

Business Strategy and Earnings Management

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Abstract: This study examines the impact of business strategy on earnings management using a sample of non-financial firms listed on the Taiwan Stock Exchange. The results show that, regardless of whether strategic orientation is measured using indicator variables or a continuous strategy score, prospector firms exhibit the highest level of real earnings management, followed by defender firms, whereas analyzer firms exhibit the lowest. In other words, the findings reveal a U-shaped relationship between strategic orientation and real earnings management, suggesting that firms positioned at either end of the strategic spectrum are more likely to engage in real earnings manipulation and, consequently, exhibit lower earnings quality. Overall, the results underscore the important role of business strategy in shaping financial reporting quality and suggest that auditors should exercise greater caution when auditing firms with extreme strategic orientations.

Keywords: Business strategy, earnings management, prospector, defender, analyzer.

1. INTRODUCTION

This study examines whether and how firms' business strategies influence earnings management. Business strategy represents a fundamental means through which firms differentiate themselves from competitors, allocate resources, and pursue market opportunities. Because strategic choices shape firms' operating environments and managerial decision-making, they may also influence managers' financial reporting decisions. Prior research documents that business strategy affects various aspects of firms' information environments. For example, prospector firms tend to produce less readable annual reports (Lim *et al.*, 2018) and issue press releases more frequently (Bentley-Goode *et al.*, 2019). Despite growing research on both strategic orientation and earnings management, however, whether and how firms' strategic orientations are associated with earnings-management practices remains insufficiently understood.

To address this gap, the present study draws on the Miles and Snow strategic typology and adopts the methodology developed by Bentley *et al.* (2013) to measure firms' strategic orientations. The Miles and Snow framework classifies firms as prospectors, defenders, or analyzers. Prospectors emphasize innovation, flexibility, and the pursuit of new products and markets, whereas defenders focus on operational efficiency, cost control, and stability within established markets. Analyzers represent a distinct strategic configuration that combines relatively stable operations with selective innovation and growth opportunities. This three-way classification provides an opportunity to examine whether earnings-management behavior varies systematically across different strategic orientations rather than focusing exclusively on the two strategic extremes.

The analysis employs both categorical and continuous measures of strategic orientation to enhance the robustness of the empirical results. Earnings management is examined using both accrual-based and real-activity measures, thereby capturing alternative mechanisms through which managers can influence reported earnings. This approach is particularly important because managers may substitute between accrual-based and real earnings management depending on the constraints, opportunities, and detection risks associated with each mechanism.

Using a sample of Taiwanese firms, the results indicate that business strategy is significantly associated with real earnings management but not with accrual-based earnings management. The association with real earnings management remains significant when strategic orientation is measured using either categorical indicators or a continuous strategy score. Specifically, prospector firms (with scores above 23) exhibit the highest degree of real earnings management, followed by defender firms (with scores below 13), while analyzer firms (with scores between 13 and 23) exhibit the lowest degree. The results therefore reveal a non-monotonic association between strategic orientation and real earnings management, suggesting that firms at both strategic extremes are more likely to engage in real-activity manipulation than firms adopting a more balanced strategic configuration. The absence of a significant association with accrual-based earnings management further suggests that strategic orientation is more closely related to managers' operating decisions than to their use of accounting accruals to influence reported earnings.

This study makes several contributions to the literature. First, it extends the limited literature examining the relationship between business strategy and earnings management by explicitly incorporating all three strategic types identified by Miles and Snow. Prior studies have largely focused on comparisons between prospectors and defenders, leaving the behavior of analyzer firms relatively underexplored. By exam-

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ining analyzers separately rather than treating them simply as an intermediate position between the two strategic extremes, this study provides a more complete assessment of how strategic orientation relates to managerial financial reporting behavior.

Second, the study documents a non-monotonic relationship between strategic orientation and real earnings management. The finding that prospectors exhibit the highest level of real earnings management, defenders the next highest, and analyzers the lowest challenges the view that earnings-management behavior can be adequately characterized by a simple linear progression from one strategic extreme to the other. Instead, the evidence suggests that firms pursuing highly innovative strategies and those emphasizing stability and efficiency may both face stronger incentives or opportunities to manipulate real operating activities than firms combining elements of the two orientations. This finding highlights the importance of considering analyzer firms as a distinct strategic group when examining the consequences of business strategy.

Third, the study distinguishes between accrual-based and real earnings management and finds that the association between strategic orientation and earnings management is concentrated in real activities rather than accounting accruals. This finding contributes to the literature by suggesting that the consequences of business strategy for financial reporting may extend beyond accounting choices to managers' underlying operating decisions. The result is also consistent with the broader literature indicating that managers may rely on real earnings management when accrual-based manipulation is subject to greater constraints and monitoring.

Finally, the findings have practical implications for corporate governance and financial reporting. The greater reliance on real earnings management among firms with extreme strategic orientations suggests that monitoring mechanisms should consider firms' underlying business strategies when assessing the risk of earnings manipulation. Because real earnings management involves actual operating decisions and may adversely affect future economic performance, identifying firms whose strategic characteristics are associated with greater reliance on such practices may help boards, auditors, regulators, and investors improve the effectiveness of monitoring and enhance the quality of financial reporting.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Earnings Management and Managers' Choice

Agency theory suggests that the separation of ownership and control can create conflicts of interest between managers and stakeholders, particularly when information asymmetry limits stakeholders' ability to monitor managerial actions. In such circumstances, financial reporting serves as an important mechanism for communicating firm performance and reducing information asymmetry. High-quality earnings provide a more faithful representation of underlying economic performance and thereby facilitate more informed decision-making by investors and other stakeholders (Dechow & Schrand, 2010). However, earnings quality is not determined

solely by firms' underlying economic conditions. Prior research indicates that it is also influenced by institutional and firm-level factors, including regulatory environments, managerial incentives, and the strength of enforcement mechanisms (Ball *et al.*, 2000; Daske *et al.*, 2013).

One important managerial response to these incentives is earnings management. Prior research documents that managers may adjust reported earnings to achieve various objectives, including meeting analysts' earnings forecasts, smoothing income, avoiding debt covenant violations, and influencing market valuations (Cohen *et al.*, 2008; Prawitt *et al.*, 2009). Earnings management generally occurs through two broad mechanisms: accrual-based earnings management and real earnings management. Accrual-based earnings management involves managerial discretion over accounting recognition and measurement without directly changing the firm's underlying operating activities or cash flows. In contrast, real earnings management involves altering actual business decisions or operating activities in ways that affect reported earnings and cash flows. Because real earnings management directly changes firms' operating decisions, it may impose more substantial long-term economic costs than accrual-based earnings management (Cohen & Zarowin, 2010).

Real earnings management can take several forms. Managers may accelerate sales by offering temporary price discounts, reduce discretionary expenditures such as advertising and research and development to increase current-period earnings, or overproduce to spread fixed production costs over a larger number of units and thereby reduce reported cost of goods sold (Roychowdhury, 2006). To identify such activities, prior research estimates abnormal levels of operating cash flows, discretionary expenditures, and production costs relative to expected levels based on firms' economic fundamentals. Because abnormal operating cash flows and abnormal production costs are mechanically related to some extent, subsequent studies have developed composite measures to capture different forms of real earnings management (Cohen & Zarowin, 2010; Al-Shattarat, 2024). One measure combines abnormal production costs with abnormal discretionary expenses multiplied by negative one, capturing earnings management through overproduction and the reduction of discretionary expenditures. A second measure combines abnormal operating cash flows multiplied by negative one with abnormal discretionary expenses multiplied by negative one, capturing earnings management through sales acceleration and reductions in discretionary expenditures.

The choice between accrual-based and real earnings management is not necessarily independent. Managers may select between these mechanisms, or employ them jointly, depending on the constraints and opportunities they face. Although real earnings management can adversely affect firms' future operating performance, managers may nevertheless substitute real activities for accrual-based manipulation when the latter becomes more difficult or costly. Several factors can contribute to such substitution. First, real earnings management is embedded in ostensibly legitimate operating decisions and is therefore generally more difficult for auditors and regulators to detect. Second, managers have limited flexibility to manipulate accruals because accounting

choices are constrained by generally accepted accounting principles and other reporting requirements. Third, accrual-based adjustments are subject to greater scrutiny from external auditors and other monitoring mechanisms.

