RESEARCH ARTICLE

Real earnings management's effects on performance in firms reaching the loss avoidance threshold: indian evidence after controlling for variations in firm's competitive strategy

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Abstract This study investigates the managerial intent—whether opportunistic or signaling—behind real earnings management (REM) actions taken to meet the loss avoidance threshold by examining their impact on future performance, whether negative or positive. The focus is on the impact of REM through overproduction, as well as selling, general, and administrative expenses (SGAX), both in aggregate and individually, on return on assets (ROA) and cash flow from operations (CFO). Additionally, the study delves into the impact of three components of SGAX, namely marketing expenses (MRKX), welfare and training expenses (WTX), and other general and administrative expenses (OGAX)—separately. To estimate REM proxies, this research utilizes Srivastava's (2019) models, which account for variation in a firm's competitive strategy. It applies panel regression analysis on observations from a sample frame consisting of 1444 non-financial enterprises spanning from 2005 to 2019. The findings reveal that firms motivated to meet the loss avoidance threshold and exhibiting REM, particularly through SGAX, experience a negative ROA in later years. The study observes similar implications for MRKX and OGAX. Furthermore, firms engaging in REM through OGAX witnessed unfavorable CFO implications. The study does not observe any impact of REM through overproduction and WTX on future performance. The robustness tests corroborate these findings, and additionally indicate that SGAX and WTX-focused REM negatively impact CFO, while overproduction-focused REM adversely impacts ROA. The results suggest that manager exercise REM opportunistically to avoid losses, highlighting the need for regulatory intervention to address the threshold mentality among Indian firms.

Keywords Real earnings management · Loss avoidance threshold · Financial performance · Competitive strategy · Institutionalized agency theory

JEL Classification M41

Introduction

Agency theorists see a firm as a nexus of contracts (Coase 1937; Jensen & Meckling 1976). Executives employ both accrual and real measures to influence earnings, aiming to affect the stock price and their compensation. Accrual earnings management (AEM) involves managers utilizing the flexibility within generally accepted accounting principles (GAAP) to select accounting methods (e.g., depreciation methods) and estimates (e.g., assumptions for defined-benefit plans) (Walker 2013; Sherman & Young 2001). Real earnings management (REM) occurs when managers undertake unexpected business decisions, such as

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cutting discretionary expenses, to enhance accounting outcomes (Sherman & Young 2016).

Accrual and real measures enable managers to boost financial performance. They prefer business decisions to accrual procedures to affect earnings (Bruns & Merchant 1990). Accrual actions may attract auditors' scrutiny, potentially leading to unfavorable audit outcomes and increased regulatory oversight. However, REM is easier to hide as ordinary business activity, making it harder for stakeholders to recognize (Kothari et al. 2016).

REM, particularly through operational decisions, is costlier than AEM regarding its impact on intangibles, future financial performance, cash flows, and long-term value (Kothari et al. 2016). Kumar et al. (2021) show that REM adversely affected corporate performance in India. However, their study did not consider firms with a motivation to manage earnings. Thus, analyzing performance implications without considering the motive to manage earnings may yield less reliable results because lower proxies for REM may simply reflect the firm's operational characteristics. Furthermore, the study's estimation models failed to take into account the firms' strategic orientations, which influence discretionary spending and could potentially weaken the statistical findings. This study is unique in the sense that it examines performance implications REM in firms motivated to reach loss avoidance threshold (i.e., achieving earnings above zero), where managers are inclined toward REM (Zang 2012). Preventing losses is a key earnings threshold and earnings management driver (Shette 2018; Carvajal et al. 2017; Degeorge, 1999).

The literature on the impact of REM on the performance of non-Indian firms aiming to avoid losses presents mixed findings. The adverse consequences of REM on future performance in such organizations have been associated with managers' opportunistic behavior—pursuing personal short-term interests at the company's expense (Bhojraj et al. 2009). Conversely, studies indicating positive performance effects of REM (Vorst 2016) attribute it to real benefits or signaling behaviors. The real benefit explanation suggests that performance enhancements are due to improved credibility with stakeholders following the achievement of certain thresholds. On the other hand, the signaling perspective argues that managers would only adopt such costly REM measures if they believed in the company's better

prospects. Keeping in view these explanations on contrary evidence and weak legal enforcements of laws in India that could affect agency behavior (Leuz et al. 2003), it is imperative to investigate the performance implications of REM in Indian firms having motivation to manage earnings, particularly an incentive to attain a loss avoidance threshold, to determine if managers engage in opportunistic REM or in signaling.

This study examines the effects of REM, both aggregate and individual, through overproduction and reductions in selling, general, and administrative expenses (SGAX) on the three-year ROA and CFO of firms motivated to avoid losses and be susceptible to REM. These REM measures are selected for three reasons. First, they are established measures of REM (Huang et al. 2020; Li 2019; Jiang et al. 2018; Ernstberger 2017; Ge & Kim 2014a). Second, these operational REM measures are chosen more often than the timing of asset sale (investing) and securitization (financing) transactions. Finally, SGAX includes marketing and training expenses, which contribute to the creation of corporate intangible assets (brand and human capital) that drive firm performance (Gunny 2010). ROA and CFO are widely recognized as core indicators of operational performance in academic research. The REM proxies are estimated using Srivastava's (2019) models, which control for the fact that firms' competitive strategies can vary. The study applies panel regression analysis on observations from a sample frame of 1444 non-financial National Stock Exchange listed firms between 2005 and 2019.

The results regarding the aggregate REM measure, which comprises a sum of overproduction and SGAX, indicate that firms with incentives to attain the threshold of avoiding losses exhibiting REM, experience a decline in the subsequent year's ROA. Additionally, the measure-specific results exhibit that firms demonstrating REM through SGAX to avoid losses had significantly lower ROA in the subsequent two years. This suggests that SGAX REM is detrimental to company performance. Furthermore, the results pertaining to individual SGAX components support this conclusion. Specifically, firms that undertake REM through MRKX and OGAX when facing an incentive to avoid losses have a considerably lower future ROA (two years). Moreover, CFO is significantly negatively associated with firms

demonstrating REM through OGAX during the loss avoidance incentive. The study, however, does not find any impact on REM through overproduction and WTX for such firms. The research also validates the robustness of the results by adopting Roychowdhury's (2006) definition for identifying firms with an incentive to achieve a loss avoidance threshold. The revised, non-tabulated estimations support the findings of this study and further reveal the adverse impact of REM through overproduction on future ROA, and REM through SGAX and WTX on future CFO. Overall, the detrimental effects of discretionary expense REM in firms motivated to prevent losses indicate that managers are predisposed to employ REM opportunistically at the expense of the firm's future earnings.

This study is unique and advances the literature in several ways. Firstly, it examines how REM affects performance when managers are under pressure to avoid losses. By analyzing the performance ramifications of REM practices in scenarios where there is a profound incentive to manage earnings, a more appropriate setting for investigating this issue is offered. Secondly, the research shows the underlying intentions of Indian enterprises using REM in these circumstances. The findings suggest that managers employ REM opportunistically rather than as a signal of better performance. Thirdly, this study provides the first empirical evidence on the performance consequences of REM adopted to prevent losses, using proxies generated using Srivastava's (2019) estimation models. These models, which consider variations in firms' strategic orientations, show substantially higher explanatory power in comparison with traditional estimation models (Roychowdhury 2006; Gunny 2010). The residuals derived from these models serve as a more accurate proxy for abnormal levels of REM measures due to their reduced noise. These residuals become the basis for determining independent variables of interest in the empirical modeling applied to test REM's effects. Thus, it improves the power of statistical tests in the present study and provides more credible evidence of REM implications. The findings require regulatory actions like regulations to limit threshold mentality in the Indian economy. Additionally, improvements in annual report disclosures are crucial to assist auditors and investors in identifying and mitigating detrimental REM practices.

The remaining sections of the research are organized as follows: First, it discusses the study's purpose, past research, and hypothesis. Next, it outlines the study's data collection and research methodology. Subsequently, descriptive and inferential results are presented. The study concludes with a discussion of its findings, contributions, and implications.

Theoretical framework, motivations for the study, review of literature and development of hypothesis

Theoretical framework

In the company form of organizations, managers act as agents for the shareholders, given the inherent separation between the two groups. These managers possess an informational advantage, stemming from their active engagement in managing corporate affairs. Agency Theory articulates that managers might not always prioritize shareholder interests due to their inclination to fulfill their own self-interests (Jensen & Meckling 1976). One such managerial self-interest is to report the desired level of earnings, which they satisfy by deliberately influencing the reported accounting numbers (see Brigham & Ehrhardt 2012). Furthermore, Positive Accounting Theory identifies various contractual motivations, such as compensation schemes and debt covenants, which motivate managers to engage in such agency behavior of earnings management (Watts & Zimmerman 1990). Institutionalized Agency Theory states that agency behavior, including earnings management, will vary with the institutional forces at play in the context within which a firm operates (Bao & Lewellyn 2017).

The arguments in this research are primarily grounded in the above-mentioned theoretical frameworks. Particularly, from an agency theory perspective, REM practices pertaining to operating decisions, including overproduction and cuts in discretionary expenses, are abnormal business practices misaligned with shareholder interests (Roychowdhury 2006). From Positive Accounting Theory perspective, managers engage in such costly practices when they have an incentive to meet earnings thresholds (Dichev et al. 2016; Graham et al. 2005). These practices are costly in terms of their adverse impact on future performance (Duong

2023; Vorst 2016; Srivastava et al. 1998). From the perspective of Institutional Agency Theory, considering India's weak legal enforcement (Leuz et al. 2003), which could exacerbate agency behavior, it is crucial to examine the future performance implications of REM practices in this context.

Motivations for the Study

In India, despite having strong laws, investors protection remains weak due to poor enforcement of laws (Cahan et al. 2008, p.8). Countries characterized by weak law enforcement witness the highest incidences of earnings management (Leuz et al. 2003).[1] Furthermore, Enomoto et al. (2015) show that the prevalence of REM practices is higher in India compared to AEM practices. This underlines the importance of scrutinizing the future performance implications of REM practices within the Indian context, especially given that weak law enforcement significantly encourages managers to engage in opportunistic REM actions when motivated to manipulate earnings.

