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Conditional conservatism and the limits to earnings management

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ABSTRACT

We examine the impact of conditional conservatism on earnings management. Our findings support the view that conditional conservatism reduces accruals-based earnings management but also triggers a trade-off between accruals and real earnings management. In our main tests we use the passage of SFAS 121 as a plausibly exogenous regulatory change that increased the level of conditional conservatism but did not materially affect earnings management. We find that, after the regulation, treated firms reduce accruals-based earnings management and increase real earnings management, and are less likely to be marginal or habitual beaters of earnings benchmarks. Given the crucial role of earnings for firm valuation and analysis, and that conditionally conservative accounting choices are observable, our results should be of wide interest for investment professionals.

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1. Introduction

Earnings management impairs firm valuation and investment decisions. Therefore, it can have negative economic consequences. We study whether conditional conservatism constrains earnings management. Conditional conservatism is the consequence of accounting that reflects bad news sooner and more completely than good news (Basu, 1997).[1] Examples of conditional conservatism and the asymmetric recognition criteria it imposes include: (a) timely impairments of assets but delayed recognition of increases in value until the cash flows associated with such gains are realized; (b) in long term contracts, the immediate recognition of changes in estimates due to new information if they result in decreased future profits, but not if they result in increased future profits; and (c) requiring a lower (higher) level of certainty to recognize losses (gains) from a lawsuit where the firm is involved.

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[1] Starting with Beaver and Ryan (2005) the literature refers to this type of conservatism as conditional conservatism. Throughout the text, we focus exclusively on conditional conservatism. As suggested by Ball and Shivakumar (2005), the conditional type is the only form of conservatism that is useful in contracting, while the other type of conservatism, unconditional, introduces a bias of unknown magnitude into reported figures and it has little or no contracting value.

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Several prior studies, including Ball (2001), argue that conditional conservatism limits the incentives and opportunities to manage earnings by imposing higher verification thresholds for the recognition of gains, relative to losses. This leads to timely and complete recognition of losses, for example, via timely impairments and write-offs, constraining earnings management.[2] Despite being widely cited, these assertions have not been empirically tested, and even recent analytical studies argue that conditional conservatism increases the marginal benefits of earnings management, because it leads to steeper performance pay (Bertomeu et al., 2017), and because it facilitates board interventions, thereby creating incentives to mislead the board through earnings management (Caskey and Laux, 2017).

We argue that, given prior evidence, it is likely that earnings management incentives co-exist with the limits to accruals-based management introduced by firms' conservative reporting. In addition, prior literature shows that the implementation of conditional conservatism relies on accounting choices, therefore being partly discretionary (Lawrence et al., 2013). This suggests that the links between conditional conservatism and accrual earnings management are far from obvious or mechanical. Thus, it is an interesting research question whether firms can manage earnings through accruals and beat earnings targets, and, at the same time, maintain their conservative reporting policies. Also, if firms avoid using the discretion inherent in accruals not to risk the contracting benefits of conservative reporting, it is also interesting to understand whether these firms would then resort to real earnings management.

Therefore, we address the following two research questions. First, we study if more conditionally conservative firms have lower accruals-based earnings management. Second, we analyze whether managers in more conservative firms resort to real earnings management to accrue the benefits of earnings management without risking losing the contracting benefits that they enjoy because of conservative accounting. Managers can use real earnings management to meet or beat their earnings targets, maximize their pay-for-performance compensation and circumvent corporate governance monitoring over financial reporting without abandoning their conservative reporting policies. When insiders' incentives for earnings management are not damped entirely, the costs that conservatism imposes on accruals-based manipulation may increase the marginal benefits of real earnings management, creating a trade-off and leading to more manipulation of real activities. Prior work shows that such trade-offs exist. Cohen et al. (2008) and Zang (2012) show that shifts in the expected benefits and costs of both types of manipulation can trigger trade-offs between real and accruals earnings management. Ewert and Wagenhofer (2005) analytically demonstrate that accounting standards designed to limit accruals-based manipulation have the undesired side effect of increasing real earnings management.

Using a large sample of US firms for the period 1990–2018, we test our predictions on the impact of conservatism on both real and accruals earnings management using three different approaches. First, we use a recursive equation system to analyze whether more conservative firms have lower discretionary accruals and higher real earnings management. Second, we study whether more conservative firms are less likely to be marginal beaters or habitual beaters of earnings benchmarks. Finally, we use the introduction of SFAS 121 as a regulatory change that exogenously increased conditional conservatism without materially affecting earnings management. To conduct our tests, we construct and validate a firm-specific measure of conditional conservatism based on the proxies developed by Givoly and Hayn (2000), Khan and Watts (2009) and Callen et al. (2010). We then create measures of accruals-based manipulation using Jones (1991) type models and of real earnings management following Roychowdhury (2006).