Consistent with this substitution argument, Cohen *et al.* (2008) document an increased reliance on real earnings management following the enactment of the Sarbanes–Oxley Act, which increased the detection and regulatory costs associated with accrual-based manipulation. Prawitt *et al.* (2009) further show that the strength of internal audit functions is associated with managers' choice of earnings-management mechanisms. Similarly, Chi *et al.* (2011) find that audit quality is positively associated with real earnings management but negatively associated with accrual-based earnings management, suggesting that stronger monitoring may induce managers to substitute real activities for accrual-based manipulation. Ipino and Parbonetti (2017) likewise document a shift toward real earnings management following the adoption of International Financial Reporting Standards (IFRSs). Collectively, these findings suggest that managerial choices regarding earnings management are shaped not only by the desire to achieve target earnings but also by the relative costs, constraints, and detection risks associated with alternative reporting mechanisms.

These findings also imply that earnings management should not be viewed solely as an accounting reporting decision. Rather, managers' choices may reflect broader organizational characteristics that determine the opportunities, incentives, and constraints associated with manipulating reported performance. One potentially important but relatively underexplored determinant is the firm's business strategy. Because strategic orientation influences firms' operating environments, investment patterns, risk exposure, and information environments, it may also affect managers' incentives and opportunities to engage in earnings management. The following section therefore considers how business strategy shapes managerial behavior and provides the basis for examining its association with earnings management.

2.2. Business Strategy

Business strategy refers to the deliberate choices and actions through which firms seek to achieve competitive advantage and superior market performance (Yuan *et al.*, 2020). As a fundamental determinant of how firms compete, allocate resources, and respond to environmental changes, business strategy influences not only firms' operating activities but also managerial decision-making and organizational behavior.

Several strategic frameworks have been developed to capture heterogeneity in firms' strategic orientations. Porter (1980), for example, identifies three generic strategies—cost leadership, differentiation, and focus. Miles and Snow (2003) classify firms as prospectors, defenders, and analyzers according to their approaches to product-market development and organizational adaptation. March (1991) distinguishes between exploration and exploitation, whereas Treacy and Wiersema (1995) propose three value disciplines: operational excellence, product leadership, and customer intimacy. Although these frameworks emphasize different

dimensions of competitive strategy, they share the fundamental premise that firms adopt systematic and relatively distinct approaches to competing in their environments.

The Miles and Snow typology is particularly useful for examining firms' strategic orientations because it provides a clear distinction among alternative strategic configurations and can be operationalized using archival financial data (Ittner *et al.*, 1997). Under this framework, prospectors are innovation-oriented firms that continuously seek new products, markets, and technological opportunities (Yuan *et al.*, 2020). Their strategies emphasize flexibility, innovation, and growth, but also expose them to greater uncertainty and risk. Defenders, in contrast, focus on efficiency, stability, and the protection of established product-market domains. They emphasize cost control, operational efficiency, and maintaining stable relationships with existing customers while limiting exposure to uncertain opportunities (Liu *et al.*, 2021; Yuan *et al.*, 2020). Analyzers occupy a distinct strategic position by combining characteristics of both prospectors and defenders. They maintain relatively stable operations in established markets while selectively pursuing new opportunities when their potential has become sufficiently evident (Sun *et al.*, 2021).

Strategic orientation has important implications for managerial behavior and corporate decision-making. Prior research shows that prospectors differ from defenders in their information disclosure practices, resource allocation, risk-taking, and governance characteristics. For example, Lim *et al.* (2018) find that prospector firms tend to produce less readable annual reports than defender firms, suggesting that strategic orientation influences the complexity and transparency of corporate disclosures. Bentley-Goode *et al.* (2019) further document that prospector firms are more likely to issue press releases, potentially reflecting greater efforts to attract attention from financial analysts and communicate information about their activities and opportunities.

The influence of strategic orientation extends beyond financial disclosure. Prospectors are more likely to engage in corporate social responsibility activities, suggesting that they may perceive greater strategic value in such initiatives (Yuan *et al.*, 2020). They are also more inclined to adopt aggressive tax-planning strategies (Higgins *et al.*, 2015), exhibit a higher likelihood of operational irregularities (Bentley *et al.*, 2013), and maintain relatively weaker internal controls (Bentley-Goode *et al.*, 2017). These findings collectively indicate that prospector firms differ systematically from defender firms in their approaches to risk-taking, resource allocation, information disclosure, and internal governance.

Importantly, these strategic differences may also have implications for financial reporting decisions. Prospectors' emphasis on innovation and growth exposes them to greater uncertainty, more volatile operating outcomes, and greater reliance on discretionary investments. Their activities may therefore be more difficult for external stakeholders to evaluate, potentially increasing information asymmetry and managerial discretion. In contrast, defenders operate in more stable and predictable environments and place greater emphasis on efficiency and the protection of established markets. These differences suggest that strategic orientation may

influence not only what firms do operationally but also the incentives and opportunities managers face when making financial reporting decisions.

Accordingly, business strategy represents a potentially important determinant of earnings-management behavior. The distinct operating environments and managerial incentives associated with prospectors, defenders, and analyzers provide a theoretical basis for examining whether strategic orientation is systematically associated with the extent to which firms engage in earnings management. The next section develops these arguments and derives hypotheses concerning the relationship between Miles and Snow strategic types and earnings management.

2.3. Business Strategy and Earnings Management

As discussed in the previous section, strategic orientation plays an important role in shaping firms' information disclosure and corporate decision-making. However, empirical evidence on the relationship between business strategy and earnings management remains inconclusive. Prior studies predominantly draw on either the Miles and Snow typology (e.g., Herusetya *et al.*, 2023; Houqe *et al.*, 2017; Karampinis *et al.*, 2024) or Porter's strategy framework (e.g., Purba *et al.*, 2022; Wu *et al.*, 2015). Because these frameworks conceptualize business strategy in fundamentally different ways and consequently involve different approaches to measuring strategic orientation, the present study focuses exclusively on the Miles and Snow typology to maintain conceptual consistency and facilitate comparison with prior research.

Within the Miles and Snow framework, prior studies document systematic differences between prospectors and defenders in various aspects of corporate behavior. Relative to defenders, prospectors tend to produce less readable annual reports, potentially reflecting greater information complexity and efforts to reduce exposure to risks associated with their uncertain operating environments (Lim *et al.*, 2018). Prospectors also attract greater attention from financial analysts through more frequent press releases (Bentley-Goode *et al.*, 2019), adopt more aggressive tax-planning strategies (Higgins *et al.*, 2015), and engage more extensively in corporate social responsibility activities because of their perceived strategic value (Yuan *et al.*, 2020). Despite these findings, the implications of strategic orientation for earnings quality, particularly earnings management, remain relatively underexplored. This gap is important because earnings management is a pervasive corporate practice and a central concern in the financial reporting literature.

Several theoretical arguments suggest that prospectors may have stronger incentives and greater opportunities to engage in earnings management than defenders. From an agency theory perspective, prospectors operate in highly uncertain and dynamic environments characterized by innovation, experimentation, and rapidly changing market conditions. The outcomes of these activities are often difficult for external stakeholders to assess, which can increase information asymmetry between managers and outside stakeholders and provide managers with greater discretion over financial reporting (Herusetya, 2023). This greater information asymmetry may weaken external monitoring and increase managers' ability to influence reported earnings.

Prospectors may also have greater opportunities to manage earnings because their business models typically involve substantial discretionary expenditures, particularly research and development, marketing, and other investments associated with innovation and growth. The timing and accounting treatment of such expenditures can provide managers with greater discretion in determining reported performance. Accordingly, the greater uncertainty and managerial discretion associated with prospector strategies may create a more favorable environment for earnings management.

In addition, aggressive growth strategies may increase prospectors' demand for external financing. Financing requirements can create incentives for managers to manage reported earnings to enhance perceived firm performance, attract investors, obtain more favorable borrowing terms, and reduce the cost of capital (Dechow & Sloan, 1991; Frankel *et al.*, 1995). Such incentives may be particularly relevant to prospectors because their investments in new products, markets, and technologies require substantial resources while generating uncertain future returns.

Signalling theory provides another explanation for why prospectors may have stronger incentives to manage earnings. Earnings stability can serve as an important signal of a firm's future performance (Barth *et al.*, 2001; Bentley *et al.*, 2013). Because prospectors operate in more volatile and uncertain environments, their reported performance may exhibit greater fluctuations. Managers may therefore have stronger incentives to smooth earnings in order to convey greater stability and reliability to investors and other external stakeholders. Taken together, these arguments suggest that prospectors may face both stronger incentives and greater opportunities to engage in earnings management than defenders.

