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CEO regulatory focus and management earnings forecasts

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ABSTRACT

In this study we examine the association between CEO Regulatory focus (RF) and likelihood, frequency, and accuracy of management earnings forecasts (MEFs). RF theory suggests that an individual makes decisions and pursues goals through either a promotion focus or prevention focus. A promotion focus individual is regulated towards achievements, success, growth, and advancement while a prevention focus individual is regulated towards vigilance, fulfilling basic duties and avoiding the performance of additional tasks. For the period of 2000 to 2018, we find that a CEO promotion focus is associated with higher likelihood, frequency, and accuracy of MEFs. On the other hand, CEO prevention focus results in a lower likelihood and frequency of MEFs. Additionally, the relationship between CEO prevention focus and MEF likelihood and frequency is negatively moderated by higher-level litigation within certain industries. Furthermore, stock return volatility is found to as mediate the relationship between CEOs RF (promotion focus and prevention focus) and MEFs.

Introduction

Management Earnings Forecasts (MEFs) are a form of voluntary disclosure that is recognised as a core contributor to the effective functioning of capital markets. The presence of certain antecedents can influence the decisions about issuing a forecast, which can be further classified as either external (analyst, investor, regulatory, and legal environment) or specific to a firm (characteristics of the forecaster) (Hirst et al., 2008). The reason why managers might issue a forecast is that they can set or change their firm's expected earnings within the market, to minimise information symmetry with key parties such as investors and analysts, prevent legal actions, and establish their reputation for unambiguity and accuracy in MEF disclosures (Hirst et al., 2008).

Previous studies suggest that the frequency of MEFs directly relates to the proportion of CEO compensation impacted by stock price and the absolute value of shares held. That is the focus is on minimising potential equity mispricing that could negatively influence their wealth, while rectifying any information asymmetry problems that might affect the firm's stock price (Nagar et al., 2003). Mande and Myungsoo (2012) examined whether there is a relationship between CEO centrality and the likelihood of meeting or beating (MBE) analyst forecasts. Using the proxy of senior management compensation to measure this executive power, these authors found that CEOs earning a relatively high amount of compensation are more likely to resort to opportunistic financial reporting behaviours to MBE analyst forecasts.

High ability CEOs have been associated with a stronger likelihood, frequency and accuracy of MEFs, signalling their ability to anticipate positive changes to the firm's prospects and to keep markets aware of these changes in the firm's economic environment

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(Baik et al., 2011). CEO age has also been recognised as inversely related to such MBE behaviour; that is, in comparison with younger CEOs, they are more risk-averse and ethical, meaning less aggressive earnings management and better quality financial reporting (Huang et al., 2012). However, CEOs that are overconfident are more likely to issue and miss their own forecasts, which could also be due to over-optimism about future earnings (Hribar and Yang, 2016). As previous literature has highlighted CEO incentive and characteristics as motivators for them to issue MEFs and MBE analyst forecasts, this study extends previous research and explores the influence of CEO psychological traits on MEFs.

We draw on upper echelons theory which highlights that an executive's values, experiences, and personalities can impact the scenarios they face and the corresponding choices they make (Hambrick, 2007). One such trait that has captured the attention of upper echelon researchers over the years in the area of organisational psychology is the Regulatory Focus (RF) of a CEO (Higgins, 1997). RF theory suggests that most individuals accomplish tasks using either a promotion focus strategy founded on eagerness or completion of work in less time, or prevention focus strategy centred around vigilance and adherence to regulations, rules, and responsibilities (Higgins, 1997; Wallace and Chen, 2006). Lanaj et al. (2012) argued that a promotion focus (prevention focus) is a form of motivation that regulates around the existence of positive outcomes (negative outcomes). Most individuals with a promotion focus are regulated towards growth, accomplishments, dedication and innovativeness; thus, their sensitivity to corresponding emotions can range from cheerfulness to depression. Lanaj et al. (2012) also contended that those with a prevention focus can experience emotions ranging from being quiescent to anxious, and their main concerns relate to safety, responsibility and protection. The RF of a CEO could therefore help to understand their motivations, goals and actions, especially as few of them abstain from failures and most pursue success (Liao and Long, 2018). It can influence their strategies used to accomplish certain goals (promotion focus) and to refrain from conflicting activities that could hinder their attainment (prevention focus). Thus, these two theories play an important role in exploring the additional dimension of how the underlying motivation of CEO promotion focus and prevention focus influences the likelihood, frequency, and accuracy of MEFs.

Shah et al. (1998) contended that self-regulation references an ideal self-direction thereby representing an individual's aspiration to satisfy needs of nurturance and goal accomplishment (promotion focus), while an ought self-direction represents obligation as well as duties that satisfy the needs of security based on the goal of safety (prevention focus). One of the reasons CEO RF might be related to the likelihood, frequency and accuracy of MEFs is that promotion focus is concerned with looking out for rewards, career opportunities and improving one's self-concept based on a drive for growth and advancement, while prevention focus is related to fulfilling obligations, duties, and anxiety-based emotions that are not compatible with additional role behaviours (Lanaj et al., 2012). Thus, it is expected in this study that promotion focus (prevention focus) would be positively (negatively) related to the likelihood, frequency and accuracy of MEFs. On the other hand, it can be argued that CEO promotion focus might exhibit a negative relationship with the likelihood, frequency, and accuracy of MEFs. This can be attributed to their tendency towards aggressive practices, prioritizing the speed of completing tasks over accuracy, thereby compromising the reliability of the MEFs to meet or beat the market expectations (Gamache et al., 2015; Förster et al., 2003). On the contrary, CEO prevention focus while working towards their goal completion might exhibit a positive relationship with the likelihood, frequency, and accuracy of MEFs, which can be attributed to them sacrificing speed for accuracy (Förster et al., 2003).

In line with the above reasonings, this study's main analyses conducted across different industries for 12,456 firm-years show that CEO promotion focus is positively related to the likelihood ($p < 0.01$) and frequency ($p < 0.01$) of MEFs, while prevention focus is negatively related to likelihood ($p < 0.01$) and frequency ($p < 0.01$) of MEFs. Furthermore, CEO promotion focus is found to be positively related to lagged closing price-deflated MEF accuracy ($p < 0.01$), while prevention focus documents a negative and insignificant relationship. These results are consistent with the idea that CEO promotion focus inherent nature of being gain- and advancement- oriented, while CEO prevention focus individuals are directed towards being vigilant, performing basic duties and responsibilities, thereby refraining from doing additional tasks (Lanaj et al., 2012; Gamache et al., 2015).

To further address the concerns in relation to endogeneity, the study's findings are validated as robust after using entropy balancing to minimise the covariate imbalance between the control and treatment groups. The entropy balance procedure reweights the control sample and minimises the differences of the means. Furthermore, it reduces the potential biases due to unobserved confounding variables. The results are robust and indicate that CEO promotion focus results in a greater likelihood, frequency and accuracy of MEFs, and that CEO prevention focus results in the lower likelihood and frequency of MEFs. Furthermore, we added a lead of $t + 1$ on the dependent variable of MEFs likelihood and frequency to address the endogeneity issues of reverse causality, it is documented that CEO promotion focus (CEO prevention focus) leads to higher (lower) MEFs likelihood and frequency.

In addition, to shed light on the relation between CEO RF and MEFs, we examine the moderating influence of industry litigation environment. The litigious nature of certain industries might pose challenges to managers in relation to the likelihood, frequency, and accuracy of forecasting the firm earnings. Testing the relationship, industry litigation environment is found to weaken the positive relation between CEO promotion focus and MEFs likelihood, which can be attributed to reputational risks with overly optimistic earnings forecasts (Lanaj et al., 2012). On the other hand, industry litigation environment is found to strengthen the negative relation between CEO prevention focus and MEFs likelihood and frequency, thereby resulting in the lower likelihood ($p < 0.01$) and lower frequency ($p < 0.01$) of MEFs. This can be attributed to the potential of increased litigation instigating fears to disclose material information as they might be overly optimistic or contain negative information that could result in a drastic price drop of a firm's stock (Healy and Palepu, 2001; Johnson et al., 2001). Furthermore, in a highly litigious environment CEO prevention focus might tend to be risk-averse and cautious about making inaccurate earnings forecasts that could potentially expose them to litigation risk.

We further analyse the mediating effects of stock return volatility between CEO RF and MEFs. In the first set of channel analysis, we show that CEO promotion focus leads to lower stock return volatility, likely due to their focus on achieving results and taking calculated risks that positively influences their performance in a dynamic environment as they are quick to adapt (Förster et al., 2003),

which can lead to more stability and predictability of stock returns. Furthermore, their organisational citizenship behaviour (OCB) promotes a better self-concept, success and advancement, and helps to secure career-related benefits such as recognition (Lanaj et al., 2012; Lavelle, 2010), thereby explaining the greater likelihood ($p < 0.01$), frequency ($p < 0.01$), and better accuracy of MEFs ($p < 0.01$). In contrast, CEO prevention focus is shown to lead to higher returns volatility, possibly due to their overly cautious nature they fail to mitigate the potential risks and using a comprehensive decision-making strategy might not be optimal in an environment where there is a high level of uncertainty (Wallace et al., 2010), which can lead to more volatility and unpredictability of stock returns. Furthermore, CEO prevention focus is linked to higher counterproductive work behaviour (CWB) and their propensity to place economic threats on the organisation (Lanaj et al., 2012), which resulted in lower likelihood ($p < 0.01$), frequency ($p < 0.01$) and accuracy ($p < 0.01$) of MEFs. Finally, when CEO prevention focus experiences losses they are likely to reinstate the previous state of affairs within the firm even if it means selecting risky options (Scholer et al., 2010).

This study contributes to the literature in the following ways. First, it adds to upper echelon literature by theorising and confirming that the effects of CEO RF are not limited to firm strategic outcomes, such as the areas of environmental dynamism and firm performance (Wallace et al., 2010), number and value of acquisitions (Gamache et al. 2015), exploitation and exploration activities (Kammerlander et al., 2015), product innovation and environmental processes (Liao and Long, 2018), CSR activities (Chang et al., 2018), and advertising and research and development (R&D) activities (Kashmiri et al., 2019). We extend these studies by focussing on an important outcome related to information disclosure to the markets i.e., MEFs. In other words, this study shows that CEO promotion focus and prevention focus also affects corporate disclosure policy, based on higher or lower likelihood, frequency and accuracy of MEFs, which shapes the information environment.

Second, it extends prior research via its examination of different managerial incentives to issue MEFs, with CEO psychological traits identified (i.e., promotion focus and prevention focus) as playing an important role in the likelihood, frequency and accuracy of MEFs (Nagar et al., 2003). Third, it highlights that the increased propensity of litigation in certain industries is likely to deter CEO prevention focus in the context of the likelihood and frequency of issuing MEFs (Healy and Palepu, 2001; Johnson et al., 2001). Fourth, this research illustrates the mediating channel that promotion- and prevention-focussed CEOs result in either higher or lower likelihood, frequency and accuracy of MEFs. It also adds to the literature by providing deeper insights into the determinants and consequences of stock return volatility (Baginski and Hassel, 1997; Healy and Palepu, 2001).

This study has several practical implications for practitioners and researchers. First, it highlights how certain CEO psychological traits (i.e. strategic eagerness vs. strategic vigilance towards goal achievement) can result in the voluntary disclosure of MEFs. The prediction of MEFs can be considered appropriate in this context, because it provides information about the likelihood, frequency, and accuracy of the disclosure of a firm's expected earnings.

