# Earnings Management to Exceed Earnings Threshold: Evidence from Bangladesh

**Dr. Md. Hamid Ullah Bhuiyan\***

***Abstract:*** *The concern of exceeding threshold in the environment of earnings management is a much investigated issue in the accounting literature. Existing research indicates that managers engage in earnings manipulation to manage reported earnings and value of the firm to maximize specific private benefits and to mislead some of the firm's investors. This study examines whether the managers of Bangladeshi firms engage in earnings manipulation in the forms of real earnings management (REM) and accrual earnings management (AEM) across the years. They are beating earnings benchmarks in the form of small changes in earnings per share (Changes in EPS) and small changes in Return on Assets (Changes in ROA). Using a 1067 firm-year observations (excluding the financial sectors) over the 15 years from 2000 to 2014, cross-sectional REM models developed by Dechow, Kothari, and Watts (1998) and implemented by Roychowdhury (2006) are used to estimate the proxies for REM (abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses) and the modified Jones (1991) model is used to measure the proxy for AEM (abnormal accruals). Controlling for other determinants of REM and AEM activities, this study reveals that beating prior year's performance earnings benchmarks is associated with both REM and AEM activities.*

***Keywords:*** *Earnings threshold; Real Earnings Management; Accrual Earnings Management; Capital Market*

## 1. Introduction

This paper further extends the research in the area of earnings management in the context of a developing country by examining whether firm managers undertake earnings manipulation to beat earnings benchmarks. Firm managers, who engage in income-increasing earnings manipulation habitually, exercise one of the two methods of earnings management: accrual-based earnings management (*AEM*) and real earnings management (*REM*). The issue of benchmark beating and its association with earnings management has not yet been settled in the Bangladesh context. Very little examination has been undertaken in Bangladesh to find out any existence of earnings manipulation. Prior research using Bangladeshi sample has used AEM to examine the existence of earnings management in two different sectors. In particular, Razzaque, Rahman, and Salat (2006) examine Textile sector in Bangladesh, document significantly positive discretionary accruals in fourteen firms. Ahmed and Azim (2015) analyse the Cement Sector of Bangladesh using Beniesh (1997) Model, find that some companies involved with the earnings manipulation because there are signs of highly volatile revenue and operating profit.

\* Professor, Department of Accounting and Information Systems, Faculty of Business Studies, University of Dhaka.

This study investigates the earnings management behavior of the managers of Bangladeshi firms using both real earnings management (*REM*) and accruals earnings management (*AEM*), to examine whether managers engage in earnings manipulation to exceed prior year performance, in the form of changes in earnings per share (*EPS*) and in the form of changes in Return on Assets (*ROA*). This examination is motivated by the recent benchmark meeting and/or beating using REM evidence found in the USA (Roychowdhury, 2006; Cohen, Dev, and Lys, 2008; Gunny, 2010; and Zang, 2012) and in Australia (Bhuiyan, 2015) which has not been explored in Bangladesh.

To measure the existence of REM and AEM, this investigation uses three proxies of REM (abnormal cash flows from operations, abnormal production costs, and abnormal discretionary expenses) and one proxy of AEM (abnormal accruals). To measure REM proxies this study follows the model developed by Dechow et al. (1998) and implemented by Roychowdhury (2006), and estimate the abnormal cash flow from operations (*AB_CFO*), abnormal production costs (*AB_PROD*) and abnormal discretionary expenses (*AB_DIS*). To estimate the proxy for AEM this examination uses the cross-sectional Jones (1991) model in line with recent studies (Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010; and Zang, 2012) and estimate abnormal accruals (*AB_ACC*). This study uses both univariate and multivariate analysis to examine the existence of REM and AEM across the benchmark meeting firm-years.

Using the above measures of REM and AEM, this examination evidence that the managers of Bangladeshi firms tend to engage in earnings management in the years of they are beating zero earnings thresholds in the form of changes in EPS and in the form of changes in ROA. Consistent with the propositions of this research, the multivariate results document significantly higher production costs and higher abnormal accruals for firms that sustain prior year's performance at the annual level, in comparison to the rest of the sample.

The above results suggest that the managers of Bangladeshi firms that report small positive increase in earnings are involved in real activities manipulation by overproduction to reduce cost of goods sold and engaged in accrual-based earnings manipulation to avoid losses and to report marginally positive earnings. However, this study did not find any evidence of sales manipulation resulting in lower abnormal cash flow from operations and cutting off discretionary expenses. This examination results are robust to various measurement methods and assumptions, and validate the significance of examining earnings management in an alternative institutional context.

The remainder of the paper is structured as follows. Sections 2 outline the empirical literature relating to REM and AEM and discuss the motivation behind earnings management. Section 3 reviews the literature relating to use of REM and AEM to meet and/or earnings benchmark, leading to the hypothesis development for this paper. Section 4 describes the methodology used in this paper, including sample constructions, estimation parameters, along with related descriptive statistics. Section 5 presents the empirical results and associated discussion along with empirical models to test the hypotheses, and Section 6 summarizes the conclusions and implications of the paper.

## 2. Earnings Management

Conventional wisdom suggests that accounting earnings have information content (Hayn 1995), and are a key source of information used by the investors when developing expectations of future earnings. The market reacts positively to positive abnormal earnings news (Kothari, 2001) and, in conjunction with the increased use of stock-based compensation; managers are increasingly sensitive to the relation between earnings and the firm's stock prices (Dechow and Skinner, 2000). Therefore, managers acting in self-interest, as well as in shareholders' interests potentially, have strong motivation to manage earnings Degeorge, Patel, and Zeckhauser (1999).

Earnings management is the managerial action to amend the reported earnings and value of the firm in the short-run with an objective to achieve specific welfare outcomes and to mislead some firm investors, by taking advantage of opportunistic flexibilities offered by generally accepted accounting principles (GAAP) and through modification of real economic activities.

It is the responsibility of managers to prepare the financial statements of the firm in accordance with the provisions of Generally Accepted Accounting Principles (*GAAP*), and other accounting standards (*FASB* and *IFRS* standards, if applicable). The financial reporting process allows managers to exercise judgements and estimates in the preparation of general purpose financial statements, consistent with them having much better information about the operating environment of their organizations relative to external parties. This increases the worth of financial reporting as a relevant and reliable form of communication, but not if earnings management is present. This opportunity to use judgements and estimates also creates prospects for earnings management for their own benefit.

Empirical studies evaluating the reasons behind earnings management document that the motives for manipulating earnings include signalling a firm's future prospects DeAngelo, DeAngelo, and Skinner (1996), equity incentives (Cheng and Warfield, 2005 and Bergstresser and Philippon, 2006), compensation plans (Bauman and Shaw, 2006), stock price driven motivation (Graham, Harvey, and Rajgopal, 2005 and Bhojraj, Hriban, Picconi, and McInnis, 2009), stakeholder motivation (Bowen, DuChrame, and Shores, 1995), employee bonuses (Healy, 1985 and Matsunaga and Park, 2001), debt covenant violation avoidance (DeFond and Jiambalvo, 1994; Dichev and Skinner, 2002; and Dechow, Sloan, and Sweeney, 1996), job security Matsumura, Shin, and Wu, (2009) and to raise external financing (Dechow et al., 1996)[†].