Despite these theoretical arguments, empirical evidence remains mixed. Consistent with the prediction that prospectors engage more extensively in earnings management, Karampinis *et al.* (2024) find that prospector firms exhibit higher absolute discretionary accruals than defender firms, indicating a greater propensity for earnings management. Similarly, Ballas *et al.* (2021) report that prospector firms exhibit higher absolute discretionary accruals, lower abnormal operating cash flows, lower abnormal production costs, and higher discretionary expenses. These findings collectively suggest that prospectors engage more intensively in both accrual-based and real-activity earnings management.

In contrast, other studies provide evidence supporting the opposite prediction. Houqe *et al.* (2017) find that defender firms have stronger incentives to manage earnings. Likewise, Herusetya *et al.* (2023) document that, relative to prospectors, defenders are more likely to engage in both accrual-based and real-activity earnings management. They argue that although defenders operate in relatively stable environments with lower inherent uncertainty, they may face stronger pressure to meet predictable performance benchmarks. Such pressure may motivate managers to manipulate reported earnings to maintain the appearance of consistent performance and mitigate potential conflicts with stakeholders. In addition, Pinheiro de Sá *et al.* (2021) find no statistically significant difference in accrual-based earnings management between prospectors and defenders.

The inconsistent findings may reflect differences in research design and measurement choices. First, prior studies do not consistently address potential endogeneity between strategic orientation and earnings management. Business strategy may affect managers' reporting decisions, but earnings-management practices may also be associated with firms' subsequent strategic choices, creating potential reverse causality and omitted-variable concerns. Second, prior studies differ in their measurement of earnings management. Karampinis *et al.* (2024) and Ballas *et al.* (2021) use absolute values of earnings management proxies, which capture the magnitude of earnings management irrespective of whether reported earnings are increased or decreased. In contrast, Herusetya *et al.* (2023) and Pinheiro de Sá *et al.* (2021) use signed measures that capture both the direction and magnitude of earnings management. Such measurement differences may contribute to the divergent findings in the literature.

Motivated by these unresolved issues, the present study reexamines the relationship between strategic orientation and earnings management while addressing potential endogeneity and focusing on the magnitude of earnings management. Absolute measures are employed because the primary interest is whether firms engage more extensively in earnings management, regardless of whether managers use such practices to increase or decrease reported earnings. This approach is consistent with Karampinis *et al.* (2024) and Ballas *et al.* (2021). Given the theoretical arguments that prospectors face greater information asymmetry, managerial discretion, financing pressures, and performance volatility than defenders, prospectors are expected to have stronger incentives to engage in earnings management. Accordingly, the following hypothesis is proposed:

Hypothesis 1. Prospector firms have a higher level of earnings management than defender firms.

An additional limitation of prior research is its predominant focus on the two strategic extremes—prospectors and defenders. Such an approach may implicitly treat strategic orientation as a linear continuum between these two extremes and, consequently, overlook firms in between (i.e., analyzer firms). Under the Miles and Snow framework, however, analyzers represent a distinct strategic configuration rather than simply an intermediate position between prospectors and defenders. Analyzers seek to balance the stability of established products and markets with selective innovation and growth opportunities. Their strategic characteristics therefore differ from those of both prospectors and defenders and may lead to distinctive patterns of earnings management.

Including analyzers in the analysis provides a more complete test of the Miles and Snow framework and avoids imposing an untested linear relationship between strategic orientation and earnings management. In particular, examining analyzers directly allows their earnings-management behavior to be compared separately with that of prospectors and defenders, rather than assuming that analyzer firms simply occupy an intermediate position. Importantly, the strategic characteristics of analyzers give rise to competing theoretical arguments regarding the direction of their earnings-management behavior. On the one hand, their emphasis on

maintaining established products and markets may create pressures to sustain performance and meet market expectations, potentially increasing the incentives and opportunities for earnings management. On the other hand, their selective pursuit of innovation and growth opportunities may expose them to greater uncertainty and information asymmetry, while their more balanced strategic approach may constrain some forms of earnings management. Thus, the combined effects of these potentially opposing mechanisms do not provide a sufficiently clear theoretical basis for predicting whether analyzer firms will exhibit higher or lower levels of earnings management than either strategic extreme.

Accordingly, rather than imposing a directional prediction that may not be supported by the underlying theory, this study hypothesizes that analyzer firms differ in their level of earnings management from both prospector and defender firms. This non-directional approach is consistent with the view that analyzers constitute a distinct strategic configuration and allows the empirical analysis to determine the direction of the observed differences. Accordingly, the following hypotheses are proposed:

Hypothesis 2. Prospector firms and analyzer firms differ in their level of earnings management.

Hypothesis 3. Defender firms and analyzer firms differ in their level of earnings management.

3. DATA AND METHODOLOGY

3.1. Data and Sample

The firms included in this study are non-financial companies listed on the Taiwan Stock Exchange between 2020 and 2024, yielding a total of 7,879 firm-year observations. A total of 440 observations are excluded due to insufficient data for calculating strategy scores. An additional 84 observations are removed for not meeting the minimum requirement of 15 observations per industry-year group, as stipulated by the methodology of prior studies (e.g., Chi *et al.*, 2011; Roychowdhury, 2006), necessary for calculating earnings management values. Moreover, 759 observations are excluded due to missing data for control variables in the real-activity earnings management models, while 1,230 observations are excluded in the accrual-based earnings management models. Following these exclusions, the final sample consists of 6,596 observations for the real-activity earnings management analysis and 5,366 observations for the accrual-based earnings management analysis. All data are sourced from the Taiwan Economic Journal database.

3.2. Variable Measurement

3.2.1. Dependent Variable

The dependent variables are accrual-based earnings management (AEM) and real-activity earnings management (REM). AEM is estimated using the cross-sectional performance-adjusted modified Jones model proposed by Kothari *et al.* (2005), as specified in Eq. (1). The standardized residuals from this model proxy for abnormal accruals, and their absolute values are used to measure AEM, with higher val-

ues indicating greater earnings management and lower earnings quality.

REM is constructed in three steps following prior literature. First, abnormal cash flows from operations (Abn_CFO), discretionary expenditures (Abn_Discexp), and production costs (Abn_Prod) are estimated using Eqs. (2)–(4), based on Roychowdhury (2006). Second, these components are aggregated into a composite REM measure (e.g., Chi *et al.*, 2011). Finally, the absolute value of the composite measure is used to capture REM, where higher values indicate greater real-activity manipulation.

$$\begin{aligned} \frac{TAC_{i,t}}{Asset_{i,t-1}} &= \alpha_0 + \alpha_1 \frac{1}{Asset_{i,t-1}} + \alpha_2 \frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{Asset_{i,t-1}} \\ &+ \alpha_3 \frac{PPE_{i,t}}{Asset_{i,t-1}} + \alpha_4 ROA_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Where: $TAC_{i,t}$ is net income from continuing operations minus operating cash flows in year t , $Asset_{i,t-1}$ is total assets in year $t-1$, $\Delta REV_{i,t}$ is change in net sales in year t , $\Delta AR_{i,t}$ is change in accounts receivable, $PPE_{i,t}$ is gross real estate, plant and equipment in year t , $ROA_{i,t-1}$ is return on assets in year $t-1$.

$$\begin{aligned} \frac{CFO_{i,t}}{Asset_{i,t-1}} &= \beta_0 + \beta_1 \frac{1}{Asset_{i,t-1}} + \\ &\beta_2 \frac{S_{i,t}}{Asset_{i,t-1}} + \beta_3 \frac{\Delta S_{i,t}}{Asset_{i,t-1}} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Where: $CFO_{i,t}$ is operating cash flows in year t , $Asset_{i,t-1}$ is total assets in year $t-1$, $S_{i,t}$ is net sales in year t , $\Delta S_{i,t}$ is change in sales in year t .

$$\begin{aligned} \frac{PROD_{i,t}}{Asset_{i,t-1}} &= \beta_0 + \beta_1 \frac{1}{Asset_{i,t-1}} + \beta_2 \frac{S_{i,t}}{Asset_{i,t-1}} + \\ &\beta_3 \frac{\Delta S_{i,t}}{Asset_{i,t-1}} + \beta_4 \frac{\Delta S_{i,t}}{Asset_{i,t-1}} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

Where: $PROD_{i,t}$ is production costs in year t , $Asset_{i,t-1}$ is total assets in year $t-1$, $S_{i,t}$ is net sales in year t , $\Delta S_{i,t}$ is change in sales in year t , $\Delta S_{i,t-1}$ is change in sales in year $t-1$.

$$\frac{DISEXP_{i,t}}{Asset_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Asset_{i,t-1}} + \beta_2 \frac{S_{i,t}}{Asset_{i,t-1}} + \varepsilon_{i,t} \quad (4)$$

Where: $DISEXP_{i,t}$ is the sum of SG&A expenses and R&D expenses in year t , $Asset_{i,t-1}$ is total assets in year $t-1$, $S_{i,t-1}$ is net sales in year $t-1$.