The remainder of this study is organised into the following sections. Section II elucidates the theoretical background and relevant literature. Section III elucidates the hypotheses development. Section IV describes the data and research methodology. Section V reports and discusses the empirical results and robustness tests. Section VI provides a discussion of the main results. Section VII concludes the study.

Theoretical background

An individual's preference towards strategies of eagerness and vigilance often stems from their early childhood (Higgins, 1997), when there is a distinguished need for nurturance and security. A child learns to self-regulate such behaviour based on interaction with their caretakers, based on promotion-focus ideals or prevention-focus oughts (Higgins, 1997). In later stages of their life, these interactions can be extended to their employers, coworkers, or spouse (Higgins, 1997). Those with a dominating promotion focus generally strive to maximise gains and minimise non-gains, thereby leaning towards growth and advancement (Gamache et al., 2015). Those with a dominating prevention focus generally strive to maximise non-losses and reduce losses, thereby leaning towards company norms and regulations (Lanaj et al., 2012; Gamache et al., 2015). This means that firm characteristics are unlikely to affect the promotion focus and prevention focus of a CEO because such traits are mostly developed in early childhood.

In the context of CEOs, RF influences the strategic choice of decision-makers, including how they identify goals and the strategic means to achieve them (Gamache et al., 2015). When the RF is greater the motivation is stronger, and relevant individuals generally feel better when they make a desirable choice and worse if they make an undesirable choice (Higgins, 2000). Promotion focus emphasises growth and advancement, motivating internal regulation with the ideal self, and thereby increasing the propensity of achieving potential gains (Brockner et al., 2004). Prevention focus influences self-regulation with the ought self, based on the need for security and safety, and thereby enhancing the propensity of avoiding possible losses (Brockner et al., 2004).

Promotion focus regulates an individual towards rewards and ideal end-states, and is generally associated with a more innovative performance based on higher levels of achievement, determination, and willingness to consider new ideas (Lanaj et al., 2012). It is also likely to be elicited when the emphasis is on recognising individuals for work done well, while withholding recognition when the task is not performed properly (Brockner et al., 2004). Prevention focus is instead focussed on completing formal work duties and obligations in relation to an individual's task performance, and is more likely to be elicited when there have been sanctions for not completing tasks properly (Brockner et al., 2004; Lanaj et al., 2012).

It would therefore appear that RF can be differentiated from other psychological traits, as it impacts goal-striving by relating general dispositions to work-related behaviour (Lanaj et al., 2012) i.e., RF is a trait that influences the CEOs motivation in accomplishing a particular goal (Brockner and Higgins, 2001; Lanaj et al., 2012). When compared to overconfidence, overconfident CEOs are found to have a greater propensity to overestimate their ability with respect to resolving problems, they play down the resources needed to achieve goals, and do not gauge correctly the uncertainties a firm faces (Brown and Sarma, 2007; Chen et al.,

2020). Furthermore, such CEOs tend to feel that they have better abilities to make decisions and are more capable as compared to their peers (Doukas and Petmezas, 2007).

Research suggests that CEO RF is a relatively stable trait that is likely to remain consistent over time (Higgins, 1997), while CEO overconfidence may change as a CEO gains more experience. For example, CEOs may become more confident in their abilities after achieving success but may become more cautious and risk-averse following setbacks or failures. This variability in overconfidence underscores the importance of focusing on CEO RF as a more reliable predictor of their behavior and decision-making. Thus, while there might be some overlap between CEO RF and overconfidence, the two cannot be interchanged. A promotion-focussed CEO may not be necessarily overconfident, and an overconfident CEO might exhibit a prevention focus.

On the other hand, RF can be differentiated from the five-factor model psychological traits of openness to experiences and emotional stability. These might not be consistent with job performance or motivation-based measures, because the former factors in curiosity, sophistication and creativity, while the latter is linked to anxiety and depression (Barrick et al., 2002).

CEO RF and MEFs

According to RFT, individuals regulate their cognitive behaviour to attune with their goals and standards, such that a promotion focus is where they seek desired goals and a prevention focus is used to evade mismatch to their preferred goals (Jiang et al., 2020). Empirical studies have explored the relationship between CEO RF and firm strategic outcomes, such as environmental dynamism and firm performance (Wallace et al., 2010), number and value of acquisitions (Gamache et al., 2015), product innovation and environmental processes (Liao and Long, 2018), advertising and R&D activities (Kashmiri et al., 2019), and strategic change (Jiang et al., 2020). Thus, giving rise to the possibilities of its relationship with another dimension (i.e. MEFs).

Using a survey approach, involving financial metrics, stakeholder relations, and heterogeneity in resources allocation strategies, Wallace et al. (2010) found that CEO prevention focus avoid making mistakes via more cautious strategies, while CEO promotion focus promotes better firm performance based on their eagerness nature. Based on the longitudinal analysis of CEO letters to shareholders, CEO promotion focus is found to be linked to a higher number and value of acquisitions, based on their strategic preference to undertake acquisitions and greater propensity to exploit potential opportunities (Gamache et al., 2015).

CEOs with a dominating prevention focus have often been linked to a lower number of marketing-related controversies, as well as lower levels of R&D and advertising intensities based on their loss avoidance nature (Kashmiri et al., 2019). In contrast, CEO promotion focus has often been related to higher levels of product and environmental processes innovation, based on their strong desire for growth and lower need for security (Liao and Long, 2018). Jiang et al.'s (2020) study further demonstrated how CEO promotion focus and prevention focus can impact on such strategic change, highlighting that the former often influence a greater levels of strategic change spurred on by eagerness, while positively evaluating uncertain outcomes. In contrast, the latter generally influence lower levels of strategic change, because they are more concerned about security, and subsequently adopt more cautious strategies while negatively evaluating uncertain outcomes (Jiang et al., 2020).

Gamache et al. (2020) investigated the relationship between CEO RF and corporate strategy, and found support for the theory that CEO promotion focus prioritize ideal goals and opportunities that benefits stakeholders, on the other hand CEO prevention focus centers around governance-oriented strategies that prioritizes the protection of shareholders and reducing agency costs. Furthermore, CEO prevention is negatively related to lower investment in R&D, this can be due to high levels of CEO prevention focus leading to the conservation of resources for other purposes (Scoresby et al., 2021).

Hypotheses development

Relationship between CEO RF and MEFs

When an individual is oriented towards a promotion focus, their need for growth and development prompts them to attune with their ideal selves and increases the prominence of existence or absence of positive outcomes (Brockner and Higgins, 2001). Those who are oriented towards a prevention focus lean more towards security needs, motivating them to align with their ought selves and heightening the prominence or existence or absence of negative outcomes (Brockner and Higgins, 2001). In this context, individuals establish their goals in alignment with their RF orientation.

CEO promotion focus is more inclined towards achievement, success, gains, advancement and procuring career-related benefits such as personal recognition (Lanaj et al., 2012). A promotion focus makes individuals aware of the presence as well as absence of positive stimuli (i.e., gains and non-gains), they are primarily driven by their desire for achievements and aspirations, thereby motivating them towards potential growth and advancement opportunities (Gamache et al., 2015; Brockner et al., 2004; Higgins, 1997). Promotion focus is linked to an exploratory orientation, individuals view situations through a lens of opportunities and in a more favourable sight (Gamache et al., 2015; Higgins, 1997). They prioritize positive outcomes and future accomplishments, placing importance on obtaining rewards and focussing on growth that can translate into higher earnings projections (Gamache et al., 2015). Furthermore, in situations of uncertainty such individuals might strive for more accuracy because of the potential to achieve positive outcomes such as success, which can motivate them to work harder and make accurate predictions. Thus, in this study, it is anticipated that CEO promotion focus would be positively associated with the likelihood, frequency, and accuracy of MEFs, based on the conjecture that they are more likely to resort to exploratory behaviours because of the potential rewards and opportunities to grow (Wallace et al., 2016).

CEO prevention focus is more likely to be inclined towards fulfilling basic duties and obligations, rather than performing additional

tasks such as MEFs that are a form of voluntary disclosure (Lanaj et al., 2012; Wallace et al., 2016). A prevention focus makes individuals aware of the presence as well as absence of negative stimuli (i.e., losses and non-losses), they are primarily driven by “ought” states, exhibiting higher levels of concerns towards issues related to duty and obligations, and having greater security needs (Gamache et al., 2015; Higgins, 1997). As a consequence, CEO prevention focus might be overly cautious and conservative in their approach to setting growth targets and earnings forecasts. Furthermore, in situations of uncertainty due to greater degree of unpredictability, such individuals might rely over the past firm performance that might not be reflective of the future earnings forecast. Thus, in this study it is anticipated that CEO prevention focus would be negatively associated with the likelihood, frequency, and accuracy of MEFs, based on the conjecture that they are oriented towards fulfilling basic duties and avoid performing additional tasks (Lanaj et al., 2012), adhering to approaches that are familiar and less willing to consider new information.

Thus, the above reasoning leads to the following hypotheses:

H1a: CEO promotion focus will be positively associated with (a) likelihood (b) frequency and (c) accuracy of MEFs.

H1b: CEO prevention focus will be negatively associated with (a) likelihood (b) frequency and (c) accuracy of MEFs.

Moderating effects of industry litigation

High litigation risk has been known to deter firms from forward-looking voluntary disclosures, because the actual performance might not correlate and lead to litigation (Johnson et al., 2001; Baginski et al., 2002). Such information disclosure could also instigate litigation if managers are later found to have been overly optimistic or drastically negative, leading to a large drop in stock price (Francis et al., 1994; Johnson et al., 2001). Although these are also incentives for managers to avoid costly litigation by accordingly modifying their behaviour to disclose more frequent and accurate disclosures (Cao and Narayananamoorthy, 2011).

Industry litigation is recognised as a beneficial metric in this study. It is used to determine the moderating effects on the association between CEO RF and MEF likelihood, frequency, and accuracy. In a litigious environment CEO promotion focus might be hesitant in providing earnings forecasts due to reputational risks linked to making inaccurate or overly optimistic earnings projections. This can be further supported by the argument that such individuals are inclined towards achievement and success, including procuring career-related benefits such as personal recognition, bonuses, and promotions (Lanaj et al., 2012). As such in a high industry litigation environment promotion focussed CEOs become concerned about losing out their career related benefits due to higher frequency and issue of inaccurate forecasts. Thus, we expect the positive association between CEO promotion focus and MEF likelihood and frequency is likely to be weaker for firms in litigious industries. Also, we expect industry litigation to strengthen the positive association leading to better MEF accuracy.

On the other hand, increased industry litigation is likely to strengthen the negative association between CEO prevention focus and MEF likelihood and frequency, while weakening the negative association with MEF accuracy, because such individuals might be cautious and risk-averse in their decision making about providing inaccurate or overly optimistic earnings projections. This can be further supported by their inherent nature of prioritising security and protection from negative consequences such as litigation (Lanaj et al., 2012).