According to a literature assessment, Kumar et al. (2021) is the only Indian study to examine how REM practices (overproduction and aggregate discretionary expenditure) affect performance. This study strongly advocates reexamining the topic due to the following considerations.

Kumar et al. (2021) regressed residuals, proxying REM, with performance measures. Their findings underscored the detrimental effects of REM, evidenced by a significant negative association. The present study argues that the observations with small residuals, proxying discretionary expense REM, without motivation to manage earnings upward, does not necessarily reflect earnings-increasing REM. It may be due to organizational operational characteristics and future strategic orientation. Thus, there is a need to reexamine the issue in a more valid setting. This work minimizes such possibilities by regressing REM proxy for firms with significant earnings management motivation, i.e., attaining loss avoidance threshold. This approach is deemed a more

valid setting and is expected to yield more reliable evidence, as numerous studies have confirmed the practice of REM to meet specific thresholds.

Further, Kumar et al. (2021) used Roychowdhury's (2006) estimation models to generate REM proxies. A notable limitation of these models is that they do not control the firm's strategic considerations, and their explanatory power is low (Srivastava 2019). This highlights the necessity for reevaluating the REM implications through the lens of contemporary models. Accordingly, this study adopts Srivastava (2019) REM estimation models, which include new regressors to control for differences in corporate strategy that influences operational choices, particularly discretionary spending.

Lastly, Kumar et al. (2021) assessed the REM effect on subsequent year performance. However, REM effects may last or emerge later, there is a need to reexamine the long-term REM implications. Thus, this study evaluates three-year performance consequences and investigates the same for different components of SGAX—MRKX, WTX, and OGAX—relevant to marketing, human resources, and general management. It is crucial because managers may employ REM in different ways and with different goals. Given these arguments, an investigation of the performance repercussions of REM in Indian context, especially when used to prevent losses, is essential.

Review of Literature and Development of Hypothesis

Agency Theory states that managers prioritize their own interests over those of capital suppliers (Jensen & Meckling 1976). This includes practices such as manipulating reported earnings to meet certain benchmarks or incentives. To fulfill self-interest, managers exploit their informational advantage to make abnormal business decisions (i.e., REM), which, according to Brigham and Ehrhardt (2012), can reduce a firm value.

The detrimental impact of REM on information quality and firm performance has been well documented. Exercising REM by overproducing, manipulating sales, and cutting discretionary spending, raise cost of both equity and debt capital, and adversely impact credit ratings and bond yield spreads (Kim et al. 2020; Kim & Sohn 2013; Ge & Kim 2014b). Further research by Vorst (2016) indicates that firms engaging in REM practices,

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[1] Leuz et al. (2003) list India as one of 10 nations with inadequate law enforcement. Another nine nations in the cluster include Greece, Korea, Portugal, Italy, Spain, Indonesia, Thailand, Pakistan, and Philippines.

specifically reversing discretionary spending cuts, exhibit poorer ROA and CFO. Similarly, Tabassum et al. (2015) find that sales manipulation lowers future return on equity, EPS, and P/E in addition to ROA. Li et al. (2021) also confirms that REM practices hurt firm ROA. Beyond financial performance, REM practices have been shown to negatively impact firm value. For instance, Mizik (2010) reveals that enterprises with REM practices, characterized by reducing MRKX and Research & Development expenses (R&DX) and higher than average ROA, have worse long-term stock returns.

Despite the negative effects, studies provide strong evidence that managers use REM to meet earnings thresholds (Gandhi 2020; Alhadab & Nguyen 2018; Zang 2012; Cohen et al. 2010). The importance of meeting earnings thresholds stems from stakeholders' threshold mentality, which they use to evaluate managers and firms (Degeorge et al. 1999). This mentality is driven by stakeholders' loss aversion, a phenomenon where losses are perceived as more significant when explicitly contrasted or weighted against revenues (Kahneman 2011). As a result, firms are likely to experience greater consequences if they fail to meet these thresholds. Shette (2018) finds that Indian firms prioritize meeting threshold of loss avoidance.[2] The Economic Times reported a 40% increase in the number of Bombay Stock Exchange 500 Index companies holding earnings calls in the five years leading up to fiscal year 2018 (Somvanshi 2018). This increase suggests more activity, which may exacerbate the threshold thinking prevalent in the Indian stock market.

Evidence on how REM to attain earnings thresholds affect a firm's future operating performance is mixed. One stream of studies observes adverse performance in future. Bhojraj et al. (2009) contrasts the future performance of enterprises that just meet the earnings threshold with earnings management practices (both AEM and REM) with those that just miss the threshold without earnings management. They observe that, after three years, the ROA of beaters with earnings management approaches decreases, whereas the ROA of missers without earnings management

increases. Leggett et al. (2009) show that cutting discretionary costs reduces future CFO and ROA for companies that meet earnings targets. Cohen and Zarowin (2010) find that enterprises that engage in REM activities (overproduction and discretionary spending reduction) during the Seasoned Equity Offering (SEO) year have lower post-SEO operating performance. Paredes and Wheatley (2017) show that REM methods to exceed earnings benchmarks hurt the firm's return on sales the following year. Eldenburg et al. (2011) find that nonprofit hospitals, which meet the earnings threshold of avoiding losses by managing non-operating and non-revenue-generating expenses, experience a decline in future ROA. Bereskin et al. (2018) observe that organizations that meet the profits criterion via discretionary R&DX spending cuts exhibit lower innovation efficiency (patents). These studies collectively suggest that managers, motivated to meet earnings thresholds, use REM opportunistically.

Another series of studies exhibit that REM positively impacts the future performance of threshold firms, suggesting that management signals good future business prospects. Gunny (2010) shows that firms that overproduce and cut R&DX and/or SGAX to reach earnings thresholds have a higher ROA and CFO. Vorst (2016) finds that enterprises that meet thresholds by adopting REM, measured through the reversal of discretionary expense cutbacks, have better operating performance and cash flows. Paredes and Wheatley (2017) find that overproducing firms with expanding sales have a greater return on sales the subsequent year. Beyer et al. (2018) also find a positive relationship between REM practices to meet earnings thresholds and future performance in firms with less incentive, such as low price-to-book ratio (PBR), low transient investors, and no SEOs. Al-Shattarat et al. (2022) show that organizations used REM to modify production costs and discretionary expenditure to reach earnings threshold have improved operating performance and prospects. These studies collectively endorse the conception that the positive effects of REM, when employed to meet earnings thresholds, are attributed either to the benefits of reaching those thresholds— such as increased stakeholder credibility (Mindak et al. 2016; Dichev et al. 2013, 2016; Gunny 2010), or may be a signal for a firm's favorable prospects because managers would only engage in such costly

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[2] Author finds extremely high number of enterprises reporting small positive earnings and the relatively low number reporting minor negative earnings.

practices when they believed in favorable prospects (Beyer et al. 2018; Gunny & Zhang 2014; Gunny 2010; Arya et al. 2003; Holland & Ramsay 2003; Parfet 2000).

The REM practices employed to meet earnings thresholds may not affect a firm's future performance. Taylor and Xu (2010) find that REM used to meet earnings thresholds does not impact the firm's operating performance or cash flows. Similarly, Beyer et al. (2018) observe no effect of REM on future performance when enterprises have high incentives to exceed profit thresholds, such as high PBR, a transient investor base, and SEO.

This section discusses opposing ideas for how exercising REM to attain earnings thresholds influences future performance. Consequently, the null hypothesis concerning future performance and REM in organizations motivated to reach the loss avoidance threshold is established:

H_0: *Ceteris paribus, real earnings management practices in firms that just meet earnings threshold of avoiding losses are not significantly related to future performance.*

Research Design

Data Source

All the data needed to generate the variables in the regression models outlined in subsequent sections are sourced from the ProwessIQ database, provided by the Centre for Monitoring Indian Economy Pvt. Ltd.

Sample Selection

This study's sample frame comprises companies listed on the National Stock Exchange of India between April 1, 2005, and March 31, 2019, organized into industries using 2-digit NIC codes. The reason for limiting the study's time range to the year 2019 is due to the emergence of the COVID pandemic in 2020, which adversely affected the Indian economy. Including later years might bias the results since Duong (2023) finds that REM adverse impact get magnifies during economic downturns. The sample frame excludes financial services and public utility companies, which are

extensively regulated and have different accounting standards than other organizations (Gunny 2010). In addition, industries with fewer than 15 companies are excluded, in accordance with the literature. The final sample frame and number of companies in this investigation are shown in Table 1.

To estimate proxies for REM practices, namely abnormal levels of actions, the study estimates the relevant cross-sectional regression models (outlined in the subsequent section) for each year and industry using data available for the firms during 2005 to 2016 in the above-mentioned sample frame. The residuals serve as a surrogate for the applicable REM technique and laying the basis for computation of variable of interest in the later described hypothesis testing regression model. Finally, the actual sample used to test a hypothesis linked to a certain REM measure includes all firm-years from the sampling frame during the period April 1, 2005, and March 31, 2016 with available data to estimate the later described hypothesis testing panel regression model (Ge & Kim 2014a). The reason for restricting regression analysis, both industry-year cross-sectional and panel, to observations from 2005 to 2016 is to assess the impact of REM on performance over the next three years, i.e., 2017, 2018, and 2019.