3.2.2. Explanatory Variable

The explanatory variables include strategy indicators—DEFENDER, ANALYSER, and PROSPECTOR—and strategy scores (SCORE). Following the methodologies of prior studies, the values for the strategy variables are determined as outlined below.

First, Miles and Snow's business strategy typology is adopted, classifying firms as defenders, analyzers, or prospectors. Next, Bentley's (2013) methodology is applied to compute a rolling 5-year average for each firm-year observation, using six financial and operational ratios: (1) R&D expenses as a percentage of total sales, (2) employees as a percentage of total sales, (3) one-year percentage change in total sales, (4) SG&A expenses as a percentage of total sales, (5) standard deviation of total employees, and (6) net real estate, plant, and equipment scaled by total assets (capital intensity).

Firms are grouped by their two-digit industry code, as classified by the Stock Exchange. Within each industry group, firm-year observations are divided into quintiles based on each of the six ratios. For the first five ratios, observations in the highest quintile receive a score of 5, with scores decreasing incrementally to 1 for those in the lowest quintile. For the capital intensity ratio, the scoring is inverted: observations in the lowest quintile receive a score of 5, while those in the highest quintile receive a score of 1.

The scores for all six ratios are then summed to calculate an overall strategy score (SCORE) for each firm-year observation. Higher scores indicate a stronger alignment with the prospector strategy, while lower scores suggest a stronger alignment with the defender strategy. Based on these scores, firms are classified into strategy groups. Following Bentley (2013), firms with scores between 6 and 12 are categorized as defenders, those with scores between 13 and 23 are classified as analyzers, and firms with scores between 24 and 30 are categorized as prospectors.

The ANALYZER category is used as the baseline, and two indicator variables are created: DEFENDER and PROSPECTOR. DEFENDER is coded as 1 for firms classified as defenders and 0 otherwise, while PROSPECTOR is coded as 1 for firms classified as prospectors and 0 otherwise.

3.2.3. Control Variable

This study incorporates various control variables to account for firm-specific characteristics and differences in corporate governance. The firm-specific variables include firm size (SIZE), financial leverage (LEVERAGE), firm performance (ROA), sales growth (GROWTH), and market-to-book value (MTB).

SIZE is measured as the natural logarithm of total assets. According to the political cost argument, larger firms may engage in less earnings management due to increased regulatory scrutiny and political sensitivity (Cohen & Zarowin, 2010; Watts and Zimmerman, 1990). However, empirical findings are mixed: some studies report a negative relationship between firm size and earnings management (e.g., Pinheiro de Sa *et al.*, 2021), while others find a positive relationship (e.g., Awuye, 2022; Herusetya *et al.*, 2023).

LEVERAGE, representing a firm's capital structure, is measured as the ratio of total debt to total assets. The debt covenant argument posits that firms with higher debt ratios face stronger incentives to engage in earnings management to avoid covenant violations or reduce the cost of capital (Efendi *et al.*, 2007; Roychowdhury, 2006). Consistent with this view, numerous studies document a positive association

between leverage and earnings management (e.g., Pinheiro de Sa *et al.*, 2021; Wu *et al.*, 2015).

ROA, a widely used indicator of financial performance, is linked to earnings management, although the results are inconclusive. Some studies suggest that firms with better performance are more likely to engage in earnings management (Le & Nguyen, 2023; Wu *et al.*, 2015), while others report the opposite (Burgstahler *et al.*, 2006; Prawitt *et al.*, 2009).

GROWTH, calculated as the percentage change in sales, and MTB, the market-to-book value ratio, are commonly used as proxies for growth opportunities. Several studies show that firms with higher growth opportunities are more likely to engage in earnings management (e.g., Skinner & Sloan, 2002; Wu *et al.*, 2015).

To control for corporate governance differences, this study includes BIG4, an indicator indicating whether the firm is audited by a Big Four accounting firm. Research consistently shows that firms audited by Big Four firms engage in less earnings management (e.g., Chi *et al.*, 2011; Herusetya *et al.*, 2023).

OUTDIR, representing board independence, is measured as the proportion of independent directors on the board. Agency theory suggests that firms with a higher proportion of independent directors can better mitigate conflicts of interest between shareholders and managers. This is supported by studies showing a negative relationship between board independence and earnings management (e.g., Beasley, 1996; Dechow *et al.*, 1996).

CEOSHARE, representing CEO ownership, is calculated as the percentage of shares owned by the CEO. According to agency theory, higher managerial ownership aligns managers' interests with those of shareholders, potentially reducing earnings management. However, empirical findings are mixed, with some studies showing a negative relationship (e.g., Nguyen *et al.*, 2021) and others finding a positive association (e.g., Agrawal & Knoeber, 1996; Yermack, 1996).

FREECASH, measured as free cash flow scaled by operating cash flow, is included to capture firms' incentives for earnings management. Firms with stronger free cash flows generally face less pressure to engage in earnings management, whereas those with weaker free cash flows may have stronger incentives to manipulate earnings to signal favorable performance to investors (Lobo & Zhou, 2006; Herusetya *et al.*, 2023).

PREAEM, measured as the absolute value of prior-year abnormal accruals, is included to account for potential accrual reversals. This variable is used only in the accrual-based earnings management model. Because both PREAEM and AEM are expressed in absolute terms, a positive association between the two is expected.

3.3. Empirical Models

Because business strategy can be measured using both indicator variables and a continuous measure, this study employs both specifications to test the hypotheses. For the indicator-based approach, as shown in Eqs. (5) and (6), the key explanatory variables are *DEFENDER* and *PROSPECTOR*,

with *ANALYZER* serving as the reference category. For the continuous specification, as presented in Eqs. (7) and (8), the key explanatory variable is *SCORE*, which captures the firm's strategic orientation. Because accrual-based earnings management typically exhibits a reversal effect, Eqs. (6) and (8) include an additional control variable, *PREAEM* (prior-year AEM), to account for this reversal.

$$REM_{i,t} = \beta_0 + \beta_1 DEFNEDER_{i,t} + \beta_2 PROSPECTOR_{i,t} + \beta_3 ROA_{i,t} + \beta_4 MTB_{i,t} + \beta_5 LEVERAGE_{i,t} + \beta_6 BIG4_{i,t} + \beta_7 CEOSHARE_{i,t} + \beta_8 OUTDIR_{i,t} + \beta_9 GROWTH_{i,t} + \beta_{10} FREECASH_{i,t} + \beta_{11} SIZE_{i,t} + YEAR\ FE + INDUSTRY\ FE + \varepsilon_{i,t} \quad (5)$$

$$AEM_{i,t} = \beta_0 + \beta_1 DEFNEDER_{i,t} + \beta_2 PROSPECTOR_{i,t} + \beta_3 ROA_{i,t} + \beta_4 MTB_{i,t} + \beta_5 LEVERAGE_{i,t} + \beta_6 BIG4_{i,t} + \beta_7 CEOSHARE_{i,t} + \beta_8 OUTDIR_{i,t} + \beta_9 GROWTH_{i,t} + \beta_{10} FREECASH_{i,t} + \beta_{11} SIZE_{i,t} + \beta_{12} PRERAM_{i,t} + YEAR\ FE + INDUSTRY\ FE + \varepsilon_{i,t} \quad (6)$$

$$REM_{i,t} = \beta_0 + \beta_1 SCORE_{i,t} + \beta_2 SCORE_{i,t}^2 + \beta_3 ROA_{i,t} + \beta_4 MTB_{i,t} + \beta_5 LEVERAGE_{i,t} + \beta_6 BIG4_{i,t} + \beta_7 CEOSHARE_{i,t} + \beta_8 OUTDIR_{i,t} + \beta_9 GROWTH_{i,t} + \beta_{10} FREECASH_{i,t} + \beta_{11} SIZE_{i,t} + YEAR\ FE + INDUSTRY\ FE + \varepsilon_{i,t} \quad (7)$$

$$AEM_{i,t} = \beta_0 + \beta_1 SCORE_{i,t} + \beta_2 SCORE_{i,t}^2 + \beta_3 ROA_{i,t} + \beta_4 MTB_{i,t} + \beta_5 LEVERAGE_{i,t} + \beta_6 BIG4_{i,t} + \beta_7 CEOSHARE_{i,t} + \beta_8 OUTDIR_{i,t} + \beta_9 GROWTH_{i,t} + \beta_{10} FREECASH_{i,t} + \beta_{11} SIZE_{i,t} + \beta_{12} PREAEM_{i,t} + YEAR\ FE + INDUSTRY\ FE + \varepsilon_{i,t} \quad (8)$$