Extant evidence classified earnings management into two groups: accrual earnings management (*AEM*) and Real earnings management (*REM*). The former has no cash flow consequences; however, the later has cash flow consequences. AEM is characteristically accomplished by shifting income from future periods to the present period. Examples of AEM includes recording revenues before they are realizable, understatements of bad debt expenses, drawing down the provision for reserves for bad debts, selective inventories and marketable securities valuation,

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[†]Graham et al. (2005) survey evidence indicates some more possible incentives according to the opinions of CFO's, from engaged in REM to beat or meet earnings benchmark, which includes helps to generate trustworthiness into the capital market, sustain or increase stock prices, increase the external standing of management, deliver future growth prospects to investors, moderate stock price instability, and assure stockholders that the business is steady.

changing methods of depreciation, and the classification of items as above or below the line of profit from operations.

REM, which is a recent phenomenon, is accomplished through modification of real operating activities of the firm. Examples include introducing price discounts or more lenient credit terms to increase sales temporarily, over-production to reduce the per unit cost of products, deferring or eliminating selling, administrative, and general (*SG & A*) expenses, reducing research and development (*R & D*) expenditure, and the disposal of investments and long-term assets.

Graham et al. (2005) suggest that, after implementation of the Sarbanes-Oxley Act 2002 (*SOX*), financial statements are subject to more scrutiny, therefore, firm managers would prefer to engage in REM because they are less likely to be detected by the auditors and less likely to be litigated against relative to undertaking AEM. However, the consequences of REM appear to be more financially significant to the firm. Subsequent studies support the empirical validity of the Graham et al. (2005) findings. They find that managers engaged in REM to meet and/or beat zero earnings, last year's earnings, and analysts forecast (Bhuiyan, 2015; Roychowdhury, 2006, Gunny, 2010, and Zang 2012). Cohen et al. (2008) present evidence that managers have moved to REM from AEM after the implementation of SOX.

## 3. Literature Review and Hypothesis Development

The importance attached to earnings figures, and the assumption that investors rely on simple earnings benchmarks suggest that reporting positive earnings; avoiding losses; earnings superior than last year; and earnings that beat or meet analysts forecast will have positive valuation implications (Burgstahler and Dichev 1997; DeGeorge et al. 1999; and Brown 2001). In addition, prospect theory suggest that investors would prefer to invest in firms that report a sequence of small gains rather than companies with unstable earnings (Koonce & Mercer 2005). Burgstahler and Dichev (1997) suggest that benchmark beating evidence is also consistent with the expectation of prospect theory. They claim that firms are responsive to the idea that the market may have preferences for specific earnings patterns (zero earnings and a vicinity of zero changes in earnings).

Since financial statements usually do not directly provide information regarding firm's future prospects, investors may use an observed earnings threshold to evaluate a firm's future performance. Investors compensate a firm with higher valuation if the firm outstrips an earnings benchmark and lowers the valuation if it misses the benchmark. Therefore, if firm managers deliberately manage earnings in the form of REM and/AEM to report a marginally positive earnings it is likely that they have incentives for benchmark beating.

### 3.1. Meeting and/or beating earnings benchmark: empirical evidence from distributional test

Initial evidence of beating or meeting a certain earnings benchmark was shown by Hayn (1995). He presented that there is a discontinuity of earnings around the zero earnings benchmark using earnings per share (*EPS*) deflated by share price. Using annual level earnings observation, Burgstahler and Dichev (1997) document that firm managers engage into cash flow management and take the advantage of opportunistic accrual earnings management to report increases in earnings. They find that avoiding losses is more predominant than avoiding earnings decreases

and reveal that there is a strong discontinuity in the distribution of firm-years around zero earnings.[‡] Using a quarterly earnings sample, Degeorge et al. (1999) investigate the comparative significance of three earnings management benchmarks that management try to achieve, and reveal that management rank their earnings benchmarks as: (a) report positive earnings (for example, 1 penny a share); (b) avoid earnings decreases; and (c) avoid negative earnings surprise.[§] However, Durtschi and Easton (2005) present that the frequency distribution of reported earnings per share (EPS) does not exhibit a discontinuity at zero, in contrast to frequency distributions of income scaled by lagged market value of equity, total assets, sales and employee numbers. Subsequently, Dechow, Richardson, and Tuna, (2003), using annual earnings level observations, examine the three benchmark as identified by Degeorge et al. (1999) and exhibit that avoiding negative earnings surprise is the most important benchmark management try to achieve. Holland and Ramsay (2003) examine Australian firms to reveal whether they manage earnings to avoid losses and to avoid earnings decreases. Using annual level net profit after taxes scaled by lagged total assets as the proxy for earnings, they plot the frequency distribution with an interval width of 0.01 and find similar results to those presented by Burgstahler and Dichev (1997).

### 3.2. *Meeting and beating earnings benchmark and accrual-based earnings management (AEM): empirical evidence*

Earnings manipulation using flexible or abnormal components of accruals is less likely to be noticeable and is more problematic to infer (Payne and Robb, 2000). In relation to intentional changes in accounting methods, accrual manipulation is a less costly means of shifting earnings between periods (Healy, 1985). Prior research has documented a number of strategies of accrual-based earnings management (AEM) to meet and/or beat earnings threshold, for example, discretionary accruals management (Payne and Robb, 2000; Dechow et al., 2003; Hensen, 2008; Barua, Legoria, and Moffitt, 2006), specific component of accruals (Marquardt and Wideman, 2004), classification shifting (McVay, 2006 and Doyle, Jennings, and Soliman , 2011) deferred tax expense (Phillips, Pincus, and Rego, 2003 and Ayers, Jiang, and Yeung, 2006), EPS rounding and working capital accruals (Das and Zhang, 2003). Assuming that managers are motivated to exercise discretion over the accrual component of earnings to remove negative earnings shocks, Payne and Robb (2000) show that, when pre-managed earnings are lower than the market anticipation, managers use income-increasing discretionary accruals to increase reported earnings. Similar evidence has been documented by Barua et al. (2006), where they show that firms' with pre-managed profits are more likely to use discretion over abnormal accruals to meet or beat the prior period earnings compared to the firms' that have pre-managed losses.