Cross-Sectional Estimation Models for Generating REM Proxies

To assess the abnormal levels of production cost (AB_PRODCO) and discretionary expenses (AB_SGAX, AB_MRKX, AB_WTX, and AB_OGAX), the study applies below mentioned cross-sectional regression models developed by Srivastava (2019). Specifically, the residuals from these estimation models indicate the abnormal levels of REM measure. According to Srivastava, differences within industries concerning a firm's competitive strategy are critical to the firm's investment policy. As a result, the firm's cost disparities connected to strategy might be misunderstood as proof of REM practice. Therefore, while ascertaining abnormal levels of real measures (REM proxies), it is essential to control for variance in characteristics related to a firm's competitive strategy. He included factors such as prospective sales, size, growth, previous

Table 1 Sample frame

2-Digit NIC Code	Industry	Observations
10	Manufacture of food products	75
11	Manufacture of beverages	17
13	Manufacture of textiles	80
14	Manufacture of wearing apparel	23
17	Manufacture of paper and paper products	28
19	Manufacture of coke and refined petroleum products	15
20	Manufacture of chemicals and chemical products	161
21	Manufacture of pharmaceuticals, medicinal chemical, and botanical products	86
22	Manufacture of rubber and plastics products	71
23	Manufacture of other non-metallic mineral products	56
24	Manufacture of basic metals	95
25	Manufacture of fabricated metal	28
26	Manufacture of computer, electronic, and optical products	32
27	Manufacture of electrical equipment	63
28	Manufacture of machinery and equipment	62
29	Manufacture of motor vehicles, trailers, and semitrailers	61
32	Other manufacturing	16
34	Diversified	48
41	Construction of buildings	51
42	Civil engineering	32
46	Wholesale trade, except of motor vehicles and motorcycles	143
47	Retail trade, except of motor vehicles and motorcycles	38
55	Accommodation	26
62	Computer programming, consultancy, and related activities	81
63	Information service activities	16
77	Rental and leasing activities	18
86	Human health activities	22
	Final sample frame	1444

profitability, and a lagged dependent variable to provide control for the same. These recently developed and improved estimation models are mentioned below:

Production Cost Model

$$Y_t/TA_{t-1} = \alpha + \alpha_1\left(1/TA_{t-1}\right) + \beta_1(NS_t/TA_{t-1}$$
$$+ \beta_2\left(\Delta NS_t/TA_{t-1}\right) + \beta_3\left(\Delta NS_{t-1}/TA_{t-1}\right) + \beta_4\left(\Delta NS_{t+1}/TA_{t-1}\right)$$
$$+ \beta_5\left(LMC_t\right) + \beta_6\left(PBR_t\right) + \beta_7\left(EBXI_{t-1}/TA_{t-1}\right)$$
$$+ \beta_6\left(Y_{t-1}/TA_{t-1}\right) + \varepsilon_t \qquad \text{(Model A)}$$

Discretionary Expense Model

$$Y_t/TA_{t-1} = \alpha + \alpha_1(1/TA_{t-1}) + \beta_1(NS_{t-1}/TA_{t-1})$$
$$+ \beta_2(NS_{t+1}/TA_{t-1}) + \beta_3(LMC_t)$$
$$+ \beta_4(PBR_t) + \beta_5(EBXI_{t-1}/TA_{t-1})$$
$$+ \beta_6(Y_{t-1}/TA_{t-1}) + \varepsilon_t \qquad \text{(Model B)}$$

where:

Y = Production cost (PRODCO), SGAX, MRKX, WTX, and OGAX.

NS = net sales, calculated as net sales minus rebates and discounts expenses and fiscal benefits;

TA = total assets;

LMC = natural logarithm of market capitalization which is the market value of common shares outstanding;

PBR = price-to-book ratio;

EBXI = earnings before extraordinary items.

The results, not tabulated, of Srivastava's (2019) REM estimation models exhibit considerably high explanatory power (Adjusted R^2) for both the REM measures Overproduction (97.63%) and SGAX (90.19%). This is in contrast to Roychowdhury' (2006) estimation models, which display explanatory powers of 89% for overproduction and 38% for SGAX, and Gunny's (2010) estimation models, which show 82% and 40%, respectively. Furthermore, Srivastava's (2019) models also perform well on components of SGAX, with MRKX at 89.86%, WTX at 90.93%, and OGAX at 82.64%.

Regression Model for Testing of Hypotheses

The period fixed-effect panel regression model mentioned below is estimated to assess the relationship between firm's subsequent performance (ROA and CFO) and firms being motivated to meet earnings threshold of avoiding losses which are susceptible of engaging in REM practices:

$$
\begin{aligned}
\text{ADJ\_ROA}_{i,t+k} &\text{ or ADJ\_CFO}_{i,t+k} \\
= &\ \beta_0 + \beta_1\left(\text{ADJ\_ROA}_{i,t+k-1}\right) + \beta_2\left(\text{ADJ\_ZSCR}_{i,t}\right) \\
&+ \beta_3\left(\text{ADJ\_RET}_{i,t}\right) + \beta_4\left(\text{ADJ\_LMC}_{i,t}\right) \\
&+ \beta_5\left(\text{ADJ\_LEVRG}_{i,t}\right) + \beta_6\left(\text{ADJ\_SLGRTH}_{i,t}\right) \\
&+ \beta_7\left(\text{ADJ\_LGPPE}_{i,t}\right) + \beta_8\left(\text{ADJ\_MOWN}_{i,t}\right) \\
&+ \beta_9\left(\text{AB\_TYPE\_REM}_{i,t+k}\right) + \beta_{10}\left(\text{ETAL}_{i,t}\right) \\
&+ \beta_{11}\left(\text{TYPE\_REM}_{i,t}\right) + \beta_{12}\left(\text{ETAL}_{i,t} * \text{TYPE\_REM}_{i,t}\right) \\
&+ \text{Year Effects} + \varepsilon_{i,t+k} \qquad \text{(Model C)}
\end{aligned}
$$

where Y denotes financial statement-based measures of performance, viz., ROA and CFO. The subscript t + k with Y denotes the year of performance. Specifically, the study estimates Model C with performance measures for the subsequent three years, i.e., year t + 1 (2017), t + 2 (2018), and t + 3 (2019). ROA

denotes EBXI in year t divided by TA in year t-1, and CFO denotes cash flow from operations before extraordinary items in year t divided by TA in year t-1. Following the literature, these performance measures are adjusted for the industry-year median (Gunny 2010; Vorst 2016; Beyer et al. 2018). The rationale for adjusting performance measures is "to control for differences in industry concentration that may affect the performance measure" (Gunny 2010, p. 873). Particularly, the dependent variables are: (i) Adj_ROA denotes the firm's ROA minus the median ROA of firms in the same year and same industry. (ii) Adj_CFO is defined as a firm's CFO minus the median CFO of firms in the same year and the same industry. Additionally, to check the robustness of the results, the study also assesses the impact on non-adjusted subsequent three years future performance measures, i.e., ROA_{t+k} and $\text{CFO}_{i,t+k}$.

Amongst the independent variables besides intercept, the first nine are the control variables. Adj_ROA_{t+k-1} denotes the industry-year median-adjusted ROA of the previous to the year t + k. For example, if dependent variable is Adj_ROA_{t+1} (Adj_ROA_{t+2}, Adj_ROA_{t+3}), then the control variable will be Adj_ROA_t (Adj_ROA_{t+1}, Adj_ROA_{t+2}). It controls for the correlation between the current and future performance. ADJ_ZSCR_t denotes industry-year median-adjusted Modified Altman's Z-score, calculated as 1.2*(net working capital$_t$/TA$_{t-1}$) + 1.4*(cumulative retained earnings$_t$/TA$_{t-1}$) + 3.3*(EBXI$_t$/TA$_{t-1}$) + 1*(NS$_t$/TA$_{t-1}$). This variable provides a control for the firm's financial health. ADJ_RET_t denotes size decile portfolio-adjusted return, i.e., buy-and-hold return (BHR) minus median annual BHR of firms in a size-matched decile portfolio.[34] It provides a control for the relationship between a firm's current year stock returns with future performance. ADJ_LMC_t denotes industry-year median-adjusted natural logarithm of market capitalization, which controls for the firm size (Roychowdhury 2006). Measured as borrowings in year t divided by TA in year t-1, further adjusted for industry-year median, the variable ADJ_LEVRG_t controls for financial leverage. ADJ_SLGRTH_t denotes industry-year median-adjusted

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[3] Annual buy-and-hold return is defined as closing stock price (CSP) in year t minus CSP in year t-1 divided by CSP in year t-1.

[4] Ten portfolios are created in the year end, i.e., March closing, using rankings based on market capitalization of the firms in the sample relevant to estimation.

growth in the firm's revenues measured as NS_t minus NS_{t-1} divided by NS_{t-1}. Since the level of property, plant, and equipment (PPE) affects ROA, the model considers ADJ_LGPPE, i.e., industry-year median-adjusted natural logarithm of gross PPE_t, as a control variable. ADJ_MOWN_t controls for managerial ownership since it affects managerial opportunism. Following Sehrawat et al. (2019), MOWN is measured as the ratio of shares owned by promotors to total shares and further adjusted for the industry-year median. Lastly, the model incorporates abnormal levels of a REM measure (AB_TYPE_REM), estimated from industry-year regressions (Model A and Model B), for year t+k to provide control for the impact of REM through that measure on performance measures of year t+k. For example, if dependent variable is Adj_ROA_{t+1} (Adj_ROA_{t+2} or Adj_ROA_{t+3}), and examining the impact of REM through overproduction, then the control variable will be AB_PROD_{t+1} (AB_PROD_{t+2} and AB_PROD_{t+3}, respectively). Roychowdhury (2006) adjusted the control variables for industry-year mean since the abnormal levels of REM measures are estimated from industry-year regressions (p. 350). Based on this reasoning, since the dependent variables in Model C are industry-year median-adjusted ROA and CFO (Gunny 2010; Vorst 2016, and Beyer et al. 2018), the control variables in Model C are also adjusted for industry-year median except for ADJ_RET which is size decile-adjusted following literature (Gunny 2010, Vorst 2010 and Beyer et al. 2018). The study also estimates Model C with variables not adjusted for industry-year median, and the non-tabulated results of these estimations are discussed in the robustness section.

The following variable in Model C is ETAL. It is a dummy variable that captures firms that attain the earnings threshold of avoiding losses by a very small margin. The literature shows that such firms are more likely to engage in REM to report positive earnings. Roychowdhury (2006) identifies such firms as those whose ROA is greater than zero but less than 0.005. However, he has not mentioned any scientific criterion to determine this range, which is essential to avoid any bias in detecting ETAL firms. Degeorge et al. (1999) apply formula $2(IQR)n^{-1/3}$, where IQR denotes interquartile range and n denotes the number of observations, to scientifically determine the range for several earnings thresholds. This study also applies this formula to ROA observations (n = 18,356) to determine the range for earnings threshold of avoiding losses,

and range comes out to be 0.006582. ROA between 0 and 0.006582 indicates firm-years (count 875) during which there is a strong incentive to attain loss avoidance thresholds (i.e., to report positive earnings) and a higher likelihood of adoption of REM for the same. Thus, the dummy variable ETAL is set equal to "1" if ROA is greater than 0 but less than 0.006582, "0" otherwise. The study also checks robustness of the results using above-mentioned Roychowdury's (2006) definition for identification of ETAL firms. The non-tabulated results from revised estimations of Model C are discussed in robustness checks in Sect. "Inferential Statistics".

