-0.0566***	-0.0598	-0.0473
	(0.0168)	(0.0170)	(0.0501)	(0.0597)
Jones 1991* Media spotlight	-0.4503***	-0.6561***	-0.7643*	-0.9005**
	(0.1257)	(0.1561)	(0.3995)	(0.4326)
Ln(total assets)	0.0119	0.0120	-0.0490**	-0.0069
	(0.0079)	(0.0107)	(0.0199)	(0.0317)
Percentage of independent directors	-0.0002	-0.0004	-0.0003	-0.0006
	(0.0003)	(0.0004)	(0.0005)	(0.0008)
Leverage	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Ln(non-audit fee)	0.0008	0.0005	-0.0023	-0.0014
	(0.0015)	(0.0021)	(0.0022)	(0.0035)
Ln(audit fee)	0.0065	0.0052	0.0002	0.0020
	(0.0052)	(0.0058)	(0.0103)	(0.0135)
Ch in revenues	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Return on equity	-0.0004**	-0.0002	-0.0001**	-0.0001*
	(0.0002)	(0.0002)	(0.0000)	(0.0001)
Profit dummy	-0.0790***	-0.0979***	-0.0530**	-0.0378
	(0.0191)	(0.0196)	(0.0223)	(0.0313)
Whether block holder		-0.0424		-0.0496
		(0.0357)		(0.0454)
Board size		-0.0006		0.0024
		(0.0026)		(0.0063)
Financial crisis		0.0474*		0.0281
		(0.0250)		(0.0522)
Constant	-0.2440**	-0.1399	0.7116**	0.1089
	(0.0976)	(0.1345)	(0.2887)	(0.4605)
Observations	1,826	1,299	1,826	1,299
R-squared	0.6126	0.6587	0.6366	0.6857
Number of id	330	294	330	294

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Overall, since neither of the robustness tests change the general results, I am confident that my findings are qualitatively robust.

4.1.3 Further analysis 1 –divide data on basis of profitability

Next I bifurcate the sample of firms into two groups – those with majority of board of directors classified as independent and those with majority of board of directors not classified as independent and re-run Eq (2) separately for each group. Table 7 reports that media spotlight acts as a moderator only in case of profitable firms. This suggests that firms with low profitability tend to apply both real earnings management and accrual based earnings management even when they are faced with tight media spotlight.

Table 7 Divided sample

	Profitability is positive	**Profitability is negative**
Jones 1991	0.4520***	0.1918**
	(0.0544)	(0.0831)
Media spotlight	-0.0547***	-0.0099
	(0.0193)	(0.0372)
Jones 1991* Media spotlight	-0.6913***	0.5778
	(0.1701)	(0.4589)
Ln(total assets)	0.0184	-0.0391
	(0.0117)	(0.0292)
Percentage of independent directors	-0.0005	0.0013
	(0.0004)	(0.0010)
Leverage	0.0001	0.0000
	(0.0001)	(0.0000)
Ln(non-audit fee)	0.0005	0.0011
	(0.0023)	(0.0055)
Ln(audit fee)	0.0025	0.0282
	(0.0063)	(0.0257)
Ch in revenues	0.0000	0.0000***
	(0.0000)	(0.0000)
Return on equity	-0.0002	0.0000
	(0.0002)	(0.0002)
Profit dummy	-0.0432	-0.0382
	(0.0372)	(0.0799)
Whether block holder	-0.0024	0.0077
	(0.0029)	(0.0088)
Board size	0.0720**	-0.0884*
	(0.0290)	(0.0491)
Financial crisis	-0.2811*	0.1242
	(0.1489)	(0.1857)
Observations	1,142	157
R-squared	0.6690	0.5584
Industry fixed effects	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

In this paper I empirically test the association between accrual based earnings management and real earnings management. I show that as opposed to the common belief, real earnings management and accrual earnings management are actually compliments to each other and this relationship is only negatively motivated by the negative media spotlight. A series of robustness checks confirm these findings. Additional analysis reveals that this relationship is only likely for firms which have positive profitability. These insights are especially relevant for policy makers and stock market analysts as they reveal that firms are not homogeneous in their preferences for real earnings management over accrual based earnings management (and vice versa) as often assumed in prior research.

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Appendix A

Table 8 List of control variables

Variable	**Definition**
Jones (1991)	Discretionary accruals
Media spotlight	Dummy variable coded '1' if the firm is under media spotlight; '0' otherwise
Ln(total assets)	Natural log of total assets
Percentage of independent directors	Number of independent directors divided by total number of directors
Leverage	Debt divided by Common equity
Ln(non-audit fee)	Natural log of non-audit fee
Ln(audit fee)	Natural log of audit fee
Ch in revenue	Change in revenue
Return on equity	Return on equity percentage

Profit dummy	Dummy variable equal to 1 if the firm is profitable