Our tests yield the following key findings. First, in our association tests, we show that conservative firms have lower levels of accruals-based earnings management, in line with the arguments in Watts (2003) and LaFond and Watts (2008). In particular, we find lower levels of both positive and negative discretionary accruals. This is consistent with conservatism limiting not only upward earnings management but also long-term strategies to smooth income and sustain earnings patterns. Importantly, it also shows that our results are not capturing a mechanical correlation between conditional conservatism and discretionary accruals, driven by negative discretionary accruals. It is worth noting that the correlation between discretionary accruals measures and conditional conservatism is, for our sample, very low and positive (between 0.01 and 0.04, depending on the specific measures used), further challenging the naïve interpretation that they are mechanically correlated, and that conditional conservatism just releases negative discretionary accruals. Second, we find that conservative firms have greater levels of real earnings management. To assess the net effect of conditional conservatism, we analyze its association with the overall probability that a firm manages earnings by using either accruals or real actions. The results from this test provide empirical evidence that more conservative firms have a lower probability of managing earnings (through any means) to meet or marginally beat earnings benchmarks. Conservative firms also have a lower probability of being habitual beaters of earnings benchmarks. In sensitivity tests, we show that these effects are more pronounced in settings with poorer information environments.

In our main tests, to better identify whether there is a causal relation between conditional conservatism and earnings management, we examine the passage of SFAS 121, *Accounting for the impairment of long-lived assets and for long-lived assets to be disposed of*, in 1996. SFAS 121 introduced more stringent impairment tests for long-lived assets. We show that it led to increases in conditional conservatism but it did not affect earnings management. There was substantial cross-sectional variation in how the regulatory change affected firms, as its effects depended on their pre-existing level of conditional conservatism: firms with the lowest levels of conditional conservatism pre-SFAS 121 (treated firms) were the ones more affected by

[2] Similarly, Watts (2003) contends that an important role of conservatism is to constrain opportunistic financial reporting and offset biases introduced by self-interested parties, and LaFond and Watts (2008, p. 448) argue that conservatism reduces managerial ability to "manipulate and overstate financial performance." See also the literature review by Kothari et al. (2010), and analytical evidence by Chen et al. (2007) and Gao (2013).

the regulation. We find that treated firms decrease their discretionary accruals and increase their real earnings management after the implementation of SFAS 121. We interpret this finding as an indication that, if the incentives to manage earnings do not disappear, firms with increased costs linked to accrual-based manipulation (i.e., more conservative firms) switch to real earnings management. We also find that their probability of being either marginal or habitual beaters of earnings benchmarks decreases significantly. Put together, our evidence indicates that, overall, the shift from one type of earnings management to the other is moderate and that conservatism constrains earnings management. Therefore, even if incentives to manage earnings co-exist with the incentives to be conservative, our results are in line with more conservative firms not using accruals or real earnings management to meet or beat earnings benchmarks. This empirical evidence, in turn, is in line with the analytical work of Chen et al. (2007, p. 542), who show that conservatism does not offset opportunistic biases by imposing explicit constraints in accounting standards but rather that it lowers earnings management "by dampening firm insiders' incentives to manage earnings."

Finally, we seek additional evidence of the role of conservatism in constraining earnings management through the analysis of two regulatory shocks to firms' information environment and external monitoring. We examine 1) the passage of SFAS 131 *Disclosures about segments of an enterprise and related information*, which took effect in 1998, and 2) the Securities and Exchange Commission (SEC) Regulation SHO, which exempted pilot firms (Rule 202 T pilot program) from short-sale price tests. We find that the effects of these regulations on earnings management are substantially less pronounced for firms that were more conservative before their passage, consistent with conditional conservatism already eliciting these transparency effects for them.

We make several contributions to the literature. First, we provide the first empirical evidence of a negative relation between conditional conservatism and accruals earnings management, consistent with the arguments of Watts (2003) and LaFond and Watts (2008) and with the analytical evidence of Chen et al. (2007) and Gao (2013). This is a novel finding in the empirical literature, which has only explored the links between unconditional conservatism and accruals-based earnings management, finding evidence of a positive association. In particular, the closest paper to ours is possibly the work of Jackson and Liu (2010) that analyzes how firms use the allowance for uncollectible accounts to build cookie jar reserves and subsequently manage earnings. In their study, unconditional conservatism creates greater scope for earnings management, rather than constrain it. Also closely linked to our work is the study of Penman and Zhang (2002), which more generally looks at the issue of how unconditional conservatism affects earnings quality, as measured by earnings persistence, and contends that conservative accounting choices "create unrecorded reserves that provide managers with flexibility to report more income in the future" (p. 238). While the evidence in Penman and Zhang (2002) and Jackson and Liu (2010) link unconditional conservatism with lower earnings quality, we show this is not the case for conditional conservatism.

Second, we find that conservatism triggers a substitution effect between accruals and real earnings management. This evidence, while consistent with conservatism introducing limits to accruals-based earnings management, as predicted by Chen et al. (2007) and Gao (2013), is also consistent with the analytical evidence of Bertomeu et al. (2017) and Caskey and Laux (2017). We thus add to the evidence of Cohen et al. (2008), Cohen and Zarowin (2010), Badertscher (2011), Zang (2012) and Wongsunwai (2013) on the trade-offs between accruals-based and real earnings management.