Thereafter, TYPE_REM is a dummy variable capturing those firm-years in a sample relevant to estimation, wherein the level of earnings-increasing REM practice is higher, i.e., the firm's abnormal level of REM practice is in the quintile suggesting the highest earnings-increasing REM. For example, if Model C is estimated to assess the impact of aggregate REM, the dummy variable TYPE_REM denotes AGG_REM. This variable captures firm-years with higher levels of AB_REM, which is measured as the sum of AB_PRODCO and AB_SGAX (multiplied by -1 following literature (Zang 2012; Kumar et al. 2021) so that, in line with AB_PRODCO, higher values are indicative of a greater REM by reducing expenses). AGG_REM is set equal to "1" if AB_REM in a sample relevant to estimation is in the highest quintile, "0" otherwise. If Model C is estimated to assess the impact of overproduction to meet an earnings threshold on future performance, the dummy variable TYPE_REM denotes OPROD_REM. It captures firm-years wherein the level of overproduction is higher, i.e., it is set equal to "1" if residuals of production cost estimation Model A (AB_PROD) of a firm in a sample relevant to estimation is in the highest quintile, "0" otherwise. If Model C is estimated to assess the impact of decreasing spending on SGAX to avoid losses on future performance, the dummy variable TYPE_REM denotes SGAX_REM. It captures firm-years exhibiting low spending on SGAX, i.e., it is set equal to "1" if residuals of discretionary expenses estimation Model B (AB_SGAX) of a firm in a sample relevant to estimation is in the lowest quintile, "0" otherwise. The TYPE_REM dummy variable for components of SGAX in the relevant estimations of Model C is defined similarly.

The interaction variable ETAL*TYPE_REM is the variable of interest in Model C, which captures firm-years attaining an earnings threshold of avoiding losses and exhibits a higher level of earnings-increasing REM practice. For example, if Model C is estimated to assess the impact of aggregate REM on future performance, the interaction variable ETAL*TYPE_REM in the relevant estimation denotes the interaction between ETAL and AGG_REM. It captures firm-years that have just attained avoiding losses earnings threshold and have high levels of AB_REM (sum of AB_PRODCO and AB_SGAX*-1). If Model C is estimated to assess the impact of overproduction to prevent losses on future performance, the interaction variable ETAL*TYPE_REM in the relevant estimation denotes the interaction between ETAL and OPROD_REM. It captures firm-years that have just attained avoiding losses earnings threshold and exhibit high overproduction. If Model C is estimated to assess the impact of decreasing spending on SGAX to prevent losses on future performance, the interaction variable ETAL*TYPE_REM in the relevant estimation denotes the interaction between ETAL and SGAX_REM. It captures firm-years that have just attained avoiding losses earnings threshold exhibiting low abnormal SGAX. Similar interaction variables are generated for components of SGAX in the relevant estimations of Model C.

Results

Descriptive statistics and Correlations

Table 2 summarizes descriptive statistics of variables proxying company performance, REM measures, and control variables. The sample frame consists of 18,356 firm-year observations of ROA, with 3,307 (18.02%) of these observations reporting negative ROA. It comprises 17,359 firm-year observations of CFO, with 3791 (21.84%) of these observations reporting negative CFO. The mean values of the abnormal levels of real measures (residuals) are by construction near zero. On average, Indian corporates have borrowings that amount to 34.48% of their total assets. The mean value MOWN is 0.545651, indicating that, on average, promoters in the Indian corporations owned majority stake.

Table 3 shows the pairwise Pearson correlations of performance measures with REM measures (residuals). It exhibits that the aggregate measure of REM, i.e., AB_REM, a sum of AB_PRODCO and AB_SGAX (multiplied by -1), is significantly negatively correlated with subsequent three years ROA and CFO. It suggests that engaging in REM activities could detrimentally affect a company's future performance and may show instances of managerial opportunism.

The correlations of a specific REM measure reveal that AB_PRODCO substantially negatively correlated with three-year ROA and CFO. It suggests that the overproduction REM may hurt a firm's future. AB_SGAX correlation coefficients with subsequent two years ROA are significantly negative. Conversely, the correlation between AB_SGAX and CFO for the following year is significantly positive. These correlations show the conflicting effects of REM on future performance by reducing SGAX spending. Further, the correlations of REM through SGAX components exhibit that AB_MRKX and AB_WTX are significantly negatively correlated with subsequent ROA, indicating negative implications of REM. However, AB_OGAX is significantly positively correlated with the subsequent year's CFO. Overall, the majority of correlations provide indications of managerial opportunism.

Inferential Statistics

This section shows the findings of Panel Regression Model C applied to test the null hypothesis H3. This model examines how REM practices in firms striving to attain loss avoidance thresholds would affect future performance. It links ADJ_ROA and ADJ_CFO during the next three years with enterprises that have avoided losses by a small margin and are exhibiting REM (ETAL*TYPE_REM). The interaction variable ETAL*TYPE_REM quantifies the incremental influence of REM on future performance in firms motivated to meet earnings thresholds in this regression model. REM's significant positive (negative) coefficient estimate suggests positive (negative) effects on future performance.

Table 4 presents the impact of aggregate REM (AB_REM), a measure formed by combining AB_PRODCO and AB_SGAX*-1, on future performance. In Panel A, the interaction coefficient of

Table 2 Descriptive Statistics

Variables	N	Mean	Median	Maximum	Minimum	Std. Dev
ROA_t	18,356	0.057306	0.045147	1.020593	−0.426069	0.111509
ROA_{t+1}	17,385	0.056640	0.044508	1.020593	−0.426069	0.111494
ROA_{t+2}	16,362	0.054347	0.043003	1.020593	−0.426069	0.109999
ROA_{t+3}	15,291	0.051107	0.041276	1.020593	−0.426069	0.106803
CFO_t	17,359	0.068373	0.070843	0.715797	−1.35036	0.144756
CFO_{t+1}	16,435	0.066719	0.069598	0.715797	−1.35036	0.144658
CFO_{t+2}	15,483	0.065846	0.069233	0.67173	−1.35036	0.143695
CFO_{t+3}	14,484	0.065693	0.068956	0.67173	−1.35036	0.141358
AB_REM_t	9737	0.000072	0.000031	0.276436	−0.392841	0.066003
AB_PRODCO_t	9580	−0.000014	−0.000186	0.246734	−0.290799	0.061367
AB_SGAX_t	10,172	−0.000099	−0.000068	0.098770	−0.074549	0.017373
AB_MRKX_t	9986	−0.000149	−0.000076	0.074361	−0.073677	0.015695
AB_WTX_t	9679	−0.000012	−0.000015	0.008295	−0.008387	0.001373
AB_OGAX_t	10,136	−0.000047	−0.000221	0.039263	−0.017669	0.005024
$ZSCR_t$	17,238	2.084527	1.969626	17.158460	−2.879677	1.373287
BHR_t	12,031	0.279403	0.008321	32.701860	−0.954609	1.302329
$LOGMC_t$	13,568	8.128101	8.061104	13.945680	3.018603	2.212187
PBR_t	12,863	2.536881	1.410000	27.875300	0.060000	3.307916
$LEVRG_t$	16,198	0.344805	0.329176	0.964060	0.000304	0.231342
$SALGROW_t$	17,633	0.237040	0.132501	8.880342	−0.800687	0.683196
$LGPPE_t$	18,701	7.069459	7.268711	12.451040	−0.041091	2.159772
$MOWN_t$	15,252	0.545651	0.552030	0.931968	0.053196	0.163657

Descriptive statistics are computed considering observations in the full sample frame winsorized at the 1st and 99th percentiles. Refer Appendix 1 for Variables Description

Table 3 Correlations

Variables	ROA_{t+1}	ROA_{t+2}	ROA_{t+3}	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
AB_REM_t	−0.113773***	−0.099885***	−0.099643***	−0.120641***	−0.070534***	−0.087659***
	(9736)	(8708)	(7755)	(9676)	(8651)	(7703)
AB_PRODCO_t	−0.130858***	−0.115077***	−0.108554***	−0.123572***	−0.077432***	−0.098887***
	(9579)	(8561)	(7618)	(9519)	(8506)	(7567)
AB_SGAX_t	−0.024531**	−0.024503**	−0.000446	0.026059***	−0.004640	−0.002094
	(10,170)	(9143)	(8190)	(10,111)	(9084)	(8136)
AB_MRKX_t	−0.030875***	−0.030120***	−0.008126	0.010507	−0.012293	−0.005115
	(9984)	(8972)	(8036)	(9926)	(8914)	(7983)
AB_WTX_t	−0.020252**	−0.012595	−0.021334*	−0.000731	0.004714	0.004621
	(9677)	(8698)	(7782)	(9620)	(8642)	(7733)
AB_OGAX_t	−0.008203	−0.003614	−0.006004	0.019141*	−0.001030	−0.000889
	(10,134)	(9108)	(8156)	(10,075)	(9049)	(8102)

interest ETAL*AGG_REM is significantly negatively associated with ADJ_ROA in year t+1 (-0.008816, $p < 0.10$). Although negative, this coefficient is statistically insignificant when Adj_ROA_{t+2} and Adj_ROA_{t+3} are dependent variables. These results, albeit over a short-term ROA, suggest that managers are ready to compromise future profitability to achieve short-term profit objectives (Graham et al. 2005), indicating managerial opportunism. The study does not observe the adverse impact of aggregate REM on cash flows since, in Panel B, the interaction coefficient ETAL*AGG_REM is not significantly

Table 4 Impact of Aggregate REM on future performance of firms just meet earnings threshold of avoiding losses