Based on the above reasoning the following hypotheses is formulated:

H2a: *The positive association between CEO promotion focus and (a) likelihood and (b) frequency will be weakened under increased industry litigation; it is further expected to strengthen the positive association with (c) forecast accuracy of MEFs.*

H2b: *The negative association between CEO prevention focus and (a) likelihood and (b) frequency will be strengthened under increased industry litigation; it is further expected to weaken the negative association with (c) forecast accuracy of MEFs.*

Mediating effects of stock returns volatility

The CEO has a critical role in determining the strategic direction of the company, their decisions and actions through investment strategy and financial reporting can influence stock return volatility, which can thereafter impact earnings forecasts. Stock return volatility is often influenced by market updates about a CEO's ability, which is greater when there is an uncertainty about that ability; although such volatility generally declines as the CEO tenure extends (Pan et al., 2005). Firms with high return volatility generally have greater uncertainty about future performance, and their managers are less likely to make voluntary disclosures (Healy and Palepu, 2001). Forecast precision is also likely to be negatively impacted by return volatility (Baginski and Hassel, 1997; Baginski et al., 2002).

In the context of our study, we predict that CEO promotion focus is likely to be associated with lower stock return volatility, resulting in better MEFs (likelihood, frequency, and accuracy) because of their aspirations to obtain career rewards and progression. Such individuals are likely to engage in Organizational Citizenship Behaviour (OCB) to enhance their self-concept, procure career-related benefits such as personal recognition, bonus, and promotions (Lanaj et al., 2012; Lavelle, 2010). They are also associated with higher levels of persistence (Higgins and Spiegel, 2004) and known for reaching higher levels of productivity that lead to promotion and recognition (Lanaj et al., 2012). Furthermore, their success and achievement motivation is inconsistent with Counter-productive Work Behaviour (CWB), which reduces the likelihood of gaining workplace rewards and advancements (Lanaj et al., 2012). In addition, they focus on achieving results and taking calculated risks that positively influences their performance in a dynamic environment as they are quick to adapt (Förster et al., 2003), which can lead to more stability and predictability of stock returns. Thus, stock return volatility is likely to negatively mediate the relationship between CEO promotion focus and MEF activity.

On the other hand, we predict that CEO prevention focus is likely to be associated with higher stock return volatility, resulting in lower MEFs (likelihood, frequency, and accuracy) because of their inherent nature of greater levels of anxiety, agitation, and vigilance

that can exhaust their cognitive resources which leads to higher CWB (Bennett and Robinson, 2000; Lanaj et al., 2012). Resorting to CWBs have been associated with reputation loss and economic performance issues in a firm such as significant annual costs (Bennett and Robinson, 2000; Lanaj et al., 2012). In addition, due to their overly cautious nature such individuals might not use a comprehensive decision-making strategy in an environment where there is a high level of uncertainty (Wallace et al., 2010), which can lead to more volatility and unpredictability of stock returns. Furthermore, when they face losses they are likely to seek to reinstate the status quo, even if it means selecting risky options (Scholer et al., 2010). Thus, it was anticipated that CEO prevention focus would be associated with higher stock return volatility and therefore lower MEF activity.

Thus, the following hypotheses is suggested:

H3a: Stock return volatility is likely to mediate the relationship between CEO promotion focus and MEFs; such that CEO promotion focus leads to lower return volatility, thereby resulting in greater (a) likelihood (b) frequency and (c) accuracy of MEFs.

H3b: Stock return volatility is likely to mediate the relationship between CEO prevention focus and MEFs; such that CEO prevention focus leads to higher return volatility, thereby resulting in lower (a) likelihood (b) frequency and (c) accuracy of MEFs.

Data and research methodology

Independent variable

Following Gamache et al. (2015) to determine CEO RF, content analysis was conducted of CEO letters to shareholders between the period of 2000 and 2018 of U.S. S&P 1500-listed public companies. The annual reports were gathered from Google and company websites from which the CEO letters to shareholders were extracted. In alignment with Gamache et al. (2015), this study's content analysis dictionaries included 25 prevention words and 27 promotion words (including alternative tenses) used by CEOs in letters to shareholders to capture their motivation and attitudes related to promotion and prevention foci, which was analysed via LIWC and NVIVO 12.0 software. Promotion words included *accomplish, achieve, advancement, aspiration, aspire, attain, desire, earn, expand, gain, grow, hope, hoping, ideal, improve, increase, momentum, obtain, optimistic, progress, promoting, promotion, speed, swift, toward, velocity, and wish*. Prevention words included *accuracy, afraid, careful, anxious, avoid, conservative, defend, duty, escape, escaping, evade, fail, fear, loss, obligation, ought, pain, prevent, protect, responsible, risk, safety, security, threat, and vigilance*. Thereafter, CEO promotion focus and CEO prevention focus is calculated as the number of promotion-oriented words and prevention-oriented words divided by the total word count from each of the annual CEO letters to shareholders (Gamache et al., 2015). An individual can have the existence of both promotion focus and prevention focus. Implicit or indirect measures are the most effective way to assess regulatory focus since it functions beyond conscious awareness in individuals (Lanaj et al., 2012). Thus, it must be noted that CEO RF can be measured in several ways; however, we adopt the approach of treating CEO promotion focus and CEO prevention focus as independent variables in the regression equation (Gamache et al., 2015; Gamache et al., 2020).

The reason for carrying out content analysis of CEO letters to shareholders was to overcome response bias and face validity issues; for example, a survey approach may include questions about the extent that a CEO experiences anxiety, which they might not be willing to disclose (Gamache et al., 2015). The letters provided support for longitudinal research, based on them being consistent annual communications that could be compared across the years (Gamache et al., 2015).

Furthermore, in relation to the common debate on whether CEOs author these shareholder letters, previous researchers have identified persuasive reasons why they would be the author. First, there is a fiduciary duty for CEOs to ensure that the letter provides accurate data, so it is unlikely that they would hold back issues that are important (Kaplan, 2008). Second, while public relations teams might be involved in finalising the content, CEOs would still spend a significant amount of time outlining what is to be included, as well as proof-reading and customising it to their style; most CEOs perceive annual reports as an important form of communication about both theirs and the company's performance (Bowman, 1984). Lastly, it is hard to imagine the public relations teams writing the contents of letters to shareholders when it is likely predicting significant organisational outcomes (Gamache et al., 2015) such as adoption of new technology (Kaplan, 2008), strategic actions and flexibility (Nadkarni and Herrmann, 2010; Kashmiri et al., 2019), and strategic choices linked to globalisation (Levy, 2005).

Finally, following Scoresby et al. (2021), we support the aforesaid arguments by testing the intraclass correlation coefficient (ICC) of promotion focus and prevention focus within an organisation and for each CEO using a hierarchical linear modelling (HLM). These results showed that the ICC for promotion focus within an organisation was 0.32 and 0.42 for prevention focus. The ICC for promotion focus of a CEO was 0.38 and 0.46 for prevention focus. These results indicated a stronger ICC for each CEO compared with their organisation.

Dependent variable

The MEF data were collected from the IBES Guidance and IBES Academic database, to conduct analysis of annual MEFs issued between the period 2000 and 2018. The hypotheses were tested based on a probit model for the likelihood of issue of MEF (MEF_LIKELIHOOD) and OLS regression model for the frequency of MEFs (MEF_FREQUENCY) issued and to test the accuracy (MEF_ACCURACY) of the MEFs issued during each firm-year (Baik et al., 2011). In the probit model, each firm was assigned a value of '1' if it issued an annual MEF in the year t , and '0' otherwise. In the OLS model, the number of annual MEFs in a given firm-year was calculated for each of the firms (Baik et al., 2011). Lastly, forecast accuracy was calculated as -1 multiplied with the absolute value of actual EPS minus forecasted EPS scaled by the lagged closing price. That is, accuracy was calculated as forecasted upper value of guidance value range if given or guidance value if given (whichever was greater) minus the actual EPS value scaled by lagged closing price, excluding those firms with actual EPS value less than \$0.05 and current year closing stock price less than \$1. If multiple forecasts were reported, the forecast provided before the announcement date of earnings was used (Baik et al. 2011).

Similar to Baik et al. (2011), when we study the relationship between CEO RF and MEF accuracy, we have considered the addition of one control variable i.e., measured as timeliness, which indicates the duration measured in days from the date of the earnings announcement to the date when management provides their earnings forecast.

Control variables

This study considered several financial (FCV), CEO (CCV), auditor and analyst (ACV), institutional ownership (INST_OWN), and industry-related (IC) controls that can affect the likelihood, frequency and accuracy of MEFs. These controls align with previous studies and were obtained from various sources, as included in Table 1. The financial information was obtained from CRSP/Compustat, CEO characteristics from ExecuComp, auditor data from AuditAnalytics and analyst data from IBES, institutional ownership from Thomson Reuters 13-F holdings, and industry controls from CRSP/Compustat.

Regression models

The relationship between CEO RF and MEFs was tested using the following probit (likelihood) and OLS (frequency and forecast accuracy) regression models

$$MEF_LIKELIHOOD_{i,t} = \alpha + \beta_1 PROM_{it} + \beta_2 PREV_{it} + \beta_3-9 FCV_{it} + \beta_{10-11} ACV_{it} + \beta_{12} INST_OWN + \beta_{13-14} IC_{it} + \beta_{15-16} CCV_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.1)$$

$$MEF_FREQUENCY_{i,t} = \alpha + \beta_1 PROM_{it} + \beta_2 PREV_{it} + \beta_3-9 FCV_{it} + \beta_{10-11} ACV_{it} + \beta_{12} INST_OWN + \beta_{13-14} IC_{it} + \beta_{15-16} CCV_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.2)$$

$$MEF_ACCURACY_{i,t} = \alpha + \beta_1 PROM_{it} + \beta_2 PREV_{it} + \beta_3-9 FCV_{it} + \beta_{10-11} ACV_{it} + \beta_{12} INST_OWN + \beta_{13-14} IC_{it} + \beta_{15-16} CCV_{it} + \beta_{17} TIMELINESS_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.3)$$

$$MEF_LIKELIHOOD_{i,t+1} = \alpha + \beta_1 PROM_{it} + \beta_2 PREV_{it} + \beta_3-9 FCV_{it} + \beta_{10-11} ACV_{it} + \beta_{12} INST_OWN + \beta_{13-14} IC_{it} + \beta_{15-16} CCV_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.4)$$

$$MEF_FREQUENCY_{i,t+1} = \alpha + \beta_1 PROM_{it} + \beta_2 PREV_{it} + \beta_3-9 FCV_{it} + \beta_{10-11} ACV_{it} + \beta_{12} INST_OWN + \beta_{13-14} IC_{it} + \beta_{15-16} CCV_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.5)$$

$$MEF_LIKELIHOOD_{i,t} = \alpha + \beta_1 PROM_{it} + \beta_2 PROM_{it} \times LITIGATION_{it} + \beta_3 PREV_{it} + \beta_4 PREV_{it} \times LITIGATION_{it} + \beta_{5-11} FCV_{it} + \beta_{12-13} ACV_{it} + \beta_{14} INST_OWN + \beta_{15-16} IC_{it} + \beta_{17-18} CCV_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.6)$$

$$MEF_FREQUENCY_{i,t} = \alpha + \beta_1 PROM_{it} + \beta_2 PROM_{it} \times LITIGATION_{it} + \beta_3 PREV_{it} + \beta_4 PREV_{it} \times LITIGATION_{it} + \beta_{5-11} FCV_{it} + \beta_{12-13} ACV_{it} + \beta_{14} INST_OWN + \beta_{15-16} IC_{it} + \beta_{17-18} CCV_{it} + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.7)$$

$$MEF_ACCURACY_{i,t} = \alpha + \beta_1 PROM_{it} + \beta_2 PROM_{it} \times LITIGATION_{it} + \beta_3 PREV_{it} + \beta_4 PREV_{it} \times LITIGATION_{it} + \beta_{5-11} FCV_{it} + \beta_{12-13} ACV_{it} + \beta_{14} INST_OWN + \beta_{15-16} IC_{it} + \beta_{17-18} CCV_{it} + \beta_{19} TIMELINESS + IND_{FE} + YEAR_{FE} + \varepsilon \quad (1.8)$$

where 'i' refers to that firm in the present year 't', and the lead year 't + 1'.