Finally, we provide new evidence on the consequences of conservatism in accounting, contributing to the ongoing regulatory and academic debate on whether it is desirable. Our results are consistent with conditional conservatism improving the firm information environment by reducing earnings management. Earnings management complicates equity valuation as it may conceal true company performance and mask trends in revenue and earnings growth that matter in building expectations of future growth and product demand (McNichols and Stubben, 2008). Therefore, while regulatory bodies and standard setters are moving towards more neutral and less conservative conceptual frameworks and standards, our results show that conditional conservatism leads to better quality earnings and, therefore, benefits the investment community.

The remainder of the paper is structured as follows. Section 2 discusses the links between conditional conservatism and earnings management. Section 3 describes the research methods and the empirical measures that we use in our tests. Section 4 presents the data and the empirical results. Finally, Section 5 summarizes the findings and concludes.

2. Conditional conservatism and earnings management

Prior work argues that conditional conservatism serves to "contain management's opportunistic behavior in reporting accounting measures" (Watts, 2003, p. 209), and that this restraint of opportunism is one of the cornerstones for an efficient financial reporting system (Ball, 2001). The assumption that conditional conservatism reduces earnings management, however, has not been empirically tested. This is surprising, given that this line of argumentation is commonly used and researchers often build their predictions against this untested backdrop. For example, LaFond and Watts (2008, p. 448) argue but do not show that conservatism "reduces the managers' ability to manipulate and overstate financial performance," and Ramalingegowda and Yu (2012) similarly argue but do not show that conditional conservatism reduces managers' incentives and ability to overstate the value they create. This lack of empirical research on the links between conditional conservatism and earnings management stems partially from a certain misunderstanding of the differences between conditional and unconditional conservatism, their determinants and consequences. We briefly discuss this past literature before presenting our predictions on the impact of conditional conservatism on earnings management.

2.1. Conditional and unconditional conservatism

As noted by Beaver and Ryan (2005) and Ball and Shivakumar (2005), conservatism manifests in two distinct ways. First, accounting can be conservative in an unconditional, *ex ante* or news independent sense. This refers to aspects of the accounting process that yield unrecognized goodwill, by applying conservative measurement and recognition criteria at the inception of assets and liabilities, leading to a persistent understatement of net assets. Examples of unconditionally conservative practices include the immediate expensing of certain intangibles such as research and development, or the accelerated depreciation of property, plant and equipment. Second, accounting can be conservative in a conditional, *ex post* or news dependent sense. This refers to the more stringent verifiability criteria for the recognition of gains *versus* losses, which results in a timelier and more complete recognition of economic losses into accounting earnings, relative to gains. Basu (1997) refers to this conservatism as the asymmetric timeliness of earnings. Examples of conditional conservatism would be the lower of cost or market inventory valuation, or impairment accounting for fixed assets. Thus, the key features of conditional conservatism are that firms recognize in a timely manner incurred economic losses that will materialize in the near future, and that it imposes a higher verification threshold for the recognition of gains.

While these two types of conservatism are interrelated, and firms may apply both conditionally and unconditionally conservative criteria (see, e.g., Roychowdhury and Watts, 2007, Qiang, 2007), they are clearly separate and the choice to apply one may even negate the other. This is because unconditional conservatism preempts and limits conditional conservatism in the obvious way that a certain asset cannot be written off twice. For example, if a pharmaceutical firm directly expenses all of its research and development into a new drug, news about FDA approval failure cannot lead to a timely impairment.

Both conditional and unconditional conservatism are embedded into accounting standards. However, this does not mean that flexibility is entirely removed or that managers cannot choose certain levels of both. Indeed, the use of discretion in applying conservatism has significant economic consequences, with important differences between conditional and unconditional conservatism. While prior research offers evidence consistent with economic benefits accruing to firms that choose more conditionally conservative reporting within the options embedded in a given set of accounting standards (see, e.g., Zhang, 2008, Wittenberg-Moerman, 2008, Garcia Lara et al., 2011, 2016, Gormley et al., 2012, Kim et al., 2013), unconditional conservatism is usually regarded as a "bias of unknown magnitude," that "introduces randomness in decisions based on financial information and can only reduce contracting efficiency" (Ball and Shivakumar, 2005, p. 91).

