Received: 13 December 2021 | Revised: 11 December 2022 | Accepted: 15 December 2022
DOI: 10.1111/jbfa.12683
JBFA

ARTICLE

Quarterly earnings guidance and real earnings management

Beatriz García Osma[1] | Encarna Guillamón Saorín[1] | Facundo Mercado[2]

[1]Department of Business Administration, Universidad Carlos III de Madrid, Madrid, Spain
[2]Warwick Business School, University of Warwick, Coventry, UK

Correspondence
Facundo Mercado, Warwick Business School, University of Warwick, Scarman Rd, Coventry CV4 7AL, UK.
Email: facundo.mercado@wbs.ac.uk

Funding information
European Social Fund, Grant/Award Number: S2015/HUM-3417; Spanish Ministry of Innovation and Science, Grant/Award Number: ECO2016-77579

Abstract
We examine if quarterly earnings guidance induces real earnings management. Quarterly guidance may cause myopia and inefficient decision-making, if managers become overly concerned with setting and beating short-term earnings targets. We test these associations on a large sample of US firms. Our evidence suggests that quarterly guidance is informative and lowers myopic incentives. However, our analyses also reveal endogenous associations exist between guidance and real earnings management. In contrast with existing concerns over frequent guiders, we find that guidance appears problematic in infrequent guiders, and in firms that issue good news earnings guidance and that operate in settings where earnings pressures are high.

KEYWORDS
frequent guidance, management earnings forecasts, real earnings management, short-termism

JEL CLASSIFICATION
G30, M41

1 | INTRODUCTION

Providing short-term, forward-looking earnings forecasts is a widespread practice among firms. However, practitioners and regulators increasingly oppose such "earnings guidance," as it may lead to an inefficient allocation of managerial attention, if managers dedicate time to produce and communicate their short-term forecasts to the market, instead of focusing on the firm's long-term objectives. In addition, guidance may attract investors with a short-term focus. These concerns have led to calls for the discontinuation of guidance, with some firms already stopping it.[1]

Against this backdrop, we examine whether quarterly earnings guidance generates incentives for real earnings management. Real earnings management refers to business decisions taken to report earnings that misrepresent true performance (Schipper, 1989). Real earnings management proxies capture aggregated managerial short-termism, arising from sub-optimal operating (e.g., overproduction/sales manipulation) and investment decisions (e.g., cuts in discretionary expenditures) that directly affect cash flows. Thus, it measures the concerns of regulators and practitioners that short-term earnings pressures may lead to poor business decisions, with potential long-term costs on the company (Bhojraj et al., 2009, Francis et al., 2016a, Khurana et al., 2018).

Survey evidence in Graham et al. (2005) suggests that managers use real actions to meet their own earnings forecasts. This is consistent with predictions derived from traditional myopia models, where price pressures lead managers to increase short-term prices by borrowing earnings from the future via under-investing, sub-optimal project selection or liquidation of assets. (Stein, 1989, Gigler et al., 2014). Despite these compelling arguments and anecdotes, the literature offers conflicting arguments on the effects of guidance. Managers may issue guidance to reduce information asymmetry (Healy and Palepu, 2001), which, in turn, may reduce incentives to manage real actions to meet forecasts, consistent with the expectation alignment hypothesis (Ajinkya and Gift, 1984).

No prior empirical work directly examines real earnings management and guidance. However, prior work by Cheng et al. (2007) reports that guidance frequency is associated with under investment in research and development (R&D), and Hu et al. (2014) find that firms that stop guidance have lower discretionary accruals. In contrast to these findings, Houston et al. (2010) find no evidence of firms increasing investment in capital expenditures and R&D after they stop guidance, and focusing on all guiders (and not just on those that stop guidance), Call et al. (2014) find that more frequent guiders are less likely to manage discretionary accruals.

This lack of conclusive findings may be explained by several factors, which we address in our empirical design. First, as noted, these studies focus on proxies that provide partial evidence on short-termism, while real earnings management proxies capture aggregated short-termism driven by earnings pressures, arising from multiple decisions linked with opportunistic overproduction, sales manipulation and cuts in discretionary expenditures. Second, these studies consider earnings guidance to be homogeneous, ignoring managerial motivations. We build on Kim and Park (2012), who argue that guidance may be associated with either (a) strategic incentives (i.e., issued with the purpose of meeting or beating market expectations or inducing higher expectations) or (b) communication incentives (i.e., issued to convey reliable information), and consider the incentives that underlie guidance. Third, prior work uses samples extensively populated by firms that started guiding in the period surrounding Regulation Fair Disclosure (Reg. FD). According to Wang (2007), firms that start guidance as a result of Reg. FD differ from other guiding firms along numerous dimensions linked to short-termism (e.g., institutional ownership, analyst following, financing needs or industry earnings response coefficients).[2] Thus, we focus on the period *after* Reg. FD. Fourth, given that the decision to guide is voluntary, endogeneity problems can arise due to self-selection or omitted-variable bias.[3] To address endogeneity

[1] As examples, the consulting firm McKinsey suggests that "companies that currently provide quarterly earnings guidance should shift their focus away from short-term performance and toward the drivers of long-term company health" (Hsieh et al. 2006). The Chartered Financial Analyst (CFA) Institute panel of experts recommends to "end the practice of providing quarterly earnings guidance" (Krehmeyer et al. 2006). And the Chamber of Commerce encourages public companies to "eliminate the practice of providing quarterly earnings guidance" (U.S. Chamber of Commerce 2007). Explicitly agreeing with this view, several companies have stopped guidance. For example, when The Coca-Cola Company announced its decision to do so, Gary Fayard, then CFO of the company, stated that "it will allow the company to continue to focus on long-term growth objectives, which is good for our shareholders and not managed in the short-term quarter-to-quarter" (December 13th 2002-Q3 Earnings Conference Call).

[2] Many of these firms stopped guidance in quick succession, as they presumably developed alternative communication channels. In Online Appendix A, we provide detailed evidence of how entry and exit of guiders around Reg. FD may have influenced sampling and findings in prior empirical work.

[3] This is particularly problematic for studies that examine the consequences of stopping guidance, given evidence that such decisions are associated with poor performance (Houston et al. 2010). Treating all guidance as equal and not controlling adequately for endogeneity may lead to power test reductions and correlated omitted-variables problems (Li et al. 2011, 2012, 2016).

concerns, we identify guidance issued in response to an exogenous decrease in analyst coverage, arising from brokerage downsizing (Yu, 2008, Anantharaman and Zhang, 2011). Analyst coverage is valuable for managers because it drives investor attention and liquidity. Therefore, managers have incentives to issue guidance to attract or retain coverage (Rana, 2008, Frankel and Li, 2004, Healy and Palepu, 2001, Mola et al., 2013). The literature finds evidence that exogenous decreases in analyst coverage degrade firms' information environment and that managers respond by increasing earnings forecasting (Balakrishnan et al., 2014).[4]

We test the links between guidance and real earnings management on a large sample of publicly listed firms over the period 2003–2017, excluding firms that might be subject to specific institutional and regulatory constraints. We follow Roychowdhury (2006) and Zang (2012) to measure real earnings management and use the I/B/E/S Guidance database to identify firms issuing quarterly earnings forecasts. We include all guidance made between 0 and 90 days before the quarter-end. Doing this ensures that we focus on short-term quarterly forecasts and avoid including stale forecasts and earnings preannouncements in the sample. We extensively validate our identification strategy. Relative to other earnings forecasts, guidance issued in response to analysts' decreases ("shock" guidance) is more precise and accurate and associated with higher liquidity. There is also more new information incorporated into stock prices and higher one quarter-ahead future earnings response coefficients. Furthermore, relative forecast accuracy indicates that, on average, analysts are better off following management forecasts issued in response to a shock.

Our tests provide the following key findings. We find that guidance reduces real earnings management. These results hold for different model specifications and are robust to the inclusion of time- and industry-fixed effects and to clustering standard errors by firm. The results are also robust to different shock definitions, control samples, alternative approaches to measure real earnings management and using a "stacked-regression" approach. Firms engaging in target beating behavior do not respond to the loss of analyst coverage by issuing additional guidance, thereby assuaging concerns that our strategy identifies target beating firms. In several of our specifications, we also find that in control firms, guidance is positively associated with real earnings management. This may suggest some guiding firms meet targets through real actions, creating the endogenous correlation between earnings management and guidance observed in some prior work.

We conduct several additional analyses to support our main results. First, we consider the role of guiding frequency. Our sample is populated, by design, by frequent guiders, although significant variation in guidance frequency exists. The repeated/frequent nature of disclosure may affect strategic incentives (Rogers and Stocken, 2005, Stocken, 2000), thus, we discard the possibility that our results are driven by either highly frequent guiders or by firms that only issue occasional guidance. Second, we consider samples with different degrees of short-term incentives. Third, we consider the type of news embedded in the forecasts (i.e., good versus bad), as good news forecasts are likely to increase the pressure to meet earnings expectations to a greater extent (Richardson et al., 2004). Finally, because ASC 270, *Interim Reporting* requires the estimation of many figures in quarterly reporting (e.g., cost of goods sold), we explore whether our results reflect patterns created by the integral method of interim reporting. Overall, the findings from these analyses confirm our main results that guidance does not lead to real earnings management.

We make a number of contributions to the literature. First, we contribute to the debate on whether issuing guidance fosters short-termism. We find that guidance is informative and not associated with real earnings management. Our results suggest that it is important to consider the underlying nature of the forecast when assessing the costs and benefits of short-term guidance. We do find evidence that some guiding firms in our control sample engage in earnings management practices. We interpret these findings as providing assurance that our identification strategy accurately separates earnings forecasts that are issued with an informative rather than strategic intention. However, we acknowledge that our setting is not perfectly exogenous, and therefore, while we extensively validate our approach, we cannot entirely discard endogeneity concerns.

[4] Anecdotal evidence likewise shows that companies acknowledge the importance of analyst coverage when discussing the risk factors associated with investing in their shares. For example, Amyris Inc., traded on the NASDAQ Global Select Market, or Floor & Decor Holdings Inc., traded on the NYSE, both state in their 2018 10-K filing that: "If any analyst who may cover us were to cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline."

We also contribute to the voluntary disclosure literature. Prior work investigates the effects of guidance on accruals management (Call et al., 2014, Hu et al., 2014) and R&D investment (Cheng et al., 2007, Houston et al., 2010), presenting mixed evidence. We add to this work by studying real earnings management decisions, arguably a better proxy for myopia (Roychowdhury, 2006). Indeed, studying real decisions is relevant for several reasons. First, myopia is unlikely to manifest via short-term earnings pressures that can be solved independently in each quarter by managing accruals. Short-term pressures drive business decisions such as under-investment, or asset liquidations (Stein, 1989, Gigler et al., 2014) during the quarter, affecting the stream of revenues and structure of costs, and thus, firm earnings. Accruals management takes place when these earnings do not meet managerial targets, often after the end of the quarter (when financial statements are produced). Hence, if business decisions achieve the desired performance, accrual adjustments would be unnecessary (Zang, 2012, Cohen and Lys, 2022). Second, the net costs of accruals and real earnings management differ across firms, as does their relative monitoring over time. As documented in Graham et al. (2005), managers may prefer to undertake real actions to manage earnings. Overall, it is likely that managers use both types of instruments and trade-off their relative costs in selecting which ones to use and when (Zang, 2012, Burnett et al., 2012). Third, earnings management in one quarter is unlikely to be independent from prior and future earnings management. The articulation of the financial statements means that the balance sheet acts as a constraint to accruals management (Barton and Simko, 2002); prior accrual choices accumulate and eventually reverse, imposing limits to accrual accounting. As a last resort managers may rely on changes in accounting estimates to manipulate earnings (Beaulieu et al., 2022). Finally, in a quarterly setting, the integral method may also limit flexibility, likely triggering a substitution between earnings management instruments.

2 | LITERATURE REVIEW AND BACKGROUND

2.1 | Real earnings management in response to pressures to meet earnings targets

Real earnings management consists of business actions such as "changing the timing or structuring of an operation, investment or financing transaction" (Zang, 2012, p. 676) to alter earnings, with potential sub-optimal consequences. This contrasts with accruals earnings management, which involves accounting choices that do not affect underlying transactions. Survey evidence in Graham et al. (2005) indicates that managers are willing to take real actions, such as postponing new investment opportunities or reducing R&D expenditures to meet short-term earnings targets, and that these real actions may be preferred over accruals manipulation. This behavior can be explained by severe negative market reactions to missing earnings targets, as well as "inside pressure to hit earnings benchmarks" (Dichev et al., 2013, p. 26). Hence, real earnings management reflects managerial decisions that are driven by earnings pressures and capture short-termism (i.e., excessive focus on short-term earnings at the expense of long-term firm value).

While Gunny (2010) reports higher future returns in firms engaging in real earnings management, overall, the empirical literature finds that real earnings management is associated with poor future performance. Bhojraj et al. (2009) document that firms beating short-term earnings targets with lower discretionary expenditures underperform in the long term, relative to firms missing the targets with high earnings quality. Gupta et al. (2010) find that overproduction is associated with a lower return on assets in the following year, and the evidence in Francis et al. (2016a) and Khurana et al. (2018) suggests that managing real activities to increase and smooth earnings destroys shareholder value by increasing stock price crash risk. Despite these high costs, managers must trade-off many costs and benefits, both in the long and short term, and they may choose to manage earnings through real actions because, for example, missing an earnings target may trigger negative price reactions, which may, in the short term, be costlier for them (Matsunaga and Park, 2001, Matsumoto, 2002, Skinner and Sloan, 2002, Lennox and Park, 2006, Byun and Roland, 2022), particularly, if they face horizon problems (Dechow and Sloan, 1991).