Four-digit standard industry classification (SIC) code industry-fixed effects (IND_{FE}) and year-fixed effects (YEAR_{FE}) were included in the model to account for the time invariant heterogeneity (Hribar and Yang, 2016). The continuous firm financial controls and MEF accuracy were winsorized at the 1st and 99th percentile. The data analysis is carried out on the S&P 1500 U.S. publicly listed firms. The final firm-year sample comprises of 12,456 firm-years as illustrated below in Table 2 (1,281 unique firms after eliminating missing data values).

Results

The descriptive statistics for the variables are reported in Table 3 Panel A below. The statistics for MEF likelihood and frequency are based on firms with RF data, while MEF forecast accuracy are based on those firms that only issued MEFs. On an average close to 46% of the sample firms issued a MEF. The mean values of the CEO promotion focus score is 1.541 and CEO prevention focus score is 0.250, this is validated and found to be similar to prior studies exploring the relationship CEO RF and the outcome variables of acquisitions and firm stakeholder strategy (Gamache et al., 2015; Gamache et al., 2020). The Panel B of Table 3 reports the sample observations in each industry, approximately 27% of the MEFs issued are by the construction industry.

The intercorrelations for these variables are reported in Table 4 and Table 5 below.¹ As anticipated, there is a positive correlation between CEO promotion focus and MEFs issued (i.e., likelihood ($\rho < 0.01$) and frequency of MEFs ($\rho < 0.01$)), indicating that these CEOs are likely to issue a higher number of MEFs in a firm-year. A positive relationship is also identified between promotion focus and MEF accuracy ($\rho < 0.01$). In contrast, there was a strong negative correlation between CEO prevention focus and MEFs issued (i.e., likelihood ($\rho < 0.01$) and frequency of MEFs ($\rho < 0.01$)), indicating that these CEOs are likely to issue less MEFs in a firm-year. A negative relationship was also identified between CEO prevention focus and MEF accuracy ($\rho < 0.05$). Furthermore, firms with a higher number of analysts are associated with a greater likelihood ($\rho < 0.01$), higher frequency ($\rho < 0.01$), and more accurate ($\rho < 0.01$) MEFs in a firm-year. Regarding other firm characteristic variables, larger firms and profitable firms are associated with greater likelihood ($\rho < 0.01$), frequency ($\rho < 0.01$), and accuracy ($\rho < 0.01$) of MEFs. Furthermore, firms with higher earnings volatility are less likely to be associated with the likelihood ($\rho < 0.01$), frequency ($\rho < 0.01$), and accuracy ($\rho < 0.01$) of MEFs. The variance inflation factor (VIF) for CEO promotion focus (PROM) is 1.07 and CEO prevention focus (PREV) is 1.11. LOG_AT has the largest VIF of 2.82, which is < 3 , thereby indicating no serious multicollinearity issues exist with the model.

¹ The correlation matrix was separated into MEF issued and MEF accuracy, because the sample reduces based on the relationship between CEO RF and MEF accuracy that only includes firms issuing MEFs.

Table 1
Control variables definition.

Variable	Explanation
Financial control variables (FCV)	
Firm size (<i>LOG_AT</i>)	Log transformation of total assets in the present year, based on the assumption that larger firms would have greater demands for disclosures compared with smaller firms (Baik et al. 2011).
Firm profitability (<i>GAIN</i>)	Net income scaled by total assets in the present year and was coded as '1' if the earnings were positive, or '0' otherwise (Baik et al. 2011). This is consistent with the perception that firms with higher earnings have informative earnings which leads to better disclosures (Hayn 1995).
Sales concentration (<i>HHI_SALE</i>)	Herfindahl Index in four-digit industry in a given year. As firms under greater competitive pressure have been determined as less likely to make disclosures (Baik et al. 2011), a positive relationship with MEF disclosures was anticipated in this study.
Earnings volatility (<i>ROA_IB_SD</i>)	Computed as the standard deviation of earnings before interest and taxes, scaled by the book value of total assets, calculated over the past five years (Hribar and Yang 2016), it was expected to have a negative relationship with MEFs.
Market-to-book ratio (<i>MB_RATIO</i>)	Measured growth and was computed as the market value of outstanding common shares multiplied with the annual price close for the fiscal year, scaled by the total common/ordinary equity. It was expected to be positively related to MEFs (Hribar and Yang 2016).
Change in EPS (<i>EPS_DIFF</i>)	Was calculated as the difference between the current and previous year EPS (Baik et al. 2011). It was expected to have a negative relationship with MEFs, because stockholders have been known to hold managers personally liable for withholding bad news, influencing better disclosures to avoid potential litigation (Skinner 1994).
Auditor and Analyst control variables (ACV)	
Auditor reputation (<i>BIG4_AUD</i>)	Coded as '1' if a Big 4 auditor audited the firm, and '0' otherwise. Lang and Lundholm (1996) previously reported a positive relationship between Big 5 auditors and better disclosures.
Number of analysts (<i>NUM_ANALYST</i>)	Log transformation of the number of analysts following the firm in the present year and was anticipated to influence higher-quality corporate disclosures (Ajinkya et al. 2005).
Institutional ownership (<i>INST_OWN</i>)	
Institutional ownership (<i>INST_OWN</i>)	Percentage of institutional ownership in the present year, and was expected to be positively related to MEFs based on institutional owners often pushing for more regular disclosures (Ajinkya et al. 2005; Karamanou and Vafeas 2005).
Industry-related controls (<i>IC</i>)	
Regulated industries (<i>REG_IND</i>)	Included those firms with SIC code 4900–99 (transportation and utilities) and 6000–6799 (financial services), and these firms were assigned '1' or '0' otherwise. This was expected to have a positive relationship with MEFs (Cao and Narayanamoorthy 2011).
CEO characteristics control variables (<i>CCV</i>)	
Equity compensation (<i>EQUITY_COMP</i>)	Computed as the sum of restricted stock and option grants, scaled by the total compensation (in dollar terms). It was expected to have a positive relationship with MEFs, because stock-based compensation has been known to incentivise managers to increase price informativeness via disclosures (Nagar et al. 2003).
CEO ability (<i>ABILITY</i>)	Calculated as the two-digit industry and year-wise rank based on deciles of the natural log of the total CEO compensation, with the lowest-paid CEO assigned a rank of '1' and the highest-paid a '10' (Bhutta et al. 2021). It was expected to have a positive relationship with MEFs, because high ability CEOs are more likely to deliver information about the changes in a firm's underlying economics (Baik et al. 2011).
Timeliness measure	
Timeliness (<i>TIMELINESS</i>)	Measured as the number of days between the earnings announcement date and the MEF date, it was expected to be negatively related to forecast accuracy because longer duration implies inaccuracy (Baginski and Hassel 1997).
Moderating variable	
Industry litigation (<i>LITIGATION_IND</i>)	Firms in certain industries are often associated with higher levels of litigation, relevant firms with SIC code 2833–2836, 3570–3577, 7370–7374 and 3600–3674 were assigned '1', and the rest '0' (Baik et al. 2011). Furthermore, as the information environment of regulated industries and technology industries are different to other industries, industry litigation was expected to have a negative relationship with MEFs (Cao and Narayanamoorthy 2011).
Mediating variable	
Stock return volatility (<i>RET_VOL</i>)	Indicates uncertainty in the future performance and was calculated as the annualised standard deviation on the basis of daily returns in a firm-year. It is therefore anticipated to have a negative relationship with voluntary disclosures (Healy and Palepu 2001; Cho et al. 2020).

Table 2
Sample selection procedure.

Explanations	Observations
Matched sample of CEO RF and MEFs for the period 2000–2018	23,774
Less: Missing CEO characteristics variables	5,503
Less: Missing financial control variables ³	4,179
Less: Missing institutional ownership control variables	866
Less: Missing analyst details	451
Less: Missing auditor related control variables	319
Final usable sample ⁴	12,456

³The firm-year 2000 was eliminated while computing *EPS_DIFF*.

⁴There was a manual exclusion of 22 firm-years due to matching inconsistencies.

Table 3
Summary statistic.

Panel A: Descriptive statistics – CEO RF and MEFs						
Variable	N	Mean	Std. Dev.	25th pct	50th pct	75th pct
MEF_LIKELIHOOD	12,456	0.457	0.498	0.000	0.000	1.000
MEF_FREQUENCY	12,456	2.025	2.633	0.000	0.000	4.000
MEF_ACCURACY	5,505	-0.004	0.011	-0.003	-0.001	-0.000
PROM	12,456	1.541	0.745	1.010	1.440	1.990
PREV	12,456	0.250	0.255	0.070	0.180	0.360
LOG_AT	12,456	8.186	1.720	6.947	8.088	9.298
GAIN	12,456	0.881	0.324	1.000	1.000	1.000
HHI_SALE	12,456	0.253	0.218	0.088	0.194	0.342
ROA_IB_SD	12,456	0.037	0.054	0.009	0.019	0.040
RET_VOL	12,456	2.316	0.561	1.907	2.213	2.612
MB_RATIO	12,456	3.101	4.401	1.456	2.273	3.671
EPS_DIFF	12,456	0.102	2.194	-0.350	0.150	0.630
BIG4_AUD	12,456	0.923	0.266	1.000	1.000	1.000
NUM_ANALYST	12,456	10.819	7.828	5.000	9.000	16.000
INST_OWN	12,456	0.762	0.190	0.665	0.800	0.903
REG_IND	12,456	0.269	0.443	0.000	0.000	1.000
LITIGATION_IND	12,456	0.144	0.351	0.000	0.000	0.000
EQUITY_COMP	12,456	0.091	0.218	0.000	0.000	0.000
ABILITY	12,456	5.324	2.861	3.000	5.000	8.000

Panel B: Industry breakdown			
SIC code	SIC Description	Observations (All)	Observations (Issued MEF)
1	Agriculture Forestry Fishing	692	165
2	Mining oil	1,868	944
3	Construction	3,219	1,479
4	Manufacturing	1,229	730
5	Transportation Communications Electric Gas	1,260	748
6	Wholesale Trade	2,640	535
7	Retail Trade	1,160	640
8	Finance Insurance Real Estate	356	238
9	Services	32	26
Total		12,456	5,505

Hypotheses 1a and 1b: The results in Table 6 below shows the baseline regression predicting the relationship between CEO promotion focus, CEO prevention focus and the likelihood, frequency, and accuracy of MEFs (model 1.1, 1.2, and 1.3). Hypothesis 1a predicted that CEO promotion focus would result in higher likelihood, frequency, and accuracy of MEFs, while hypothesis 1b predicted that CEO prevention focus would result in a lower likelihood across these three MEF dimensions. The main effects of CEO promotion focus are shown to have a positive relationship and can be considered a significant predictor of MEFs likelihood (0.070, $\rho < 0.01$), frequency (0.105, $\rho < 0.01$), and accuracy (0.001, $\rho < 0.01$) in Table 6. In contrast, the main effects of CEO prevention focus was shown to have a negative relationship and can be considered a significant predictor of the likelihood (-0.271, $\rho < 0.01$) and frequency (-0.241, $\rho < 0.01$) of MEFs. We further test the economic significance and find that one standard deviation increase in CEO promotion focus is associated with a 18.400% increase in the likelihood, 4.000% increase in frequency, and 18.623% increase in the accuracy of MEFs issued. On the other hand, one standard deviation increase in CEO prevention focus results in 20.521% decrease in the likelihood and 3.035% decrease in frequency of MEFs issued. The reason to support these results is that CEO promotion focus individuals are gain, advancement, and success oriented, while CEO prevention focus individuals are directed towards being vigilant, performing basic duties and responsibilities, thereby refraining from doing additional tasks (Gamache et al., 2015; Lanaj et al., 2012).