In particular, unconditional conservatism can be used to purposely understate net assets, leading to overstated earnings in future periods. Such use of conservative accounting has been a concern for regulators for decades (FASB, 1980, Levitt, 1998). The work of Jackson and Liu (2010) studies this possible consequence. They focus on the overstatement of the allowance for uncollectible accounts, a type of unconditional conservatism, and show that when past overstatements unravel, they are used opportunistically to meet or beat earnings targets.[3] Although Jackson and Liu (2010) refer to this practice simply as conservatism, they clearly study the unconditional form. The opportunistic understatement of assets, by definition, could not be considered conditional conservatism. The allowance for uncollectible accounts is a good example of a discretionary accounting practice that can lead, depending on managerial accounting choices, either to conditional or to unconditional conservatism. If the allowance reflects an amount that is larger than the best estimate of future losses given the current information, then this would be a case of unconditional conservatism, which, as described by Jackson and Liu (2010), would create cookie jar reserves that can be subsequently used to manage earnings. However, if the allowance reflects the best estimate of future losses, with little margin for error and none for systematic bias, then this accounting choice would reflect a conditionally conservative practice, as described, for example, in Byzalov and Basu (2016). To the extent that this reserve is not overstated, there is no room for it to unravel in the future when the losses materialize (i.e., when receivables are written off).

2.2. Conditional conservatism and earnings management

Focusing on the links between conditional conservatism and earnings management, there is a scarcity of empirical evidence in the literature, while prior analytical research reports mixed findings. One stream of analytical research finds that conditional conservatism leads to lower earnings management. This is explained because conservatism dampens the incentives for earnings management, as it increases its costs (Chen et al., 2007), and because conditional conservatism, by imposing more stringent verifiability requirements for the recognition of good news, decreases managerial opportunities to inflate earnings (Gao, 2013). Chen et al. (2007) argue that the intuition behind their model is that under conservative accounting, a low earnings number is less indicative of poor performance, and, therefore, earnings management would be less beneficial.

The arguments in these two studies that conservatism decreases the incentives to manage earnings engage well with the literature showing that increased conservatism leads to positive economic outcomes. Prior research shows that firms with a record of conditionally conservative reporting enjoy easier access to debt financing and improved credit terms (Ahmed et al., 2002, Zhang, 2008, Wittenberg-Moerman, 2008, Göx and Wangenhofer, 2009, Gormley et al., 2012, Beyer, 2013, Jayaraman and Shivakumar, 2013, Garcia Lara et al., 2016, Penalva and Wagenhofer, 2019), and lower cost of equity financing (Suijs, 2008, Garcia Lara et al., 2011, Kim et al., 2013, Li, 2015). These rewards would disappear or be substantially reduced for firms

[3] Related examples on how unconditional conservatism may lead to earnings management are common in the work that studies the banking industry, where prudential regulation often influences the calculation of loan loss allowances. This leads to overstated allowances that are later used to smooth earnings (Beatty et al., 2002, Gray and Clarke, 2004, Kanagaretnam et al., 2004, Beck and Narayanamoorthy, 2013).

that deviate from their prior conservative reporting choices to manage earnings to, for example, meet or beat an earnings target. Hence a managerial preference for maintaining conservatism-related benefits is expected to increase the costs of accruals-based earnings management and thus to lower its incidence. Ahmed et al. (2002) provide similar arguments to support their empirical findings that conservatism leads to lower cost of debt. They argue that deviating from conservatism increases future financing costs. Thus, for conservatism to accrue benefits to the firm, firms should adopt a predetermined level of accounting conservatism from which deviations would be penalized.

However, a recent stream of analytical research presents contrasting arguments and indicates that conservatism can increase the incentives to manage earnings. Bertomeu et al. (2017) show that, because conservatism decreases current earnings, if managers seek to maintain their compensation level, they will implement steeper pay-for-performance contracts. These steeper contracts will, in turn, increase the marginal utility of managing earnings. Similarly, Caskey and Laux (2017) show that conservatism facilitates board monitoring over the top management team. This increased monitoring also increases the utility of managing earnings to circumvent board oversight. Indeed, scope for increased earnings management exists in more conditionally conservative firms, which are likely to have greater impairments and provisions. This, in turn, implies that their balance sheets are less bloated. Prior literature indicates that aggressive accounting choices accumulate in the balance sheet and that bloated balance-sheets act as a constraint to future earnings management (Barton and Simko, 2002). In conditionally conservative firms, where bloat is low, managers could unravel the impairments and the provisions to manage earnings but at the risk of losing the benefits of conditional conservatism mentioned above.

Given these mixed views, we test the following hypothesis:

H1. Conditional conservatism leads to lower accrual-based earnings management.

Based on the body of knowledge that these studies develop, we argue that if the described increases in the incentives to manage earnings co-exist with the disincentives discussed, these opposing effects could lead to a trade-off. In particular, the limits that conditional conservatism imposes to earnings management, described in Chen et al. (2007) and Gao (2013), would reduce accruals-based earnings management. These limits, combined with the increased benefits of managing earnings in more conservative firms described by Bertomeu et al. (2017) and Caskey and Laux (2017), would then trigger a trade-off between accruals-based and real earnings management, leading to increases in real earnings management.