2.2 | Frequent earnings guidance and managerial short-termism

While prior research does not directly address the question of whether real earnings management is associated with earnings guidance, a number of empirical and theoretical papers investigate the closely related issues of whether earnings pressures and earnings guidance create short-termism. The seminal work of Stein (1989) argues that a managerial focus on current stock prices leads to myopia. The assumption of Stein (1989)'s model is that current stock prices are an input in manager's utility function.[5] It then follows that because investors use earnings to predict firm value, assuming current earnings are positively correlated with future earnings, managers have incentives to boost short-term prices by borrowing earnings from the future into the present via under-investing, liquidating assets or both. Investors anticipate managers' behavior and discount firm value, leading to a noncooperative equilibrium, similar to the prisoner's dilemma. In the context of mandatory reporting, Gigler et al. (2014) extend Stein (1989)'s model by considering the costs and benefits of frequent reporting and argue that the trade-off between the costs and benefits of frequent reporting affects firms' project selection. On the one hand, when there is information asymmetry, higher reporting frequency enables prices to discipline managerial choices. On the other hand, more frequent reporting results in price pressures that induce managers to be myopic. Wagenhofer (2014) suggests that allowing for voluntary disclosure in traditional myopia models may increase price pressures on managers. In line with this idea, Edmans et al. (2016) show that, in a setting with both hard and soft information, voluntary disclosure (i.e., quarterly earnings guidance) increases managerial myopia.

Translating these analytical findings to empirical settings has proven challenging, and prior empirical work reports conflicting evidence. Cheng et al. (2007) argue that frequent earnings guidance exacerbates investors' and managers' focus on short-term earnings, leading to managerial myopia, independent of the initial motive for issuing guidance. Cheng et al. (2007) find that dedicated guiders invest less in R&D, meet or beat analysts' expectations more frequently and have lower long-term earnings growth rates, which they conclude are evidence of a positive relation between guidance and short-termism.[6] However, the decision to stop issuing guidance is not associated with increases in R&D and capital expenditures (Houston et al., 2010). The results of Houston et al. (2010) suggest that, after guidance terminates, the firm information environment deteriorates, mainly due to reduced analysts' coverage. This is consistent with evidence presented by Irani and Oesch (2013), who finds that a loss in coverage decreases financial reporting quality.[7] Therefore, prior work presents mixed views. Guidance may be informative, allowing managers to align market earnings expectations with their own (Ajinkya and Gift, 1984, Healy and Palepu, 2001, Dutta and Gigler, 2002, Lansford et al., 2013), reducing information risk (Graham et al., 2005). Alternatively, guidance may be used to "hype" stock price, to increase prices around equity offerings (Lang and Lundholm, 2000), to maximize managerial stock option compensation (Aboody and Kasznik, 2000) or to trade opportunistically in firm's shares (Noe, 1999, Cheng et al., 2007). In this study, we aim to add to this literature by examining whether guidance induces real earnings management. The extent to which real earnings management is associated with guidance is an empirical question of interest that we address in our analyses. We explain our identification strategy next.

[5] This may be true for a variety of reasons. For example, (1) managers may face hostile takeovers, (2) their compensation may be tied to current stock price performance, (3) they may face liquidity needs that force them to sell stocks in the short term and (4) funding needs may require the company to issue new shares.

[6] Other papers presenting evidence and arguments supporting that earnings guidance intensifies managerial myopia include those by Kasznik (1999), Degeorge et al. (1999), Bartov et al. (2002), Richardson et al. (2004), Burgstahler and Eames (2006), Acito (2011) and Koch et al. (2012).

[7] Endogeneity may substantially explain the lack of definitive evidence in prior research, which usually considers all guidance as homogeneous (Hirst et al. 2008). As we explain in Online Appendix A, these mixed findings in the empirical archival literature may be, at least partly, also explained by sample composition concerns surrounding Reg. FD, as many firms started to issue guidance in response to the regulation, and subsequently stopped, as they presumably developed alternative communication channels (see, e.g., Wang 2007, Houston et al. 2010). Mixed findings in analytical studies (Stein 1989, Gigler et al. 2014, Wagenhofer 2014, Edmans et al. 2016), literature reviews (Healy and Palepu 2001) or studies based on interviews/surveys (Graham et al. 2005) are not affected by sampling concerns.

3 | METHODOLOGY

3.1 | Research design

To provide evidence on the relationship between guidance and real earnings management, we estimate the following panel data model:

$$\begin{aligned}\text{REM}_{i,t} = \; & \alpha + \beta_1\text{GUIDE}_{i,t} + \beta_2\text{SHOCK}_{i,t} + \beta_3\text{GUIDE}_{i,t} \times \text{SHOCK}_{i,t} + \sum_{k=1}^{17} \theta_k \text{Controls}_{i,t-4} \\ & + \text{QuarterFE} + \text{IndustryFE} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where $\text{GUIDE}_{i,t}$ is an indicator variable equal to one if the firm *i* issues guidance in quarter *t* and zero otherwise. We exclude all guidance made earlier than 90 days before the quarter-end, to focus on short-term quarterly forecasts and avoid stale forecasts. We also exclude all quarterly forecasts made after the quarter-end because these forecasts are likely to be earnings preannouncements. $\text{SHOCK}_{i,t}$ is a dummy variable indicating whether the firm suffers an exogenous shock to analyst coverage in quarter *t*. Treating all guidance as homogeneous reduces the power of tests in prior literature and introduces correlated omitted-variable concerns (Kim and Park, 2012, Li et al., 2011, 2012, 2016), by separating guidance using $\text{SHOCK}_{i,t,}$ we can focus on quasi-exogenous guidance and its consequences. In Subsection 3.3, we provide details on the calculation of $\text{SHOCK}_{i,t.}$ The interaction term GUIDE × $\text{SHOCK}_{i,t}$ captures the marginal effect of guidance made in response to an exogenous shock in analyst coverage. Since the exact date of the shock within the quarter is unknown, we further require guidance to be made after the previous quarter earnings announcement date; otherwise GUIDE × $\text{SHOCK}_{i,t}$ equals zero. Our dependent variable is $\text{REM}_{i,t,}$ which captures real earnings management and is defined in Section 3.2.

In model (1), β_3 is the coefficient of interest, and captures the effect of guidance on real earnings management. We expect $\beta_2 + \beta_3$ to be negative. If the exogenous decrease in analyst coverage degrades the firm information environment, β_2 should be positive. Finally, β_1 captures the effect of guidance on REM absent a shock to analyst coverage. We make no prediction on the sign of β_1.

As our aim is to determine whether quarterly earnings guidance induces short-termism, we consider only those cases where $\text{REM}_{i,t}$ is positive. Opponents of short-term earnings guidance claim that managers of guiding firms will boost short-term earnings at the expense of long-term firm value, to hit the targets established by their own guidance. The concerns in the literature (e.g., Stein, 1989, Perry and Grinaker, 1994, 1995, Bartov, 1993) are concentrated in cases where discretionary expenses are cut, assets are sold sub-optimally and generally, firms under-invest as a consequence of myopia. Limiting our sample to firm-quarters with income increasing $\text{REM}_{i,t}$ allows us to better capture this concern, as it gives us a clear prediction with respect to the sign of earning management. A potential limitation of this focus is that "cookie jar accounting" via income-decreasing real earnings management (and importantly, its reversal, which would be income-increasing) is not considered. While cookie jar accounting is common when engaging in smoothing via accrual-based earnings management, these practices are less likely in a real earnings management setting (Badertscher et al., 2009).[8] However, income-decreasing real earnings management has been documented for tax motives and around specific events such as repurchases of stock, management buyouts and CEO option awards

[8] Consider, as an example, the case of R&D expenditure. Committing to unusually high discretionary R&D expenses ahead of time would be unlikely because the bulk of these expenses for a particular project are (a) salaries of technical staff and (b) depreciation charges of equipment used. Equipment is likely to be project-specific, and therefore, not a good candidate to be bought substantially in advance, as obsolescence and/or lack of fit would negatively impact on innovation. Even if management made such an investment, it would increase expenses for several years as depreciation charges accrued, that is, there would be no reversals that inflated earnings in the following period and changes to the depreciation charge would be highly visible. Similar persistence would exist in labor costs, which are sticky, and labor employed ahead of the project would need to be allocated to other projects. These expenses would also remain on the income statement for as long as the project was undertaken. More linked to operating expenses, while prior work usually focuses on the *delay* of expenses (Graham et al. 2005), one could also consider a certain *anticipation* of expenses such as maintenance (i.e., income-decreasing REM) or perhaps, in inventory management, if managers have a good foresight that the following quarter may bring in poorer performance.

(Badertscher et al., 2009, Francis et al., 2016b). Given this evidence, in our robustness tests, we also look at signed real earnings management.

We control for endogenous decreases in analyst coverage (OTHER_DEC) because considering only the exogenous decrease (i.e., SHOCK) may result in a correlated omitted variable (Anantharaman and Zhang, 2011). In addition, we control for lagged values of REM (PAST_REM) to capture prior real earnings management behavior and capture potential reversal effects. We include the lagged value of net operating assets (BLOAT) as an additional control variable to proxy for earnings management constraints (Barton and Simko, 2002). We control for past abnormal accruals (AB_ACC) because real actions are preferred when accruals-based earnings management is constrained or its costs are higher (Cohen et al., 2008, Cohen and Zarowin, 2010, Zang, 2012, Koch et al., 2012). Analyst following (AF) is included to capture the potential role of analysts in disciplining managerial myopia (Healy and Palepu, 2001, Yu, 2008, Irani and Oesch, 2013), although analyst coverage may engender pressures to meet or beat earnings benchmarks (Cohen and Zarowin, 2010, Irani and Oesch, 2016). Following Bushee (1998) and Roychowdhury (2006), we include institutional ownership (INST) because more sophisticated investors might better understand the long-term value implications of myopic managerial actions and discourage real activities management. Leverage (LEV) controls for firm's capital structure (Cohen and Zarowin, 2010) and is a proxy for the presence of debt covenants, as firms might manage real activities to avoid violating them (Roychowdhury, 2006, DeFond and Jiambalvo, 1994). The book-to-market ratio (BTM) is a proxy for growth opportunities. Firms with higher growth opportunities have more incentives to manage earnings (Skinner and Sloan, 2002). Following Roychowdhury (2006) and Zang (2012), we include operating cycle (OPCYCLE) as a proxy for the flexibility in overall earnings management. Firms with shorter (larger) operating cycles rely more on real activities manipulation (accruals manipulation). Following Gupta et al. (2010), we include fixed assets intensity (FAI) to proxy for firm's fixed cost structure and control for the variation in the incentives to overproduce generated by full absorption costing.[9] Order backlog (BACKLOG) controls for capacity utilization because it is harder for firms to increase production near full capacity utilization. Including order backlog mitigate concerns that our measure captures an optimal managerial response in anticipation of future sales (Gupta et al., 2010). Following Roychowdhury (2006) and Zang (2012), we include controls for firm size (SIZE) and performance (ROA). We also control for whether the firm reports a loss (LOSS) because according to Degeorge et al. (1999) and Matsumoto (2002), meeting or beating analysts' earnings expectations is less important for loss-making firms. Following Call et al. (2014), we include the standard-deviation of operating cash *flow* (*S_CFO*) to control for the volatility of firms' operating environment. Finally, we include earnings persistence (PERS) and predictability (PRED) because more predictable earnings may be associated with the decisions both of guiding and of manipulating earnings (Call et al., 2014).

Control variables are lagged four quarters to control for seasonality and to avoid possible effects that GUIDE and REM might have on the controls. Quarter and industry fixed effects are included to control for time-trends or shocks that affect all firms in the sample and industry-specific factors.[10] Appendix 1 provides definitions of all variables.

3.2 | Real earnings management measure

We construct our proxy for real earnings management (REM) following Roychowdhury (2006) and Zang (2012), who use deviations from normal levels of discretionary expenditures and production costs to detect real activities manipulation.[11] To construct our proxy, we first estimate the following models within each fiscal year and two-digit SIC

[9] Different from Gupta et al. (2010), we measure FAI using the ratio of net property, plant and equipment to total assets. Arguably, using gross PPE would better capture fixed-assets intensity because it is unaffected by depreciation rules. However, if we use gross PPE, we would lose around one-third of our sample because of data availability. Given that, in our sample, the correlation between net PPE and gross PPE is above 0.95, we opt to use net PPE and retain a larger sample. Our results remain unchanged if we measure FAI using gross PPE and estimate our main model for a smaller sample.

[10] Our results remain qualitatively similar in sign and significance if we include firm fixed effects, although, since our main focus is in firm-quarters with income-increasing real activities manipulation, firm fixed effects may not capture time-invariant firm characteristics.

[11] An alternative measure of real earnings management also developed by Roychowdhury (2006) is abnormal cash flows from operations. We do not consider this measure because real activities manipulation has ambiguous effects over abnormal cash flows. While activities such as price discounts, channel stuffing

industry, using quarterly data[12]:

$$\frac{PC_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t}}{A_{i,t-4}} + \alpha_7 \frac{\Delta_4 S_{i,t}}{A_{i,t-4}} + \alpha_8 \frac{\Delta_4 S_{i,t-4}}{A_{i,t-4}} + \varepsilon_{i,t} \tag{2}$$

$$\frac{DE_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t-4}}{A_{i,t-4}} + \varepsilon_{i,t} \tag{3}$$

where subscript *i* indexes firms and *t* indexes fiscal quarters.

Production costs ($PC_{i,t}$) are defined as the change in inventory from quarter *t*−1 to *t* plus the cost of goods sold in quarter *t*, A_{t-4} is total assets in quarter *t*−4, S_t are sales in quarter *t*, we use Δ_4 to symbolize changes relative to the same quarter in prior year.[13] According to Roychowdhury (2006), by offering limited-time price discounts, more lenient credit terms, or engaging in channel stuffing, managers can generate additional sales, shift sales from future periods to the current period or both. These increases in sales have lower margins and cause production costs, relative to the volume of sales, to be abnormally high. Overproduction (i.e., producing goods in excess of the expected demand) allows managers to distribute fixed overhead costs across a larger number of units, reducing the fixed costs per unit, and lower reported cost of sales result in higher earnings. Moreover, fixed overhead costs allocated to unsold goods are not expensed and increase inventory value. Overproduction causes total production costs, relative to sales, to be abnormally high because of higher marginal production costs and inventory build-up. Abnormal levels of production costs (AB $PC_{i,t}$) are measured as the residuals of model (2).[14] Discretionary expenditure ($DE_{i,t}$) is defined as the sum of advertising, R&D and SG&A expenditure in quarter *t*. Managers can boost earnings by reducing costs that are expensed when incurred. For instance, managers can boost reported earnings by cutting R&D. Unusually low values of discretionary expenditures reflect this earnings management strategy. Abnormal discretionary expenditures ($AB\_DE_{i,t}$) are measured as the residuals from model (3) times minus one. We multiply the residuals of model (3) by minus one to be able to interpret positive values of ($AB\_DE_{i,t}$) as income increasing manipulation.