Where: *i* represents the firm and *t* represents the year. *REM* = real earnings management; *AEM* = accrual-based earnings management; *PROSPECTOR* = indicator variable equal to 1 if the firm follows a prospector strategy, and 0 otherwise; *DEFENDER* = indicator variable equal to 1 if the firm follows a defender strategy, and 0 otherwise; *SCORE* = strategy score; *ROA* = return on assets; *MTB* = market-to-book ratio; *LEVERAGE* = total debt divided by total assets; *BIG4* = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise; *CEOSHARE* = percentage of shares owned by the CEO; *OUTDIR* = proportion of independent directors on the board; *GROWTH* = percentage change in sales; *FREECASH* = free cash flow scaled by operating cash flow; *SIZE* = natural logarithm of total assets; *PREAEM* = prior-year AEM; *YEAR FE* = year-fixed effects; *INDUSTRY FE* = industry-fixed effects.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 1 presents descriptive statistics for the variables used in the empirical analysis. The mean values of real-activity earnings management (*REM*) and accrual-based earnings management (*AEM*) are 0.139 and 0.060, respectively. *REM* is approximately 2.3 times higher than *AEM*, suggesting that firms rely more heavily on real activities than accrual-based techniques when managing earnings, consistent with the notion that real activities manipulation is less detectable.

The average strategic score (*SCORE*) is 17.880, which is comparable to prior studies, such as the 18.029 reported by Yuan *et al.* (2020), supporting the validity of the strategy measure. Sample firms exhibit a mean return on assets

Table 1. Descriptive statistics.

Panel A: Continuous Variable	Mean	S.D.	Q1	Q2	Q3
REM	0.139	0.152	0.042	0.097	0.183
REM1	0.153	0.169	0.049	0.108	0.203
REM2	0.086	0.111	0.027	0.059	0.109
AEM	0.060	0.090	0.018	0.039	0.074
SCORE	17.880	3.876	15	18	21
ROA (%)	8.087	9.193	3.060	7.635	12.970
MTB	2.108	1.731	1.060	1.580	2.440
LEVERAGE (%)	42.210	18.514	27.793	42.720	55.588
CEOSHARE (%)	1.128	2.003	0.040	0.300	1.200
OUTDIR	0.358	0.084	0.286	0.333	0.429
GROWTH (%)	9.640	46.901	-8.448	3.540	16.578
FREECASH	-0.055	0.743	-0.021	0.041	0.110
SIZE	15.414	1.468	14.392	15.251	16.235
Panel B: Indicator Variable					
DEFENDER	0.09				
PROSPECTOR	0.08				
ANALYZER	0.83				
BIG4	0.88				

Note: REM = real earnings management; REM1 = real earnings management through discretionary expenses and cost of goods sold; REM2 = real earnings management through sales and discretionary expense adjustments; AEM = accrual-based earnings management; SCORE = strategy score; ROA = return on assets; MTB = market-to-book ratio; LEVERAGE = total debt divided by total assets; CEOSHARE = percentage of shares owned by the CEO; OUTDIR = proportion of independent directors on the board; GROWTH = percentage change in sales; FREECASH = free cash flow scaled by operating cash flow; SIZE = natural logarithm of total assets; DEFENDER = indicator variable equal to 1 if the firm follows a defender strategy, and 0 otherwise; PROSPECTOR = indicator variable equal to 1 if the firm follows a prospector strategy, and 0 otherwise; ANALYZER = indicator variable equal to 1 if the firm follows an analyzer strategy, and 0 otherwise; BIG4 = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles.

(ROA) of 8.087% and an average financial leverage (LEVERAGE) of 42.210%, indicating moderate profitability and capital structure.

The mean market-to-book ratio (MTB) is 2.108, suggesting that firms' market values are, on average, roughly twice their book values. CEO ownership (CEOSHARE) is relatively low, with a mean of 1.128%, implying limited alignment between managers and shareholders, potentially increasing agency-driven incentives for earnings management.

The proportion of independent directors (OUTDIR) averages 35.8%, indicating a moderate level of board independence. Average sales growth (GROWTH) is 9.640, suggesting that most firms are in a growth stage. The mean free cash flow ratio (FREECASH) is -0.055, indicating that, on average, firms do not generate sufficient free cash flows.

Firm size (SIZE), measured as the natural logarithm of total assets, has a mean of 15.414. Regarding strategic orientation, 9% of firms adopt a defender strategy (DEFENDER), 8% pursue a prospector strategy (PROSPECTOR), and 83% follow an analyzer strategy. In addition, 88% of the sample firms engage Big Four accounting firms (BIG4) for auditing services, indicating a relatively high level of demand for high-quality external monitoring.

4.2. Hypothesis Tests

To test the hypotheses, this study employs two types of strategy variables: indicator variables (PROSPECTOR, DEFENDER) and a continuous measure (SCORE). Table 2 presents the results for the three hypotheses using indicator variables to proxy for strategic orientation.

Table 2. The effects of strategic orientation indicators on earnings management.

		REM			AEM		
		coef.	t-stat.		coef.	t-stat.	
Intercept (β_0)		0.356	9.434	***	0.089	8.555	***
PROSPECTOR (β_1)	H1	0.034	5.300	***	0.005	0.803	
DEFENDER (β_2)	H2	0.022	7.256	***	-4.2×10⁻⁴	-0.122	
ROA (β_3)		0.002	5.191	***	-2.9×10 ⁻⁵	-0.138	
MTB (β_4)		0.013	7.389	***	0.003	5.503	***
LEVERAGE (β_5)		3.8×10 ⁻⁴	4.580	***	4.1×10 ⁻⁴	6.413	***
BIG4 (β_6)		-0.006	-2.406	**	-0.006	-1.992	**
CEOSHARE (β_7)		0.001	1.568		-3.2×10 ⁻⁶	-0.008	
OUTDIR (β_8)		-0.057	-8.042	***	0.0185	1.826	*
GROWTH (β_9)		3.0×10 ⁻⁴	11.377	***	3.5×10 ⁻⁴	4.656	***
FREECASH (β_{10})		-0.009	-3.774	***	-0.0127	-2.780	***
SIZE (β_{11})		-0.007	-12.241	***	-0.007	-7.836	***
PREAEM (β_{12})					0.161	7.935	***
Industry FE		YES			YES		
Year FE		YES			YES		
Number of observations		6,596			5,366		
F-statistic		50.018***			25.575***		
Adj-R ²		0.246			0.171		
H3 : $\beta_1 \neq \beta_2$							
Wald test: F-statistic		4.037 (p<0.045)			1.007 (p=0.316)		

REM = real earnings management; AEM = accrual-based earnings management; PROSPECTOR = indicator variable equal to 1 if the firm follows a prospector strategy, and 0 otherwise; DEFENDER = indicator variable equal to 1 if the firm follows a defender strategy, and 0 otherwise; ROA = return on assets; MTB = market-to-book ratio; LEVERAGE = total debt divided by total assets; BIG4 = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise; CEOSHARE = percentage of shares owned by the CEO; OUTDIR = proportion of independent directors on the board; GROWTH = percentage change in sales; FREECASH = free cash flow scaled by operating cash flow; SIZE = natural logarithm of total assets; PREAEM = prior-year AEM. All continuous variables are winsorized at the 1st and 99th percentiles. White cross-sectional standard errors are used to compute t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

For the REM equation, PROSPECTOR is positively and significantly associated with REM ($\beta_1 = 0.034$, $p < 0.01$), supporting Hypothesis 2. This finding is consistent with the view that prospector firms operate in more uncertain and dynamic environments, which not only increases their incentives to smooth or stabilize reported performance but also makes their financial outcomes more difficult for external stakeholders to assess. As a result, relative to analyzers, prospector firms are more likely to engage in real-activity earnings management.