The control variables are included in all three models and as expected only some of these variables are significantly related to MEFs. Larger firms are associated with higher likelihood (0.075, $\rho < 0.01$), frequency (0.150, $\rho < 0.01$), and lower accuracy (-0.001, $\rho < 0.01$) of MEFs, which can be attributed to the information asymmetry between the managers and external parties. Firms that have a higher profitability are related to higher MEFs likelihood (0.172, $\rho < 0.01$), frequency (0.249, $\rho < 0.01$), and accuracy (0.003, $\rho < 0.01$) because of informative earnings (Hayn, 1995). Higher earnings volatility leads to a decreased MEF likelihood (-2.948, $\rho < 0.01$), frequency (-3.192, $\rho < 0.01$), and accuracy (-0.015, $\rho < 0.01$) of MEFs, which can be attributed to uncertainties in firm performance. Higher return volatility leads to a decreased MEF likelihood (-0.258, $\rho < 0.01$), frequency (-0.376, $\rho < 0.01$), and accuracy (-0.005, $\rho < 0.01$) of MEFs, which can be attributed to uncertainties in future performance (Healy and Palepu, 2001; Cho et al., 2020).

Big 4 auditors are associated with lower MEF likelihood (-0.125, $\rho < 0.05$), frequency (-0.181, $\rho < 0.01$), and accuracy (-0.02, $\rho < 0.05$), which can be attributed to auditors preventing companies from overly optimistic disclosures. Furthermore, firms with a higher number of analysts are likely to have a greater likelihood (0.210, $\rho < 0.01$), frequency (0.309, $\rho < 0.01$) and accuracy (0.002, $\rho < 0.01$) of MEFs (Baik et al., 2011), which can be due to analysts promoting managers to make higher-quality corporate disclosures (Ajinkya et al., 2005). Firms with a higher institutional ownership push for more regular disclosures and associated with greater MEFs likelihood (0.410, $\rho < 0.01$), frequency (0.199, $\rho < 0.10$), and accuracy (0.003, $\rho < 0.01$). Finally, CEOs with higher ability result in

Table 4

Correlation matrix – CEO RF and MEF issued.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
MEF_LIKELIHOOD	1																		
MEF_FREQUENCY	0.837	1																	
PROM	0.097	0.112	1																
PREV	-0.070	-0.050	-0.069	1															
LOG_AT	0.095	0.150	-0.051	0.196	1														
GAIN	0.128	0.141	0.086	-0.055	0.128	1													
HHL_SALE	0.135	0.127	0.138	-0.132	-0.101	0.019	1												
ROA_IB_SD	-0.139	-0.137	-0.013	-0.035	-0.308	-0.270	0.001	1											
RET_VOL	-0.185	-0.210	-0.092	0.042	-0.341	-0.393	0.002	0.318	1										
MB_RATIO	0.086	0.093	0.046	-0.065	-0.031	0.081	0.079	0.052	-0.107	1									
EPS_DIFF	-0.010	0.002	0.055	-0.022	0.021	0.256	0.007	0.097	-0.074	0.030	1								
BIG4_AUD	0.089	0.100	0.046	0.022	0.228	0.030	0.026	-0.056	-0.105	0.022	0.019	1							
INST_OWN	0.063	0.053	0.026	-0.064	-0.050	0.056	0.055	-0.037	-0.058	0.012	0.013	0.092	1						
NUM_ANALYST	0.209	0.244	0.018	0.043	0.542	0.095	0.015	-0.068	-0.198	0.133	0.023	0.199	0.124	1					
REG_IND	-0.137	-0.123	-0.186	0.252	0.355	0.078	-0.390	-0.252	-0.174	-0.132	-0.004	-0.014	-0.132	-0.119	1				
LITIGATION_IND	0.031	0.009	0.010	-0.016	-0.194	-0.088	-0.121	0.292	0.153	0.088	0.001	-0.053	0.024	0.073	-0.249	1			
EQUITY_COMP	0.086	0.017	0.079	-0.009	-0.016	-0.029	-0.015	0.049	0.040	0.030	-0.009	0.026	-0.136	0.060	-0.084	0.063	1		
ABILITY	0.166	0.203	0.034	0.050	0.562	0.102	-0.014	-0.101	-0.180	0.086	0.040	0.188	0.110	0.460	0.023	0.035	0.122	1	

Table 5

Correlation matrix – CEO RF and MEF accuracy.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
MEF_ACCURACY	1																		
PROM	0.081	1																	
PREV	-0.034	-0.102	1																
LOG_AT	0.042	-0.037	0.193	1															
GAIN	0.145	0.065	-0.028	0.049	1														
HHI_SALE	0.032	0.146	-0.107	-0.029	0.000	1													
ROA_IB_SD	-0.118	0.027	-0.040	-0.273	-0.144	-0.007	1												
RET_VOL	-0.203	-0.079	-0.030	-0.385	-0.244	0.017	0.246	1											
MB_RATIO	0.046	0.034	-0.035	0.012	0.035	0.059	0.044	-0.096	1										
EPS_DIFF	0.060	0.060	-0.020	0.024	0.348	0.015	0.083	-0.090	0.049	1									
BIG4_AUD	0.027	0.053	-0.011	0.222	0.026	0.001	-0.075	-0.122	0.016	0.025	1								
INST_OWN	0.026	0.033	-0.057	-0.245	0.009	0.031	0.085	0.092	0.003	0.021	-0.001	1							
NUM_ANALYST	0.130	-0.014	0.046	0.545	0.042	0.028	-0.051	-0.178	0.098	0.024	0.166	-0.037	1						
REG_IND	-0.049	-0.193	0.249	0.328	0.036	-0.344	-0.226	-0.181	-0.108	-0.008	0.025	-0.198	-0.115	1					
LITIGATION_IND	0.021	-0.053	0.012	-0.119	-0.046	-0.192	0.225	0.140	0.036	-0.002	-0.086	0.053	0.071	-0.214	1				
EQUITY_COMP	-0.024	0.088	-0.001	0.005	-0.015	-0.033	0.020	0.050	-0.009	-0.011	-0.031	-0.189	0.013	-0.020	0.126	1			
ABILITY	0.068	0.019	0.097	0.478	0.030	-0.046	-0.068	-0.176	0.042	0.036	0.101	-0.024	0.379	0.047	0.108	0.102	1		
TIMELINESS	-0.339	-0.081	0.016	-0.087	-0.088	-0.059	0.064	0.156	-0.026	-0.030	-0.060	0.007	-0.103	0.057	0.008	0.110	-0.087	1	

Table 6
Effects of CEO RF on MEFs at (t).

Dependent variable (MEFs)	MEF_LIKELIHOOD		MEF_FREQUENCY		MEF_ACCURACY	
	(1)		(2)		(3)	
	Coefficient	z-stat	Coefficient	t-stat	Coefficient	t-stat
RF						
PROM	0.070***	3.33	0.105***	3.96	0.001***	3.34
PREV	-0.271***	-4.11	-0.241***	-2.93	-0.000	-0.08
Financial control variables (FCV)						
LOG_AT	0.075***	4.16	0.150***	6.59	-0.001***	-5.36
GAIN	0.172***	3.11	0.249***	4.15	0.003***	3.49
HHI_SALE	-0.005	-0.02	-0.101	-0.42	-0.002	-1.06
ROA_IB_SD	-2.948***	-7.13	-3.192***	-8.06	-0.015***	-2.79
RET_VOL	-0.258***	-5.30	-0.376***	-6.73	-0.005***	-6.62
MB_RATIO	0.000	0.07	0.008*	1.83	0.000*	1.91
EPS_DIFF	-0.018**	-2.51	-0.010	-1.32	0.001	1.15
Auditor and analyst control variable (ACV)						
BIG4_AUD	-0.125**	-2.04	-0.181***	-2.68	-0.002**	-1.90
NUM_ANALYST	0.210***	7.57	0.309***	9.28	0.002***	4.73
INST_OWN	0.410***	4.25	0.199*	1.75	0.003***	2.55
Industry controls (IC)						
LITIGATION_IND	-3.915***	-5.32	-1.660	-1.14	0.014***	3.20
REG_IND	-1.260***	-4.32	1.288***	5.13	-0.005**	-2.29
CEO control variables (CCV)						
ABILITY	0.026***	3.57	0.055***	5.90	0.001**	2.59
EQUITY_COMP	0.121	1.00	-0.050	-0.35	0.001	0.30
Timeliness					-0.001***	-11.52
Number of observations		11,383		12,456		5,505
Industry / Year fixed effects		Yes		Yes		Yes
Pseudo-R ²		0.345				
Adj-R ²				0.463		0.422

***Significance at 1%, **Significance at 5%, and *Significance at 10%.

greater MEFs likelihood (0.026, $\rho < 0.01$), frequency (0.055, $\rho < 0.01$), and accuracy (0.001, $\rho < 0.01$), which can be attributed to high ability CEOs delivering changes in the firm's underlying economics (Baik et al., 2011).

To address the endogeneity concerns we carry out entropy balancing across the entire sample, as it reweights the control sample and minimises the differences of the means. Furthermore, it reduces the potential biases due to unobserved confounding variables. The sample was divided into a group of CEOs with low promotion focus (<50th percentile) and CEOs with high promotion focus (greater than 50th percentile). The entropy balancing procedure is carried out on the entire sample of CEO promotion focus and MEF (Likelihood and Frequency) as shown in Table 7 Panel A, which illustrates the comparison of means - before and after entropy balancing.

The treatment group for CEO promotion focus comprises of 6,290 treated units and 6,166 control units. As shown in Table 7 Panel B below, the results continue to be robust, CEO promotion focus is positively related to MEFs likelihood ($\rho < 0.01$) and frequency ($\rho < 0.01$).

We further carry out entropy balancing on the smaller sample of CEO promotion focus and MEF accuracy as shown in Table 8 Panel A, which illustrates the comparison of means - before and after entropy balancing.

The treatment group for CEO promotion focus comprises of 2,736 treated units and 2,769 control units. The relationship is robust ($\rho < 0.01$) as shown in Table 8 Panel B.

We replicate the procedure of entropy balancing by dividing the sample into CEOs with a low prevention focus (<50th percentile) and CEOs with high prevention focus (greater than 50th percentile) as shown in Table 9 Panel A, which illustrates the comparison of means - before and after entropy balancing. The treatment group for CEO prevention focus comprises of 6,362 treated units and 6,094 control units. As shown in Table 9 Panel B below, the results continue to be robust, CEO prevention focus is negatively related to MEFs likelihood ($\rho < 0.01$) and frequency ($\rho < 0.01$).