We require at least 15 observations to estimate models (2) and (3) and include fiscal quarter dummies Q_{1i}, to Q_{4i}, to capture fiscal quarter effects. Changes in sales are calculated, relative to the same quarter of the previous year, because changes in sales, relative to the adjacent quarter, are dominated by seasonal effects (Collins et al., 2017).[15] Following Zang (2012), we use abnormal production costs plus abnormal discretionary expenditures as an aggregate measure of real earnings management and define it as $REM_{i,t} = AB\_PC_{i,t} + AB\_DE_{i,t}$. $REM_{i,t}$ captures the combined effect of real activities manipulation by means of overproduction, sales manipulation and cuts in discretionary expenses. Positive (negative) values of REM indicate income-increasing (income-decreasing) earnings management.

Chen et al. (2018) caution that using the residuals from an ordinary least squares model as the dependent variable in another regression leads to biased coefficients and standard errors, with the seriousness of this problem depending on the correlation among model regressors. Therefore, following Chen et al. (2018), we include the regressors from

and overproduction would lead to a decrease in cash flows from operations, cutting discretionary expenditures would increase them, therefore the net effect of real activities manipulation over abnormal cash flows is unclear, as noted in Roychowdhury (2006) and Zang (2012). Using this variable as our dependent variable in model (1) would result in lower statistical power.

[12] Starting from the entire population of Compustat for the period of 2003-2017, we exclude financial and regulated industries (SIC 60-69 and SIC 44-50). To avoid possible mistakes in the database, we remove all observations with miss¬ing (negative) values of total assets (Compustat item atq), sales (item saleq) and selling, general and administrative expenses (SG&A) (item xsgaq). We also exclude all observations with missing values for common equity (item ceqq), net income (loss) (item niq), cost of goods sold (item cogsq), inventory (item invtq) and income before extraordinary items (item ibq).

[13] As pointed out by Roychowdhury (2006), this definition does not apply literally for nonmanufacturing firms, even though it allows to calculate "production costs" for such firms.

[14] Overproduction, as an earnings management strategy, is not available to nonmanufacturing firms. Consequently, one would expect evidence of abnormal production costs to be driven particularly by manufacturers. This would be the case only if the combined effect of overproduction and sales manipulation in manufacturers is larger than the effect of sales manipulation in nonmanufacturing firms (Roychowdhury 2006).

[15] In section 5.5, we augment models (2) and (3) including changes in sales relative to adjacent quarters.

equations (2) and (3) (i.e., first-stage controls) in our main model specification (i.e., second-stage regression), equation (1). This procedure is equivalent to estimating the coefficients for all the model regressors in a single regression, therefore leading to unbiased estimates of the coefficients of interest and standard errors. We follow Chen et al. (2018) approach throughout all our robustness tests and additional analysis.

3.3 | Guidance in response to a shock to analyst coverage

Analyst coverage is valuable to managers because it reduces information asymmetries and drives liquidity (Healy and Palepu, 2001, Frankel and Li, 2004, Rana, 2008, Mola et al., 2013). When analyst coverage decreases, these benefits are lost (Merton, 1987).[16] Managers can respond to declining analyst coverage by issuing earnings guidance (Anantharaman and Zhang, 2011). For example, Balakrishnan et al. (2014) finds that managers respond to exogenous coverage shocks by increasing voluntary disclosure. These authors establish a positive causal link between guidance and liquidity. We build on their evidence to identify management forecasts made in response to an exogenous reduction in analyst coverage. Decreases in coverage due to brokerages' downsizing are plausibly exogenous because changes in the size of a brokerage are mainly associated with changes in its own revenue or industry-wide structural changes. These changes are unlikely to be determined by characteristics of any individual followed firm (Hong and Kacperczyk, 2010, Kelly and Ljungqvist, 2012, Yu, 2008, Anantharaman and Zhang, 2011).

To measure exogenous shocks to analyst coverage, we follow a modified Yu (2008) procedure, as per Anantharaman and Zhang (2011). According to Yu (2008), the probability that a particular brokerage house continues to cover a firm after a reduction in its size yields the expected coverage for the firm by that brokerage. By aggregating over all the brokers covering the firm, we obtain the expected number of analysts covering it.[17] An important assumption we must make to obtain the expected coverage for a particular firm in a given quarter is that brokerages assign the same amount of resources to cover a given firm i in quarter t. Then, if firm i is covered by j brokerages in quarter $t-1$, following Anantharaman and Zhang (2011), the expected coverage of firm i from brokerage j in quarter t ($\mathrm{EC}_{i,j,t}$) is:

$$\mathrm{EC}_{i,j,t} = \min\left\{\frac{\mathrm{Broker\_Size}_{j,t}}{\mathrm{Broker\_Size}_{j,t-1}}\mathrm{Coverage}_{i,j,t-1}, 1\right\} \tag{4}$$

where $\mathrm{Broker\_Size}_{j,t}$ is the number of analysts working for brokerage house j in quarter t, and $\mathrm{Coverage}_{i,j,t-1}$ is the number of analysts in brokerage j covering firm i in quarter $t-1$. $\mathrm{EC}_{i,j,t}$ has a minimum value of 1 because data show that, within brokerages, each stock is covered only by one analyst. As a result, expected coverage of firm i in quarter t ($\mathrm{EC}_{i,t}$) is:

$$\mathrm{EC}_{i,t} = \sum_j \mathrm{EC}_{i,j,t} \tag{5}$$

Exogenous decreases in coverage are given by the difference between the expected coverage for firm i in quarter t ($\mathrm{EC}_{i,t}$) and the number of analysts following firm i after the quarterly earnings announcement of quarter $t-1$ ($\mathrm{COV}_{i,t-1}$).

[16] For example, Kelly and Ljungqvist (2012) show that exogenous coverage terminations lead to an increase in firms' information asymmetry, leading to greater bid-ask spreads, higher Amihud (2002) illiquidity measure, more missing-return days, more volatile returns around earnings announcements and greater earnings surprises, relative to control firms. Hong and Kacperczyk (2010) also show that exogenous decreases in analysts coverage result in a worse firm information environment.

[17] According to Yu (2008), even if the brokerage's decision to stop covering a firm might be endogenous to that firm's characteristics (e.g., dropping firms with poor economic prospects), expected coverage is not affected by the endogeneity concerns that affect realized coverage because it is a measure of "the tendency to keep the coverage before a broker decides which firm to keep" (Yu 2008, p. 257).

We define exogenous decrease ($EXO\_DEC_{i,t}$) as:

$$EXO\_DEC_{i,t} = \frac{COV_{i,t-1} - EC_{i,t}}{COV_{i,t-1}} \quad (6)$$

Finally, we consider firm *i* to suffer a shock to analyst coverage in quarter *t* if the exogenous decrease in coverage is greater than 15%. We define $SHOCK_{i,t}$ as an indicator variable that takes value 1 when $EXO\_DEC_{i,t} < -0.15$ and zero otherwise. We choose the 15% threshold so that the shock is strong enough to change shocked firms' behavior.[18]

4 | SAMPLE AND RESULTS

Our sample is composed of US publicly listed firms and covers the period of 2003–2017, after the passage of Reg. FD and SOX because these regulations affected firms' guidance and earnings management behavior. This starting point also avoids errors in guidance measurement due to selective disclosure prior to Reg. FD (Hirst et al., 2008, Cohen et al., 2008, Call et al., 2014).[19] Addition-ally, we exclude all firms that might be subject to specific institutional and regulatory constraints (SIC codes 44–49 and 60–69), as earnings management in these industries might not be comparable with the remaining firms. We obtain guidance data from I/B/E/S Guidance database, quarterly financial data from Compustat, analyst coverage from I/B/E/S and institutional ownership information from Thomson Reuters 13F. We drop firm-quarter observations with missing values in Compustat and with negative total assets and negative sales. Continuous variables are winsorized at 1 and 99% to mitigate concerns regarding outliers. After imposing all data requirements for the estimation of model (1), our final sample consists of 56,295 firm-quarter observations.

Table 1, panel A, shows that firm-quarter observations are evenly distributed over time. On average, our sample firms issue management earnings forecasts in 22.65% of the quarters. Consistent with the discussed claims from practitioners about ending guidance, the number of quarterly earnings forecasts in our sample decreases over time. For the first year in our sample (2003), we have 400 firms issuing at least one EPS guidance, while for the last year (2017), we only have 276 firms issuing EPS guidance. Several explanations underpin this trend. First, increasingly, firms have "gone silent," deciding to stop guidance: this is part of the motivation for our study. Second, this downward trend may reflect firms' development of alternative communication channels, that make guidance less relevant. Houston et al. (2010) discusses some of such channels and propose, for example, MD&A sections, conference calls or special press releases. Finally, the trend can also be partially explained by the decrease in the number of listed firms over our sample period in the Compustat universe, as documented, for example, in Gilliam et al. (2015).

Sample firms suffer a shock to analyst coverage in 10.23% of the quarters, and there is no indication that these shocks are concentrated in a particular year. In our sample, 11.28% of management forecasts quarters correspond to a quarter in which firms suffer a shock to analyst coverage.

Table 1, panel B, presents summary statistics on the REM proxies and control variables. This descriptive evidence is consistent with prior work. Compared with Zang (2012), mean and median values for our real earnings management proxies are higher, but this is mainly because our sample focuses on firms doing income-increasing manipulation. Summary statistics for control variables are, in general, comparable to those in Call et al. (2014); a few discrepancies may be explained because our sample includes more recent years. Table 1, panels C and D, further presents summary statistics of our real earnings management proxies by splitting the sample into whether guidance (GUIDE) is issued and companies suffer an exogenous shock to analyst following (SHOCK).

[18] The mean value of analysts following in our sample is approximately 6, consequently, a 15% exogenous decrease implies that the mean firm in our sample loses, on average, one analyst.

[19] Further, 98.22% of our observations correspond to quarters after the Global Analyst Research Settlement (GARS) reached in April 2003, which potentially affected management forecast behavior. This sample period also avoids the concerns noted in Hope et al. (2022), that during the COVID pandemic, the changing environment led to many firms either stopping or starting providing guidance.

TABLE 1 Descriptive statistics

Panel A: Sample distribution by year					
Year	Observations	GUIDE = 0	GUIDE = 1	SHOCK = 1	GUIDE = 1/SHOCK = 1
2003	3586	2799	787	338	103
2004	3776	2754	1022	390	132
2005	3767	2750	1017	360	130
2006	4942	2960	982	411	127
2007	3832	2887	945	433	121
2008	3624	2795	829	401	118
2009	3801	2975	826	383	105
2010	3643	2803	840	416	112
2011	3728	2865	863	416	93
2012	3528	2741	787	331	83
2013	3816	2957	859	399	79
2014	3837	3037	800	419	80
2015	3777	3015	762	383	68
2016	3850	3095	755	408	52
2017	3788	3087	701	275	36
Total	56,295	43,520	12,755	5763	1439

Panel B: Summary statistics							
	Mean	S.D.	1%	Q1	Median	Q3	99%
Dependent variables							
REM	8.289	7.946	0.104	2.609	5.965	11.341	40.138
AB_PC	3.421	5.979	−5.610	−0.043	1.917	5.068	28.939
AB_DE	4.797	4.823	−4.771	1.471	3.986	7.323	20.996
Independent variables							
BLOAT	0.550	0.248	−0.242	0.449	0.597	0.708	0.886
AB_ACC	0.018	0.128	−0.422	−0.024	0.009	0.051	0.490
AF	1.400	1.066	0.000	0.000	1.609	2.303	3.332
INST	0.545	0.335	0.000	0.223	0.622	0.832	1.114
SIZE	4.986	2.112	−0.143	3.570	5.029	6.426	9.550
LEV	0.179	0.191	0.000	0.004	0.136	0.280	0.848
BTM	0.580	0.967	−3.036	0.299	0.508	0.817	3.675
OPCYCLE	542.47	410.63	33.78	294.44	460.56	674.65	2227.43
FAI	0.250	0.217	0.007	0.084	0.183	0.354	0.887
BACKLOG	0.290	1.031	0.000	0.000	0.000	0.000	5.869
ROA	−0.001	0.061	−0.256	−0.003	0.010	0.020	0.080
LOSS	0.284	0.451	0.000	0.000	0.000	1.000	1.000
S CFO	0.034	0.032	0.007	0.017	0.025	0.040	0.158
PERS	0.212	0.347	−0.476	−0.031	0.142	0.411	1.195
PRED	0.734	0.091	0.615	0.667	0.693	0.832	0.901

(Continues)

TABLE 1 (Continued)

Panel C: Real earnings manipulation by GUIDE								
	GUIDE = 0			GUIDE = 1			Mean Diff.	*t*-Test
	Mean	Median	S.D.	Mean	Median	S.D.	(0)–(1)	*p* Value
REM	8.287	5.951	7.998	8.295	5.997	7.764	−0.008	0.923
AB_PC	3.534	2.010	6.066	3.035	1.611	5.654	0.499***	0.000
AB_DE	4.668	3.771	4.891	5.237	4.627	4.559	−0.568***	0.000
Panel D: Real earnings manipulation by SHOCK								
	SHOCK = 0			SHOCK = 1			Mean Diff.	*t*-Test
	Mean	Median	S.D.	Mean	Median	S.D.	(0)–(1)	*p* Value
REM	8.361	6.044	7.990	7.658	5.216	7.520	0.703***	0.000
AB_PC	3.465	1.948	6.023	3.033	1.648	5.563	0.433***	0.000
AB_DE	4.823	4.029	4.854	4.573	3.506	4.541	0.250***	0.000

Notes: The sample consists of 56,295 firm-quarter observations for the period 2003–2017. Dependent variables are multiplied by 100, their summary values represent the percentage of total assets. Continuous variables are winsorized at the 1 and 99% levels. GUIDE is an indicator variable that takes value 1 if the firm issues guidance during quarter *t* and zero otherwise. SHOCK is an indicator variable that takes value 1 if the firm suffers an exogenous shock to analyst coverage during quarter t and zero otherwise. AB_PC measures abnormal levels of production costs as the residuals from: $\frac{PC_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t}}{A_{i,t-4}} + \alpha_7 \frac{\Delta_4 S_{i,t}}{A_{i,t-4}} + \alpha_8 \frac{\Delta_4 S_{i,t-4}}{A_{i,t-4}} + \varepsilon_{i,t}$.
AB_DE measures abnormal discretionary expenditures as the residuals (multiplied by minus one) from: $\frac{DE_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t-4}}{A_{i,t-4}} + \varepsilon_{i,t}$.
REM is an aggregate measure of real earnings management defined as the sum of AB_PC and AB_DE, it captures the combined effect of real activities manipulation by means of overproduction, sales manipulation and cuts in discretionary expenses. See Appendix 1 for variables definitions. Tests of the difference in means are based on t test. ***, ** and * indicate significance at the 1, 5 and 10% levels.