While the relation between conditional conservatism and accrual-based earnings management has been discussed in prior work, the links between conditional conservatism and real earnings management have not attracted similar attention. Prior research has focused on the broader topic of the links between constraints to accruals-based earnings management and how these constraints, in the form of tighter accounting standards or monitoring, lead to real earnings management. In particular, Demski (2004) and Ewert and Wagenhofer (2005) provide analytical evidence that, in the presence of tighter accounting standards, accrual-based and real earnings management are substitutes. The explanation is that tighter monitoring increases the marginal benefits of real earnings management (Ewert and Wagenhofer, 2005) or, alternatively, lowers its disutility (Demski, 2004). The empirical evidence of Cohen et al. (2008) is consistent with this view and indicates that, following the passage of SOX, which included governance provisions aimed at strengthening the monitoring over the financial reporting system, accrual-based manipulation declined while real earnings management increased. More recent evidence by Cohen and Zarowin (2010), Badertscher (2011), Zang (2012) and Wongsunwai (2013) confirms the view that managers choose among earnings management instruments depending on their expected net costs.

Given the above argumentation, we test the following hypothesis:

H2. Conditional conservatism leads to higher real earnings management.

The predicted trade-off between real and accruals-based manipulation could be interpreted as a costly consequence of conservatism in accounting, raising the issue of the net impact of conservatism on the aggregate level of earnings management. Given that there is evidence that firms with better corporate governance and monitoring present more conservative accounting numbers (Beekes et al., 2004, Ahmed and Duellman, 2007, Garcia Lara et al., 2009, Ramalingegowda and Yu, 2012), it could be argued that managers in more conservative firms have less room to switch from accrual-based to real earnings management, as independent directors and institutional investors will monitor not only the financial reports but also real operational decisions that affect long-term firm value. This argument is consistent with the results of Roychowdhury (2006) and Zang (2012) that firms with institutional investors engage less in real earnings management. However, we cannot discard the opposite explanation that independent directors who are better at monitoring financial reporting might be less able to understand the long-term effects of operational decisions, opening the door for real earnings management. The results of Faleye et al. (2011) that increased board monitoring reduces accrual-based earnings management but also innovation are consistent with this second view. Thus, the aggregate effect of conservatism over earnings management is ultimately an empirical question of interest.

3. Research design

We use three sets of tests to study the impact of conditional conservatism on earnings management. First, we use a recursive equation system and study whether conditional conservatism is associated with lower discretionary accruals and higher real earnings management. Second, we use a logit model to study whether more conservative firms have a lower probability of being marginal beaters of earnings benchmarks (and thus suspect of managing earnings) and a lower probability of becoming habitual beaters of earnings benchmarks (thereby also suspect of managing earnings). Finally, we study the passage of SFAS 121 as an exogenous shock to conditional conservatism. This is our main test, as it allows us to better identify the causal effects of conditional conservatism on accruals-based and real earnings management.

In our first set of tests, we estimate the following two equations:

$$RM_t = \alpha + \beta_1 CO_{t-1} + \delta \sum Controls_t + \varepsilon_t, \tag{1.a}$$

$$AM_t = \alpha + \beta_1 CO_{t-1} + \delta \sum Controls_t + \varepsilon_t, \tag{1.b}$$

where *RM* and *AM* are our real and accrual-based earnings management proxies, *CO* is our conditional conservatism proxy measured with lag to reduce endogeneity concerns, and *t* is the time-period indicator. *Controls* is a vector of control variables that includes firm characteristics and variables that capture the costs of, and incentives for, engaging in either type of manipulation, and that determine the trade-offs between real and accruals earnings management. To identify this set of control variables (see Appendix A for details), we follow prior research (Cohen et al., 2008, Cohen and Zarowin, 2010, Zang, 2012). We also include as control variables the standard determinants of conditional conservatism, which we identify following Watts (2003), Qiang (2007), Garcia Lara et al. (2009), and Khan and Watts (2009), among others. If conservatism decreases accrual-based earnings management, we should observe that greater levels of conservatism are associated with lower accrual-based earnings management, and thus we expect that β_1 in model (1.b) will be negative and significant. At the same time, if conservatism leads to increases in the manipulation of real operations, we expect to see a positive association between our measure of real earnings management and *CO* in model (1.a). Following Petersen (2009), we estimate this regression in a pooled fashion and report *t*-statistics based on standard errors that are robust to heteroskedasticity, serial and cross-sectional correlation with a two dimensional cluster at the firm- and year-level. All regressions include two-digit SIC industry- and fiscal-year indicator variables.

Our dependent variables, *RM* and *AM*, are estimated as the residuals from first-step regressions described in Appendix B. Chen et al. (2018) point out that when these residuals are used as dependent variables of second-step regressions, as in our Eqs. (1.a) and (1.b), they can generate biased coefficients and standard errors that can lead to incorrect inferences. They show that these biases can be avoided by including in the second-step regressions the regressors used in the first-step regressions. We follow their advice and include among the control variables the regressors of the first-step regressions. All our inferences remain the same if we do not use this procedure.