In untabulated results we added a lead of one year to the dependent variables of MEF likelihood and frequency (model 1.4 and 1.5), to introduce a temporal distance between them and the independent and control variables. This was used to address endogeneity concerns about reverse causality. The results further validated that CEO promotion focus is positively related to higher MEFs likelihood in model 1 (0.093, $\rho < 0.01$) and frequency in model 2 (0.146, $\rho < 0.01$). In contrast, CEO prevention focus is negatively related to likelihood (-0.283, $\rho < 0.01$) and frequency of MEFs (-0.247, $\rho < 0.05$).

Hypotheses 2a and 2b: As shown in Table 10 below, CEO promotion focus documented a weaker negative relationship with MEF likelihood ($\rho < 0.05$), when moderated by industry litigation. This can be attributed to their concerns about reputation risk with overly optimistic earnings forecasts. On the other hand, increased industry litigation was found to strengthen the negative relationship between CEO prevention focus and MEF likelihood ($\rho < 0.05$) and frequency ($\rho < 0.01$) with higher negative coefficients (model 1.6 and 1.7). This indicates that in the presence of increased industry litigation, CEO prevention focus will continue to issue lower likelihood

Table 7

Entropy Balancing Procedure of the Effects of CEO Promotion focus on MEFs (Likelihood and Frequency) Comparison of Means (Before Entropy Balancing vs. After Entropy Balancing).

Panel A						
	Treat		Control before entropy balancing		Control after entropy balancing	
	Mean	Variance	Mean	Variance	Mean	Variance
Financial control variables (FCV)						
LOG_AT	8.044	2.695	8.331	3.190	8.044	2.793
GAIN	0.903	0.087	0.858	0.121	0.903	0.087
HHI_SALE	0.278	0.049	0.227	0.044	0.278	0.055
ROA_IB_SD	0.036	0.002	0.036	0.003	0.036	0.003
RET_VOL	2.281	0.263	2.351	0.365	2.281	0.265
MB_RATIO	3.243	19.530	2.958	19.250	3.243	21.900
EPS_DIFF	0.211	3.086	-0.009	6.560	0.211	4.872
Auditor and Analyst control variable						
BIG4_AUD	0.935	0.061	0.911	0.081	0.935	0.061
NUM_ANALYST	2.062	0.716	2.075	0.798	2.062	0.804
INST_OWN	0.768	0.033	0.757	0.038	0.768	0.035
Industry controls (IC)						
LITIGATION_IND	0.147	0.125	0.141	0.122	0.1467	0.125
REG_IND	0.196	0.158	0.343	0.225	0.196	0.157
CEO characteristics control variables (CCV)						
ABILITY	5.326	7.891	5.324	8.486	5.326	8.344
EQUITY_COMP	0.103	0.052	0.078	0.042	0.103	0.054

Panel B Regression Results Using Entropy Balanced Samples				
Dependent variable (MEFs)	MEF_LIKELIHOOD (1)		MEF_FREQUENCY (2)	
	Coefficient	z-stat	Coefficient	t-stat
RF				
PROM	0.070***	3.29	0.107***	3.90
PREV	-0.287***	-4.14	-0.260***	-2.89
Financial control variables (FCV), Auditor and analyst control variable (ACV), Industry controls (IC), CEO control variables (CCV)				
			Yes	
Number of observations		11,383		12,456
Industry / Year fixed effects		Yes		Yes
Pseudo-R ²		0.338		
Adj-R ²				0.459

***Significance at 1%, **Significance at 5%, and *Significance at 10%.

and frequency of MEFs based on their cautious nature of avoiding litigation and negative consequences (Lanaj et al., 2012). In the context of MEF accuracy, no support was found for the moderating effects of industry litigation on CEO RF (promotion focus and prevention focus).

Hypotheses 3a and 3b: This study used Sobel-Goodman tests involving all the control variables of the probit and OLS model to confirm whether the coefficients of the mediating and independent variables were valid, to better examine the mediating effects of returns volatility. In the context of the PROM variable, the absolute value of Z-statistics was identified as greater than 1.96 and statistically significant at $p < 0.01$ for likelihood, frequency and accuracy of MEFs; thereby indicating that CEO promotion focus results in lower returns volatility, which leads to a higher likelihood ($|Z| = 8.031$), frequency ($|Z| = 8.223$), and accuracy of MEFs ($|Z| = 5.587$).

The Stata/SE 15 software was used to establish the direct and indirect relationship between CEO promotion focus and MEFs. The corresponding path diagram validates hypothesis 3a that CEO promotion focus influences MEFs through return volatility, which was calculated as the annualised standard deviation on the basis of daily returns in a firm-year. That is, CEO promotion focus negatively predicts stock return volatility, which will generally lead to higher likelihood, frequency and accuracy of MEFs. This supports the argument that CEO promotion focus is associated with higher levels of persistence (Higgins and Spiegel, 2004) and are linked to higher levels of productivity that lead to promotion and recognition (Lanaj et al., 2012). Their success and achievement motivation is inconsistent with CWB, which reduces the likelihood of gaining workplace rewards and advancements (Lanaj et al., 2012). Figs. 1a–1c below provides a diagrammatic representation of the relationship between CEO promotion focus, return volatility and MEFs (i.e. (a) likelihood, (b) frequency and (c) accuracy).

In the context of the PREV variable, the absolute value of Z-statistics was identified as greater than 1.96 and statistically significant at $p < 0.01$ for likelihood, frequency and accuracy of MEFs; thereby indicating that CEO prevention focus results in higher returns volatility, which leads to a lower likelihood ($|Z| = 8.160$), frequency ($|Z| = 8.362$) and accuracy ($|Z| = 2.676$) of MEFs. The corresponding path diagram validates hypothesis 3b that CEO prevention focus influences MEFs through return volatility. That is, CEO

Table 8

Entropy Balancing Procedure of the Effects of CEO Promotion focus on MEFs (Accuracy) Comparison of Means (Before Entropy Balancing vs. After Entropy Balancing).

Panel A						
	Treat		Control before entropy balancing		Control after entropy balancing	
	Mean	Variance	Mean	Variance	Mean	Variance
Financial control variables (FCV)						
LOG_AT	8.255	2.327	8.547	3.190	8.255	2.327
GAIN	0.953	0.044	0.930	0.121	0.953	0.044
HHI_SALE	0.313	0.314	0.259	0.044	0.314	0.056
ROA_IB_SD	0.028	0.027	0.025	0.003	0.028	0.001
RET_VOL	2.163	0.194	2.204	0.365	2.163	0.197
MB_RATIO	3.884	45.35	3.415	19.250	3.884	93.700
EPS_DIFF	0.201	1.967	0.011	6.560	0.201	2.782
Auditor and Analyst control variable						
BIG4_AUD	0.960	0.038	0.943	0.081	0.960	0.038
NUM_ANALYST	2.252	0.514	2.314	0.798	2.252	0.561
INST_OWN	0.783	0.027	0.757	0.769	0.784	0.028
Industry controls (IC)						
LITIGATION_IND	0.133	0.115	0.141	0.168	0.133	0.115
REG_IND	0.132	0.114	0.343	0.277	0.132	0.114
CEO characteristics control variables (CCV)						
ABILITY	4.808	8.092	5.324	4.916	4.808	8.602
EQUITY_COMP	0.124	0.060	0.078	0.091	0.124	0.063
TIMELINESS	117.500	5436.000	127.900	6703	117.5	4166
Panel B Regression Results Using Entropy Balanced Samples						
DEPENDENT VARIABLE	MEF_ACCURACY					
	Coefficient					
RF	t-stat					
PROM	0.001***					
PREV	-0.000					
Financial control variables (FCV), Auditor and analyst control variable (ACV), Industry controls (IC), CEO control variables (CCV)						2.86
Number of observations						-0.33
Industry / Year fixed effects						Yes
Adj-R ²						5,505
						Yes
						0.446

***Significance at 1%, **Significance at 5%, and *Significance at 10%.

prevention focus predicts returns volatility, which generally leads to lower likelihood, frequency and accuracy of MEFs. This supports the argument that CEO prevention focus is more likely to result in CWB and cause serious economic consequences for an organisation (Bennett and Robinson, 2000; Lanaj et al., 2012), particularly as they are more likely to select risky options when facing such issues to reinstate the status quo (Scholer et al., 2010), which can negatively impact MEFs. Figs. 2a–2c below provides a diagrammatic representation of the relationship between CEO prevention focus, returns volatility and MEFs (i.e. (a) likelihood, (b) frequency and (c) accuracy).

Discussion

RF has been recognised as a core consideration when an individual determines the strategies to use to attain their goals, based on the regulation of behaviour (Lanaj et al., 2012). To further the literature, where previous research has examined the relationship between CEO RF and firm strategic outcomes such as acquisitions, marketing related controversies, and CSR activities, this study has examined its relationship with MEFs. The results show that CEO promotion focus results in a higher likelihood, frequency, and accuracy of MEFs, which can be attributed to their achievement-, success, gains- and advancements-oriented nature. In contrast, CEO prevention focus results in a lower likelihood and frequency of MEFs, which can be attributed to their nature of fulfilling basic duties and obligations without additional work. Thus, this study has further validated that RF plays a crucial role in determining the underlying motivation of an individual to choose a particular corporate outcome.

The results also indicate that increased industry litigation inhibits CEO prevention focus from increasing the likelihood and frequency of MEFs due to their aversion to negative consequences and litigation. CEO promotion focus is more likely to ensure higher likelihood, frequency, and accuracy of MEFs via lower stock return volatility due to their motivation for success- and accomplishment-orientation, which is more in line with OCB to obtain rewards and advancement in an organisation. On the contrary, CEO prevention focus is more likely to lead to lower likelihood, frequency, and accuracy of MEFs via higher stock volatility due to their propensity to cause higher economical threat to an organisation and possibly selecting risky options when they face losses.

The additional analysis shows that when CEO RF is divided into low and high promotion focus, the results continue to indicate that

Table 9

Entropy Balancing Procedure of the Effects of CEO Prevention focus on MEFs (Likelihood and Frequency) Comparison of Means (Before Entropy Balancing vs. After Entropy Balancing).

Panel A						
	Treat		Control before entropy balancing		Control after entropy balancing	
	Mean	Variance	Mean	Variance	Mean	Variance
Financial control variables (FCV)						
LOG_AT	8.503	3.238	7.855	2.456	8.503	2.767
GAIN	0.865	0.117	0.897	0.092	0.865	0.117
HHI_SALE	0.228	0.043	0.278	0.278	0.228	0.045
ROA_IB_SD	0.034	0.003	0.039	0.003	0.034	0.003
RET_VOL	2.321	0.353	2.311	0.365	2.321	0.371
MB_RATIO	2.925	17.330	3.286	21.520	2.925	18.230
EPS_DIFF	0.087	5.910	0.116	3.677	0.087	4.940
Auditor and Analyst control variable						
BIG4_AUD	0.928	0.066	0.917	0.076	0.929	0.066
NUM_ANALYST	2.100	0.749	2.305	0.763	2.100	0.792
INST_OWN	0.750	0.037	0.775	0.035	0.751	0.041
Industry controls (IC)						
LITIGATION_IND	0.134	0.116	0.155	0.131	0.1342	0.116
REG_IND	0.363	0.231	0.171	0.142	0.363	0.231
CEO characteristics control variables (CCV)						
ABILITY	5.497	8.289	5.145	8.015	5.497	8.176
EQUITY_COMP	0.093	0.049	0.008	0.046	0.093	0.049

Panel B Regression Results Using Entropy Balanced Samples

Dependent variable (MEFs)				
	MEF_LIKELIHOOD (1)		MEF_FREQUENCY (2)	
	Coefficient	z-stat	Coefficient	t-stat
RF				
PREV	-0.286***	3.86	-0.222***	-2.65
PROM	0.076***	3.30	0.108***	3.78
Financial control variables (FCV), Auditor and analyst control variable (ACV), Industry controls (IC), CEO control variables (CCV)				
			Yes	
Number of observations			11,383	12,456
Industry / Year fixed effects			Yes	Yes
Adj-R ²			0.353	0.474

***Significance at 1%, **Significance at 5%, and *Significance at 10%.

Table 10

Moderating effects of industry litigation on CEO RF and MEFs (t).