Panel A: Impact on Return on Assets

Dep. Var:	ADJ_ROA_{t+1}	ADJ_ROA_{t+2}	ADJ_ROA_{t+3}
Constant	0.002343	0.000692	−0.000347
	(2.9761)***	(0.8992)	(−0.4174)
$ADJ\_ROA_{t,t+1,t+2}$	0.580751	0.605728	0.681111
	(23.0589)***	(18.6863)***	(28.0099)***
ADJ_MZSCR_t	0.007457	0.008775	0.006257
	(5.5062)***	(6.1744)***	(5.9685)***
ADJ_RET_t	0.000939	−0.000458	−0.000220
	(1.6506)*	(−0.8369)	(−0.5183)
ADJ_LMC_t	0.004486	0.003009	0.002095
	(5.9269)***	(4.0772)***	(3.2345)***
ADJ_LEVRG_t	−0.037439	−0.017100	−0.018270
	(−9.2201)***	(−4.2385)***	(−4.5437)***
ADJ_SLGRTH_t	0.000302	−0.001149	0.002436
	(0.1208)	(−0.5451)	(0.9660)
ADJ_LGPPE_t	−0.001491	−0.001097	−0.000115
	(−1.6215)	(−1.3608)	(−0.1485)
ADJ_MOWN_t	0.013133	0.004767	0.012310
	(2.4325)**	(0.9141)	(2.1899)**
$AB\_REM_{t+1,t+2,t+3}$	−0.194551	−0.181146	−0.181920
	(−12.8626)***	(−11.3471)***	(−10.6260)***
$ETAL_t$	−0.008170	−0.004322	−0.000328
	(−3.1620)***	(−1.3814)	(−0.1001)
AGG_REM_t	−0.000784	0.002989	0.000925
	(−0.4343)	(1.7706)*	(0.4549)
$ETAL_t*AGG\_REM_t$	**−0.008816**	−0.000407	−0.003950
	(−1.6518)*	(−0.0511)	(−0.5164)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5304	5304	5304
R-squared:	0.5763	0.5650	0.5660

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
Constant	0.001133	−0.000962	−0.001213
	(0.7403)	(−0.6385)	(−0.8211)
$ADJ\_ROA_{t,t+1,t+2}$	0.436567	0.447297	0.474373
	(11.1732)***	(10.6930)***	(13.9489)***
ADJ_MZSCR_t	0.005939	0.007049	0.005025
	(2.1298)**	(2.2174)**	(1.3660)
ADJ_RET_t	−0.001348	−0.000641	0.000276
	(−1.1791)	(−0.7010)	(0.3794)
ADJ_LMC_t	−0.003713	−0.003491	−0.003384
	(−2.7255)***	(−2.6225)***	(−3.0020)***
ADJ_LEVRG_t	0.010014	0.028002	0.034713

Table 4 (continued)

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO$_{t+1}$	ADJ_CFO$_{t+2}$	ADJ_CFO$_{t+3}$
	(1.2257)	(3.3459)***	(4.0140)***
ADJ_SLGRTH$_t$	−0.005138	−0.008276	−0.006950
	(−0.8348)	(−2.2966)**	(−1.2814)
ADJ_LGPPE$_t$	0.010007	0.009207	0.009243
	(5.4496)***	(5.4037)***	(6.5270)***
ADJ_MOWN$_t$	0.019359	0.020084	0.022532
	(1.7748)*	(1.9585)*	(2.2036)**
AB_REM$_{t+1,t+2,t+3}$	−0.271370	−0.253798	−0.255323
	(−10.5267)***	(−9.2466)***	(−9.3250)***
ETAL$_t$	−0.000281	−0.004757	0.001022
	(−0.0530)	(−0.7478)	(0.1642)
AGG_REM$_t$	−0.008162	−0.001285	−0.008562
	(−2.5681)**	(−0.4154)	(−2.6566)***
ETAL$_t$*AGG_REM$_t$	−0.016109	0.002332	0.014626
	(−1.3053)	(0.2407)	(1.1458)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5246	5246	5246
R-squared:	0.1849	0.1884	0.1990

'*', '**', and '***' represent statistical significance at 10%, 5%, and 1% level, respectively. *t*-statistics, reported in parentheses below the coefficients, are calculated using White's period standard errors

associated with ADJ_CFO of the subsequent three years.

Table 5 exhibits that the interaction coefficient ETAL*OPROD_REM is not significantly associated with the subsequent three years ADJ_ROA (Panel A) and ADJ_CFO (Panel B). These results indicate that managerial action to exercise REM through overproduction does not affect the future performance of firms just avoided losses. The Panel A of Table 6 shows that the interaction variable ETAL*SGAX_REM is significantly negatively associated with ADJ_ROA in year t+1 (-0.013805, $p < 0.05$) and t+2 (-0.018250, $p < 0.01$). The relationship with ADJ_ROA in year t+3 is insignificant. It suggests that discretionary cuts in SGAX to avoid losses negatively impact the firm's future ROA. These results contradict Gunny (2010) and Vorst (2016), who documented the positive impact of REM to meet the earnings threshold. Thus, it signifies managerial opportunism in Indian corporations. No implications, however, are observed for CFO since the associations of ETAL*SGAX_REM with subsequent three years

ADJ_CFO are insignificant. Overall, the REM measure-specific results, particularly of SGAX_REM, more strongly reinforce the insight from aggregate REM results that managers exercise REM opportunistically (i.e., at the cost of future profitability) when there is pressure to attain the threshold of positive earnings.

Tables 7, 8, and 9 exhibit the performance implications of REM through components of SGAX, i.e., MRKX, WTX, and OGAX. The results reinforce the insight from results about SGAX_REM in Table 6. Particularly, in Panel A of Table 7, the interaction coefficient ETAL*MRKX_REM is significantly negatively associated with ADJ_ROA in year t+1 (-0.012454, $p < 0.10$) and t+2 (-0.014194, $p < 0.05$). In Panel B of Table 7, the same is not significantly associated with ADJ_CFOs of the subsequent three years. These coefficient estimates indicate that REM, by cutting MRKX, adversely impacts the future ROA of firms having an incentive to avoid losses. However, the study observes no adverse impact of the same on future

Table 5 Impact of overproduction REM on future performance of firms just meet earnings threshold of avoiding losses

Panel A: Impact on Return on Assets

Dep. Var:	ADJ_ROA_{t+1}	ADJ_ROA_{t+2}	$\mathbf{ADJ\_ROA_{t+3}}$
Constant	0.002636	0.000634	−0.000155
	(3.5040)***	(0.8128)	(−0.1869)
$ADJ\_ROA_{t,t+1,t+2}$	0.579529	0.605316	0.677117
	(22.7528)***	(18.4531)***	(27.8731)***
ADJ_MZSCR_t	0.007273	0.008808	0.006340
	(5.2453)***	(6.1684)***	(5.9844)***
ADJ_RET_t	0.000857	−0.000381	−0.000249
	(1.5065)	(−0.6842)	(−0.5886)
ADJ_LMC_t	0.004639	0.003063	0.002083
	(6.0705)***	(4.0917)***	(3.1777)***
ADJ_LEVRG_t	−0.038198	−0.017050	−0.018349
	(−9.4323)***	(−4.2531)***	(−4.5906)***
ADJ_SLGRTH_t	0.000220	−0.001421	0.001855
	(0.0824)	(−0.6420)	(0.7013)
ADJ_LGPPE_t	−0.001648	−0.001112	−0.000074
	(−1.7862)*	(−1.3723)	(−0.0944)
ADJ_MOWN_t	0.014096	0.004621	0.013458
	(2.6085)***	(0.8847)	(2.4248)**
$AB\_PROD_{t+1,t+2,t+3}$	−0.206070	−0.197862	−0.204433
	(−12.2339)***	(−11.1901)***	(−11.1506)***
$ETAL_t$	−0.009149	−0.004228	0.000016
	(−3.4252)***	(−1.2996)	(0.0051)
$OPROD\_REM_t$	−0.002287	0.002486	0.000249
	(−1.1487)	(1.3790)	(0.1214)
$ETAL_t *OPROD\_REM_t$	−0.006597	−0.001900	−0.003830
	(−1.1906)	(−0.2343)	(−0.4803)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5249	5249	5249
R-squared:	0.5765	0.5645	0.5685

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
Constant	0.001428	−0.001258	−0.000659
	(0.9447)	(−0.8209)	(−0.4628)
$ADJ\_ROA_{t,t+1,t+2}$	0.437173	0.455210	0.472516
	(11.0865)***	(10.7113)***	(14.0677)***
ADJ_MZSCR_t	0.005673	0.006514	0.004977
	(1.9883)**	(2.0156)**	(1.3910)
ADJ_RET_t	−0.001479	−0.000465	0.000151
	(−1.2748)	(−0.4984)	(0.2107)
ADJ_LMC_t	−0.003529	−0.003734	−0.003146
	(−2.5402)**	(−2.9010)***	(−2.7124)***
ADJ_LEVRG_t	0.010010	0.027881	0.036667
	(1.2183)	(3.2824)***	(4.3008)***

Table 5 (continued)

Panel B: Impact on Cash Flow from Operations			
Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
ADJ_SLGRTH_t	−0.005614	−0.007814	−0.007851
	(−0.8644)	(−2.0894)**	(−1.3898)
ADJ_LGPPE_t	0.009724	0.009656	0.008758
	(5.2142)***	(5.8218)***	(6.2511)***
ADJ_MOWN_t	0.018694	0.019251	0.021478
	(1.7098)*	(1.8725)*	(2.1162)**
$AB\_PROD_{t+1,t+2,t+3}$	−0.298618	−0.300971	−0.292431
	(−10.2022)***	(−8.3272)***	(−9.6244)***
$ETAL_t$	−0.001753	−0.002822	0.001195
	(−0.3214)	(−0.4337)	(0.2025)
$OPROD\_REM_t$	−0.008192	−0.000695	−0.011611
	(−2.5598)**	(−0.2207)	(−3.4227)***
$ETAL_t*OPROD\_REM_t$	−0.017251	−0.009775	0.011028
	(−1.3660)	(−0.9009)	(0.7108)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5192	5192	5192
R-squared:	0.1857	0.1966	0.2040

'*', '**', and '***' represent statistical significance at 10%, 5%, and 1% level, respectively.
t-statistics, reported in parentheses below the coefficients, are calculated using White's period standard errors

cash flows. Table 8 shows no significant association between the interaction coefficient ETAL*WTX_REM and the succeeding three years' ADJ_ROA (Panel A) and ADJ_CFO (Panel B). Thus, the study does not observe the implications of WTX_REM on future performance. Table 9, Panel A, exhibits that the interaction coefficient on ETAL*OGAX_REM is significantly negatively related with subsequent two years ADJ_ROA (t + 1: -0.010543, $p < 0.05$; t + 2: -0.019986, $p < 0.01$). Moreover, in Panel B, the same is significantly negatively associated with ADJ_CFO in year t + 1(-0.041865, $p < 0.01$). These results show that firms that have just avoided losses and are susceptible of engaging in REM by cutting spending on OGAX experience a decline in future ROA and CFO.