The evidence in Table 1, panel C, indicates that, compared with nonguiding firm-quarters, guiding firms exhibit similar values in our measure of aggregate REM. The evidence on the individual measures is mixed. We find lower average values of abnormal production costs (AB_PC) and higher average values of abnormal discretionary expenditures (AB_DE). This is consistent with our prior argument that simply considering whether a firm issues guidance is unlikely to capture its managers' incentives for real earnings management. It is also consistent with the mixed findings of the prior literature (Cheng et al., 2007, Houston et al., 2010). Table 1, panel D, reveals that, compared with nonshocked firms, those suffering an exogenous shock to analyst coverage exhibit significantly lower mean values of REM and its separate components (AB_PC and AB_DE).

4.1 | Validation of informative versus strategic guidance

We provide validation of our identification strategy. First, in Table 2, we provide descriptive evidence on the differences between guidance characteristics of forecasts issued in shock quarters and other guidance. Guidance issued as a result of the shock (in "Shock Quarters") is more precise: it is more likely to be a point forecast (FORM = 1) than a range forecast, and when it is a range, the width of this range forecast is likely to be smaller (WIDTH). Shock guidance is also likely to be more accurate (ACCURACY), and issued relatively later than other guidance, as measured by how close (in days) to the end of the quarter management forecasts are issued (HORIZON). While our identification strategy is at the quarter-level, and therefore, does not produce a specific date for the shock, this evidence on HORIZON

TABLE 2 Characteristics of guidance in shock quarters versus other guidance

	Other guidance			Guidance in shock quarters			Mean Diff.	*t*-Test
	Mean	Median	S.D.	Mean	Median	S.D.	(0)–(1)	*p* Value
FORM	0.154	0.000	0.361	0.175	0.000	0.380	–0.021*	0.085
WIDTH	0.324	0.148	0.590	0.278	0.136	0.489	0.046**	0.011
ACCURACY	0.338	0.113	0.684	0.297	0.110	0.607	0.041**	0.043
HORIZON	–59.554	–62.000	12.482	–57.634	–62.000	15.122	–1.919***	0.000

Note: The sample consists of 9497 quarterly management forecasts over the period 2003–2017. Some observations are lost due to data requirements to calculate guidance characteristics. FORM is an indicator variable that takes value one for point forecasts and zero otherwise, WIDTH is the absolute value of the difference between the upper and lower end of the range scaled by last quarter close stock price, ACCURACY is the absolute value of the difference between management forecast (mid-point for range forecasts) and actual earnings scaled by actual earnings, HORIZON is the difference between management forecast date and quarter end date. Tests of the difference in means are based on t test. ***, ** and * indicate significance at the 1, 5 and 10% levels.

is suggestive of these forecasts being made later and thus, plausibly in reaction to the loss of analyst coverage. This is evidence that guidance issued in the quarter of the shock differs from other guidance in the expected direction.[20]

Next, we consider the relative forecast accuracy (RFA) of guidance surrounding forecast date. Management forecasts are useful to analysts when they bring initial analysts' expectations closer to actual earnings (Williams, 1996, Ajinkya and Gift, 1984). RFA is measured as follows:

$$RFA = \frac{|Consensus - Actual| - |Guidance - Actual|}{|Actual|} \tag{7}$$

Positive (negative) values of RFA indicate that management's guidance is closer (farther) to actual earnings than analysts' expectations. In other words, positive and greater values of RFA indicate that analysts' expectations are overly optimistic or overly pessimistic compared with management's guidance; when analysts' expectations shift towards management's guidance RFA tends to zero, on the extreme case in which analysts' expectations are equal to management's guidance, RFA equals zero; negative and smaller values of RFA indicate that analysts' expectations are more accurate than management's guidance.[21] With the benefit of hindsight, we can calculate RFA relative to the day of management guidance to validate our approach. Given the values of management guidance and actual earnings, any change in RFA reflects changes in analysts' expectations, and this can give us an idea if analysts would have been better off by following guidance or not.[22]

Figure 1 presents mean RFA for the [−7,7] days window relative to the guidance date (i.e., day 0) by type of forecast. RFA for guidance in shock quarters is positive and greater than that of other management forecasts prior to the date of guidance.[23] For day 0 onwards there is almost no difference in average RFA by type of guidance. The pattern

[20] A potential concern, given this descriptive evidence, is that guidance issued after the shock are more precise and accurate because they are issued later in the quarter, when firm's earnings may be easier to forecast. In untabulated analysis we split guidance on Horizon quintiles, and find that guidance issued later in the quarter are less accurate and have a larger range width. This is the opposite pattern to that observed in Table 2.

[21] Consider, as an example, an actual of \$0.1, and three different analyst forecasts. Analyst A forecasts an EPS of \$0.09, analyst B forecasts an EPS of \$0.15, and analyst C forecasts and EPS of \$0.99. Finally, there is a management forecast (i.e., guidance) of \$0.095. In this example analyst A is underestimating the future EPS by \$0.01, analyst B is overestimating the future EPS by \$0.05, analyst C is underestimating the future EPS by \$0.001, and finally the management forecast is underestimating the future EPS by \$0.005. The closest forecast to the actual is the one from analyst C, followed by the management forecast, next is the one by analyst A, and finally the forecast from analyst B is the one that is farthest from the actual EPS. In terms of the relative forecast accuracy measure we have: $RFA_B = 0.45 > RFA_A = 0.05 > RFA_C = -0.04$.

[22] Recent empirical evidence indicates that reputable analysts trade-off forecast accuracy for informativeness by relying less on management forecasts, suggesting that better analysts may see through strategic guidance (Chen et al. 2022).

[23] For day −7 the difference in average RFA by type of guidance is statistically significant at the 10% level (one-side test), and for days −6 to −1 the difference in average RFA is statistically significant at the 1% level (two-side test).

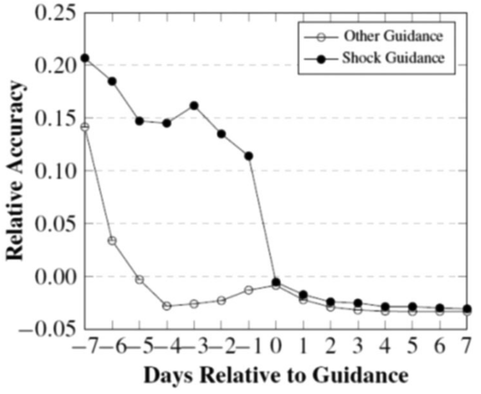

FIGURE 1 Relative forecast accuracy of guidance in shock quarters versus other guidance

in Figure 1 indicates that for shock quarter forecasts, on average, prevailing analysts' expectations before guidance were "unrealistic" and less accurate than management forecasts, after guidance analysts' expectations move closer to management forecasts and therefore closer to actual earnings. For other management forecasts, on average, prevailing analyst expectations before guidance were more accurate than management forecasts since day −5, and remain the same after guidance. The patterns presented in Figure 1 suggest that, on average, analysts would have been better off following management forecasts issued in shock quarters and ignoring the other guidance.

We provide further validation to our identification strategy in Online Appendix B. We find that relative to other guidance, guidance issued in shock quarters: (i) is associated with greater liquidity (proxied, following Balakrishnan et al. (2014), by the Amihud (2002) illiquidity measure (AIM) and bid-ask spread (BAS) in quarter t+1), (ii) convey more new information to the market (as measured using Ball and Shivakumar (2008) approach) at forecasts date; and (iii) exhibit greater future earnings response coefficients (following the approach of Choi et al. (2010)). We also find that guidance issued in shock quarters is not associated with target beating behavior. See Online Appendix B for details on these validation tests.

4.2 | Main results

Table 3, column 1, reports regression results of a naïve OLS model, without considering endogeneity or differences in guidance. β_1 is negative but not significantly different from zero. Column 2 presents regression results of estimating model (1), without including control variables. We find β_1 turns to positive, but still is not statistically significant. β_2 is positive consistent with the shock to analyst coverage worsening the information environment. In line with our main prediction, we find β_3 is negative and statistically significant, indicating that guidance made in response to an exogenous decrease in analyst coverage is negatively associated with income increasing real earnings manipulation. Further, $\beta_2+\beta_3$ is also negative and statistically significant (untabulated coefficient equals −0.313***, se = 0.100), which indicates that guidance firms exhibit lower REM than other firms. Column 3 shows that our main results hold after including control variables in the estimation of model (1), β_3 and $\beta_2+\beta_3$ (untabulated coefficient equals −0.274***, se = 0.099) remain negative and statistically significant.[24,25]

[24] Model (1) is estimated clustering standard errors at the firm level, but our results are robust to double-clustering at the firm and quarter level.

[25] Our results are not explained by accruals earnings management (see Call et al. (2014)). If managers trade-off the costs and benefits of accruals versus real manipulation, as indicated by Zang (2012), firms issuing informative guidance might engage in less real earnings management but in more accruals manipulation, relative to those issuing strategic guidance. We reestimate model (1) with AB_ACC as the dependent variable and controlling for the estimated residuals from our main model. We find no evidence of greater accruals manipulation ($\beta_3 = -0.403$, se = 0.370 and $\beta_2+\beta_3 = -0.065$, se = 0.323).

TABLE 3 Real activities manipulations and quarterly earnings guidance

Dependent variable: REM_t	(1)	(2)	(3)
$GUIDE_t$	-0.044	0.025	0.025
	(0.081)	(0.100)	(0.081)
$SHOCK_t$	–	0.175**	0.256***
	–	(0.084)	(0.076)
$GUIDE \times SHOCK_t$	–	−0.488***	−0.530***
	–	(0.129)	(0.117)
$OTHER\_DEC_t$	–	−0.062	−0.073
	–	(0.049)	(0.046)
PAST REM	0.302***	–	0.302***
	(0.011)	–	(0.011)
BLOAT	−0.373	–	−0.373
	(0.229)	–	(0.229)
AB_ACC_{t-4}	0.414*	–	0.417*
	(0.238)	–	(0.238)
AF_{t-4}	−0.025	–	−0.018
	(0.063)	–	(0.063)
$INST_{t-4}$	−0.450***	–	−0.443**
	(0.173)	–	(0.174)
$SIZE_{t-4}$	−0.016	–	−0.016
	(0.044)	–	(0.044)
LEV_{t-4}	0.677***	–	0.679***
	(0.261)	–	(0.261)
BTM_{t-4}	0.057	–	0.057
	(0.040)	–	(0.040)
$OPCYCLE_{t-4}$	−0.000	–	−0.000
	(0.000)	–	(0.000)
FAI_{t-4}	0.577	–	0.578
	(0.404)	–	(0.404)
$BACKLOG_{t-4}$	0.030	–	0.030
	(0.034)	–	(0.034)
ROA_{t-4}	−3.916***	–	−3.910***
	(1.042)	–	(1.042)
$LOSS_{t-4}$	−0.079	–	−0.080
	(0.078)	–	(0.078)
S_CFO_{t-4}	7.688***	–	7.690***
	(1.972)	–	(1.973)
$PERS_{t-4}$	0.221**	–	0.223**
	(0.095)	–	(0.095)

(Continues)

TABLE 3 (Continued)

Dependent variable: REM_t	(1)	(2)	(3)
$PRED_{t-4}$	1.523	–	1.516
	(1.744)	–	(1.745)
Within R^2	0.168	0.078	0.169

Note: The estimated model is: $REM_{i,t} = \alpha + \beta_1 GUIDE_{i,t} + \beta_2 SHOCK_{i,t} + \beta_3 GUIDE_{i,t} \times SHOCK_{i,t} + CONTROLS + QuarterFE + IndustryFE + \varepsilon_{i,t}$.See Appendix 1 for variables definitions. The main sample consists of 56,295 firm-quarter observations for the period 2003–2017. Continuous variables are winsorized at the 1 and 99% levels. ***, ** and * indicate significance at the 1, 5 and 10% levels. The intercept, quarter and industry fixed-effects and regressors from equations (2) and (3) (i.e., first-step regressors) are included in the regressions following Chen et al. (2018); for parsimony, the estimated coefficients on these variables are not tabulated. Robust standard errors clustered at the firm level are in parentheses.

Overall, these findings suggest that earnings guidance does not create short-termism, as measured by REM actions. These results suggest that, when guidance is associated with REM, it is more likely that guidance is one more tool within an overall managerial strategy to meet or beat earnings targets, where such incentives exist, regardless of guidance. Thus, our results shed new light into the effects of guidance on short-termism (i.e., managerial myopia). The negative and statistically significant estimated coefficient β_3 (β_2+β_3) indicate that guidance is associated with lower levels of real earnings management, supporting the literature's implications on the benefits of providing informative guidance (Ajinkya and Gift, 1984, Healy and Palepu, 2001, Houston et al., 2010, Chen et al., 2011, Call et al., 2014). In turn, the positive (but mostly insignificant) β_3 may suggest that in endogenous settings, guidance proxies for other firm characteristics positively associated with real earnings management and myopic behavior (Stein, 1989, Graham et al., 2005, Cheng et al., 2007, Gigler et al., 2014, Wagenhofer, 2014, Brochet et al., 2015, Edmans et al., 2016).[26]

4.2.1 | Robustness checks

Following Atanasov and Black (2016) we perform several robustness checks to enhance the credibility of our shock-based design results. First, we combine our shock-based design with a propensity-score matching approach. We estimate a logit regression where the dependent variable is $SHOCK_{i,t}$ (i.e., matching on differences in the treatment) and match firms on size, performance, leverage, book-to-market, analyst coverage and sales growth in the quarter before the shock. We also require an observation to be in the same industry-quarter as the treated nearest-neighbor to be included in the control sample. The results from this analysis remain similar in magnitude and significance to the main results ($\beta_3 = -0.506$***, se = 0.152 and β_2+$\beta_3 = -0.356$**, se = 0.142).[27] Second, we test the shock strength by regressing $GUIDE_{i,t}$ (i.e., the forced variable) on $SHOCK_{i,t}$ and covariates, and also consider the robustness of our main results to defining SHOCK using alternative thresholds. We find that shocked firms are 18.68% more likely to issue guidance relative to nonshocked firms. Moreover, our main results get stronger, both in magnitude and significance, as the severity of the shock increases (i.e., when we use larger threshold of exogenous decrease in coverage to identify

[26] This prior literature includes analytical work, as well as literature reviews, and surveys with CEOs/CFOs making its inferences not directly replicable in our setting. In addition, while generally addressing the question of whether managerial forecasting promotes myopic behavior, some of the prior empirical archival work uses alternative methods and proxies, and is therefore, not directly comparable. For example, Brochet et al. (2015, p. 1123) focus on conference calls and develop a proxy for "corporate disclosure horizon by creating a dictionary of short and long-term oriented keywords." In Online Appendix A, we detail also how patterns of entry and exit in the period surrounding Reg. FD may influence sampling (see Figures 1 and 2, and Table 1 in Online Appendix A). We find that firms that start guidance around Reg. FD are distinct from all other guiding firms, in terms of outcome variables commonly used in prior research, explaining, at least partly, its mixed findings (see Tables 2, 3 and 4 in Online Appendix A).