Dependent variable (MEFs)						
	MEF_LIKELIHOOD (1)		MEF_FREQUENCY (2)		MEF_ACCURACY (3)	
	Coefficient	z-stat	Coefficient	t-stat	Coefficient	t-stat
RF						
PROM	0.096***	3.93	0.125***	4.26	0.000**	2.99
PROMxLITIGATION	-0.093**	-2.03	-0.088	-1.42	-0.000	-0.12
PREV	-0.169***	-2.28	-0.129	-1.49	-0.001	-0.71
PREVxLITIGATION	-0.391**	-2.53	-0.536**	-2.35	0.002	1.35
Financial control variables (FCV), Auditor and analyst control variable (ACV), INST_OWN, Industry controls (IC), CEO control variables (CCV)						
			Yes	Yes	Yes	
Number of observations			11,383	12,456	5,505	
Industry / Year fixed effects			Yes	Yes	Yes	
Pseudo- R ²			0.346			
Adj-R ²				0.463	0.422	

***Significance at 1%, **Significance at 5%, and *Significance at 10%.

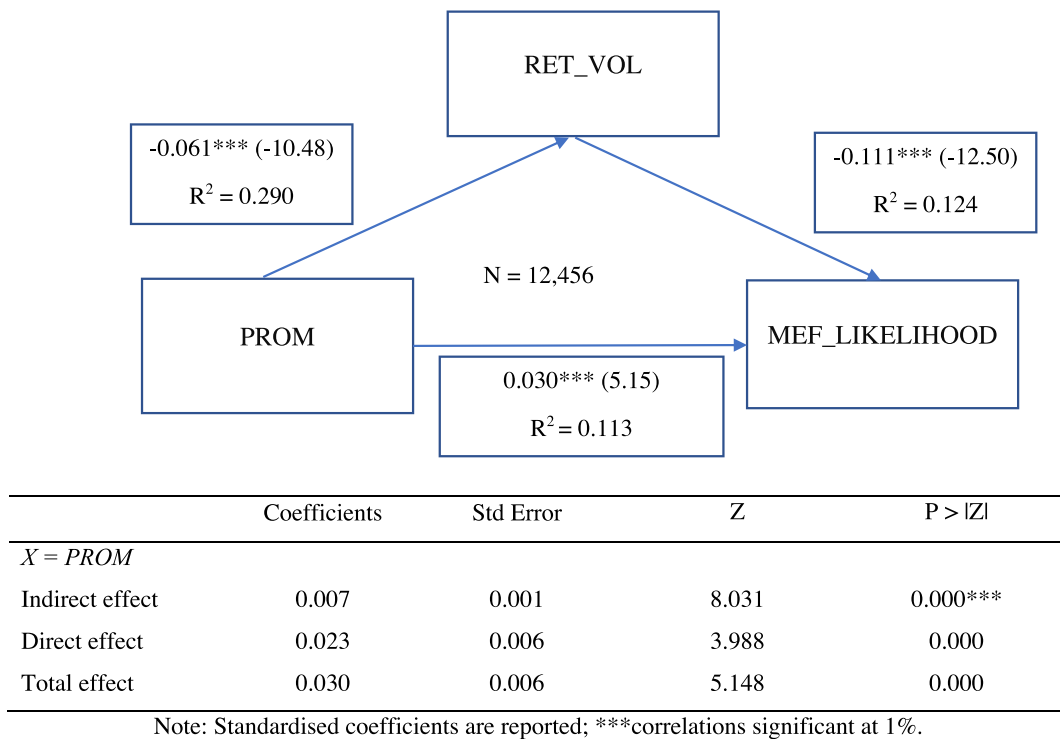


Fig. 1a. Mediating influence of stock return volatility on the relationship between CEO promotion focus and MEF likelihood. Note: Standardised coefficients are reported; ***correlations significant at 1%.

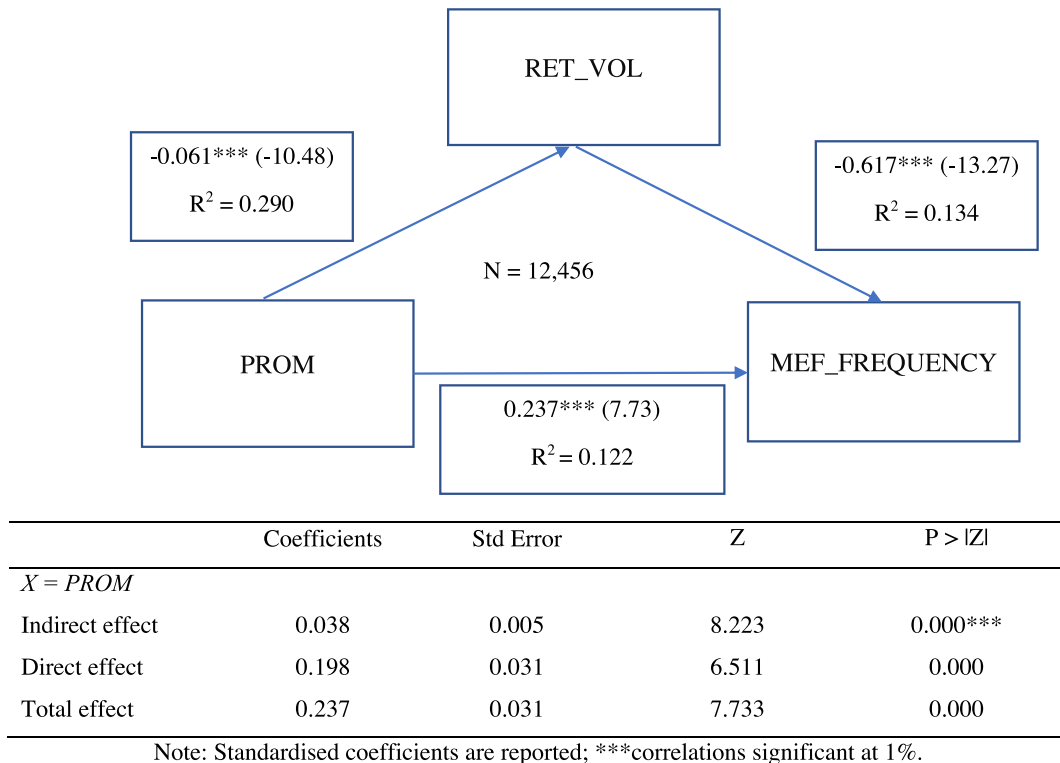


Fig. 1b. Mediating influence of stock return volatility on the relationship between CEO promotion focus and MEF frequency. Note: Standardised coefficients are reported; ***correlations significant at 1%.

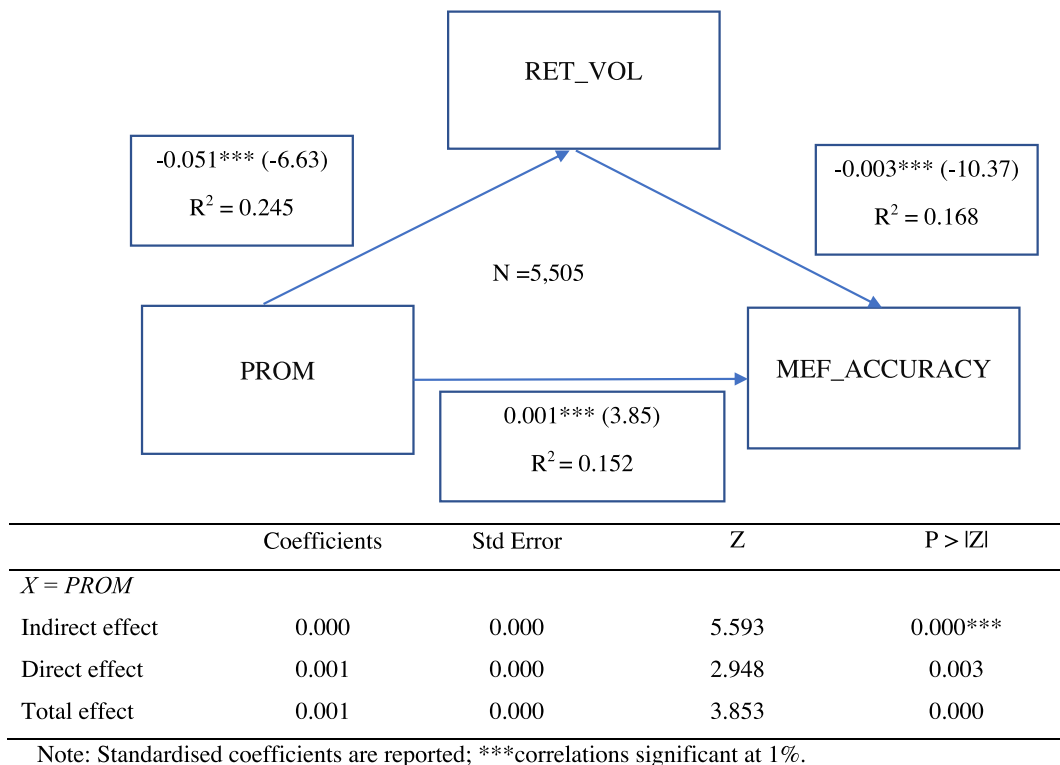


Fig. 1c. Mediating influence of stock return volatility on the relationship between CEO promotion focus and MEF accuracy. Note: Standardised coefficients are reported; ***correlations significant at 1%.

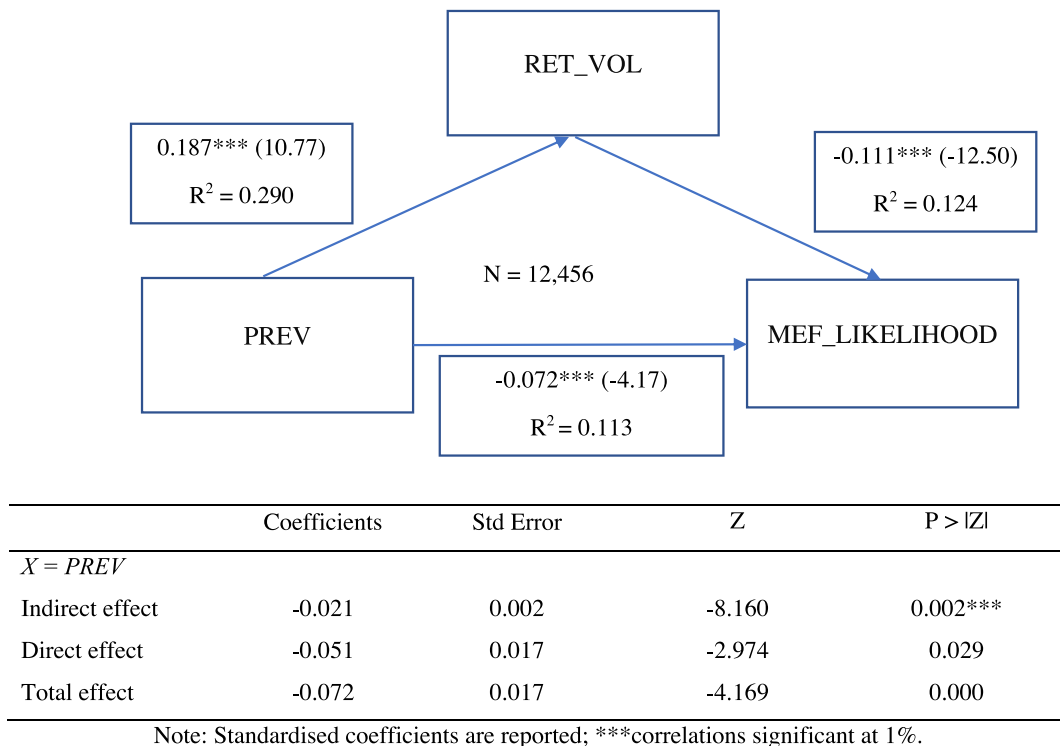


Fig. 2a. Mediating influence of stock return volatility on the relationship between CEO prevention focus and MEF likelihood. Note: Standardised coefficients are reported; ***correlations significant at 1%.