In an empirical study, Dechow et al. (2003) examine the discretionary accruals for firms with small profits and losses, and present that marginal, or small, profit firms have significantly high discretionary accruals as expected; however, interestingly, firms with marginal losses also have significantly high discretionary accruals and there is no significant difference in the unexpected

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[‡] Burgstahler and Dichev (1997) reveal that 30% to 44% of the firms with marginally negative pre-managed earnings use discretion to cross the zero earnings threshold, and 8% to 12% of the firms with small pre-managed earnings decreases use discretion to report earnings escalations.
[§] Degeorge et al. (1999) indicate that the first benchmark arises from the psychologically important differences between positive and negative numbers and the remaining benchmarks arise from performance relative to the prior period.

accruals between small profit and small loss firms. Similar results were also presented by Coulton, Taylor, and Taylor, (2005) and Habib and Hossain (2008) using Australian data. However, Hensen (2008) proposed that firms that marginally exceed earnings threshold, and that marginally fail to meet earnings threshold, might have different levels of discretionary accruals because firms' that fail to meet the earnings benchmark might have used discretionary accruals to avoid an alternative benchmark. After removing firms with the incentive to meet an alternative benchmark from the sample, he finds that small profit firms have higher unexpected accruals relative to those that missed the earnings benchmark.

### 3.3. Meeting and beating earnings benchmark and real earnings management (REM): empirical evidence

Accounting earnings have two components, a cash flow component and an accrual component. Most of the earnings management studies to date use the discretionary or abnormal component of accruals as a proxy of earnings management (McNichols, 2000). Since accounting earnings includes a cash flow component, in addition to accrual management, firms' can also manipulate real operating activities to report positive profits. After the implementation of the SOX, there is increasing literature that managers are enthusiastic to give up economic value to meet short-run earnings targets. For example, Graham, et al. (2005) survey 401 CFOs and report that managers are willing to take actions that are not economically beneficial to the firm if those actions assist the managers to meet a particular earnings benchmark. 51% of the CFOs rank bottom line earnings, earnings per share (EPS) as the number one financial metric to the external constituents, which is much higher than revenues (12%) and cash flow from operations (12%). When asked what measures they might take in order to meet an earnings target, surprisingly, 80% of the participants replied that they would prefer to reduce discretionary expenditures; more than 55% are willing to sacrifice or delay value-increasing positive NPV projects; 41% would favor to book revenues now rather than next quarter; 39% state that they are willing to provide incentives to customers to buy more products this quarter; and 28% are willing to draw down reserves. Executives also suggest that they are more reluctant to use opportunistic GAAP based accrual earnings management (*AEM*). Subsequent research on myopic behavior and real earnings management (*REM*) as a proxy of earnings management, support the empirical validity of the Graham et al. (2005) results (Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010; Gunny, 2010; and Zang, 2012).

Relatively similar findings also documented by Woodhouse and Mather (2013) in the Australian context. Woodhouse and Mather (2013) survey 116 Australian CFOs and report that reporting profit (*EPS>0*) and exceeding prior year profit (*EPS_t>EPS_{t-1}*) are the most important targets of Australian firm managers. Authors show that, managers believe that, meeting an earnings benchmark assists in building credibility with the capital market, increasing stock prices, increasing external reputation of the management team, and conveying future growth prospects to investors, indicating that Australian managers might have strong incentives to manage earnings.[**]

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[**]Woodhouse and Mather (2013) show that 74% of the CFOs are willing to accept value increasing positive NPV projects if it does not affect the earnings benchmark, however, when the probability of missing earnings benchmark increases the probability of accepting the project decreases. For example, the authors reveal that 59%, 52%, and 38% of the respondents would prefer to sacrifice value-increasing positive NPV projects if accepting it results in missing the earnings benchmark by 50 cents, 20 cents and 10 cents respectively, suggesting that Australian managers are willing to engage in REM practices to meet/beat earnings benchmark.

An empirical study by Roychowdhury (2006) presents that executives employ price discounts to momentarily increase sales to manage the cash flow component of earnings, produce more to decrease the per unit cost of goods sold, and reduce their discretionary expenses to increase earnings to meet marginally positive earnings benchmarks in the form of return on assets (ROA). Cohen et al. (2008) examine managers' earnings management behaviour before and after the passage of SOX (Sarbanes – Oxley Act of 2002) using the REM proxies developed by Roychowdhury (2006). They presents that REM replaced the use of AEM after the SOX introduction due to the greater scrutiny placed on the examination of accounting practices.

Gunny (2010) documents that real activity manipulation is positively associated with the firms meeting small positive earnings and sustaining last period earnings. In addition to the zero earnings benchmark, Zang (2012) study firms-years that meeting zero earnings (in the form of *ROA*), beating last year's earnings (in the form of changes in *EPS*), analysts' forecasts and managements forecast and show that, in aggregate, both accrual and real activities manipulation is positively associated with these activities. She also documents that firm's trade-off tools of earnings management depending on their relative costs of doing so.

### 3.4. Hypothesis development:

Section 3.1 provides evidence that there is a strong discontinuity around zero earnings benchmark; the question then is why investors rely on simple heuristic cut-offs. One possible explanation for these results is that investors wish to invest in firms that report a series of small gains rather than firms with unstable earnings, as suggested by Koonce & Mercer (2005), and, therefore, the marginal benefits of earnings management increase sharply as firms meets or beat an earnings benchmark. If interested parties really employ such a heuristic cut-off, then the means by which firms' accomplish the benchmark is immaterial and only reported earnings matters, and the persistence of earnings is of little importance (Marquardt and Wiedman, 2004). Therefore, incurring high cost accrual earnings management is less justifiable to managers and they can easily achieve their objective using low cost real earnings management, leading to the following propositions (*in alternate form*):

*H1: After controlling for sales level, firm-years that report small positive increase in earnings in the form of change in earnings per share (EPS) exhibit evidence of REM and/or AEM.*

*H2: After controlling for sales level, Firm-years that report small positive increase in earnings in the form of changes in return on assets (ROA) exhibit evidence of REM and/or AEM.*

### 4. Research Methodology and Descriptive Statistics

### 4.1. Sample selection:

To evaluate the above hypotheses, initial sample contains 118 Bangladeshi companies with sufficient information to calculate the proxies for earnings management, listed on the Dhaka Stock Exchange Limited (*DSE*) over the analysis period from 2000 to 2015. The firms are not selected randomly; any firms with sufficient financial information to estimate at least one proxy for REM and/or AEM during the observation period are included in the sample. Since this examination bases earnings management measures on cross-sectional regressions using industry-year

information, industry-year portfolios with less than five observations were dropped from the sample. A total of 1,067 firm-years observations, meet the above criteria. The financial information is hand collected from the annual reports of DSE listed companies.

### 4.2 Selection of suspect firm-years

To classify firms that exceed zero earnings benchmark in the form of increase in earnings per share (*EPS*), this paper clusters firm-years into intervals based changes in EPS, then this examination constructs groups of changes in earnings per share (*EPS*) with an interval width of Tk. 0.00 and Tk. 2.00 and hypotheses that firm-years in the interval to the immediate right of zero have strong incentives to meet the zero earnings benchmark. The Suspect changes in EPS (*SuschaEPS*) firm-years have a change in EPS that is in between Tk. 0.00 and Tk. 2.00; this research excludes changes in EPS of Tk. 0.00 to avoid the rounding effect. Similarly, firm-years with changes in ROA that are greater than or equal to 0.00% and less than 2% are classified as suspect changes in ROA (*SuschaROA*) firm-years.