[27] Concerns exist in recent work (e.g., King and Nielsen (2019)) that propensity-score matching can produce biased results when there is weak common support across covariates between treated and control firms. We therefore follow Hainmueller (2012) and use entropy balancing to confirm our findings. Specifically, we reweight the data from the control sample to match the first three moments of the distribution of each covariate in model (1) computed from the sample of the treated observations. In conducting this entropy balancing, we ensure that the weights used are not extreme. Our results are robust to this alternative specification.

shocked firms). Observing stronger results when the shock is stronger makes it less likely that an unobserved variable is driving our results. Third, we run a placebo test. We estimate model (1) using one thousand different realizations of a random generated shock replicating the proportion of shocked firms in our sample. This placebo shock will most likely miss classify guidance and attenuate the magnitude of the estimated coefficients. As expected, estimated coefficients β_2 and β_3 are not statistically significant. Details on these three tests are presented in Online Appendix C.

Fourth, we estimate our main model (1) including four leads/lags of SHOCK to check whether preshock trends are parallel. Consistent with the parallel-trends assumption results in Table 4, column 1, show that the estimated coefficients of the four leads are statistically insignificant. Then, we further consider whether our results survive to the inclusion of unit-specific time trends. Table 4, column 2, shows that our main results are robust to this specification.[28] Our main model includes time-varying covariates, which can potentially reduce the importance of nonparallel trends. However, if the covariates are affected by the shock this can bias the results as well (Atanasov and Black, 2016). We run a lead-and-lags model on each individual covariate included in our main model (see Online Appendix C), to identify covariates affected by our shock (i.e., "suspect" covariates), and report the results of the previous analysis excluding "suspect" covariates. This analysis suggest that BLOAT, AF, INST, SIZE, ROA and LOSS may be affected by the shock. Results in Table 4, column 3, suggest that bias from including affected covariates is small.

4.2.2 | Stacked regression approach

Recent methodological studies raised concerns with the estimation of staggered difference-indifferences (DiD) when treatment effects are heterogeneous and the timing of treatment varies across units because one can potentially have "bad group comparisons" (i.e., later treated vs. earlier treated) (Barrios, 2021, Callaway and Sant'Anna, 2021, Baker et al., 2022). When treatment effects are heterogeneous these comparisons are problematic because one would be using as controls observations that were already treated, violating the parallel-trends assumption. In other words, after treatment the outcome trend for the "early treated" units will not be parallel with the outcome trend for the "later treated" units. Therefore, when the "later treated" units are treated, one cannot compare them with the "earlier treated" units (posttreatment) (Baker et al., 2022).

Our shock-based design is not exactly the same as a "typical" staggered treatment shock (e.g., regulatory change) in the sense that the treatment turns "on" and "off." In other words, a firm may be treated in one quarter but not in the following quarters, whereas the concerns in Baker et al. (2022) mostly refer to cases where once the units get treated they remain treated over the entire sample period. In addition, the effect of the shock seems to be transitory and fade out after one fiscal quarter (see Table 4). Moreover, 76.74% of the units in our sample are never treated. Baker et al. (2022) argues that the above mentioned bias is more likely in settings where there is a lower percentage of "never-treated" units in the control sample and the expected long-run effects of treatment are larger. Therefore, we do not expect this to be a severe problem in our setting. Nonetheless, we follow Baker et al. (2022) suggestions and corroborate that our results are robust to a "stacked" regression approach.[29]

To estimate our main model using the "stacked" regression approach, we stack treatment-specific datasets that include observations from firms that suffer a shock to analyst coverage and issue guidance in response to it in a given

[28] Atanasov and Black (2016) argues that including unit-specific trends usually "kill" effects that appear to be strong without considering them. However, they caution about using them in the main specifications because including unit-specific trends may turn random fluctuations in the dependent variable into an estimated trend. This may explain why when we include unit-specific trends our estimated treatment coefficient (i.e., GUIDE × SHOCK) becomes larger and the second lead coefficient becomes marginally significant.

[29] In a nutshell, the "stacked" design recommended in Baker et al. (2022) consist in creating "clean" shock-specific 2×2 datasets, that include the outcome and control variables for the treated cohort, and observations that can be regarded as "clean" controls within the treatment window (e.g., not-yet treated or never-treated firms). One also needs to create a new variable that identifies each "stacked" dataset (e.g., StackID). The shock-specific datasets are then "stacked" together and the standard two-way fixed effects (TWFE) DiD regressions can be estimated on the "stacked" dataset. When estimating the TWFE DiD regression on the stacked data, time- and unit- fixed effects needs to be interacted with the "stacked" dataset identifying variable. The last treated cohort needs to be dropped because it is not used to identify the average treatment effect on the treated (i.e., there are no "clean" controls for this group).

TABLE 4 Parallel trends checks

Dependent variable: REM_t	(1) Main model w/ leads & lags	(2) Including unit trends	(3) Removing affected covariates
$GUIDE_t$	0.073	0.132	0.066
	(0.095)	(0.099)	(0.095)
$SHOCK_t$	0.255***	0.257***	0.257***
	(0.084)	(0.091)	(0.084)
$GUIDE_t \times SHOCK_t$	−0.429***	−0.475***	−0.422***
	(0.126)	(0.140)	(0.126)
Pretrends (Leads)			
$GUIDE_t \times SHOCK_{t+1}$	−0.071	−0.104	−0.033
	(0.132)	(0.146)	(0.133)
$GUIDE_t \times SHOCK_{t+2}$	−0.184	−0.240*	−0.153
	(0.140)	(0.146)	(0.140)
$GUIDE_t \times SHOCK_{t+3}$	0.101	0.111	0.125
	(0.144)	(0.145)	(0.144)
$GUIDE_t \times SHOCK_{t+4}$	−0.182	−0.093	−0.160
	(0.145)	(0.162)	(0.146)
Posttrends (Lags)			
$GUIDE_t \times SHOCK_{t-1}$	−0.243*	−0.288*	−0.212
	(0.141)	(0.162)	(0.141)
$GUIDE_t \times SHOCK_{t-2}$	0.088	0.035	0.116
	(0.136)	(0.150)	(0.136)
$GUIDE_t \times SHOCK_{t-3}$	0.146	0.150	0.174
	(0.147)	(0.162)	(0.147)
$GUIDE_t \times SHOCK_{t-4}$	−0.182	−0.082	−0.147
	(0.136)	(0.150)	(0.137)
Observations	46,589	46,285	46,589
Fixed effects	Quarter and Industry	Quarter ×Firm	Quarter and Industry
Within R^2	0.140	0.082	0.140

Note: The estimated model is: $REM_{i,t} = \alpha + \beta_1 GUIDE_{i,t} + \beta_2 SHOCK_{i,t} + \beta_3 GUIDE_{i,t} \times SHOCK_{i,t} + CONTROLS + QuarterFE + IndustryFE + \varepsilon_{i,t}$.See Appendix 1 for variables definitions. We incorporate four leads and lags for the variables SHOCK, GUIDE and GUIDE × SHOCK to the main model. Following Atanasov and Black (2016) suggestions on how to assess whether preshock trends are parallel; column 1 shows our main model including four leads/lags of SHOCK, GUIDE and GUIDE × SHOCK; column 2 further incorporates unit time trends by having quarter × firm fixed-effects; column 3 shows the results of estimating the main model including four leads/lags of SHOCK, GUIDE and GUIDE × SHOCK but excluding the covariates that seems to be affected by SHOCK (i.e., BLOAT, AF, INST, SIZE, ROA and LOSS). The main sample consists of 56,295 firm-quarter observations for the period 2003–2017. Some observations are lost due to the inclusion of lead/lags for SHOCK, GUIDE and GUIDE × SHOCK variable. Continuous variables are winsorized at the 1 and 99% levels. ***, ** and * indicate significance at the 1, 5 and 10% levels. The intercept, fixed-effects, control variables and lead/lags for the variables SHOCK, GUIDE are included in the regressions; for parsimony, the coefficients on these variables are not tabulated. Robust standard errors clustered at the firm level are in parentheses.

quarter (i.e., treated) and all other firm-quarter observations that are not-yet or never-treated (i.e., effective controls). We keep only firm-quarter observations within four quarters of the given treatment quarter (i.e., four quarters before and four quarters after) and estimate our main model regressions with dataset-specific time- and firm-fixed effects using the stacked datasets.[30] We drop the first and last fourth treatment cohorts to ensure sufficient observations before and after treatment in order to have enough "effective" controls and to be able to tests the parallel trends assumption.[31] Following Baker et al. (2022) recommendations we report the results for the "stacked" regression approach with and without time-varying covariates, and also including four lead-and-lags of GUIDE × SHOCK to check whether the parallel trends assumption holds. As shown in Table 5, "stacked" regression aggregate effect estimates are similar in sign and magnitude to our main results, and statistically significant at the 1% level. Moreover, the results do not depend on the inclusion of controls, and the lead-and-lags model suggests there are no anticipation effects. These results indicate that biases caused by heterogeneous time-varying treatment effects are of little concern.

4.2.3 | Additional robustness checks

We run a battery of additional robustness checks, for parsimony, we only discuss the results here and leave the details for Online Appendix C.

First, guiding (shocked) and nonguiding (nonshocked) firms may differ in unobservable characteristics and this could influence our results. To mitigate this concern, we estimate model (1) using alternative control samples: (i) including only guiding firms. Then, the nonguidance quarters of guiding firms serve as our control sample, (ii) including only shocked firms (i.e., those that suffer at least one shock in our sample period) and (iii) excluding serially shocked firms (i.e., those in the top quintile of the number of shocks distribution).[32] Our results are robust to estimating model (1) using these alternative control samples.

Second, we estimate model (1) using alternative approaches to measure real earnings management. Systematic deviations from industry-year normal levels of production costs and discretionary expenditure may reflect decisions made by the firm to differentiate from industry peers (Dechow et al., 2010, Kothari et al., 2016, Owens et al., 2017). Also, the linear relationship assumed between production costs and discretionary expenditures as well as sales and change in sales in our equations (2) and (3) may not hold (Collins et al., 2017). These issues may lead to excessive type-I and type-II errors. To mitigate these concerns, we use two different approaches: (i) following Owens et al. (2017), we control for firm idiosyncratic shocks to firm underlying economics. Idiosyncratic shocks are proxied by the firm-specific stock-return variation of each firm over the past 2 years. (ii) We follow Collins et al. (2017) and include quintile dummy variables for return on assets, sales growth and market-to-book. The purpose of doing this is twofold. First, it captures performance and growth effects on normal levels of production costs and discretionary expenditures. Second, it accounts for potential nonlinearities. Our results are robust to both specifications.

Finally, the results in our main model specification provide inferences on the effect of guidance over REM, conditional on the sample of firm-quarters with positive REM. To shed light on the unconditional effect and potential biases in our estimated coefficients, due to this specific research design choice, we perform the following robustness checks: (i) we estimate model (1) without excluding firm-quarters with income decreasing REM (i.e., full distribution of REM) and (ii) we estimate model (1) for firm-quarters with positive REM, using a truncated regression model (Call et al., 2014), this model address the potential bias introduced when using ordinary least squares regression with truncated data (Heckman, 1979). Our results are robust to both specifications.

[30] We thank Charles C.Y. Wang for sharing the Stata code for implementing the "stacked regression" methodology.

[31] We obtain similar results in terms of signs, magnitudes and statistical significance if we keep the first four treatment cohorts and drop the last four (or only the last) treatment cohorts.

[32] The average firm in our sample suffers an exogenous shock to analyst coverage in 5.19 over the 60 quarters that comprise our sample period. Excluding serially shocked firms, this average goes down to 2.44 quarters.