Similarly, DEFENDER is positively and significantly associated with REM ($\beta_2 = 0.022$, $p < 0.01$), supporting Hypothesis 3. This suggests that, relative to analyzers, defender firms—despite their emphasis on efficiency and stable operations—also exhibit stronger incentives to manage earnings

through real activities, possibly to maintain consistent performance and meet stakeholder expectations.

In addition, the Wald test shows that the coefficient on PROSPECTOR ($\beta_1 = 0.034$) is significantly greater than that on DEFENDER ($\beta_2 = 0.022$) (F-statistic = 4.037, $p < 0.05$), providing support for Hypothesis 1. This result indicates that the incentives for real-activity earnings management are stronger among prospector firms than among defender firms, which aligns with the theoretical arguments.

In contrast, in the AEM equation, neither PROSPECTOR nor DEFENDER is significantly associated with accrual-based earnings management at conventional significance levels. The Wald test likewise indicates no significant difference between the coefficients on PROSPECTOR ($\beta_1 = 0.005$) and DEFENDER ($\beta_2 = -0.0004$), with an F-statistic

Table 3. The impact of strategy orientation scores on earnings management.

	REM				AEM		
		coef.	t-stat.		coef.	t-stat.	
Intercept (β_0)		0.541	11.299	***	0.094	8.376	***
SCORE (β_1)	H1	-0.024	-10.135	***	-0.001	-0.480	
SCORE² (β_2)	H2	0.001	10.430	***	6.6×10⁻⁵	0.606	
ROA (β_3)		0.002	5.378	***	-2.2×10 ⁻⁵	-0.102	
MTB (β_4)		0.013	6.897	***	0.003	5.546	***
LEVERAGE (β_5)		4.0×10 ⁻⁴	5.101	***	4.2×10 ⁻⁴	6.561	***
BIG4 (β_6)		-0.007	-2.872	***	-0.006	-1.954	*
CEOSHARE (β_7)		0.001	1.258		-3.7×10 ⁻⁵	-0.086	
OUTDIR (β_8)		-0.057	-9.799	***	0.018	1.803	*
GROWTH (β_9)		2.9×10 ⁻⁴	10.858	***	3.5×10 ⁻⁴	4.656	***
FREECASH (β_{10})		-0.009	-3.630	***	-0.013	-2.793	***
SIZE (β_{11})		-0.007	-7.121	***	-0.007	-7.364	***
PREAEM (β_{12})					0.161	7.869	***
Industry FE	YES				YES		
Year FE	YES				YES		
Number of observations	6,596				5,366		
F-statistic	51.252***				25.575***		
Adj-R ²	0.251				0.171		

REM = real earnings management; AEM = accrual-based earnings management; SCORE = strategy score; ROA = return on assets; MTB = market-to-book ratio; LEVERAGE = total debt divided by total assets; BIG4 = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise; CEOSHARE = percentage of shares owned by the CEO; OUTDIR = proportion of independent directors on the board; GROWTH = percentage change in sales; FREECASH = free cash flow scaled by operating cash flow; SIZE = natural logarithm of total assets; PREAEM = prior-year AEM. All continuous variables are winsorized at the 1st and 99th percentiles. White cross-sectional standard errors are used to compute t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively. All continuous variables are winsorized at the 1st and 99th percentiles.

of 1.007 ($p = 0.316$). These results suggest that strategic orientation is not systematically related to accrual-based earnings management, possibly because such practices are more tightly constrained by accounting standards and external monitoring mechanisms.

With respect to control variables, firms with higher growth opportunities, proxied by sales growth (GROWTH) and the market-to-book ratio (MTB), as well as firms with higher financial leverage (LEVERAGE), are more likely to engage in earnings management. These results are consistent with agency theory and capital market pressure arguments. In contrast, firms with more free cash flows (FREECASH), those audited by Big Four accounting firms (BIG4), and larger firms (SIZE), which face greater political costs and external scrutiny, are less likely to engage in earnings management. Firms with stronger financial performance (ROA) are more likely to engage in real-activity earnings management, potentially to sustain favorable performance signals.

In addition, firms with a higher proportion of independent directors (OUTDIR) appear to substitute from real-

activity to accrual-based earnings management, suggesting that stronger board monitoring constrains more observable operational manipulation while shifting managerial discretion toward accounting-based methods. Consistent with expectations, PREAEM is positively associated with AEM.

The above findings suggest a non-linear, potentially U-shaped relationship between strategic orientation and real activity earnings management. To confirm this pattern, this study replaces the categorical strategy variables with a continuous strategy score (SCORE) and incorporates both the linear (SCORE) and squared (SCORE²) terms, as specified in Eqs. (7) and (8).

The results are reported in Table 3. In the REM equation, the coefficient on SCORE is negative and statistically significant ($\beta_1 = -0.024$, $p < 0.01$), while the coefficient on SCORE² is positive and significant ($\beta_2 = 0.001$, $p < 0.01$). This pattern provides strong evidence of a U-shaped relationship between strategic orientation and real activity earnings management, offering additional support for Hypotheses 1–3. In contrast, in the AEM equation, both coefficients (β_1

Table 4. The effects of strategic orientation on REM.

		REM _{t+1}				REM _{t+1}		
		coef.	t-stat.			coef.	t-stat.	
Intercept (β ₀)		0.376	12.108	***		0.497	9.005	***
PROSPECTOR _t (β ₁)	H1	0.019	4.285	***				
DEFENDER _t (β ₂)	H2	0.014	3.944	***				
SCORE _t (β ₁)					H1	-0.016	-6.305	***
SCORE ² _t (β ₂)					H2	0.001	7.302	***
Control variables		YES			YES			
Industry FE		YES			YES			
Year FE		YES			YES			
Number of observations		5,295			5,295			
F-statistic		41.217***			42.059***			
Adj-R ²		0.246			0.250			
		H3 : β ₁ ≠β ₂						
		Wald test: F-statistic 5.766 (p=0.0164)						

REM = real earnings management; PROSPECTOR = indicator variable equal to 1 if the firm follows a prospector strategy, and 0 otherwise; DEFENDER = indicator variable equal to 1 if the firm follows a defender strategy, and 0 otherwise; SCORE = strategy score; All continuous variables are winsorized at the 1st and 99th percentiles. White cross-sectional standard errors are used to compute t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

and β_2) are statistically insignificant at conventional levels, reaffirming the earlier findings.

Overall, the results indicate that prospector firms exhibit the highest propensity to engage in real activity earnings management, followed by defender firms, whereas analyzer firms—representing a mixed strategy—display the lowest tendency. This pattern is consistent with the theoretical prediction that prospector firms face stronger incentives to manage earnings. More broadly, the findings highlight a non-monotonic relationship between strategic orientation and real activity earnings management, challenging the conventional assumption of linearity and offering new insights into the literature.

Finally, the absence of significant results for accrual-based earnings management suggests that such practices may be less aligned with firms' strategic objectives, possibly due to their temporary nature and eventual reversal.

4.3. Robustness Checks

4.3.1. Addressing Endogeneity

Endogeneity remains a central concern in empirical research relying on non-experimental data to draw causal inferences (Lehmann *et al.*, 2011; Rouen, 2020). To mitigate this concern, this study employs several complementary identification strategies. First, it incorporates a one-year lagged dependent variable and firm fixed effects to reduce concerns about reverse causality and to control for time-invariant unobserved heterogeneity. Second, this study applies the System Generalized Method of Moments (System

GMM) estimator, which exploits internal instruments based on lagged variables to address potential simultaneity and dynamic endogeneity (Arellano & Bover, 1995; Blundell & Bond, 1998; Farzana *et al.*, 2024).