In our second set of tests, we focus on two well-established outputs of earnings management: whether a firm beats marginally or habitually beats earnings benchmarks. Anecdotal evidence and several prior studies provide evidence on the existence of significant market rewards associated with meeting or beating earnings targets (Skinner and Sloan, 2002, Bartov et al., 2002). The evidence shows discontinuities in the earnings distributions around these benchmark points, suggesting that managers avoid reporting losses, earnings decreases and negative earnings surprises (Burgstahler and Dichev, 1997, Degeorge et al., 1999). Following this line of research, we study, conditional on its level of conservatism, the probability that a firm a) marginally meets or beats these benchmarks, and b) becomes a habitual beater of these benchmarks. To do so, we use the following two logit models:

$$Prob\ (Suspect = 1) = \alpha + \beta_1 CO_{t-1} + \delta \sum Controls_t + \varepsilon_t, \tag{2.a}$$

$$Prob\ (Hab\_beat = 1) = \alpha + \beta_1 CO_{t-1} + \delta \sum Controls_t + \varepsilon_t, \tag{2.b}$$

where *Suspect* is a dummy variable that takes the value of one if the firm is classified as having a high probability of having managed earnings, since it narrowly beats or meets an earnings benchmark, and zero otherwise. These firms are selected following the criteria of Roychowdhury (2006) and Zang (2012). *Suspect* firms are firm-years either a) with earnings before extraordinary items over lagged assets between 0 and 0.005, b) with an increase in basic EPS excluding extraordinary items from last year between zero and two cents, or c) with actual EPS exceeding by up to one cent the last analyst forecast consensus before the fiscal year end. *Hab_beat* is an indicator variable that equals one if the firm beats/meets analysts' forecast consensus in the past four quarters and zero otherwise. If conservatism lowers the overall probability that firms engage in earnings management, we expect that β_1 in models (2.a) and (2.b) will be negative and significant. Models (2.a) and (2.b) also incorporate the same set of control variables used in model (1). Finally, we include industry and fiscal-year indicator variables and estimate the model using robust standard errors based on a two dimensional cluster at the firm and year level.

3.1. Main test: The passage of SFAS 121

In our main tests, we examine the passage of SFAS 121, which was effective for fiscal years starting 15 December 1995, and introduced more stringent impairment tests for long-lived assets. We hypothesize and find that it led to increases in conditional conservatism but it did not significantly affect earnings management. The reason for the second assertion is that, despite the more stringent impairment tests imposed by SFAS 121, firms still had significant opportunities to engage in earnings management. Given cross-sectional variation in pre-SFAS 121 firm-level conditional conservatism, firms with low pre-SFAS 121 conditional conservatism (*Treated* firms) are predicted to be more affected by this regulation, being the ones that had to increase their conservatism. After SFAS 121, *Treated* firms would have less room to manage earnings through accruals. Therefore, for *Treated* firms, we expect to observe decreases in accruals-based earnings management, and increases in real earnings management. To examine the effects of SFAS 121, we examine the period 1992–1999 (4 years before and after its passage). We first estimate the following equation system to examine the effects over accruals and real earnings management, and its trade-offs:

$$RM_t = \alpha + \beta_1 F121 + \beta_2 Treated + \beta_3 F121 * Treated + \delta \sum Controls_t + \varepsilon_t, \tag{3.a}$$

$$AM_t = \alpha + \beta_1 F121 + \beta_2 Treated + \beta_3 F121 * Treated + \delta \sum Controls_t + \varepsilon_t, \tag{3.b}$$

where *F121* equals one after the passage of SFAS 121 (for year 1996 and onwards) and zero otherwise. *Treated* is a decile-ranked variable of average conservatism for the seven years ending in 1993. To ease the interpretation of our tests, high values of *Treated* indicate low conservatism. The measurement of *Treated* aims to capture average conservatism without including the endogenous anticipation effects of the passage of SFAS 121 in 1996. The main coefficient of interest, in both equations, is β_3. In Eq. (3.a), we expect a positive and significant β_3 coefficient, consistent with treated firms after SFAS 121 increasing real earnings management. In Eq. (3.b), we expect β_3 to be negative and significant, consistent with a decrease in discretionary accruals for treated firms after SFAS 121 came into effect. Finally, if SFAS 121 had little influence on earnings management, we also predict coefficient β_1 will not be significantly different from zero in both equations. This is an important prediction because it means that the expected effect on earnings management is caused by the SFAS 121 shock to conservatism and not by a direct shock to earnings management.

We also examine the effect of the passage of SFAS 121 on the probability of marginally beating earnings benchmarks, and on the probability of habitually beating earnings benchmarks. To do so, we estimate, separately, the following two logit models (with all variables defined as above):

$$Prob\ (Suspect = 1) = \alpha + \beta_1 F121 + \beta_2 Treated + \beta_3 F121 * Treated + \delta \sum Controls_t + \varepsilon_t, \tag{4.a}$$

$$Prob\ (Hab\_beat = 1) = \alpha + \beta_1 F121 + \beta_2 Treated + \beta_3 F121 * Treated + \delta \sum Controls_t + \varepsilon_t, \tag{4.b}$$

where the main coefficient of interest is also β_3, which is expected to be negative in both cases, consistent with treated firms after SFAS 121 having either a lower probability of being suspect of managing earnings (marginal beater), or a lower probability of being a habitual beater of earnings targets. As before, β_1 is expected to be zero in both equations.