### 4.3 Estimation parameters

To evaluate the hypotheses, the primary measurement tool is the proxies of REM and AEM. The proxies for REM are abnormal cash flow from operations (*AB_CFO*), abnormal production costs (*AB_PROD*), and abnormal discretionary expenses (*AB_DIS*). The proxy for AEM is abnormal or discretionary accruals (*AB_ACC*). The following estimation parameters are used to estimate the expected (normal) levels of operational activities related to REM and AEM. To estimate the proxies of REM, this research relies on the model developed by Dechow et al. (1998), and as implemented by Roychowdhury (2006). Subsequent studies provide the empirical validity of the models (Cohen et al. 2008; Cohen and Zarowin 2010; Gunny 2010; Badertscher 2011; Zang 2012).

The following cross-sectional ordinary least square (OLS) models are estimated for every year and industry, with at least 7 observations, to estimate the normal level of cash flow from operations, production costs and discretionary expenses.

### Normal level of cash flows from operations

$$CFO_t/TA_{t-1} = \gamma_0 + \gamma_1 1/TA_{t-1} + \gamma_2 SA_t/TA_{t-1} + \gamma_3 \Delta SA_t/TA_{t-1} + \varepsilon_t \qquad (1)$$

### Normal level of production costs

$$PROD_t/TA_{t-1} = \gamma_0 + \gamma_1 1/TA_{t-1} + \gamma_2 SA_t/TA_{t-1} + \gamma_3 \Delta SA_t/TA_{t-1} + \gamma_4 \Delta SA_{t-1}/TA_{t-1} + \varepsilon_i \qquad (2)$$

### Normal level of discretionary expenses[††]

$$DIS_t/TA_{t-1} = \gamma_0 + \gamma_1 1/TA_{t-1} + \gamma_2 SA_{t-1}/TA_{t-1} + \varepsilon_t \qquad (3)$$

The abnormal level of cash flow from operations (*AB_CFO*), abnormal production costs (*AB_PROD*), and abnormal discretionary expenses (*AB_DIS*) are then estimated as a deviation of

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[††]Assessing discretionary expenses as a function of current period sales may create a misspecification problem. This is because if the firm managers do not reduce discretionary expenses but manipulate sales upwards to reach an earnings benchmark, this may result in a very small discretionary expense residual from running a regression (Roychowdhury, 2006 and Cohen and Zarowin, 2010). To remove the above problem, following Cohen and Zarowin (2010), we model discretionary expenses as a linear function of last period sales.

the normal (predicted) cash flow from operations from the actual cash flow from operations, normal production costs from the actual production costs, and normal discretionary expenses from the actual discretionary expenses respectively.

***The normal level of accruals:***

Prior studies indicate that most of the AEM research to date uses abnormal (discretionary) total accruals as a measure for AEM.[‡‡] To link this examination to prior research, this examination, therefore, also estimates the normal level of total accruals following the cross sectional Jones (1991) model, as applied in many prior studies (DeFond and Jiambalvo, 1994; Cohen et al., 2008; Cohen and Zarowin, 2010; and Zang, 2012). Consistent with Hribar and Collins (2002), this examination defines total accruals as the difference between earnings before extraordinary items and cash flows from operations. The normal level of discretionary accruals is estimated using the following model:

The following cross-sectional ordinary least square (*OLS*) model is estimated for every year and industry, with at least 8 observations, to estimate the normal level of accruals.

$$TACC_t / TA_{t-1} = \gamma_0 + \gamma_1 1 / TA_{t-1} + \gamma_2 \Delta SA_t / TA_{t-1} + \gamma_3 PPE_t / TA_{t-1} + \varepsilon_t \qquad (4)$$

The abnormal level of accruals (*AB_ACC*) is then estimated as the deviation of the normal (predicted) level of accruals from the actual accruals. The abnormal level of accruals is recognized as a proxy for firm managers' accrual-based earnings management.

Firms suspected of REM are expected to have negative abnormal cash flow from operations (*AB_CFO*); positive abnormal production costs (*AB_PROD*); negative abnormal discretionary expenses (*AB_DIS*); negative abnormal aggregate REM (*AB_AGG*); and positive abnormal accruals (AB_ACC).

***Variable description:*** *Please see Appendix 1 for variable description.*

***4.4 Descriptive Statistics:***

Table 1 presents the descriptive statistics related to the abnormal REM and AEM variables from Equations 1 through 4. To limit the influence of noisy estimation errors, all continuous variables are winsorized at the top and bottom 1% level.

**Table 1: Descriptive Statistics for Real Earnings Management (REM) and Accrual Earnings Management (AEM): Residuals from Equations 1 to 4**

|  | **Mean** | **Median** | **Std. Dev.** | **Q1** | **Q3** |
|---|---|---|---|---|---|
| *AB_CFO* | 0.0000 | -0.0006 | 0.1226 | -0.0537 | 0.0473 |
| *AB_PROD* | 0.0285 | 0.0031 | 0.2045 | -0.0580 | 0.0695 |
| *AB_DIS* | -0.0000 | -0.0028 | 0.0735 | -0.0249 | 0.0192 |
| *AB_ACC* | 0.0150 | 0.0034 | 0.1366 | -0.0430 | 0.0536 |

*Variable description: Please see Appendix 1 for variable descriptions.*

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[‡‡] See Healy and Wahlen (1999) and McNichols (2000).

The mean (median) abnormal cash flow from operations (*AB_CFO*) is 0.0000 (-0.0006) with a standard deviation of 0.1226. The mean (*median*) abnormal production costs (*AB_PROD*) is 0.0285 (0.0031) with a standard deviation of 0.2045. The mean (*median*) abnormal discretionary expenses (*AB_DIS*) is -0.0000 (-0.0028) with a standard deviation of 0.0735. The mean (*median*) abnormal accruals (*AB_ACC*) is 0.0150 (0.0034) with a standard deviation of 0.1336. The $1^{st}$ and $3^{rd}$ quartiles are also reported to interpret the variable distributions and identify outliers.

## 5. Analysis and Results

### 5.1 Univariate analysis of the existence of REM and AEM:

The initial testing for the existence of REM and AEM in the year of suspect changes in EPS (*SuschaEPS*) employs group comparison analysis, based on examining the mean and median proxies for REM and AEM across the (*SuschaEPS*) firm-years and for the rest of the sample. A similar group comparison analysis is also accompanied between the suspect changes in ROA (*SuschaROA*) firm-years and rest of the sample. The result form these analyses are provided in the Tables 2 and 3. The abnormal or discretionary component of the REM and AEM proxies are used as these are fundamentally controlled by the managers of the suspect firms. This investigation did not include the normal or non-discretionary component of the REM and AEM proxies because the normal REM and AEM are primarily exaggerated by the normal operational conditions of the firm.