Table 4 reports the results using the one-year lagged dependent variable and firm fixed effects. In the REM specification using strategic indicator variables, the findings remain consistent with the baseline results. The coefficient on PROSPECTOR at t is positive and significant ($\beta_1 = 0.019$, $p < 0.01$), indicating that prospector firms exhibit higher levels of real-activity earnings management (REM) at $t + 1$ than analyzer firms. Similarly, the coefficient on DEFENDER at t is positive and significant ($\beta_2 = 0.014$, $p < 0.01$), indicating that defender firms also exhibit higher levels of REM at $t + 1$ than analyzer firms. These findings support Hypotheses 2 and 3. The Wald test further indicates that the coefficient on PROSPECTOR is significantly greater than that on DEFENDER ($F = 5.766$, $p = 0.016$), providing support for Hypothesis 1.

Using the continuous strategy measure, the results again indicate a U-shaped association between strategy score (SCORE) and REM. Specifically, SCORE is negatively associated with REM at $t + 1$ ($\beta_1 = -0.016$, $p < 0.01$), whereas SCORE² is positively associated with REM at $t + 1$ ($\beta_2 = 0.001$, $p < 0.01$). The opposite signs of the linear and quadratic terms are consistent with a U-shaped association, suggesting that REM tends to be lower for firms with intermediate strategy scores and higher as strategy scores move toward the lower and higher ends of the strategic-orientation spectrum. This continuous specification therefore reinforces the

Table 5. The effects of strategic orientation scores on REM: Using system GMM estimation.

		coef.		t-stat.	
REM _{t-1} (β_0)		0.6526		3.735	***
SCORE (β_1)	H1	-0.0160		-2.337	**
SCORE² (β_2)	H2	0.0004		2.225	**
ROA (β_3)		0.0032		5.675	***
MTB (β_4)		0.0059		2.002	**
LEVERAGE (β_5)		0.0013		4.424	***
BIG4 (β_6)		-0.0135		-1.146	
CEOSHARE (β_7)		-0.0012		-0.572	
OUTDIR (β_8)		-0.0470		-1.154	
GROWTH (β_9)		0.0003		4.484	***
FREECASH (β_{10})		-0.0081		-1.938	*
SIZE (β_{11})		-0.0149		-3.458	***
Year FE		YES			
Firm FE		YES			
Number of observations		3,720			
Model diagnose:					
AR(1)		p<0.001			
AR(2)		p=0.167			
Hansen test		J-stat.=1.892 (p=0.388)			

REM = real earnings management; SCORE = strategy score; ROA = return on assets; MTB = market-to-book ratio; LEVERAGE = total debt divided by total assets; BIG4 = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise; CEOSHARE = percentage of shares owned by the CEO; OUTDIR = proportion of independent directors on the board; GROWTH = percentage change in sales; FREECASH = free cash flow scaled by operating cash flow; SIZE = natural logarithm of total assets. All continuous variables are winsorized at the 1st and 99th percentiles. White cross-sectional standard errors are used to compute t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

general pattern observed in the indicator-variable analysis. However, the significant quadratic term does not, by itself, establish that prospector firms exhibit significantly higher levels of REM than defender firms. That directional comparison requires a direct statistical test, such as the Wald test reported above.

In contrast, in the AEM specification, neither the strategic indicator variables nor the strategy score variables are statistically significant at conventional levels (untabulated), further confirming the baseline findings.

Table 5 presents the results from the System GMM estimation. Although System GMM can provide consistent and efficient estimates under appropriate conditions, its validity depends critically on the appropriateness of the instruments. Accordingly, this study conducts the Hansen test of over-identifying restrictions to assess instrument validity. Failure to reject the null hypothesis indicates that the instruments satisfy the required exogeneity conditions. In addition, the Arellano–Bond tests are used to examine serial correlation in the idiosyncratic errors. Consistent with the requirements of the estimator, first-order serial correlation (AR(1)) is ex-

pected, whereas second-order serial correlation (AR(2)) should be absent.

The diagnostic results support the validity of the model specification. The Hansen test fails to reject the null hypothesis (J-statistic = 1.892, $p = 0.388$), suggesting that the instruments satisfy the required exogeneity conditions. The Arellano–Bond tests further indicate significant first-order serial correlation (AR(1): $p < 0.001$) and no evidence of second-order serial correlation (AR(2): $p = 0.167$), consistent with the requirements for the validity of the dynamic panel specification.

Given these diagnostic results, this study further examines the association between strategy score (SCORE) and REM. As reported in Table 5, the coefficient on SCORE is significantly negative ($\beta_1 = -0.016$, $p = 0.020$), whereas the coefficient on SCORE² is significantly positive ($\beta_2 = 0.0004$, $p = 0.026$). These results provide further evidence of a U-shaped association between strategic orientation and REM. Specifically, the results suggest that REM is relatively lower for firms with intermediate strategy scores and increases as strategy scores move toward either end of the strategic-

Table 6. Strategic orientation and earnings management.

		REM1			REM2		
		coef.	t-stat.		coef.	t-stat.	
Intercept (β_0)		0.375	9.845	***	0.303	17.577	***
PROSPECTOR (β_1)	H1	0.037	3.024	***	0.019	1.955	*
DEFENDER (β_2)	H2	0.023	5.511	***	-1.4×10⁻⁴	-0.057	
ROA (β_3)		0.002	6.894	***	0.001	2.749	***
MTB (β_4)		0.013	5.939	***	0.003	3.315	***
LEVERAGE (β_5)		0.001	7.817	***	3.5×10 ⁻⁴	11.450	***
BIG4 (β_6)		-0.016	-2.224	**	-0.015	-2.743	***
CEOSHARE (β_7)		0.001	1.165		3.0×10 ⁻⁴	0.656	
OUTDIR (β_8)		-0.035	-2.318	**	0.006	0.401	
GROWTH (β_9)		4.6×10 ⁻⁴	7.217	***	3.6×10 ⁻⁴	6.591	***
FREECASH (β_{10})		-0.017	-6.048	***	-0.015	-8.548	***
SIZE (β_{11})		-0.010	-12.466	***	-0.007	-7.940	***
Industry FE		YES			YES		
Year FE		YES			YES		
Number of observations		6,596			6,596		
F-statistic		36.499			33.136		
Adj-R ²		0.191			0.177		
H3 : $\beta_1 \neq \beta_2$							
Wald test: F-statistic		1.488 (p=0.223)			6.182 (p=0.013)		

REM1 = real earnings management through discretionary expenses and cost of goods sold; REM2 = real earnings management through sales and discretionary expense adjustments; PROSPECTOR = indicator variable equal to 1 if the firm follows a prospector strategy, and 0 otherwise; DEFENDER = indicator variable equal to 1 if the firm follows a defender strategy, and 0 otherwise; ROA = return on assets; MTB = market-to-book ratio; LEVERAGE = total debt divided by total assets; BIG4 = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise; CEOSHARE = percentage of shares owned by the CEO; OUTDIR = proportion of independent directors on the board; GROWTH = percentage change in sales; FREECASH = free cash flow scaled by operating cash flow; SIZE = natural logarithm of total assets. All continuous variables are winsorized at the 1st and 99th percentiles. White cross-section standard errors are used to compute t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

orientation spectrum. This pattern is broadly consistent with the finding that both prospector and defender firms exhibit higher levels of REM than analyzer firms. Nevertheless, the quadratic specification should not be interpreted as establishing a statistically significant difference between prospector and defender firms. The evidence for such a directional difference is appropriately assessed using the Wald test from the indicator-variable specification.

In contrast, in the AEM specification, both the coefficients on SCORE and SCORE² are insignificant at conventional levels (untabulated), further confirming the baseline findings.

4.3.2. Using Alternative Aggregate REM Measures

Following prior studies such as Cohen and Zarowin (2010) and Ipino and Parbonetti (2017), this study decomposes the aggregate REM measure into two alternative proxies to mitigate potential overlap between abnormal produc-

tion costs and abnormal cash flows. The first proxy, REM1, combines abnormal discretionary expenses (multiplied by -1) and abnormal production costs, thereby capturing earnings management through reductions in discretionary expenditures and production-related activities. The second proxy, REM2, combines abnormal cash flows (multiplied by -1) and abnormal discretionary expenses (multiplied by -1), reflecting earnings management through sales manipulation and reductions in discretionary expenditures. Using these two alternative REM measures, this study further examines whether strategic orientation is associated with different forms of real-activity earnings management.