TABLE 5 Stacked regression—treated versus not-yet treated versus never treated

	(1)	(2)	(3)	(4)
$GUIDE_t$	0.140***	0.122***	0.139***	0.121***
	(0.047)	(0.045)	(0.047)	(0.045)
$SHOCK_t$	0.147***	0.174***	0.148***	0.174***
	(0.032)	(0.032)	(0.032)	(0.032)
$GUIDE_t \times SHOCK_t$	−0.445***	−0.412***	−0.393***	−0.361***
	(0.111)	(0.108)	(0.126)	(0.123)
Pretrends (Leads)				
$GUIDE \times SHOCK_{t+1}$			−0.373	−0.274
			(0.421)	(0.399)
$GUIDE \times SHOCK_{t+2}$			−0.067	0.078
			(0.434)	(0.415)
$GUIDE \times SHOCK_{t+3}$			0.120	0.255
			(0.407)	(0.383)
$GUIDE \times SHOCK_{t+4}$			0.010	0.106
			(0.417)	(0.397)
Posttrends (Lags)				
$GUIDE \times SHOCK_{t-1}$			−0.469	−0.332
			(0.413)	(0.390)
$GUIDE \times SHOCK_{t-2}$			−0.303	−0.216
			(0.407)	(0.388)
$GUIDE \times SHOCK_{t-3}$			−0.372	−0.303
			(0.401)	(0.384)
$GUIDE \times SHOCK_{t-4}$			0.126	0.196
			(0.345)	(0.346)
Observations	317,201	317,201	317,201	317,201
Controls	No	Yes	No	Yes
Fixed effects	Quarter × stack and firm × stack			
Within R^2	9.63e−05	0.0196	8.91e−05	0.0196

Note: The estimated model is: $REM_{i,t} = \alpha + \beta_1 GUIDE_{i,t} + \beta_2 SHOCK_{i,t} + \beta_3 GUIDE_{i,t} \times SHOCK_{i,t} + CONTROLS + QuarterFE + IndustryFE + \varepsilon_{i,t}$. See Appendix 1 for variables definitions. Columns 3 and 4 incorporate four leads and lags of GUIDE × SHOCK to the main model. The main sample consists of 56,295 firm-quarter observations for the period 2003–2017. Continuous variables are winsorized at the 1 and 99% levels. ***, ** and * indicate significance at the 1, 5 and 10% levels. The intercept and control variables are included in the regressions; for parsimony, the coefficients on these variables are not tabulated. Robust standard errors clustered at the firm level are in parentheses.

5 | ADDITIONAL ANALYSES

In this section, we explore the role of frequent guidance in our tests, and examine a number of contexts where we expect the effects of quarterly guidance on real earnings management to vary.

5.1 | Guidance frequency

A potential concern is that firms may issue guidance in *all* quarters, irrespective of the shock. Our sample firms are relatively frequent guiders, by design, but it is not uncommon for them to miss some quarterly guidance.[33] Still, to better understand the role of relative forecast regularity in our results, we repeat our main tests trying to ensure that they are not unduly affected by any previous patterns in earnings guidance. In Table 6, column 1, we drop from the sample those observations where firms suffer a shock to analyst coverage but the firm had issued guidance in the previous two quarters because these firms are less likely to be treated.[34] Table 6, column 2, shows our main results after including past guidance (PAST_GUIDE) as an additional control variable when estimating model (1), where PAST_GUIDE is a dummy variable that takes value one if the firm issue guidance in at least one of the previous four quarters and zero otherwise.[35] In column 3, we remove firms in the top quintile of frequency, where frequency is defined as the proportion of quarters in which a firm issues a forecast over the 60 quarters that comprise our sample period. Finally, for completeness, in column 4, we remove firms in the bottom quintile of frequency. Our results hold for all these samples alleviating concerns that frequency drives our findings. We further examine whether occasional guiders are more likely to manipulate real earnings, compared with highly frequent guiders. Stocken (2000) argues that, in a repeated cheap-talk game, financial reports are sufficient to evaluate voluntary disclosure credibility. Following this argument, quarterly earnings guidance of firms that provide forecasts more frequently are less likely to be strategic, because management reputation can be damaged if the markets detect misleading forecasts (Rogers and Stocken, 2005). To test this prediction, we estimate model (1), splitting GUIDE between occasional guiders ($GUIDE\_OCC_t$) and frequent guiders ($GUIDE\_FREQ_t$).[36] In untabulated results, we find the coefficient on $GUIDE\_OCC_t$ to be positive but not significant (0.116, se = 0.111), while the coefficient on $GUIDE\_FREQ_t$ is negative but not significant (–0.044, se = 0.127). Further, the estimated coefficients on $GUIDE\_SHOCK\_OCC_t$ (–0.493, se = 0.187) and $GUIDE\_SHOCK\_FREQ_t$ (–0.513, se = 0.137) are negative and significant, but not significantly different from each other.[37] Consequently, we do not find evidence supporting the prediction that occasional guiders are more likely to manipulate real earnings relative to frequent guiders.

5.2 | Target beating incentives

Following Bushee (1998), we split our sample in firm-quarters with and without small earnings decreases. Our "Small Earnings Decrease" sample includes those firm-quarters where there is a decrease in pretax, pre-R&D and pre-SG&A earnings, and the earnings decrease is smaller than previous quarter R&D plus SG&A expenses. Firms in this group have strong myopic incentives because earnings decreases could be avoided by cutting R&D and SG&A expenses (Bushee, 1998, Chen et al., 2015). Prior evidence indicates that such firms manipulate earnings upwards (Baber et al., 1991, Burgstahler and Dichev, 1997), therefore for this group of firms the shock to analyst coverage would potentially have a weaker effect. The results from this analysis are reported in Table 6, columns 5 and 6. We find that for those firms in the "Small Earnings Decrease" sample there is a greater correlation between guidance and REM as suggested

[33] In our sample, for a firm that has issued forecasts in the last eight quarters of data, the probability that it misses at least one quarterly forecasts within the next four quarters is 16.9%. This percentage goes up to 30.4% if we consider the following eight quarters. For additional context, our sample spans 60 quarters, only one sample firm issues management forecasts in all quarters.

[34] We obtain similar results if we set $GUIDE \times SHOCK_t = 0$ for these observations instead of dropping them from the sample. So that we remove these firm-quarter observations from the "treated," but we keep them in the "control" group.

[35] We obtain similar results if we include a dummy variable that takes value one if the firm issue guidance in all previous four quarters and zero otherwise; including one lag of GUIDE as a control variable; or including four lags of GUIDE as control variables.

[36] We calculate the frequency with which each firm in our sample issue quarterly earnings forecasts (i.e., # of quarters issuing guidance/# of quarters in the sample). $GUIDE\_FREQ_t$ ($GUIDE\_OCC_t$) takes value one if the firm issues guidance in the quarter and is (is not) in the top quintile of the guidance frequency distribution and zero otherwise.

[37] Results from a Wald test on the equality of the estimated coefficients: Prob $> \chi^2 = 0.923$.

TABLE 6 Additional analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Guidance frequency				Small decrease in earnings		Guidance news	
	No guidance before shock	Past guidance control	Lower FREQ $\neq$ 5	Higher FREQ $\neq$ 1	SDE = 1	SDE = 0	Good news	Bad news
GUIDE_t	0.037	0.054	0.106	−0.003	0.095	−0.031	0.058	0.019
	(0.110)	(0.084)	(0.110)	(0.077)	(0.110)	(0.094)	(0.096)	(0.082)
SHOCK_t	0.299***	0.256***	0.278***	0.127	0.213*	0.259**	0.273***	0.288***
	(0.081)	(0.077)	(0.083)	(0.091)	(0.123)	(0.101)	(0.079)	(0.078)
$\text{GUIDE} \times \text{SHOCK}_t$	−0.483**	−0.532***	−0.603***	−0.400***	−0.373*	−0.612***	−0.736***	−0.516***
	(0.224)	(0.117)	(0.181)	(0.126)	(0.203)	(0.158)	(0.167)	(0.126)
Observations	45,584	56,295	45,066	30,155	21,030	35,265	49,453	53,461
Within R^2	0.148	0.169	0.149	0.235	0.195	0.174	0.158	0.163

Note: The estimated model is: $\text{REM}_{i,t} = \alpha + \beta_1 \text{GUIDE}_{i,t} + \beta_2 \text{SHOCK}_{i,t} + \beta_3 \text{GUIDE}_{i,t} \times \text{SHOCK}_{i,t} + \text{CONTROLS} + \text{QuarterFE} + \text{IndustryFE} + \varepsilon_{i,t}$.See Appendix 1 for variables definitions. The main sample consists of 56,295 firm-quarter observations for the period 2003–2017. *Guidance frequency*: Column 1 shows the results excluding those observations where firms suffer a shock to analyst coverage but the firm had issued guidance in the previous two quarters. Column 2 shows the results including past guidance (PAST GUIDE) as an additional control variable when estimating model (1), where PAST GUIDE is a dummy variable that takes value one if the firm issue guidance in at least one of the previous four quarters and zero otherwise. Column 3 shows the results excluding firms in the top quintile of guidance frequency (FREQ). Column 4 shows the results excluding firms in the bottom quintile of guidance frequency. *Small Decrease in Earnings*: Small decrease in earnings sample (SDE = 1) includes those firm-quarters where there is a decrease in pretax, pre-R&D and pre-SG&A earnings, but the earnings decrease is smaller than previous quarter R&D plus SG&A expenses. Column 5 presents the results of estimating model (1) for a sample of firms with a small decrease in earnings (SDE = 1). Column 6 presents the results of estimating model (1) for a sample of firms without a small decrease in earnings (SDE = 0). *Guidance News*: Column 7 presents the results of estimating model (1) excluding "bad news" management forecasts. Column 8 presents the results of estimating model (1) excluding "good news" management forecasts. Where "bad news" ("good news") forecasts are those management forecasts lower (higher) than the most recent analyst earnings consensus at the forecast date. Continuous variables are winsorized at the 1 and 99% levels. ***, ** and * indicate significance at the 1, 5 and 10% levels. The intercept, quarter and industry fixed-effects, control variables and regressors from equations (2) and (3) (i.e., first-step regressors following (Chen et al., 2018)) are included in the regressions; for parsimony, the coefficients on these variables are not tabulated. Robust standard errors clustered at the firm level are in parentheses.

by the positive β_1 compared with a negative β_1 for the non "Small Earnings Decrease" sample, although both coefficients are not statistically different from zero. Consistent with our expectations we find that our results are stronger in magnitude and significance in the non "Small Earnings Decrease" sample.

5.3 | Type of guidance news

Detractors of providing short-term earnings forecasts argue that managers play an "earnings guidance game" and that failure to meet earnings expectations causes drops in stock prices. Research predicts that, in playing this game, companies are likely to walk down expectations (Athanasakou et al., 2009, 2011), so it is easier to meet them at the end of the quarter (Richardson et al., 2004). Following this argument, firms that issue good news earnings guidance (i.e., inflate earnings) are likely to manipulate earnings to a greater extent than firms that issue bad news earnings guidance (i.e., walk-down earnings). Therefore, we expect our results to be stronger for firms issuing good news earnings forecasts. To test this prediction, we estimate model (1) focusing on "good news" (i.e., excluding "bad news") management forecasts first and then focusing on "bad news" (i.e., excluding "good news") management forecasts. Where "bad news" ("good news") forecasts are those forecasts lower (greater) than the most recent analyst earnings consensus at the forecast date. Table 6, columns 7 and 8, presents our findings. In line with our expectations, the coefficient on J3ˆ1 is positive (and larger) when we focus on good news forecasts relative bad news forecasts; however, in both cases, the coefficients are not statistically different from zero. β_3 is negative and significant in both cases, consistent with guidance being associated with lower levels of real earnings management. In line with our expectations the absolute magnitude of β_3 is larger for the sample considering only good news forecasts, although the coefficients are not statistically different from each other. The evidence from this analysis shows that our main result hold for both good news and bad news firms with a shock to analyst coverage.

5.4 | Integral method of interim reporting and settling up effects

Quarterly revenues are recognized on the same basis for the entire fiscal year (Mendenhall and Nichols, 1988, Brown and Pinello, 2007), allowing for similar discretion across quarters. However, in application of the integral method to interim reporting (governed by ASC 270, *Interim Reporting*), certain figures in quarterly reporting, such as inventories, cost of goods sold or income tax expense, are estimated and allocated to interim periods based on forecasts. As the year progresses, estimates are revised and errors in previous quarters incorporated into earnings (e.g., Rangan and Sloan, 1998). This may allow for earnings smoothing in the first three quarters of the year, and also affect last quarter earnings. Collins et al. (1984) discuss this effect as "settling up." In the last quarter, when annual earnings are determined, fourth-quarter earnings are calculated as the difference between the audited annual earnings and the sum of the earnings for the first three quarters.

The integral approach influences the "autoregressive structure of seasonally differenced quarterly earnings" (Rangan and Sloan, 1998), in that some expense allocations for quarters within the same fiscal year are based on a common annual estimate, while allocations for quarters in adjacent fiscal years may be based on quite different bases, generating a stronger pattern of forecast errors in the fourth interim period (Collins et al., 1984), or greater credibility of bad (good) news in the first three quarters (fourth quarter) (Mendenhall and Nichols, 1988). Given also that interim numbers are only subject to a limited review and not a full audit (like the annual earnings), there is substantial potential for earnings management in the first three quarters (Mendenhall and Nichols, 1988, Brown and Pinello, 2007). The literature, however, is split on whether the settling up effect leads to greater discretion in fourth quarter earnings reporting. Managers may need to compensate the settling up effect, leading, in fact, to greater earnings management (or expectation management) in this last quarter. Das and Shroff (2002) conclude that there is evidence of greater earnings management in the last quarter that is not consistent with a mean reversion of the settling up effect. Similarly, Jacob and Jorgensen (2007) find evidence consistent with greater earnings management in the last quarter, albeit Durtschi and Easton (2009) question their methodology.[38]

Our main specification partially captures the effect of the integral method in the measurement of our dependent variable since we include fiscal quarters dummies in both equations (2) and (3) that would capture the average levels of production costs and discretionary expenditures for each fiscal quarter. To further alleviate concerns that our results reflect patterns created by the integral method of interim reporting, in this section, we report several additional analyses.

First, we augment the production costs and discretionary expenditure models to include changes in sales relative to adjacent quarters ($\Delta_1 S_{i,t}$) interacted with a dummy variable (SFYR) equal to one if the quarter belong to the same fiscal year and zero otherwise, as follows:

$$\frac{PC_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t}}{A_{i,t-4}} + \alpha_7 \frac{\Delta_4 S_{i,t}}{A_{i,t-4}} + \alpha_8 \frac{\Delta_4 S_{i,t-4}}{A_{i,t-4}} + \alpha_9 \frac{\Delta_1 S_{i,t}}{A_{i,t-4}} SFYR_{i,t} + \varepsilon_{i,t} \tag{8}$$

$$\frac{DE_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t-4}}{A_{i,t-4}} + \alpha_7 \frac{\Delta_1 S_{i,t}}{A_{i,t-4}} SFYR_{i,t} + \varepsilon_{i,t} \tag{9}$$

This specification potentially better captures the smoothing in early quarters and the settling-up effect of quarter four. Using this alternative measure, we rerun our main analyses, and report them in Table 7, column 1. Our inferences are retained.