### 5.1.1 Firm-Years Reporting Small Increases in Earnings Relative to the Prior-Year in the form of changes in earnings per Share (SuschaEPS)

Table 2 shows the univariate results of REM and AEM for firm-years that just beat the prior period earnings. SuschaEPS firm-years represent firm-year observations having changes in EPS that are greater than Tk. 0.00 but less than or equal to Tk. 2.00 and the rest of the sample represent firm-year observations having changes in EPS that are less than Tk. 0.00 or greater than or equal to Tk. 2.00. Table 2 reports that mean (*median*) abnormal production cost (*AB_PROD*) 0.0809 (0.0138) is significantly higher for the firm-years that beat last year's performance in the form of change in EPS, and this supports Hypothesis 1.

**Table 2: Mean median REM and AEM Proxies: A comparison between suspect changes in EPS (Suschaeps) firm-years and the rest of the sample**

|  | SuschaEPS firm-years | | Rest of the sample | | Difference | |
|---|---|---|---|---|---|---|
|  | **Mean** | **Median** | **Mean** | **Median** | **Means (t-statistics)** | **Medians (z-statistics)** |
| *AB_CFO* | -0.0075 | -0.0023 | 0.0004 | 0.0000 | -0.0078 | -0.0023 |
|  |  |  |  |  | (0.84) | (-0.84) |
| *AB_PROD* | 0.0809 | 0.0138 | 0.0144 | 0.0013 | 0.0664*** | 0.0125* |
|  |  |  |  |  | (3.38) | (1.79) |
| *AB_DIS* | 0.0035 | -0.0020 | -0.0007 | -0.0028 | 0.0042 | -0.0008 |
|  |  |  |  |  | (0.70) | (0.65) |
| *AB_ACC* | 0.0600 | 0.0174 | 0.0028 | -0.0006 | 0.0572*** | 0.0180*** |
|  |  |  |  |  | (5.07) | (3.58) |

*\*\*\*Significant at 1% level. \*\*Significant at 5% level. \*Significant at 10% level, two-tailed. The numbers in parenthesis are t-statistics from the two-group mean comparison test, and z-statistics from the Wilcoxon rank-sum test.*

**Variable description:** *Please see Appendix 1 for variable descriptions.*

In addition, The mean (*median*) abnormal accruals (*AB_ACC*) 0.0600 (0.0174) for the suspect group is higher and is significantly different from the mean (median) level 0.0028 (-0.0006) for the rest of the sample, supporting Hypothesis 1, indicating that firm-years that beat prior-year's performance engaged in income-increasing accrual-based earnings manipulation. On the other hand, this study did not find any significant differences in the level of abnormal production costs and abnormal aggregate REM between the two groups.

However, the mean and median abnormal cash flow from operations (*AB_CFO*) and abnormal discretionary expenses (*AB_DIS*) for the SuschaEPS group are not statistically different that for the rest of the sample, and does not support the expectation expressed in Hypothesis 1.

### 5.1.2 Firm-Years Reporting Small Increases in Earnings Relative to the Prior-Year in the form of changes in Return on Assets (SuschaROA)

Table 3 shows the univariate results of REM and AEM for firm-years that just beat the prior period earnings in the form of changes in return on assets (*ROA*). SuschaROA firm-years represent firm-year observations having changes in ROA that are greater than 0% but less than 2% and the rest of the sample represent firm-year observations having changes in ROA that are less than 0% or greater than or equal to 2%.

Table 3 reports that the mean abnormal production cost (*AB_PROD*) 0.0638 is higher than that for the rest of the sample 0.0156 and the difference is statistically different from zero, and provides support for hypothesis 1. However, the difference the median values for the two groups are not significantly different from zero and does not provides support for Hypothesis 2.

Similarly, mean abnormal accruals (*AB_ACC*) 0.0444 is much higher than that for the rest of the sample 0.0060 and the difference is statistically significant at the 1% level, and provides support for hypothesis 2. However, the difference the median values for the two clusters are not statistically significant and does not provides support for Hypothesis 2.

However, the mean and median abnormal cash flow from operations (*AB_CFO*) for the SuschaROA group are not significantly different than that for the rest of the sample, and once again, does not support the expectation expressed in Hypothesis 2.

**Table 3: Mean median REM and AEM proxies: A comparison between suspect changes in roa (suscharoa) firm-years and the rest of the sample**

|  | SuschaROA firm-years | | Rest of the sample | | Difference | |
|---|---|---|---|---|---|---|
|  | Mean | Median | Mean | Median | Means (t-statistics) | Medians (z-statistics) |
| *AB_CFO* | -0.0008 | -0.0006 | -0.0060 | -0.0016 | 0.0052 | 0.0010 |
|  |  |  |  |  | (0.56) | (0.27) |
| *AB_PROD* | 0.0638 | 0.0059 | 0.0156 | 0.0025 | 0.0481** | 0.0034 |
|  |  |  |  |  | (2.68) | (1.13) |
| *AB_DIS* | -0.0008 | -0.0023 | 0.0018 | -0.0027 | -0.0026 | 0.0004 |
|  |  |  |  |  | (-0.44) | (0.04) |
| *AB_ACC* | 0.0444 | 0.0038 | 0.0060 | 0.0016 | 0.0384*** | 0.0022 |
|  |  |  |  |  | (3.19) | (0.19) |

*\*\*\*Significant at 1% level. \*\*Significant at 5% level. \*Significant at 10% level, two-tailed. The numbers in parenthesis are t-statistics from the two-group mean comparison test, and z-statistics from the Wilcoxon rank-sum test.*

*Variable description: Please see Appendix 1 for variable descriptions.*

### 5.2 Multivariate models to test the association between REM and firm-years that meet small positive earnings and sustain last year's performance in the form of EPS

This section presents the multivariate models employed to examine the existence of real earnings management (*REM*) and the presence of accrual earnings management (*AEM*) during the years they are beating prior year earnings threshold. Prior studies suggest that the magnitude of the REM and AEM measures are highly associated with firm performance indicators, the level of growth opportunities, and firm size. Therefore, if there are any observed group differences in the mean and median proxies of REM and AEM across the suspect firm-years in the univariate analysis, they may not necessarily be associated with earnings manipulation across the years firms are beating earnings thresholds. Therefore, the second form of analysis uses ordinary least squares (*OLS*) regression estimation to examine the existence of REM and AEM in the year of beating earnings benchmarks, after controlling for the above explanatory variables.