Overall, the study's findings indicate that the firms facing an incentive to avoid losses and exhibit REM, mainly through lowering spending on SGAX, experience a decline in future performance. These are consistent with the notion that managers use REM opportunistically (Paredes & Wheatley 2017; Eldenburg et al. 2011; Bhojraj et al. 2009; Legget,

2009). The present study's research design follows Gunny (2010) and Beyer et al. (2018). Both find positive performance implications for such organizations, although the later study doubts this design would not find negative ones. This study shows that Gunny's (2010) research methods can detect REM-related negative performance issues.

Robustness Checks

To assess the robustness of the findings, the study re-estimates Model C without adjusting the dependent and control variables for the industry-year median. The non-tabulated results reveal that all the significant coefficient estimates of the interaction variable of interest ETAL*TYPE_REM are similar to the results presented in this study except one pertaining to WTX_REM. The non-tabulated results shows that the interaction coefficient ETAL*WTX_REM is significantly negatively (−0.009924, $p < 0.10$) associated with ROA_{t+1}. Therefore, the revised estimations of Model C, with variables not adjusted for the industry-year median, reaffirm that managers of firms motivated to

Table 6 Impact of SGAX_REM on future performance of firms just meet earnings threshold of avoiding losses

Panel A: Impact on Return on Assets

Dep. Var:	ADJ_ROA_{t+1}	ADJ_ROA_{t+2}	ADJ_ROA_{t+3}
Constant	0.001020	0.000596	0.000461
	(1.2900)	(0.7446)	(0.5726)
$ADJ\_ROA_{t,t+1,t+2}$	0.586866	0.601087	0.679442
	(22.8477)***	(19.2725)***	(28.6645)***
ADJ_MZSCR_t	0.007544	0.009357	0.006953
	(5.5483)***	(6.7059)***	(6.9485)***
ADJ_RET_t	0.001109	−0.000689	−0.000257
	(1.9182)*	(−1.2898)	(−0.6028)
ADJ_LMC_t	0.003973	0.002936	0.001546
	(5.3310)***	(3.9499)***	(2.3922)**
ADJ_LEVRG_t	−0.038431	−0.017885	−0.018489
	(−9.7990)***	(−4.4445)***	(−4.7399)***
ADJ_SLGRTH_t	−0.000530	−0.001748	0.001899
	(−0.2206)	(−0.8516)	(0.8260)
ADJ_LGPPE_t	−0.000893	−0.000734	0.000288
	(−1.0089)	(−0.9161)	(0.3843)
ADJ_MOWN_t	0.011699	0.006196	0.013417
	(2.1653)**	(1.1909)	(2.4778)**
$AB\_SGAX_{t+1,t+2,t+3}$	0.219302	0.155256	0.143759
	(4.1486)***	(2.9532)***	(2.4858)**
$ETAL_t$	−0.008080	−0.001762	−0.003692
	(−3.0762)***	(−0.5319)	(−1.0830)
$SGAX\_REM_t$	0.007135	0.004600	0.000295
	(3.8202)***	(2.6825)***	(0.1625)
$ETAL_t*SGAX\_REM_t$	**−0.013805**	**−0.018250**	0.002630
	(−2.3307)**	**(−2.7028)*****	(0.4183)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5602	5602	5602
R-squared:	0.5557	0.5444	0.5492

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
Constant	−0.000242	−0.001808	−0.002695
	(−0.1575)	(−1.1885)	(−1.7695)*
$ADJ\_ROA_{t,t+1,t+2}$	0.449855	0.449653	0.485681
	(10.7968)***	(10.7097)***	(13.5071)***
ADJ_MZSCR_t	0.005823	0.007172	0.005284
	(2.1209)**	(2.2329)**	(1.4740)
ADJ_RET_t	−0.000638	−0.000388	0.000783
	(−0.5358)	(−0.4092)	(0.8524)
ADJ_LMC_t	−0.004586	−0.003835	−0.004379
	(−3.3666)***	(−2.8470)***	(−3.9150)***
ADJ_LEVRG_t	0.007678	0.026949	0.031313

Table 6 (continued)

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO$_{t+1}$	ADJ_CFO$_{t+2}$	ADJ_CFO$_{t+3}$
	(0.9689)	(3.1115)***	(3.5814)***
ADJ_SLGRTH$_t$	−0.007348	−0.012226	−0.008433
	(−1.3046)	(−2.5347)**	(−1.7300)*
ADJ_LGPPE$_t$	0.011149	0.009825	0.010223
	(6.2164)***	(5.7263)***	(7.1721)***
ADJ_MOWN$_t$	0.019460	0.020259	0.023044
	(1.7401)*	(1.8044)*	(2.1430)**
AB_SGAX$_{t+1,t+2,t+3}$	0.208205	0.047176	−0.010131
	(1.8387)*	(0.4710)	(−0.1024)
ETAL$_t$	−0.001745	−0.004765	0.001421
	(−0.3222)	(−0.8165)	(0.2310)
SGAX_REM$_t$	0.001942	0.004130	0.002232
	(0.5629)	(1.2687)	(0.8006)
ETAL$_t$*SGAX_REM$_t$	−0.020210	0.001092	0.002148
	(−1.4599)	(0.0935)	(0.1750)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5542	5542	5542
R-squared:	0.1543	0.1604	0.1722

'*', '**', and '***' represent statistical significance at 10%, 5%, and 1% level, respectively. *t*-statistics, reported in parentheses below the coefficients, are calculated using White's period standard errors

avoid losses engage in REM opportunistically, thereby sacrificing future financial rewards.

In addition, the study re-estimates Model C, using the Roychowdhury (2006) criteria to identify firms with an incentive to attain earnings threshold of avoiding losses (ETAL), that is, the firms with ROA larger than 0 but less than 0.005. In the case of estimations of Model C with industry-year median-adjusted variables, the coefficient estimates of the interaction variable of interest ETAL*TYPE_REM are similar to those reported in this study except for the association between ETAL*AGG_REM and ADJ_ROA$_{t+1}$, which becomes statistically insignificant. However, the revised estimations provide additional evidence for adverse impact of SGAX_REM on future ADJ_CFO. Notably, the negative association between ETAL*SGAX_REM and ADJ_CFO$_{t+1}$ becomes significant (−0.027512, $p < 0.10$). Lastly, in the case of re-estimations of Model C with dependent and independent variables not adjusted for industry-year median, the coefficient estimates of ETAL*TYPE_REM are similar to those reported in the study except

for the negative association between ETAL*MRKX_REM and ADJ_ROA$_{t+2}$, which becomes insignificant. These estimations, however, provide new evidence suggesting the adverse impact of overproduction REM on future ROA$_{t+1}$ (ETAL*OPROD_REM: -0.011462, $p < 0.10$) and the adverse impact of WTX_REM on CFO$_{t+3}$ (ETAL*WTX_REM: -0.018762, $p < 0.10$). Overall, consistent qualitative results were observed across all iterations of the model, demonstrating the robustness of the outcomes.

Conclusion

Managers of companies, motivated to attain loss avoidance thresholds, engage in earnings-increasing REM by overproducing and cutting discretionary spending. Studies show that these REM measures hurt companies' future performance. However, the evidence regarding firms striving to meet earnings thresholds is mixed. A few studies demonstrate that companies using REM perform better, supporting notion of

Table 7 Impact of MRKX_REM on future performance of firms just meet earnings threshold of avoiding losses

Panel A: Impact on Return on Assets

Dep. Var:	ADJ_ROA_{t+1}	ADJ_ROA_{t+2}	ADJ_ROA_{t+3}
Constant	0.000883	0.000244	0.000439
	(1.0970)	(0.3023)	(0.5377)
$ADJ\_ROA_{t,t+1,t+2}$	0.590073	0.601010	0.679581
	(23.0432)***	(19.0986)***	(28.4142)***
ADJ_MZSCR_t	0.007316	0.009454	0.007049
	(5.3517)***	(6.6921)***	(6.9266)***
ADJ_RET_t	0.001115	−0.000705	−0.000229
	(1.9151)*	(−1.3151)	(−0.5413)
ADJ_LMC_t	0.003941	0.002904	0.001372
	(5.2524)***	(3.8117)***	(2.0719)**
ADJ_LEVRG_t	−0.038652	−0.017594	−0.017835
	(−9.6116)***	(−4.2819)***	(−4.4824)***
ADJ_SLGRTH_t	−0.000025	−0.001858	0.002088
	(−0.0101)	(−0.8720)	(0.8696)
ADJ_LGPPE_t	−0.000873	−0.000723	0.000482
	(−0.9769)	(−0.8827)	(0.6331)
ADJ_MOWN_t	0.011559	0.006127	0.013681
	(2.1260)**	(1.1621)	(2.4938)**
$AB\_MRKX_{t+1,t+2,t+3}$	0.220569	0.126785	0.129970
	(3.6342)***	(2.1576)**	(2.0590)**
$ETAL_t$	−0.008670	−0.002069	−0.005126
	(−3.3859)***	(−0.5979)	(−1.4605)
$MRKX\_REM_t$	0.008280	0.005436	0.001248
	(4.2970)***	(3.0164)***	(0.6806)
$ETAL_t*MRKX\_REM_t$	**−0.012454**	**−0.014194**	0.008572
	(−1.9143)*	**(−2.0722)****	(1.3643)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5459	5459	5459
R-squared:	0.5578	0.5453	0.5509