Table 6 presents the effects of the strategic indicator variables on REM1 and REM2. In the REM1 model, the coefficients on PROSPECTOR ($\beta_1 = 0.037$) and DEFENDER ($\beta_2 = 0.023$) are both positive and significant at the 1% level. These findings indicate that both prospector and defender firms exhibit higher levels of REM1 than analyzer firms,

Table 7. The effects of strategic orientation scores on REM1 and REM2.

		REM1			REM2		
		coef.	t-stat.		coef.	t-stat.	
Intercept (β_0)		0.579	10.585	***	0.346	11.090	***
SCORE (β_1)	H1	-0.026	-6.843	***	-0.007	-1.949	*
SCORE² (β_2)	H2	0.001	6.754	***	2.4×10⁻⁴	2.200	**
ROA (β_3)		0.002	7.151	***	0.001	2.853	***
MTB (β_4)		0.012	5.545	***	0.002	2.684	***
LEVERAGE (β_5)		0.001	8.232	***	3.6×10 ⁻⁴	11.055	***
BIG4 (β_6)		-0.017	-2.354	**	-0.016	-2.871	***
CEOSHARE (β_7)		0.001	0.917		1.6×10 ⁻⁴	0.329	
OUTDIR (β_8)		-0.035	-2.316	**	0.006	0.365	
GROWTH (β_9)		4.5×10 ⁻⁴	7.188	***	3.6×10 ⁻⁴	6.573	***
FREECASH (β_{10})		-0.017	-5.771	***	-0.015	-8.220	***
SIZE (β_{11})		-0.010	-12.876	***	-0.006	-7.786	***
Industry FE		YES			YES		
Year FE		YES			YES		
Number of observations		6,596			6,596		
F-statistic		37.583***			33.661***		
Adj-R ²		0.196			0.179		

REM1 = real earnings management through discretionary expenses and cost of goods sold; REM2 = real earnings management through sales and discretionary expense adjustments; SCORE = strategy score; ROA = return on assets; MTB = market-to-book ratio; LEVERAGE = total debt divided by total assets; BIG4 = indicator variable equal to 1 if the firm is audited by a Big Four accounting firm, and 0 otherwise; CEOSHARE = percentage of shares owned by the CEO; OUTDIR = proportion of independent directors on the board; GROWTH = percentage change in sales; FREECASH = free cash flow scaled by operating cash flow; SIZE = natural logarithm of total assets; PREAEM = prior-year AEM. All continuous variables are winsorized at the 1st and 99th percentiles. White cross-sectional standard errors are used to compute t-statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed), respectively. All continuous variables are winsorized at the 1st and 99th percentiles.

providing support for Hypotheses 2 and 3. However, the Wald test indicates no statistically significant difference between the coefficients on PROSPECTOR and DEFENDER ($F = 1.488$, $p = 0.223$). Thus, Hypothesis 1 is not supported for REM1. Importantly, the results are consistent with a U-shaped pattern in which REM1 is higher among firms at both strategic extremes than among analyzer firms, but they do not provide evidence that prospector firms exhibit a significantly higher level of REM1 than defender firms.

In the REM2 model, the coefficient on PROSPECTOR ($\beta_1 = 0.019$) is positive and significant at the 10% level, indicating that prospector firms exhibit a higher level of REM2 than analyzer firms and providing support for Hypothesis 2. In contrast, the coefficient on DEFENDER ($\beta_2 = -0.0014$) is statistically insignificant, indicating that defender firms do not differ significantly from analyzer firms in terms of REM2. Therefore, Hypothesis 3 is not supported for REM2. The Wald test further indicates that the coefficient on PROSPECTOR is significantly greater than that on DEFENDER ($F = 6.182$, $p = 0.013$), providing support for Hypothesis 1 for REM2.

Taken together, the results from the alternative REM measures provide nuanced evidence regarding the differences among strategic orientations. For REM1, both prospector and defender firms exhibit higher levels of REM1 than analyzer firms, but their levels do not differ significantly from each other. For REM2, prospector firms exhibit a higher level of REM2 than both analyzer and defender firms, whereas defender firms do not differ significantly from analyzer firms. Thus, the evidence for Hypotheses 1–3 varies across the alternative REM measures, suggesting that the association between strategic orientation and REM may differ across specific forms of real-activity earnings management.

Table 7 reports the effects of the continuous strategy score (SCORE) on REM1 and REM2. In the REM1 model, the coefficient on SCORE ($\beta_1 = -0.026$) is significantly negative ($p < 0.01$), whereas the coefficient on SCORE² ($\beta_2 = 0.001$) is significantly positive ($p < 0.01$). These results indicate a statistically significant U-shaped association between SCORE and REM1. Similarly, in the REM2 model, SCORE is significantly negative ($\beta_1 = -0.007$, $p < 0.10$), whereas

SCORE² is significantly positive ($\beta_2 = 0.0024$, $p < 0.05$), also indicating a U-shaped association between SCORE and REM2.

Overall, the results based on the continuous strategy measure indicate that REM1 and REM2 tend to be higher toward the lower and higher ends of the strategy-score distribution and lower at intermediate levels of strategic orientation. This pattern is broadly consistent with the view that analyzer firms may exhibit lower levels of REM than firms at the two strategic extremes. However, the U-shaped pattern should be interpreted as evidence of a nonlinear association across the strategy-score distribution rather than as direct evidence that prospector firms have significantly higher levels of REM than defender firms. The latter conclusion depends on the direct statistical comparison between prospector and defender firms, as captured by the Wald tests in the indicator-variable specifications.

5. CONCLUSION AND IMPLICATIONS

5.1, Conclusion

This study concludes that firms, within the context of strategic orientation, are more likely to engage in real-activity earnings management than accrual-based earnings management. This finding suggests that accrual-based earnings management may be less effective in supporting strategic objectives because of its temporary nature, eventual reversal, and greater likelihood of detection by auditors. This argument is consistent with prior literature suggesting that real-activity manipulation is generally less detectable and subject to lower regulatory scrutiny, despite its potentially adverse consequences for long-term firm performance.

The findings further reveal a U-shaped relationship between strategic orientation and real-activity earnings management, indicating that firms at either end of the strategic spectrum are more likely to engage in real earnings manipulation and therefore exhibit lower earnings quality. Specifically, prospector firms exhibit the strongest incentives to engage in real-activity earnings management, followed by defender firms, whereas analyzer firms demonstrate the lowest propensity. These results suggest that both aggressive growth-oriented strategies and efficiency-oriented strategies may create incentives for managers to manipulate real operating activities in order to achieve strategic and financial objectives.

Accordingly, this study highlights the important role of business strategy in shaping financial reporting quality. As such, auditors and other monitoring mechanisms should pay greater attention to firms with extreme strategic orientations, particularly prospectors, because these firms are more likely to engage in real-activity manipulation.

This study documents a non-monotonic relationship between strategic orientation and earnings management, challenging the conventional assumption and offering new insights into the literature. This finding highlights the importance of firms occupying the middle ground—those with moderately defined strategic orientations—that have often been overlooked in prior research.

Furthermore, this study provides preliminary evidence that prospectors tend to manage earnings through both REM1- and REM2-related activities, whereas defenders primarily rely on REM1-related approaches. These findings highlight the nuanced relationship between strategic orientation and earnings management practices and contribute to a deeper understanding of managerial behavior within the context of business strategy.

5.2. Implications

This study offers several important implications. First, the findings suggest that firms tend to prioritize real-activity earnings management over accrual-based earnings management when pursuing strategic objectives. Although strategic orientation is generally intended to enhance firm value and competitiveness, the use of real-activity manipulation to support such objectives may ultimately undermine firm value because these practices can distort operational decisions and adversely affect long-term performance.

Second, the documented U-shaped relationship between strategic orientation and real earnings management indicates that firms with more extreme strategic orientations are more likely to alter operating activities to achieve earnings targets. In particular, prospectors exhibit the strongest incentives to engage in real-activity manipulation. Therefore, stakeholders, such as investors, lenders, and analysts, should exercise greater caution when evaluating the earnings quality and intrinsic value of firms with aggressive growth-oriented or highly efficiency-oriented strategies.

Finally, this study provides preliminary evidence that prospectors tend to employ a combination of REM1 and REM2 activities, whereas defenders rely primarily on REM1-related approaches. This distinction offers practical insights into how different strategic orientations influence the choice of earnings management methods and provides a foundation for future research examining the heterogeneous nature of earnings management practices across firms.

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