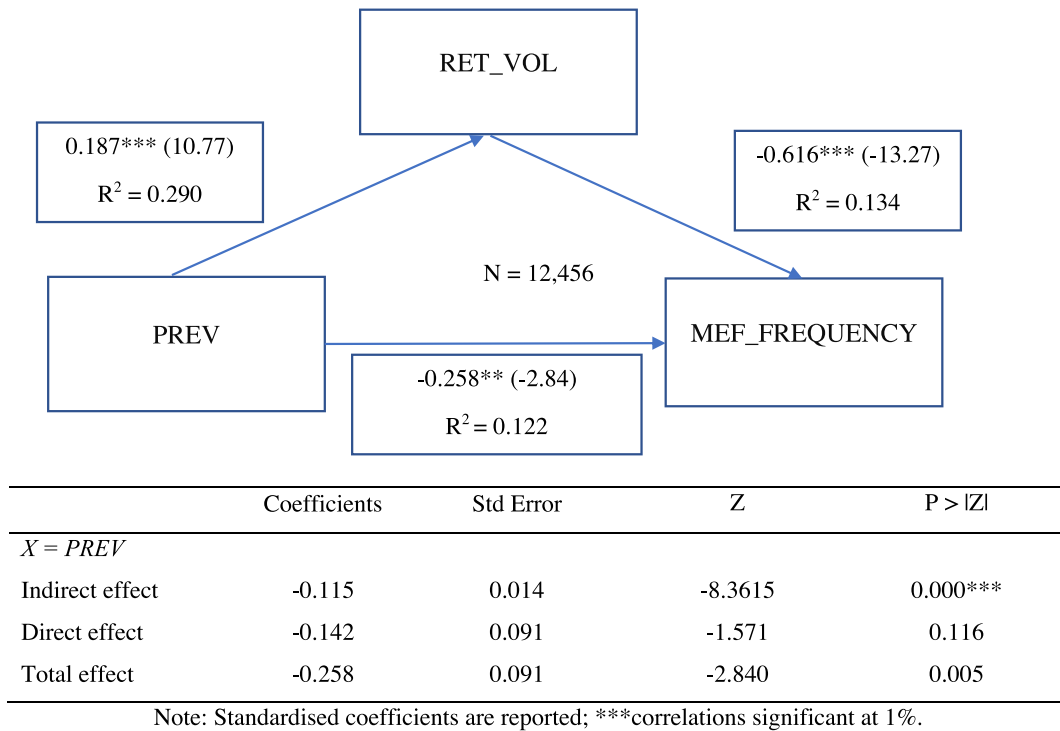


Fig. 2b. Mediating influence of stock return volatility on the relationship between CEO prevention focus and MEF frequency. Note: Standardised coefficients are reported; ***correlations significant at 1%.

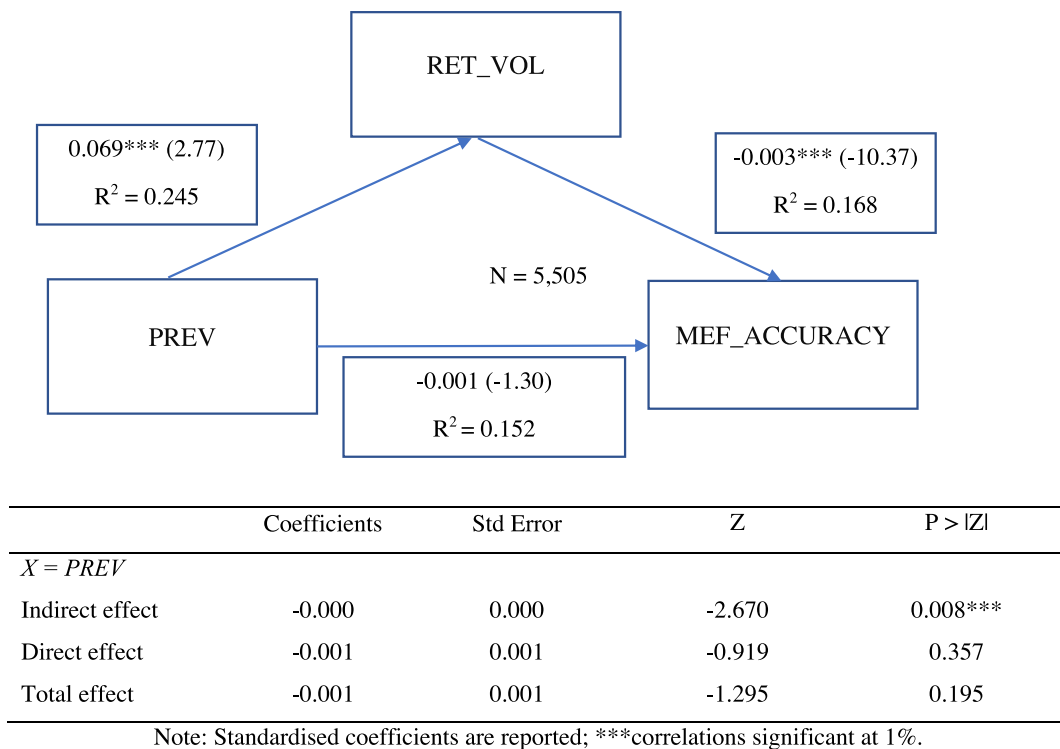


Fig. 2c. Mediating influence of stock return volatility on the relationship between CEO prevention focus and MEF accuracy. Note: Standardised coefficients are reported; ***correlations significant at 1%.

this leads to higher likelihood, frequency, and accuracy of MEFs. In contrast, when entropy balancing is applied to CEO prevention focus, the results show a lower likelihood and frequency of MEFs.

This study has answered the calls for further research of RF in the context of an organisation (Lanaj et al., 2012). To the best of our knowledge, it is the first to consider the CEO psychological trait, based on their underlying motivation and its impacts on MEFs. RF was deemed as a key component within this consideration because promotion focus and prevention focus are known to influence an individual's proclivity towards getting rewards and avoiding additional responsibilities, respectively.

The findings in this study have implications for future research related to CEO psychological traits and their relationship with MEFs. It has shown that such characteristics can affect the proclivity of CEOs towards a higher or lower likelihood, frequency and accuracy of MEFs. In alignment with previous research that has examined the relationship between executive characteristics (e.g., overconfidence and ability) and MEFs (Baik et al. 2011; Hribar and Yang 2016), this study's findings clarify that it has an impact.

The overall implications of this study are particularly important to those parties closely associated with the firm or interested in its business operations. First, they highlight how boards of directors and institutional owners can monitor and promote to CEOs the importance of frequent and accurate MEFs. Second, they could help CEOs to improve the information environment in the capital markets through higher frequency and accuracy of MEFs. Third, investors and other stakeholders such as customers, lenders, and suppliers will better understand the influence of CEO psychological characteristics on MEFs. Fourth, better analyst coverage will promote CEOs to issue more frequent and accurate MEFs, thereby reducing information asymmetries in the capital market. Lastly, policymakers and regulators may find benefits in examining the factors that influence voluntary disclosures.

Conclusion

This study has investigated the direct relationship between CEO RF and MEFs, involving measurement of the impact of CEO promotion focus and CEO prevention focus on the likelihood, frequency and accuracy of MEFs. The aim was to understand the underlying motivation of CEOs to influence the issue and accuracy of MEFs. The MEFs data is collected from IBES Guidance and IBES Academic for the period 2000 to 2018. Then the CEO RF (promotion focus and prevention focus) is calculated following Gamache et al. (2015) by running textual analysis on the CEOs annual letter to shareholders.

The results indicate that CEO promotion focus (i.e., those in pursuit of success, gains, advancement, and career-related progression) will likely lead to greater likelihood, frequency, and accuracy of MEFs. In contrast, CEO prevention focus (i.e., more focused on the fulfilment of basic duties and obligations) will likely result in lower likelihood and frequency of MEFs.

When examining the moderating effects of industry litigation, the results indicate a weakening of the positive relationship between CEO promotion focus and the likelihood of MEFs, which can be due to their propensity to towards achievement, success, and obtaining personal recognition. Further, increased industry litigation is likely to strengthen the negative relationship between CEO prevention focus and the likelihood and frequency of MEFs, which can be due to their higher risk aversion and avoidance of negative consequences.

Lastly, the results indicate that CEO promotion focus leads to lower return volatility, influencing greater MEF activity, which can be due to their underlying motivation to pursue success- and accomplishment- related outcomes, which is more in line with OCB to increase their likelihood of obtaining rewards and advancements in the organisation. We also show that CEO prevention focus can result in higher return volatility, leading to lower MEFs based on them being more likely to resort to higher economical threat to an organisation and choosing risky options when they face losses.

This study contributes to growing the literature that examines the CEO psychological traits influence on MEFs (Baik et al., 2011; Hribar and Yang, 2016). Previous studies show that high ability CEOs are linked to a greater likelihood, frequency, and accuracy of MEFs, thereby signalling their ability to anticipate positive changes to the firm's prospects and to keep markets aware about the firm's economic environment (Baik et al., 2011). Further, CEOs who are overconfident are highly likely to issue and miss their own forecasts, which could be due to over-optimism about future earnings (Hribar and Yang, 2016). Thus, we extend prior literature to show that the underlying motivation a CEO plays an important role in strategic decision making, wherein CEO promotion focus (gains and advancement) results in higher likelihood, frequency, and accuracy of MEFs. On the contrary, CEO prevention focus (fulfilment of basic duties and obligations) results in lower likelihood and frequency of MEFs.

There are several limitations in this study, which researchers could consider as opportunities for future research. First, the tests could not completely rule out endogeneity; for example, the promotion-oriented and prevention-oriented words could also partially capture the firm's performance. Second, the sample only consisted of publicly traded US firms; thus, the theory could be further tested via non-US firms and private firms to study the impact of CEO RF on firm-strategic actions because they are likely to have different cultural, industry, or economic environment.. Third, as the study was based on archival data of CEO letters to shareholders, it might not encompass the entire decision-making process of CEOs. Lastly, as CEO RF is closer to actual behaviour than other psychological traits, future researchers could also use interviews or survey methods to eliminate the chances of other CEO psychological traits impacting MEF activity.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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