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
Constant	−0.000992	−0.002062	−0.002823
	(−0.6241)	(−1.3178)	(−1.8137)*
$ADJ\_ROA_{t,t+1,t+2}$	0.452780	0.448616	0.485657
	(10.8002)***	(10.6060)***	(13.3810)***
ADJ_MZSCR_t	0.005764	0.007339	0.005299
	(2.0477)**	(2.2164)**	(1.4312)
ADJ_RET_t	−0.000721	−0.000479	0.000786
	(−0.6067)	(−0.5052)	(0.8537)
ADJ_LMC_t	−0.004721	−0.003921	−0.004496
	(−3.3792)***	(−2.8239)***	(−3.9087)***
ADJ_LEVRG_t	0.007257	0.026098	0.030779

Table 7 (continued)

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO$_{t+1}$	ADJ_CFO$_{t+2}$	ADJ_CFO$_{t+3}$
	(0.8932)	(2.9480)***	(3.4388)***
ADJ_SLGRTH$_t$	−0.007358	−0.012982	−0.009318
	(−1.2493)	(−2.5943)***	(−1.8393)*
ADJ_LGPPE$_t$	0.011440	0.009934	0.010403
	(6.2200)***	(5.6653)***	(7.1840)***
ADJ_MOWN$_t$	0.019128	0.019908	0.021974
	(1.6935)*	(1.7571)*	(2.0198)**
AB_MRKX$_{t+1,t+2,t+3}$	0.292772	0.116476	0.047078
	(2.4764)**	(1.1521)	(0.4288)
ETAL$_t$	−0.003124	−0.006543	0.000284
	(−0.5754)	(−1.1264)	(0.0453)
MRKX_REM$_t$	0.005252	0.005008	0.002603
	(1.6048)	(1.5682)	(0.9072)
ETAL$_t$*MRKX_REM$_t$	−0.017273	0.011603	0.000387
	(−1.1019)	(0.9039)	(0.0284)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5399	5399	5399
R-squared:	0.1578	0.1623	0.1735

'*', '**', and '***' represent statistical significance at 10%, 5%, and 1% level, respectively. *t*-statistics, reported in parentheses below the coefficients, are calculated using White's period standard errors

manager signaling behavior. Other studies observe that such companies performed poorly in the future, supporting the notion of opportunistic behavior. Thus, this study assesses the impact of exercising REM, through overproduction and SGAX reduction, in aggregate and individually, on the future ROA and CFO for Indian firms motivated to attain the threshold of avoiding losses. It also examines three SGAX components—MRKX, WTX, and OGAX. The study applies Srivastava's (2019) models to estimate REM proxies and employs panel regression to test the hypotheses.

The findings indicate that aggregate REM adversely impacts future ROA of firms with motivation to attain the loss avoidance earnings threshold. The measure-specific results show that firms exhibiting SGAX REM have a negative ROA in the subsequent two years. This decline implies that making abnormal business decisions, such as reducing SGAX to artificially enhance short-term accounting earnings, may jeopardize long-term performance. Additionally, component-level results reveal the same conclusions. Specifically, threshold firms exercising REM by lowering MRKX

and OGAX demonstrate declines in ROA over the next two years. The study also observes that REM through OGAX adversely impacts corporate cash flows from operations. Further robustness tests, using Roychowdhury's (2006) definition for firms with incentive to avoid losses, confirm these findings and provide new evidence of the negative effects of REM on future ROA through overproduction, as well as on future CFO through SGAX and WTX. These detrimental effects of REM highlight the opportunistic behavior of managers, suggesting that practices like cutting discretionary expenses can harm brand reputation, consumer relationships, labor skills, and operational efficiency. Consequently, firm performance may suffer because intangibles are an important driver (Gunny 2010). These results are in line with agency theory, which posits that managers may prioritize short-term gains at the expense of long-term corporate interests (Jensen & Meckling 1976).

Table 8 Impact of WTX_REM on future performance of firms just meet earnings threshold of avoiding losses

Panel A: Impact on Return on Assets

Dep. Var:	ADJ_ROA_{t+1}	ADJ_ROA_{t+2}	ADJ_ROA_{t+3}
Constant	0.000995	0.001426	0.000054
	(1.2449)	(1.7200)*	(0.0629)
$ADJ\_ROA_{t,t+1,t+2}$	0.583246	0.623172	0.682217
	(21.3554)***	(23.0958)***	(27.3564)***
ADJ_MZSCR_t	0.007838	0.008889	0.006983
	(5.6048)***	(7.4872)***	(6.6385)***
ADJ_RET_t	0.001143	−0.000776	−0.000144
	(1.8421)*	(−1.3748)	(−0.3280)
ADJ_LMC_t	0.003621	0.002770	0.001358
	(4.8453)***	(3.4753)***	(1.9796)**
ADJ_LEVRG_t	−0.041824	−0.016425	−0.017992
	(−10.2618)***	(−3.9649)***	(−4.2680)***
ADJ_SLGRTH_t	0.000390	−0.003076	0.001582
	(0.1340)	(−1.3292)	(0.6240)
ADJ_LGPPE_t	−0.000498	−0.000887	0.000187
	(−0.5507)	(−1.0429)	(0.2313)
ADJ_MOWN_t	0.012852	0.006797	0.012081
	(2.2309)**	(1.2861)	(2.1715)**
$AB\_WTX_{t+1,t+2,t+3}$	1.362950	1.642021	1.696249
	(2.1584)**	(2.3453)**	(2.2189)**
$ETAL_t$	−0.010321	-0.003680	−0.001969
	(−3.7395)***	(−1.1531)	(−0.6006)
WTX_REM_t	0.007482	0.001285	0.002750
	(4.6184)***	(0.6718)	(1.4853)
$ETAL_t*WTX\_REM_t$	−0.007055	−0.002850	−0.010675
	(−1.2665)	(−0.2964)	(−1.3268)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5276	5276	5276
R-squared:	0.5671	0.5522	0.5521

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
Constant	−0.000677	0.000047	−0.003129
	(−0.4132)	(0.0295)	(−2.0224)**
$ADJ\_ROA_{t,t+1,t+2}$	0.451375	0.502149	0.509885
	(10.3166)***	(12.9722)***	(13.7318)***
ADJ_MZSCR_t	0.006128	0.005820	0.005254
	(2.0951)**	(1.8519)*	(1.3999)
ADJ_RET_t	−0.000250	−0.001108	0.000473
	(−0.2167)	(−1.1430)	(0.4934)
ADJ_LMC_t	−0.004386	−0.004625	−0.004567
	(−3.0437)***	(−3.4064)***	(−3.8077)***
ADJ_LEVRG_t	0.011186	0.031987	0.035017

Table 8 (continued)

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
	(1.3593)	(3.6920)***	(3.8315)***
ADJ_SLGRTH_t	−0.004866	−0.009362	−0.006304
	(−0.7940)	(−2.2906)**	(−1.5195)
ADJ_LGPPE_t	0.011018	0.010208	0.009819
	(5.7955)***	(5.8120)***	(6.7074)***
ADJ_MOWN_t	0.020720	0.020327	0.018855
	(1.7988)*	(1.7752)*	(1.7783)*
$AB\_WTX_{t+1,t+2,t+3}$	1.144761	1.024922	1.615165
	(1.0584)	(0.9103)	(1.5623)
$ETAL_t$	−0.010887	−0.006207	0.008351
	(−1.8778)*	(−1.0153)	(1.4408)
WTX_REM_t	0.003408	−0.005481	0.002749
	(1.1269)	(−1.7663)*	(0.9035)
$ETAL_t*WTX\_REM_t$	0.010510	0.013607	−0.011848
	(1.1131)	(0.9734)	(−1.1140)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5220	5220	5220
R-squared:	0.1604	0.1783	0.1875

'*', '**', and '***' represent statistical significance at 10%, 5%, and 1% level, respectively. *t*-statistics, reported in parentheses below the coefficients, are calculated using White's period standard errors

Contributions, Implications, Limitations and Direction for Future Research

Contributions

The present research contributes to the literature in several ways. Firstly, unlike Kumar et al. (2021), the study shows that REM may affect the long-term performance—spanning more than one year—of enterprises facing pressure to attain the loss avoidance threshold. Secondly, the analysis unveils the managerial intent behind employing REM in Indian enterprises striving to prevent losses. Contrary to the evidence of signaling superior performance in the U.S. context, the findings show they exercise REM opportunistically. Thirdly, the study observed that cutting MRKX, WTX (from robustness checks), and OGAX damaged such firms' future performance. This indicates that the utilization of REM across various functional areas can potentially undermine a firm's competitiveness. These component-level results align with the aggregate level results with SGAX, which is a commonly analyzed measure in previous research. Finally, utilizing proxies generated from Srivastava's (2019) models, which are the most recent and have far higher explanatory power than Roychowdhury's (2006) models, the study provides more credible evidence on REM's future consequences. The former's models estimate REM proxies better by controlling for business strategy.