This study estimates pooled ordinary least square (*OLS*) regression models and computes the t-statistics using robust standard errors. Kraft, Leone, and Wasley (2007) suggest that, in accounting research, OLS offers several distinct advantages where the sample size is large, including being better understood and easier to instrument, open to including additional explanatory variables, and allowing academics to address econometric issues by using methodologies based on clustered standard errors. In addition,

This investigation, assumes that the proxies for REM and AEM are exogenous variables, when assessing the presence of REM and AEM across the years of firms meeting and/or beating earnings benchmarks. A similar assumption is also accepted by Gunny (2010) when examining the future operating performance of firms undertaking REM activities to meet and beat earnings

benchmarks. However, she argues that, if REM is endogenously determined, then the results suffer from a potential correlated omitted variable bias. Therefore, in line with Gunny (2010), this study assumes that both REM and AEM are restrictive on an earnings manipulation incentive to moderate the effects of alternative justifications.

To test Hypotheses 1 and 2 relating to whether the firm-years that exceed prior year's earnings (*suspect firm-years*) exhibit a significant difference from the rest of the sample in terms of REM activity, the following equation is estimated:

$$AB\_REM_t = \gamma_0 + \gamma_1 ROA_t + \gamma_2 MTB_t + \gamma_3 Size_t + \gamma_4 Suspect_t + \sum_{N=1}^{n} \gamma_N Year\ dummies_t + \varepsilon_t \quad (5)$$

Equation 5 regress three proxies of REM on the suspect firm indicator variables $SuschaEPS_t$, and $SuschaROA_t$, *(mutually exclusively)* and control variables.

To test Hypotheses 1 and 2 addressing whether the suspect firm-years demonstrate a significant departure from the rest of the sample in AEM engagement, the following equation is estimated:

$$AB\_AEM_t = \gamma_0 + \gamma_1 ROA_t + \gamma_2 MTB_t + \gamma_3 Size_t + \gamma_4 Suspect_t + \sum_{N=1}^{n} \gamma_N Year\ dummies_t + \varepsilon_t \quad (6)$$

Equations 6 regresses the proxy of AEM on the suspect firm indicator variables $SuschaEPS_t$, and $SuschaROA_t$, (*mutually exclusively*) and control variables.

**Variable descriptions:** Please see Appendix 1 for variable descriptions.

### 5.2.1 Expected sign on the indicator variables when the dependent variables are the measures of REM and AEM

If the managers of the firms, in the year of reporting small positive changes in earnings intentionally participate in sales manipulation by offering price discounts and compassionate credit terms to temporarily increase sales then the coefficient on the indicator variables ($SuschaEPS_t$, *and* $SuschaROA_t$) are expected to be negative when the dependent variable is abnormal cash flow from operations (*AB_CFO*). When the dependent variable is abnormal production costs (*AB_PROD*), if the managers deliberately engaged in overproduction in the year of beating earnings thresholds to reduce per unit products costs, and to satisfy the additional demand created as a result of offering price discounts and more lenient credit terms then the coefficient on the indicator variables are expected to be positive. If they adjust (reduce) discretionary expenses to avoid losses or to reports small increase in earnings relative to the prior year, then the coefficient on the indicator variables are expected to be negative when the dependent variable is the *AB_DIS*. From the discretionary accruals perspective, if the managers of the benchmark beating firm-years taking the opportunistic advantage of GAAP undertake AEM that adversely affects or increases the discretionary or abnormal accruals, then the coefficient on the indicator variables are expected to be positive when the dependent variable is the *AB_ACC*.

### 5.2.2 Control variables:

This research includes control variables based on prior studies. This study incorporates firm performance as a control variable because prior studies suggest that measurement errors in

estimating discretionary accruals (*AEM*) are correlated with firm performance (Dechow et al., 1995; Kasznik, 1999; and McNichols, 2000).[§§] Following prior studies, this paper includes growth opportunities, represented by the market to book value ratio (*MTB$_t$*), as a control variable. Previous empirical examination documents that rapidly growing firms are more likely to be associated with earnings management (Matsumoto, 2002 and McNichols, 2000). In addition, Skinner and Sloan (2002) identify that firms with growth prospects are penalized more by the investors in the market; therefore, managers of high-growth firms are likely to have incentives to avoid negative earnings.[***]

The political cost hypothesis predicts that large firms (firms that are subject to political attention) are more likely to use accounting adoptions that result in an understatement of reported earnings, because of reduced flexibilities and fragile incentives to overstate earnings (Watts and Zimmerman, 1990). However, Lobo and Zhou (2006) propose that large firms are likely to have higher incentives and opportunities to overstate reported earnings because their operational activities are complex, and the difficulty faced by outsiders in detecting such overstatement. This examination further comprises size as a control variable to control for systematic dissimilarity in proxies for REM and AEM.

This analysis also introduces year dummies in the regression model to control for fixed year effects. These variables control for differences in earnings management practices between the years. These year dummy variables also control for specific events or shocks common to all firms that may impact on firm accounting policy and decision making.

### 5.2.3 Correlation between the Dependent and Independent Variables

The correlation coefficients between the continuous variables are reported in Table 4. Following prior studies, the correlations between continuous variables and indicator variables are not reported in Table 4.

Table 4 reports the Spearman rank correlation coefficients for the earnings management measures and for the explanatory variables. The table presents that the abnormal cash flow from operations (*AB_CFO$_t$*) and abnormal accruals (*AB_ACC$_t$*) variables are strongly positively correlated with return on assets (*ROA$_t$*), with the correlation coefficients being significant at the 1% level. However, abnormal production costs (*AB_PROD$_t$*) is negatively correlated with *ROA$_t$* at the 1% significance level. The *AB_CFO$_t$* variable is significantly positively correlated with market to book value ratio (*MTB$_t$*), however, no significant correlation between *AB_PROD$_t$*, *AB_DIS$_t$*, *AB_ACC$_t$* and *MTB$_t$* are observed.

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[§§] They recommend that the inclusion of a firm performance variable in the earnings management regression can lessen the above problem. Recent studies examining the use of REM, in the context of meeting or beating benchmark (Roychowdhury, 2006; Gunny, 2010; and Zang, 2012), and in the setting of SEOs (Cohen and Zarowin, 2010), also include firm performance (ROA) as a control variable to mitigate the effect of estimation error associated with the partitioning variable (proxies for REM).

[***] Furthermore, Roychowdhury (2006) finds that managers of the suspect firm-years with high market-to-book value ratio engaged in REM, and reveals that these firm-years have abnormal production costs that are higher and abnormal discretionary expenses that are lower, on average, relative to rest of the suspect-firm years.