Second, our main results hold when we exclude observations from a particular fiscal quarter one at a time (i.e., excluding all observations from the first fiscal quarter and keeping observations from the second, third and fourth fiscal quarters; then excluding all observations from the second fiscal quarter and retaining the rest and so on). Table 7, columns 2–5, reports our findings.

Third, we split our main coefficient of interest GUIDE_SHOCK by fiscal quarter to see whether the overall effect is explained by any particular quarter. Table 7, column 6, reports the findings. Our main results are stronger in magnitude and significance in fiscal quarter three, followed by fiscal quarters four and one, and less so in fiscal quarter two, where the estimated coefficient is still negative but not statistically significant.

Overall, the evidence in Table 7 suggests that while interim reporting may create certain patterns in quarterly reporting, it does not appear to mechanically determine our findings.

6 | CONCLUSION

We study whether quarterly earnings guidance causes managerial short-termism by triggering real earnings management. We exploit a plausibly exogenous shock to firms' information environment to distinguish exogenous from endogenous short-term guidance. We find no evidence that guidance leads to real earnings management. Our main results are stronger for firms that issue good news management forecasts, consistent with the expectations walk-down hypothesis, and for occasional guiders, in line with the idea that frequent guiders build a reputation of issuing informative guidance. In cross-sectional analyses, we do find some evidence that endogenously, guidance may be

[38] 38The univariate evidence in Bartov (1993) examining the timing of income recognition from disposal of long-lived assets and investments, suggests that the sales of long-lived assets (in their sample of 653 firms selling) cluster in the fourth quarter. In turn, the evidence in Perry and Grinaker (1994, 1995) suggests that managers do adjust R&D expenditure and repair and maintenance expenses to meet earnings expectations. Their models are based on annual data (they have no quarterly data analyses), and thus, they cannot conclude on whether their results "may be largely a fourth quarter adjustment, or a continuing process throughout the year as managers monitor the deviation between quarterly results and analysts' expectations." Collectively, this evidence speaks potentially of greater extreme real earnings management actions (certainly, selling assets would be quite visible as a one-off decision) in the fourth quarter, perhaps, to compensate for the effects of interim reporting "settling up."

TABLE 7 Integral method of interim reporting

Dependent variable: REM_t	(1) Adding $\Delta 1$ *St* to equations (2) and (3)	(2) FQ1	(3) Excluding fiscal quarter FQ2	(4) FQ3	(5) FQ4	(6) Main effect by FQ
$GUIDE_t$	0.004	0.017	0.013	0.043	0.010	0.023
	(0.087)	(0.082)	(0.084)	(0.087)	(0.094)	(0.081)
$SHOCK_t$	0.279***	0.208**	0.256***	0.279***	0.244***	0.256***
	(0.081)	(0.085)	(0.087)	(0.094)	(0.088)	(0.077)
$GUIDE \times SHOCK_t$	−0.577***	−0.477***	−0.518***	−0.504***	−0.572***	–
	(0.126)	(0.134)	(0.133)	(0.143)	(0.138)	–
$GUIDE \times SHOCK_t[FQ1 = 1]$	–	–	–	–	–	−0.484**
	–	–	–	–	–	(0.217)
$GUIDE \times SHOCK_t[FQ2 = 1]$	–	–	–	–	–	−0.360*
	–	–	–	–	–	(0.214)
$GUIDE \times SHOCK_t[FQ3 = 1]$	–	–	–	–	–	−0.810***
	–	–	–	–	–	(0.193)
$GUIDE \times SHOCK_t[FQ4 = 1]$	–	–	–	–	–	−0.477**
	–	–	–	–	–	(0.193)
Observations	53,806	42,191	42,355	42,473	41,866	56,295
Within R^2	0.121	0.205	0.126	0.118	0.140	0.137

Note: The estimated model is: $REM_{i,t} = \alpha + \beta_1 GUIDE_{i,t} + \beta_2 SHOCK_{i,t} + \beta_3 GUIDE_{i,t} \times SHOCK_{i,t} + CONTROLS + QuarterFE + IndustryFE + \varepsilon_{i,t}$.See Appendix 1 for variables definitions. The main sample consists of 56,295 firm-quarter observations for the period 2003–2017. Continuous variables are winsorized at the 1 and 99% levels. ***, ** and * indicate significance at the 1, 5 and 10% levels. The intercept, quarter and industry fixed-effects, control variables and regressors from equations (2) and (3) (i.e., first-step regressors following (Chen et al., 2018)) are included in the regressions; for parsimony, the coefficients on these variables are not tabulated. Robust standard errors clustered at the firm level are in parentheses.

associated with real earnings management in some settings. Thus, we interpret our results as indicating that endogenous guidance relates to short-termism, while exogenous guidance does not. This is consistent with the expectation alignment hypothesis of Ajinkya and Gift (1984), where guidance helps reduce information asymmetries and reduces the need of managers to engage in real earnings management to meet earnings targets. Second, our results are consistent with endogenous guidance increasing market pressures to meet earnings targets and leading to higher levels of real earnings management. This comports with survey evidence presented by Graham et al. (2005).

ACKNOWLEDGMENTS

We acknowledge helpful comments and suggestions from Peter F. Pope (the editor), Garen Markarian (conference discussant), an anonymous referee, and participants at the 2022 JBFA Capital Markets Conference. We are also grateful for comments on prior drafts to Juani Aledo, Maria-del-Mar Camacho-Miñano, Mahfuz Chy, Mark Clatworthy, Juan Manuel García Lara, Bing Guo, Jo Horton, Maximilian Müller, Manuel Nuñez, Gaizka Ormazabal, Giulia Redigolo, William Rees, Silvina Rubio, Dan Segal, Cathy Shakespeare, Steve Young and seminar participants at Stockholm School of Economics, the XI and XII International Accounting Research Symposium, XXIV AEFIN Finance Forum, 6th WHU-Otto Beisheim School of Management Doctoral Summer Program in Accounting Research, 2016 British Accounting and Finance Association (BAFA) South Western Area Group Doctoral Colloquium, 2019 BAFA Annual Conference, 2019 Financial Management & Accounting Research Conference and the 2019 EAA

Annual Conference. We acknowledge financial contribution from the Spanish Ministry of Innovation and Science (ECO2016-77579, PID2019-111143GB, TED2021-129861B-I00), and CAM-Fondo Social Europeo (S2015/HUM-3417). Mercado gratefully acknowledges the generous hospitality of Stephen M. Ross School of Business while working on this project.

DATA AVAILABILITY STATEMENT

All data used are available from sources cited in the text.

ORCID

Facundo Mercado https://orcid.org/0000-0002-8894-9768

REFERENCES

Aboody, D., & Kasznik, R. (2000). CEO stock option awards and the timing of corporate voluntary disclosures. *Journal of Accounting and Economics*, *29*(1), 73–100.

Acito, A. A. (2011). *Does quarterly earnings guidance increase or reduce earnings management?* PhD Dissertation University of Iowa.

Ajinkya, B. B., & Gift, M. J. (1984). Corporate managers' earnings forecasts and symmetrical adjustments of market expectations. *Journal of Accounting Research*, *22*(2), 425–444.

Amihud, Y. (2002). Illiquidity and stock returns: cross-section and time-series effects. *Journal of Financial Markets*, *5*(1), 31–56.

Anantharaman, D., & Zhang, Y. (2011). Cover me: Managers' responses to changes in analyst coverage in the post-regulation FD period. *The Accounting Review*, *86*(6), 1851–1885.

Atanasov, V. A., & Black, B. S. (2016). Shock-based causal inference in corporate finance and accounting research. *Critical Finance Review*, *5*(2), 207–304.

Athanasakou, V., Strong, N. C., & Walker, M. (2011). The market reward for achieving analyst earnings expectations: Does managing expectations or earnings matter? *Journal of Business Finance & Accounting*, *38*(1-2), 58–94.

Athanasakou, V. E., Strong, N. C., & Walker, M. (2009). Earnings management or forecast guidance to meet analyst expectations? *Accounting and Business Research*, *39*(1), 3–35.

Baber, W. R., Fairfield, P. M., & Haggard, J. A. (1991). The effect of concern about reported income on discretionary spending decisions: The case of research and development. *The Accounting Review*, *66*(4), 818–829.

Badertscher, B., Phillips, J., Pincus, M., & Rego, S. (2009). Evidence on motivations for downwards earnings management. *Working Paper*.

Baker, A. C., Larcker, D. F., & Wang, C. C. (2022). How much should we trust staggered difference-in-differences estimates? *Journal of Financial Economics*, *144*(2), 370–395.

Balakrishnan, K., Billings, M. B., Kelly, B., & Ljungqvist, A. (2014). Shaping liquidity: On the causal effects of voluntary disclosure. *The Journal of Finance*, *69*(5), 2237–2278.

Ball, R., & Shivakumar, L. (2008). How much new information is there in earnings? *Journal of Accounting Research*, *46*(5), 975–1016.

Barrios, J. M. (2021). Staggeringly problematic: A primer on staggered did for accounting researchers. *Available at SSRN 3794859*.

Barton, J., & Simko, P. J. (2002). The balance sheet as an earnings management constraint. *The Accounting Review*, *77*(s-1), 1–27.

Bartov, E. (1993). The timing of asset sales and earnings manipulation. *The Accounting Review*, *68*(4), 840–855.

Bartov, E., Givoly, D., & Hayn, C. (2002). The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics*, *33*(2), 173–204.

Beaulieu, P., Hayes, L., & Timoshenko, L. M. (2022). Changes in accounting estimates: An update of priors or an earnings management strategy of "last resort"? Journal of Business Finance & Accounting.

Bhojraj, S., Hribar, P., Picconi, M., & McInnis, J. (2009). Making sense of cents: An examination of firms that marginally miss or beat analyst forecasts. *The Journal of Finance*, *64*(5), 2361–2388.

Brochet, F., Loumioti, M., & Serafeim, G. (2015). Speaking of the short-term: Disclosure horizon and managerial myopia. *Review of Accounting Studies*, *20*(3), 1122–1163.

Brown, L. D., & Pinello, A. S. (2007). To what extent does the financial reporting process curb earnings surprise games? *Journal of Accounting Research*, *45*(5), 947–981.

Burgstahler, D., & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, *24*(1), 99–126.

Burgstahler, D., & Eames, M. (2006). Management of earnings and analysts' forecasts to achieve zero and small positive earnings surprises. *Journal of Business Finance & Accounting*, *33*(5-6), 633–652.

Burnett, B. M., Cripe, B. M., Martin, G. W., & McAllister, B. P. (2012). Audit quality and the trade-off between accretive stock repurchases and accruals-based earnings management. *The Accounting Review*, *87*(6), 1861–1884.

Bushee, B. J. (1998). The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review*, *73*(3), 305–333.

Byun, S., & Roland, K. C. (2022). Quarterly earnings thresholds: Making the case for prior quarter earnings. *Journal of Business Finance & Accounting*, *49*(5-6), 690–716.

Call, A. C., Chen, S., Miao, B., & Tong, Y. H. (2014). Short-term earnings guidance and accrual-based earnings management. *Review of Accounting Studies*, *19*(2), 955–987.

Callaway, B., & Sant'Anna, P. H. (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics*, *225*(2), 200–230.

Chen, S., Matsumoto, D., & Rajgopal, S. (2011). Is silence golden? An empirical analysis of firms that stop giving quarterly earnings guidance. *Journal of Accounting and Economics*, *51*(12), 134–150.

Chen, W., Dai, L., & Tan, H. - T. (2022). When does analyst reputation matter? Evidence from analysts' reliance on management guidance. *Journal of Business Finance & Accounting*, *00*, 1–33.

Chen, W., Hribar, P., & Melessa, S. (2018). Incorrect inferences when using residuals as dependent variables. *Journal of Accounting Research*, *56*(3), 751–796.

Chen, X., Cheng, Q., Lo, A. K., & Wang, X. (2015). CEO contractual protection and managerial short-termism. *The Accounting Review*, *90*(5), 1871–1906.

Cheng, M., Subramanyam, K. R., & Zhang, Y. (2007). Earnings guidance and managerial myopia. *Working Paper*.

Choi, J. - H., Myers, L. A., Zang, Y., & Ziebart, D. A. (2010). The roles that forecast surprise and forecast error play in determining management forecast precision. *Accounting Horizons*, *24*(2), 165–188.

Cohen, D., & Lys, T. Z. (2022). Substitution between accrual-based earnings management and real activities manipulation - a commentary and guidance for future research. *Available at SSRN 4042253*.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-sarbanes-oxley periods. *The Accounting Review*, *83*(3), 757–787.

Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, *50*(1), 2–19.

Collins, D. W., Pungaliya, R. S., & Vijh, A. M. (2017). The effects of firm growth and model specification choices on tests of earnings management in quarterly settings. *The Accounting Review*, *92*(2), 69–100.

Collins, W. A., Hopwood, W. S., & McKeown, J. C. (1984). The predictability of interim earnings over alternative quarters. *Journal of Accounting Research*, *22*(2), 467–479.

Das, S., & Shroff, P. K. (2002). Fourth quarter reversals in earnings changes and earnings management. *Available at SSRN 308441*.

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(23), 344–401.

Dechow, P. M., & Sloan, R. G. (1991). Executive incentives and the horizon problem: An empirical investigation. *Journal of Accounting and Economics*, *14*(1), 51–89.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, *70*(2), 193–225.

DeFond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, *17*(1), 145–176.

Degeorge, F., Patel, J., & Zeckhauser, R. (1999). Earnings management to exceed thresholds. *The Journal of Business*, *72*(1), 1–33.

Dichev, I., Graham, J., Harvey, C., & Rajgopal, S. (2013). Earnings quality: Evidence from the field. *Journal of Accounting and Economics*, *56*(2-3), 1–33.

Durtschi, C., & Easton, P. (2009). Earnings management? erroneous inferences based on earnings frequency distributions. *Journal of Accounting Research*, *47*(5), 1249–1281.

Dutta, S., & Gigler, F. (2002). The effect of earnings forecasts on earnings management. *Journal of Accounting Research*, *40*(3), 631–655.

Edmans, A., Heinle, M. S., & Huang, C. (2016). The real costs of financial efficiency when some information is soft. *Review of Finance*, *20*(6), 2151–2182.

Francis, B., Hasan, I., & Li, L. (2016a). Abnormal real operations, real earnings management, and subsequent crashes in stock prices. *Review of Quantitative Finance and Accounting*, *46*(2), 217–260.