Next, we describe in detail the different variables used in models (1)–(4).

3.2. Earnings management measures

We use two measures of accruals-based earnings management (*AM*): (1) discretionary working capital accruals obtained from the modified Jones (1991) model, as proposed by Dechow et al. (1995) (*DWCA*), and (2) discretionary total accruals, also obtained from the modified Jones model (*DA*). We consider the absolute value of discretionary accruals, and we also run separate tests with the subsamples with positive and negative discretionary accruals. Across all three cases, we expect conservatism to reduce the level of discretionary accruals (that is, we expect conservatism to pull discretionary accruals towards zero: to decrease positive discretionary accruals, and also to decrease negative discretionary accruals).[4] To measure real earnings management, we use the proxies of Roychowdhury (2006): abnormal production costs (*APROD*) and abnormal discretionary expenses (*AEXP*). Following Cohen and Zarowin (2010), we aggregate the two measures into one proxy (*RM*) by adding *APROD* and −1**AEXP*.[5] In Appendix B, we explain the calculation of each of these proxies.

[4] The separate study of positive and negative discretionary accruals serves to clarify that conservatism is not mechanically associated with negative discretionary accruals. Also, unsigned measures of discretionary accruals can be affected by firms' characteristics (Hribar and Nichols, 2007) that might be difficult to control for, although in our regressions we include a large number of control variables in line with the suggestions in Hribar and Nichols (2007).

[5] We do not examine abnormal cash flows from operations because real activities manipulation impacts this variable in different directions and the net effect is ambiguous, as discussed by Roychowdhury (2006).

3.3. Measurement of conditional conservatism

We employ a summary measure of conditional conservatism constructed using three firm-year proxies: (1) the Khan and Watts (2009) measure based on the Basu (1997) model, (2) the Givoly and Hayn (2000) measure based on the skewness of earnings, and (3) the Callen et al. (2010) measure based on the Vuolteenaho (2002) return decomposition model.[6]

Our first measure is based on the conservatism scores developed by Khan and Watts (2009). Drawing from the Basu (1997) model, they estimate the timeliness of earnings to good news (*G_Score*) and the incremental timeliness of earnings to bad news (*C_Score*). By adding both, we obtain the total timeliness of bad news recognition.[7] We define our first conservatism proxy as the three-year average of the total timeliness of loss recognition (*G_Score* + *C_Score*) and denote this measure as *CO_K&W*. We take the three-year average to reduce measurement error and better capture firms' conservative reporting choices. Following Khan and Watts, to estimate this measure, we delete firm-years with price per share less than $1 and with negative total assets or book value of equity, and we delete those in the top and bottom 1% of earnings, returns, size, market-to-book ratio, leverage and depreciation each year. While there is some controversy about the validity of firm-specific measures of conservatism derived from the Basu (1997) model,[8] Ettredge et al. (2012) and Jayaraman (2012) show that the Khan and Watts (2009) measure captures expected variations in conservatism. Below, we validate the Khan and Watts proxy using the Dutta and Patatoukas (2017) measure of conditional conservatism.

The second conservatism measure is based on the work of Givoly and Hayn (2000). It is the negative of the ratio of the skewness of net income to the skewness of cash flow from operations, as proposed by Zhang (2008). To obtain the skewness, we use rolling windows of five years ending at the current year. We denote this measure as *CO_SKW*.

Our third measure is based on the ratio developed by Callen et al. (2010), which is based on the Vuolteenaho (2002) return-decomposition model. Their ratio captures the proportion of the total shock to current and expected future earnings recognized in current year earnings. To better capture firms' conservative decisions, we take the three-year average and denote it as *CO_CR*. To compute *CO_CR*, we follow the estimation details of Callen et al. (2010).[9] These authors estimate a pooled regression per industry across time using all sample years available. This can cause a look-ahead bias in the estimates of *CO_CR*. Following Garcia Lara et al. (2016), to avoid the potential negative effects of this bias, we use a 25-year rolling-window approach ending in the current year of each *CO_CR* measure. That is, to estimate *CO_CR* for, say 1995, our pooled regressions across time include years 1971–1995, and we take the estimates of *CO_CR* for the last year. Since conservatism is likely to be manifested when news is bad, following Callen et al., we restrict the sample to observations with negative unexpected returns, and we also drop observations with negative *CO_CR* as its interpretation is ambiguous.