**Table 4: Spearman Correlation Matrix**

|  | $ROA_t$ | $MTB_t$ | $Size_t$ | $AB\_CFO_t$ | $AB\_PROD_t$ | $AB\_DIS_t$ |
|---|---|---|---|---|---|---|
| $MTB_t$ | 0.231*** |  |  |  |  |  |
| $Size_t$ | 0.177*** | 0.858*** |  |  |  |  |
| $AB\_CFO_t$ | 0.251*** | 0.089** | 0.050 |  |  |  |
| $AB\_PROD_t$ | -0.214*** | -0.057 | 0.010 | -0.322*** |  |  |
| $AB\_DIS_t$ | -0.054 | -0.038 | -0.081* | -0.023 | -0.189*** |  |
| $AB\_ACC_t$ | 0.183*** | 0.043 | 0.017 | -0.506*** | 0.132** | -0.037 |

*\*\*\*Significant at 1% level. \*\*Significant at 5% level. \*Significant at 10% level, two-tailed. All variables are winsorized at the top and bottom 1% level before estimating the correlation coefficients to remove the influence of outliers.*

**Variable description:** *Please see Appendix 1 for variable descriptions.*

The proxies of REM and AEM are not significantly correlated with the size of the firm ($Size_t$), except for abnormal discretionary expenses with the correlation coefficients being significantly different from zero. Among the REM and AEM proxies, $AB\_CFO_t$ is significantly negatively correlated to $AB\_PROD_t$, $AB\_DIS_t$, and $AB\_ACC_t$, representing correlations which are consistent with prior studies.[†††]$AB\_PROD_t$ is strongly negatively correlated with $AB\_DIS_t$, with the correlation coefficient being significant at the 1% level. This suggests that managers of firms are involved in REM activities which lead to abnormally higher production costs and, at the same time, they are reducing discretionary expenses to achieve a certain income-increasing earnings benchmark.[‡‡‡] The $AB\_PROD_t$ and $AB\_ACC_t$ variables are significantly positively correlated; in contrast, no significant correlation is observed between $AB\_DIS_t$ and $AB\_ACC_t$. Following Roychowdhury (2006) and Cohen and Zarowin (2010), this study infers the significant negative correlations between ($AB\_ACC_t$ and $AB\_CFO_t$) and ($AB\_PROD$ and $AB\_DIS_t$) as evidence that the manager of firms engaged in both accrual and real earnings management activities.

Between the independent variables, $ROA_t$ is significantly positively correlated with the growth opportunities ($MTV_t$); and the $Size_t$ variable. The $MTV_t$ variable is also strongly positively correlated with the $Size_t$ variable. The correlation coefficients among the independent variables are relatively small, except for between $MTB_t$ and $Size_t$, indicating that multicollinearity should not be problematic for the regression analysis using Equations 5 and 6.

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[†††] Similar results are provided by Roychowdhury (2006); Cohen and Zarowin (2010); Gunny (2010); and Zang (2012). However, the magnitude of the correlation coefficient between $AB\_CFO$ and $AB\_ACC$ are generally much higher than the coefficient found in this study.

[‡‡‡] Prior studies explain the correlation coefficient between $AB\_PROD$ and $AB\_DIS$ in that way Roychowdhury (2006); Cohen and Zarowin (2010); Gunny (2010); and Zang (2012).

### 5.2.4 Multivariate results

### 5.2.4.1 Firm-Years Reporting Small Increases in Earnings in the form of Changes in Earnings per Share (SuschaEPS)

Table 5 presents the results of pooled cross-sectional regressions for the four proxies of REM, and for the proxy of AEM, to test Hypotheses 1 relating to SuschaEPS firm-years. An examination of the table results suggest that the managers of the suspect firm-years (*SuschaEPS*) are engaged in production cost manipulation and accrual-based earnings management relative to the rest of the sample firm-years.

The first column of Table 5 shows the relation between abnormal cash flow from operations ($AB\_CFO_t$) and the indicator variable ($SuschaEPS_t$) firm-years after controlling for other variables that may influence the magnitude of the $AB\_CFO$ variable. The coefficient on $SusEPS_t$ is not significantly different from zero, suggesting that the managers of SusEPS firm-years are not engaged in sales manipulation. However, a significant association between the $AB\_CFO_t$ and the $ROA_t$, and $MTB_t$ variables is evident.

**Table 5: Pooled Cross-Sectional Regressions Relating Abnormal Residuals to Firms
Beating Zero Earnings Threshold in the Form of Small Changes in EPS:
A Comparison between suspect changes in EPS Firm-Years (Suschaeps)
and the rest of the sample**

|  | I | II | III | V |
|---|---|---|---|---|
|  | $AB\_CFO_t$ | $AB\_PROD_t$ | $AB\_DIS_t$ | $AB\_ACC_t$ |
| *Intercept* | 0.0356** | 0.0235 | 0.0066 | 0.0423* |
|  | (1.99) | (0.30) | (0.49) | (1.74) |
| $ROA_t$ | 0.0192*** | -0.0216* | -0.0017 | 0.0167*** |
|  | (5.26) | (-1.93) | (-0.71) | (3.84) |
| $MTB_t$ | 0.0075** | -0.0074 | 0.0034 | -0.0010 |
|  | (2.32) | (-0.77) | (1.63) | (-0.26) |
| $Size_t$ | -0.0041 | -0.0023 | -0.0045** | 0.0019 |
|  | (-1.02) | (-0.17) | (-2.35) | (0.48) |
| ***SuschaEPS_t*** | **-0.0048** | *0.0612** | *0.0036* | *0.0513*** |
|  | **(-0.40)** | *(2.48)* | *(0.64)* | *(3.02)* |
| *Yeardummies* | YES | YES | YES | YES |
| *No. of Observation* | 794 | 585 | 802 | 693 |

*\*\*\*Significant at 1% level. \*\*Significant at 5% level. \*Significant at 10% level, two-tailed. The t-statistics are computed using robust standard errors clustered at the firm level. All continuous variables are winsorized at the top and bottom 1% level to minimize the influence of outliers.*

*Regression model (5) is estimated for the four proxies of real earnings management as the dependent variable and the coefficient estimates are shown in the first four columns of the above table, and regression model (6) is estimated for the proxy of accrual earnings management and the coefficient estimates are shown in the final column of the above table.*

**Variable description:** *Please see Appendix 1 for variable descriptions.*

When the dependent variable is abnormal production costs ($AB\_PROD_t$), the coefficient estimate on the $SuschaEPS_t$ variable is 0.0612 and is significant at the 5% level, indicating that the managers of the exceeding prior year's earnings threshold are involved in production costs manipulation. This result reveals that firm-year exceeding earnings benchmark in the form of small changes in EPS have abnormal (discretionary) production costs that are higher, on average, by 6.12% of total assets relative to the rest of the sample firm observation. This result supports the proposition of Hypothesis 1.

Column 3 of Table 5 presents that the coefficient on the $SuschaEPS_t$ variable is not statistically significant, when the dependent variable is abnormal discretionary expenses ($AB\_DIS_t$), suggesting that *SuschaEPS* firm-years are not engaged in discretionary expense manipulation.

The final column of Table 5 shows that firms beating prior-year's earnings benchmark are involved in higher levels of accrual-based earnings management ($AB\_ACC_t$). The coefficient estimate on the $SuschaEPS_t$ variable is positive (0.0513) with a t-statistic of 3.02, indicating that suspect firm-years have discretionary or abnormal accruals that are higher, on average, by 5.13% of total assets relative to the rest of the sample, and provides support for Hypothesis 1.