Implications

Utilizing REM to alter an entity's economic performance is one reason why investors in 21st-century exercise caution when using financial statements for making informed investing decisions (Sherman & Young 2016). REM diminishes the predictive ability of profits regarding future cash flows (Li 2019). Thus, this work has many practical applications. Firstly, regulators, especially Securities and Exchange Board

Table 9 Impact of OGAX_REM on future performance of firms just meet earnings threshold of avoiding losses

Panel A: Impact on Return on Assets

Dep. Var:	ADJ_ROA_{t+1}	ADJ_ROA_{t+2}	ADJ_ROA_{t+3}
Constant	0.001674	0.000904	−0.000240
	(2.1159)**	(1.1566)	(−0.2931)
$ADJ\_ROA_{t,t+1,t+2}$	0.592749	0.606489	0.678967
	(23.9758)***	(19.5276)***	(28.6914)***
ADJ_MZSCR_t	0.007448	0.009190	0.006947
	(5.4514)***	(6.5834)***	(6.9286)***
ADJ_RET_t	0.001037	−0.000701	−0.000253
	(1.7895)*	(−1.3139)	(−0.6005)
ADJ_LMC_t	0.004012	0.002969	0.001580
	(5.4526)***	(3.9794)***	(2.4242)**
ADJ_LEVRG_t	−0.037949	−0.017398	−0.018180
	(−9.6375)***	(−4.3364)***	(−4.6494)***
ADJ_SLGRTH_t	−0.000666	−0.002187	0.002129
	(−0.2766)	(−1.0692)	(0.9176)
ADJ_LGPPE_t	−0.001036	−0.000799	0.000245
	(−1.1809)	(−1.0000)	(0.3270)
ADJ_MOWN_t	0.011528	0.005625	0.013277
	(2.1472)**	(1.0816)	(2.4483)**
$AB\_OGAX_{t+1,t+2,t+3}$	0.259885	0.343217	0.309489
	(1.6027)	(2.0931)**	(1.7825)*
$ETAL_t$	−0.007820	−0.000473	−0.005007
	(−2.8956)***	(−0.1338)	(−1.4303)
$OGAX\_REM_t$	0.004229	0.003195	0.003353
	(2.3703)**	(1.8634)*	(1.7547)*
$ETAL_t*OGAX\_REM_t$	**−0.010543**	**−0.019986**	0.006438
	(−2.0298)	**(−3.1361)***	(1.0373)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5557	5557	5557
R-squared:	0.5579	0.5452	0.5490

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO_{t+1}	ADJ_CFO_{t+2}	ADJ_CFO_{t+3}
Constant	0.000140	−0.001490	−0.002356
	(0.0891)	(−0.9724)	(−1.5398)
$ADJ\_ROA_{t,t+1,t+2}$	0.450963	0.451479	0.489749
	(10.7554)***	(10.7065)***	(13.6225)***
ADJ_MZSCR_t	0.005673	0.007173	0.004989
	(2.0275)**	(2.1815)**	(1.3586)
ADJ_RET_t	−0.000711	−0.000409	0.000817
	(−0.5919)	(−0.4310)	(0.8921)
ADJ_LMC_t	−0.004408	−0.003728	−0.004368
	(−3.2096)***	(−2.7335)***	(−3.8776)***
ADJ_LEVRG_t	0.006219	0.026753	0.030896

Table 9 (continued)

Panel B: Impact on Cash Flow from Operations

Dep. Var:	ADJ_CFO$_{t+1}$	ADJ_CFO$_{t+2}$	ADJ_CFO$_{t+3}$
	(0.7867)	(3.0430)***	(3.4748)***
ADJ_SLGRTH$_t$	−0.007181	−0.012017	−0.008667
	(−1.2880)	(−2.5131)**	(−1.7831)*
ADJ_LGPPE$_t$	0.011131	0.009686	0.010165
	(6.2003)***	(5.6233)***	(7.1338)***
ADJ_MOWN$_t$	0.018672	0.019816	0.023282
	(1.6713)*	(1.7592)*	(2.1629)**
AB_OGAX$_{t+1,t+2,t+3}$	0.016106	−0.110961	−0.087774
	(0.0512)	(−0.3565)	(−0.2748)
ETAL$_t$	0.004531	−0.006035	−0.001666
	(0.9201)	(−0.9857)	(−0.2615)
OGAX_REM$_t$	0.000948	0.003960	−0.000276
	(0.2551)	(1.3365)	(−0.0915)
ETAL$_t$*OGAX_REM$_t$	**−0.041865**	0.004818	0.014663
	(−3.1475)*	(0.4535)	(1.1379)
Year Dummies	Yes	Yes	Yes
Industry Dummies	No	No	No
Observations:	5497	5497	5497
R-squared:	0.1562	0.1620	0.1737

'*', '**', and '***' represent statistical significance at 10%, 5%, and 1% level, respectively. *t*-statistics, reported in parentheses below the coefficients, are calculated using White's period standard errors

of India (SEBI), should examine monitoring procedures and pass legislation to curb threshold mentality in India. Secondly, capital suppliers must enhance monitoring efforts and improve internal governance mechanisms to curtail REM practices effectively. Thirdly, auditors are required to refine their methodologies to accurately identify and address challenging REM behaviors.

Limitations and directions for future research

This study encounters limitations due to missing variables within the ProwessIQ dataset. A homogenized sample across all REM variables would have resulted in a size too small for comprehensive analysis. Consequently, this study evaluates samples specific to REM measures to test the presented hypothesis. The present study controls for only one attribute of corporate governance, i.e., managerial ownership. However, there are several other corporate governance attributes, including manager's tenure and board characteristics, might also influence managerial opportunism (Boachie & Mensah 2022).

Another limitation arises from the fact that this study solely considers one earnings threshold—avoiding losses—when analyzing the performance implications of REM. Literature suggests managers use REM to meet two more crucial earnings thresholds: last year's earnings and analysts' forecasts (Makarem & Roberts 2020; Degeorge et al. 1999). Future scholars can overcome this limitation by analyzing REM consequences for firms motivated to reach these two earnings thresholds, thereby providing further evidence of managerial opportunism in Indian corporations.

Lastly, although this study analyzes REM implications for firms with the motivation to attain the threshold of avoiding losses, which is a strong motivation to engage in opportunistic earnings-increasing REM (Dichev et al. 2016), it has always been a challenge for researchers to use an empirical setting that clearly distinguishes between managerial opportunism and signaling. Gunny and Zhang

(2014) use a novel empirical setting for analyzing the implications of REM for threshold firms. They provide evidence—observed better future ROA—that is more consistent with managerial signaling. Mainly, they analyze sample of patent-intensive firms wherein it is difficult to communicate better firm prospects, and managers are likely to communicate private information by attaining earnings thresholds using accrual earnings management. This approach could be particularly insightful for future research within the Indian context to further dissect the implications of REM and decipher between managerial opportunism and signaling.

This study, however, is noteworthy because it applies a statistically more robust and valid setting, thereby uncovering the long-term detrimental effects of REM. It lays the groundwork for subsequent research to explore the enduring impact of REM on the stock returns of firms that achieve earnings thresholds.

Appendix 1 Variables Description

Variable	Description
AB_PRODCO	Residuals of Srivastava's production costs model (Model A)
AB_SGAX	Residuals of Srivastava's discretionary expense estimation model estimated for SGAX (Model B)
AB_REM	Aggregate REM, measured as a sum of AB_PRODCO and AB_SGA*-1. AB_SGA is multiplied with -1 so that, in line with AB_PRODCO, higher values are indicative of a greater REM by reducing expenses (Zang 2012; Kumar et al. 2021)
AB_MRKX	Residuals of Srivastava's discretionary expense estimation model estimated for MRKX (Model B)
AB_WTX	Residuals of Srivastava's discretionary expense estimation model estimated for WTX (Model B)
AB_OGAX	Residuals of Srivastava's discretionary expense estimation model estimated for OGAX (Model B)
ADJ_CFO	CFO less median CFO of firms in the same year and same industry
ADJ_RET	Size decile portfolio-adjusted return, i.e., BHR minus median annual BHR of firms in a size-matched decile portfolio
ADJ_ROA	ROA less median ROA of firms in the same year and same industry
ADJ_ZSCR	ZSCR less median ZSCR of firms in the same year and same industry
ADJ_LEVRG	LEVRG less median LEVRG of firms in the same year and same industry
ADJ_LGPPE	LGPPE less median LGPPE of firms in the same year and same industry
ADJ_LMC	LMC less median LMC of firms in the same year and same industry
ADJ_MOWN	MOWN less median MOWN of firms in the same year and same industry
ADJ_SLGRTH	SLGRTH less median SLGRTH of firms in the same year and same industry
BHR	(Closing price in year t less closing price in year t-1)/closing price in year t-1
CFO	Cash flow from operations before extraordinary items divided by lagged total assets
EBXI	Earnings before extraordinary items
ETAL	It is a dummy variable capturing firms which attained earnings threshold of avoiding losses by an exceedingly small margin. It set equal to "1" if ROA is greater than 0 but less than 0.006582, "0" otherwise
LEVRG	Leverage, measured as borrowings divided by lagged total assets
LGPPE	Natural logarithm of gross property, plant, and equipment
LMC	Natural logarithm of market capitalization

Variable	Description
MOWN	Managerial ownership, is measured as ratio of shares owned by promoters to total shares
MRKX	Marketing expenses includes selling and distribution expenses and traveling expenses
NS	Net sales, i.e., sale less rebates and discounts expenses and fiscal benefits
OGAX	Other general and administrative expenses include communication expenses, printing and stationary expenses, and miscellaneous expenditure (excluding research and development expenses)
PBR	Price-to-book ratio
PRODCO	Production costs
ROA	Return on Assets, measures as EBXI divided by lagged total assets
SLGRTH	Sales growth, measured as NS_t minus NS_{t-1} divided by NS_{t-1}
SGAX	Selling, general, and administrative expenses, measured as sum of selling and distribution expenses, traveling expenses, staff welfare and training expenses, communication expenses, printing and stationary expenses, and miscellaneous expenditure (excluding research and development expenses)
TA	Total assets
TYPE_REM	It is a dummy variable capturing those firm-years, in a sample relevant to estimation, wherein level of earnings-increasing REM practice is higher, i.e., firm's abnormal level of REM practice is in the quintile suggesting highest earnings-increasing REM. For example, -AGG_REM captures firm-years wherein level of aggregate REM is higher, i.e., it is set equal to "1" if AB_REM is in the highest quintile, "0" otherwise -OPROD_REM captures firm-years wherein level of overproduction is higher, i.e., it is set equal to "1" if AB_PRODCO is in the highest quintile, "0" otherwise -SGAX_REM captures firm-years exhibiting low spending on SGAX, i.e., it is set equal to "1" if AB_SGAX is in the lowest quintile, "0" otherwise -MRKX_REM captures firm-years exhibiting low spending on MRKX, i.e., it is set equal to "1" if AB_MRKX is in the lowest quintile, "0" otherwise -WTX_REM captures firm-years exhibiting low spending on WTX, i.e., it is set equal to "1" if AB_WTX is in the lowest quintile, "0" otherwise -OGAX_REM captures firm-years exhibiting low spending on OGAX, i.e., it is set equal to "1" if AB_OGAX is in the lowest quintile, "0" otherwise
WTX	Welfare and training expenses
ZSCR	Modified Altman's Z-score, calculated as $1.2*(\text{net working capital}_t/TA_{t-1}) + 1.4*(\text{cumulative retained earnings}_t/TA_{t-1}) + 3.3*(EBXI_t/TA_{t-1}) + 1*(NS_t/TA_{t-1})$

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