Francis, B., Hasan, I., & Li, L. (2016b). Evidence for the existence of downwards real-activity earnings management. *Journal of Accounting, Auditing and Finance*, *31*(2), 212–248.

Frankel, R., & Li, X. (2004). Characteristics of a firm's information environment and the information asymmetry between insiders and outsiders. *Journal of Accounting and Economics*, *37*(2), 229–259.

Gigler, F., Kanodia, C., Sapra, H., & Venugopalan, R. (2014). How frequent financial reporting can cause managerial short-termism: An analysis of the costs and benefits of increasing reporting frequency. *Journal of Accounting Research*, *52*(2), 357–387.

Gilliam, T. A., Heflin, F., & Paterson, J. S. (2015). Evidence that the zero-earnings discontinuity has disappeared. *Journal of Accounting and Economics*, *60*(1), 117–132.

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, *40*(1-3), 3–73.

Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, *27*(3), 855–888.

Gupta, M., Pevzner, M., & Seethamraju, C. (2010). The implications of absorption cost accounting and production decisions for future firm performance and valuation. *Contemporary Accounting Research*, *27*(3), 889–922.

Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political analysis*, *20*(1), 25–46.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, *31*(1), 405–440.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*(1), 153–161.

Hirst, D. E., Koonce, L., & Venkataraman, S. (2008). Management earnings forecasts: A review and framework. *Accounting Horizons*, *22*(3), 315–338.

Hong, H., & Kacperczyk, M. (2010). Competition and bias. *Quarterly Journal of Economics*, *125*(4), 1683–1725.

Hope, O. - K., Li, C., Ma, M. S., & Su, X. (2022). Is silence golden sometimes? Management guidance withdrawals during the covid-19 pandemic. *Forthcoming, Review of Accounting Studies.*

Houston, J. F., Lev, B., & Tucker, J. W. (2010). To guide or not to guide? Causes and consequences of stopping quarterly earnings guidance. *Contemporary Accounting Research*, *27*(1), 143–185.

Hsieh, P., Koller, T., & Rajan, S. R. (2006). The misguided practice of earnings guidance. The McKinsey Quarterly.

Hu, B., Hwang, J. H., & Jiang, C. (2014). The impact of earnings guidance cessation on information asymmetry. *Journal of Business Finance and Accounting*, *41*(1-2), 73–99.

Irani, R. M., & Oesch, D. (2013). Monitoring and corporate disclosure: Evidence from a natural experiment. *Journal of Financial Economics*, *109*(2), 398–418.

Irani, R. M., & Oesch, D. (2016). Analyst coverage and real earnings management: Quasi-experimental evidence. *Journal of Financial and Quantitative Analysis*, *51*(2), 589–627.

Jacob, J., & Jorgensen, B. N. (2007). Earnings management and accounting income aggregation. *Journal of Accounting and Economics*, *43*(2-3), 369–390.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, *29*(2), 193–228.

Kasznik, R. (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research*, *37*(1), 57–81.

Kelly, B. T., & Ljungqvist, A. (2012). Testing asymmetric-information asset pricing models. *Review of Financial Studies*, *25*(5), 1366–1413.

Khurana, I. K., Pereira, R., & Zhang, E. X. (2018). Is real earnings smoothing harmful? Evidence from firm-specific stock price crash risk. *Contemporary Accounting Research*, *35*(1), 558–587.

Kim, Y., & Park, M. S. (2012). Are all management earnings forecasts created equal? Expectations management versus communication. *Review of Accounting Studies*, *17*(4), 807–847.

King, G., & Nielsen, R. (2019). Why propensity scores should not be used for matching. *Political Analysis*, *27*(4), 435–454.

Koch, A. S., Lefanowicz, C. E., & Shane, P. B. (2012). Earnings guidance and earnings management constraints. *Working Paper*.

Kothari, S. P., Mizik, N., & Roychowdhury, S. (2016). Managing for the moment: The role of earnings management via real activities versus accruals in SEO valuation. *The Accounting Review*, *91*(2), 559–586.

Krehmeyer, D., Orsagh, M., & Schacht, K. N. (2006). Breaking the short-term cycle. *CFA Institute.*

Lang, M. H., & Lundholm, R. J. (2000). Voluntary disclosure and equity offerings: Reducing information asymmetry or hyping the stock? *Contemporary Accounting Research*, *17*(4), 623–662.

Lansford, B., Lev, B., & Wu Tucker, J. (2013). Causes and consequences of disaggregating earnings guidance. *Journal of Business Finance & Accounting*, *40*(1-2), 26–54.

Lennox, C. S., & Park, C. W. (2006). The informativeness of earnings and management's issuance of earnings forecasts. *Journal of Accounting and Economics*, *42*(3), 439–458.

Li, E. X., Wasley, C. E., & Zimmerman, J. L. (2011). A unified framework of management earnings forecasts: Voluntary, disclose or abstain, and opportunistic incentives. SSRN Electronic Journal.

Li, E. X., Wasley, C. E., & Zimmerman, J. L. (2012). Should management earnings guidance be pooled? Classifying management earnings guidance into capital market, opportunistic, and disclose or abstain rationales: Implications for research. SSRN Electronic Journal.

Li, E. X., Wasley, C. E., & Zimmerman, J. L. (2016). The disclose or abstain incentive to issue management guidance. *Journal of Law, Finance, and Accounting*, *1*(1), 187–233.
Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *The Accounting Review*, *77*(3), 483–514.
Matsunaga, S. R., & Park, C. W. (2001). The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *The Accounting Review*, *76*(3), 313–332.
Mendenhall, R. R., & Nichols, W. D. (1988). Bad news and differential market reactions to announcements of earlier-quarters versus fourth-quarter earnings. *Journal of Accounting Research*, *26*, 63–86.
Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, *42*(3), 483–510.
Mola, S., Rau, P. R., & Khorana, A. (2013). Is there life after the complete loss of analyst coverage? *The Accounting Review*, *88*(2), 667–705.
Noe, C. F. (1999). Voluntary disclosures and insider transactions. *Journal of Accounting and Economics*, *27*(3), 305–326.
Owens, E. L., Wu, J. S., & Zimmerman, J. (2017). Idiosyncratic shocks to firm underlying economics and abnormal accruals. *The Accounting Review*, *92*(2), 183–219.
Perry, S., & Grinaker, R. (1994). Earnings expectations and discretionary research and development spending. *Accounting Horizons*, *8*(4), 43–51.
Perry, S., & Grinaker, R. (1995). The relationship between earnings goals and expenditures for repairs and maintenance. *Journal of Applied Business Research*, *11*(4), 58–63.
Rana, E. (2008). Cover Me: How can CFO's keep their companies in an analyst's spotlight?. CFO.com.
Rangan, S., & Sloan, R. G. (1998). Implications of the integral approach to quarterly reporting for the post-earnings-announcement drift. *The Accounting Review*, *73*(3), 353–371.
Richardson, S., Teoh, S. H., & Wysocki, P. D. (2004). The walk-down to beatable analyst forecasts: The role of equity issuance and insider trading incentives. *Contemporary Accounting Research*, *21*(4), 885–924.
Rogers, J. L., & Stocken, P. C. (2005). Credibility of management forecasts. *The Accounting Review*, *80*(4), 1233–1260.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*(3), 335–370.
Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons*, *3*, 91–102.
Skinner, D. J., & Sloan, R. G. (2002). Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies*, *7*(2-3), 289–312.
Stein, J. C. (1989). Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *The Quarterly Journal of Economics*, *104*(4), 655–669.
Stocken, P. C. (2000). Credibility of voluntary disclosure. *The RAND Journal of Economics*, *31*(2), 359–374.
U.S. Chamber of Commerce (2007). Commission on the regulation of U.S. capital markets in the 21st century: Report and recommendations.
Wagenhofer, A. (2014). Trading off costs and benefits of frequent financial reporting. *Journal of Accounting Research*, *52*(2), 389–401.
Wang, I. Y. (2007). Private earnings guidance and its implications for disclosure regulation. *The Accounting Review*, *82*(5), 1299–1332.
Williams, P. A. (1996). The relation between a prior earnings forecast by management and analyst response to a current management forecast. *The Accounting Review*, *71*(1), 103–115.
Yu, F. F. (2008). Analyst coverage and earnings management. *Journal of Financial Economics*, *88*(2), 245–271.
Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, *87*(2), 675–703.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: García Osma, B., Guillamón Saorín, E., & Mercado, F. (2023). Quarterly earnings guidance and real earnings management. *Journal of Business Finance & Accounting*, *50*, 1029–1059.
https://doi.org/10.1111/jbfa.12683

APPENDIX 1: VARIABLE DEFINITIONS

Name	Definition
AB_ACC	Discretionary accruals for quarter t from a modified Jones model (Jones, 1991), following Dechow et al. (1995) and Collins et al. (2017) methodology.
AB_DE	Measures abnormal discretionary expenditures as the residuals (multiplied by minus one) from: $\frac{DE_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t-4}}{A_{i,t-4}} + \varepsilon_{i,t}$ where $DE_{i,t}$, discretionary expenditures, are defined as the sum of advertising, R&D and SG&A expenditure in quarter t, A_{t-4} is total assets in quarter t−4, S_t are sales in quarter t. We require at least 15 observations to estimate the model and include fiscal quarter dummies $Q_{1i,t}$ to $Q_{4i,t}$ to capture fiscal quarter effects.
AB_PC	Measures abnormal levels of production costs as the residuals from: $\frac{PC_{i,t}}{A_{i,t-4}} = \alpha_1 \frac{1}{A_{i,t-4}} + \alpha_2 Q_{1i,t} + \alpha_3 Q_{2i,t} + \alpha_4 Q_{3i,t} + \alpha_5 Q_{4i,t} + \alpha_6 \frac{S_{i,t}}{A_{i,t-4}} + \alpha_7 \frac{\Delta_4 S_{i,t}}{A_{i,t-4}} + \alpha_8 \frac{\Delta_4 S_{i,t-4}}{A_{i,t-4}} + \varepsilon_{i,t}$ where $PC_{i,t}$, production costs, are defined as the change in inventory from quarter t−1 to t plus the cost of goods sold in quarter t, A_{t-4} is total assets in quarter t−4, St are sales in quarter t. We require at least 15 observations to estimate the model and include fiscal quarter dummies $Q_{1i,t}$ to $Q_{4i,t}$ to capture fiscal quarter effects. Changes in sales are calculated, relative to the same quarter of the previous year because changes in sales, relative to the adjacent quarter, are dominated by seasonal effects (Collins et al. 2017).
AF	Natural logarithm of one plus the number of analysts (item NUMEST in I/B/E/S Summary file) following the company in quarter t. For companies not covered by I/B/E/S the number of analysts is set equal to zero.
BACKLOG	Order Backlog (COMPUSTAT item obkq) in quarter t sales (COMPUSTAT item saleq) in quarter t. Whenever obkq is missing, it is replaced by zero.
BLOAT	Is the lagged value of net operating asset. Where net operating assets is calculated as shareholders' equity (COMPUSTAT item ceqq) less cash and marketable securities (COMPUSTAT item cheq), plus total debt (COMPUSTAT items dlcq+dlttq) (Barton and Simko, 2002).
BTM	Book to market ratio, book value of equity (COMPUSTAT item ceqq) divided by market value of equity (COMPUSTAT item prccq times COMPUSTAT item cshoq).
FAI	Net PPE (COMPUSTAT item ppentq) in quarter t divided total assets (COMPUSTAT item atq).
EXO_DEC	Exogenous decreases in coverage is the difference between the expected coverage for firm i in quarter t ($EC_{i,t}$) and the number of analysts following firm i after the quarterly earnings announcement of quarter t−1 ($COV_{i,t-1}$), scaled by $COV_{i,t-1}$. Where $EC_{i,t}$ is defined as in Anantharaman and Zhang (2011).
GUIDE	Is an indicator variable that takes value 1 if the firm issues guidance during quarter t and zero otherwise.
INST	Shares held by institutional investors as a percentage of total outstanding shares (Thomson Reuters 13F item instown perc) in quarter t.
LEV	Long-term debt (COMPUSTAT item dlttq) divided by total assets (COMPUSTAT item atq).
LOSS	Indicator variable that takes value 1 if the firm suffers a loss (niq < 0) in quarter t and zero otherwise.
OPCYCLE	Operating cycle measured in days calculated as in quarter t: $[(AR_t + AR_{t-4})/S_t + (INV_t + INV_{t-4})/COGS_t]180$ where AR are account receivables (COMPUSTAT item rectq), INV is total inventories (invtq), S is sales (saleq) and COGS is cost of goods sold (cogsq).
PAST_GUIDE	Is an indicator variable that takes value 1 if the firm issue guidance in at least one quarter during t−1 to t−5 (i.e., prior four quarters) and zero otherwise.

(Continues)

Name	Definition
PERS	Persistence of earnings, measured by coefficient $\alpha 1$ from the following model: $EPS_t = \alpha_0 + \alpha_1 EPS_{t-4} + \varepsilon_t$ where EPS is basic earnings per share excluding extraordinary items (COMPUSTAT item epspxq) for quarter *t*. The model is estimated using a rolling window of 20 quarters with at least 15 nonmissing quarterly EPS.
PRED	Predictability of earnings in quarter *t* is measured by the standard deviation over 20 quarters of the residuals from the above model.
REM	Is an aggregate measure of real earnings management defined as the sum of AB PC and AB DE, it captures the combined effect of real activities manipulation by means of overproduction, sales manipulation and cuts in discretionary expenses.
ROA	Net income (loss) (COMPUSTAT item niq) in quarter *t* divided by total assets (COMPUSTAT item atq).
S_CFO	Standard deviations of operating cash flows over the prior 20 quarters divided by the average total assets over the same period. Quarterly operating cash flows are calculated as the difference of annual net operating cash flows (COMPUSTAT item oancfy) in quarter *t* and $t-1$ divided total assets in quarter *t*.
SHOCK	Is an indicator variable that takes value 1 if the firm suffers an exogenous shock to analyst coverage during quarter *t* and zero otherwise.
SIZE	Natural logarithm of sales in quarter *t* (COMPUSTAT item saleq).
SFYR	Is an indicator variable equal to one if an observation in quarter $t-1$ belongs to the same fiscal year as an observation in quarter *t*, and zero otherwise.