### 5.2.4.2 Firm-Years Reporting Small Increases in Earnings in the form of small changes in return on assets (SuschaROA)

Table 6 exhibits that firm-years that report small increases in return on assets compared to the prior year are engaged in income-increasing production cost manipulation and accrual earnings management. When the dependent variable is abnormal production cost ($AB\_PROD_t$), the coefficient on the $SuschaROA_t$ variable is 0.0460 and is significant at the 5% level, indicating that firm-years that sustain the prior year's performance have abnormal production costs, which are higher, on average, by 4.60% of total assets relative to the rest of the sample, and supports Hypothesis 2. The coefficient on the $SuschaROA_t$ variable is positive 0.0368 and significantly different from zero, with a t-statistic of 2.26, when the dependent variable is abnormal accruals ($AB\_ACC_t$), suggesting that this group of firm-years have abnormally higher accruals, on average, by 3.68% of total assets compared to the non-suspect group of firm-years and provides support for Hypothesis 2.

**Table 6: Pooled Cross-Sectional Regressions Relating Abnormal Residuals to Firms
Beating Zero Earnings Threshold in the Form of Small Changes in ROA:
A Comparison between Suspect Changes in ROA Firm-Years (Suscharoa)
and the Rest of the Sample**

|  | I | II | III | V |
|---|---|---|---|---|
|  | $AB\_CFO_t$ | $AB\_PROD_t$ | $AB\_DIS_t$ | $AB\_ACC_t$ |
| *Intercept* | 0.0215 | 0.0414 | 0.0083 | 0.0781*** |
|  | (1.08) | (0.51) | (0.59) | (2.92) |
| $ROA_t$ | 0.0182*** | -0.0183 | -0.0017 | 0.0209*** |
|  | (4.39) | (-1.62) | (-0.69) | (4.16) |
| $MTB_t$ | 0.0085** | -0.0073 | 0.0032 | -0.0022 |
|  | (2.21) | (-0.75) | (1.28) | (-0.49) |
| $Size_t$ | -0.0041 | -0.0036 | -0.0043* | -0.0000 |
|  | (-1.09) | (-0.26) | (-1.93) | (-0.01) |
| **$SuschaROA_t$** | ***0.0101*** | ***0.0460**** | ***-0.0030*** | ***0.0368**** |
|  | *(0.90)* | *(2.14)* | *(-0.52)* | *(2.26)* |
| *Yeardummies* | YES | YES | YES | YES |
| *No. of Observation* | 710 | 587 | 717 | 623 |

*\*\*\*Significant at 1% level. \*\*Significant at 5% level. \*Significant at 10% level, two-tailed. The t-statistics are computed using robust standard errors clustered at the firm level. All continuous variables are winsorized at the top and bottom 1% level to minimize the influence of outliers.*

*Regression model (5) is estimated for the four proxies of real earnings management as the dependent variable and the coefficient estimates are shown in the first four columns of the above table, and regression model (6) is estimated for the proxy of accrual earnings management and the coefficient estimates are shown in the final column of the above table.*

*Variable description: Please see Appendix 1 for variable descriptions.*

However, when the dependent variable is abnormal cash flow from operations ($AB\_CFO_t$) the coefficient on the $SuschaROA_t$ variable is not significantly different from zero and does not provide support for proposition 2. Similar result is also observed when the dependent variable is abnormal discretionary expenses.

## 6. Conclusion

Most of the literature on earnings management is based on the US market. Bangladeshi evidence is relatively scares in comparison. For Bangladesh, only a few papers have addressed the issue of earnings management and are limited to the investigation of accrual earnings management (AEM) around the individual industry sector. This examination extends the prior research and provides a

comprehensive examination of two types of earnings management (*REM* and *AEM*) and their association with earnings benchmarks in Bangladesh.

The multivariate results show that, after controlling for variables that may influence the magnitude of REM and AEM the findings of this study indicates that managers of Bangladeshi firms that exceed prior year earnings benchmarks in the form of small positive changes in EPS and ROA at the annual level tend to engage in at least one form of REM in addition to AEM in the years of beating previous year's earnings thresholds. Consistent with the propositions, the multivariate results document abnormally higher production costs and abnormally higher discretionary accruals in these years.

These deliberate managerial actions, in the form of REM and AEM, artificially mask the real value of the firm's assets, financial performance, and do not reflect the true and fair value of the firm. Since earnings management could affect the quality of accounting information by producing less reliable financial statements, eventually it could cause negative economic consequences for investors, managers, and other potential stakeholders.

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**APPENDIX 1: Variable Definition – In Chronological Order**

| Variable | Definition |
|---|---|
| $1/TA_{t-1}$ | Represents the lagged inverse of total assets |
| AB_ACC | Represents the abnormal accruals |
| AB_CFO | Represents abnormal cash flow from operations |
| AB_DIS | Represents abnormal discretionary expenses |
| AB_PROD | Represents abnormal production costs |
| $ACC_t$ | Represents the accruals during the year t. |
| $ACC_t/TA_{t-1}$ | Represents accruals to lagged total assets ratio |
| $CFO_t$ | Represents the cash flow from operations during the year t |
| $CFO_t/TA_{t-1}$ | Represents cash flow from operations to lagged total assets ratio |
| $DIS_t$ | Represents the discretionary expenses during the year t |
| $DIS_t/TA_{t-1}$ | Represents discretionary expenses to lagged total assets ratio |
| $EATBEX_t$ | Represents earnings after taxes but before extraordinary items |
| $EPS_t$ | Represents earnings per share |
| $MTB_t$ | Represents the market-to-book value ratio |
| $PPE_t/TA_{t-1}$ | Represents the gross property plant and equipment during the year t scaled by lagged total assets |
| $PROD_t$ | Represents the production costs during the year t |
| $PROD_t/TA_{t-1}$ | Represents production costs to lagged total assets ratio |
| $ROA_t$ | Represents the return on assets ratio and is calculated as $EATBEX_t$ divided by lagged total assets |
| $SA_t/TA_{t-1}$ | Represents sales to lagged total assets ratio |
| $SA_{t-1}/TA_{t-1}$ | Represents the sales during the year t-1 scaled by lagged total assets |
| $\Delta SA_t/TA_{t-1}$ | Represents the changes in sales during the year t scaled by lagged total assets |
| $\Delta SA_{t-1}/TA_{t-1}$ | Represents the changes in sales during the year t-1 scaled by lagged total assets |
| $Size_t$ | Represents the natural logarithm of market value of equity |
| $SuschaEPS_t$ | Represents an indicator variable coded one if changes in earnings per share (EPS) are greater than Tk. 0.00 but less than Tk. 2.00, and zero otherwise |
| $SuschaROA_t$ | Represents an indicator variable coded one if changes in return on assets are greater than 0% but less than 2%, and zero otherwise |
| $TA_t$ | Represents total assets |
| $TA_{t-1}$ | Represents lagged total assets |