Finally, we combine our three proxies into a summary measure of conservatism. To do so, we take the average of the three standardized conservatism proxies.[10] To mitigate measurement error and to reduce concerns about nonlinearities, we take annual deciles of the average and denote this summary measure as *CO*. Notice that our proxy measures conservatism with a considerable lag as it uses data for years *t*-1 to *t*-5. We adopt this research design choice to reduce endogeneity concerns regarding whether conservatism and earnings management are simultaneously determined.

3.4. Control variables

Conservatism is determined by firm characteristics and managerial discretionary choices. Therefore, in models (1) to (4), we control for several determinants of conservatism. This ensures that our conservatism measure is not just a proxy for its determinants. This approach follows the method of Francis et al. (2005). The selection of determinants is based on the literature (e.g., Watts, 2003, Qiang, 2007, LaFond and Watts, 2008) that identifies contracting, litigation, taxation, political costs and information asymmetry as the main drivers of conservatism in accounting. We include *Leverage* to capture debt-contracting motivations, defined as short-term plus long-term debt scaled by market value of equity. The fixed-effects year indicator variables included in the regression control for periods of high auditor litigation (Basu, 1997, Holthausen and Watts, 2001) and the passage of the Sarbanes-Oxley Act. Taxation incentives for conservatism are captured by a dummy variable (*High_MTR*) that takes the value of one if the firm has a high marginal tax rate and zero otherwise. A high marginal tax rate is assumed if the firm's marginal tax rate is above the sample median. To measure the marginal tax rate we employ the proxy developed by Graham (1996a, 1996b). Size is used to capture political pressures and is measured as the natural log of market value of equity. Following LaFond and Watts (2008), the demand for conservatism driven by information asymmetries is captured by the bid-ask spread (*BAS*). Finally, we also include the market-to-book ratio of assets (*MTB*) because firms

[6] Prior literature has also used another firm-year specific measure of conservatism: the accumulation of non-operating accruals (Givoly and Hayn, 2000). We do not use this proxy because our dependent variables are discretionary accruals, which are mechanically associated with non-operating accruals.

[7] Taking the Basu (1997) model ($Earn = \beta_0 + \beta_1 Neg + \beta_2 Ret + \beta_3 Ret*Neg + \varepsilon$) as a reference, G_Score is a firm-year estimation of the β_2 coefficient (timeliness to good news), and C_Score is the estimation of the β_3 coefficient (incremental timeliness to bad news). Therefore G_Score + C_Score is the total timeliness to bad news.

[8] Dietrich et al. (2007), Givoly et al. (2007), Patatoukas and Thomas (2011, 2016) and Dutta and Patatoukas (2017) highlight several problems with the Basu (1997) model. Ball et al. (2013a, 2013b) and Ettredge et al. (2012) provide counterarguments and suggest ways to overcome the problems without abandoning its use.

[9] To estimate this proxy, we use the computer code described in Callen and Segal (2010).

[10] We use unit weights to construct *CO* following the recommendations of Grice and Harris (1998), who find that unit-weighted composites exhibit better psychometric properties than alternative weighting schemes. We obtain similar results if we use factor analysis.

with high *MTB* ratio have more growth options relative to assets in place; growth options are associated with agency costs and conservatism is an efficient governance response to these agency costs (Khan and Watts, 2009). We also control for the effect of firm performance on accruals using return on assets (*ROA*) and sales growth (*SG*).

We also control for the determinants (costs, opportunities) of engaging in either accruals-based or real earnings management. To do so, we follow prior research (Cohen et al., 2008, Cohen and Zarowin, 2010, Zang, 2012) that argues that engaging in earnings management is costly for firms, and that firms trade-off between managing real activities or accruals. The decision is based on their relative costliness and firms' ability to use one type or the other. Zang (2012) also argues that the decision to engage in real earnings management is made early in the year and the effects are realized during the year. At the end of the year, managers still can further adjust earnings by managing accruals. For this reason, it is important to consider the timing of both activities when designing the tests. We introduce in Eqs. (1)–(4) the following determinants of the decision to engage in either accrual-based or real earnings management: a) controls for corporate governance (institutional investors, *Institutions*; analysts following, *Analysts*; and the anti-takeover index of Cremers and Nair (2005): *ATI* and *ATI_dummy*)[11]; b) the firm's market share (*High_mkt_share*), c) firm financial condition (the negative of Altman's, 1968 Z-Score: *Poor_fin_cond*); d) taxation (*High_MTR*); e) *Auditing* (indicator variable for strong auditing); f) past earnings management (the bloated balance sheet measure in Barton and Simko (2002), net operating assets: *NOA*); g) length of the operating cycle in days: *Cycle*; and h) in Eqs. (1.b) and (3.b), the effect of real earnings management on accruals management (the fitted values and the residuals of the *RM* equation: *Pred_RM* and *Unexp_RM*, respectively). We explain the rationale for including these variables in Appendix A and their construction in Appendix B.

4. Sample and results

We take accounting data from COMPUSTAT and stock market data from CRSP. Analyst data come from IBES, ownership data from Thomson Financial, and governance data from Risk Metrics. Our final sample contains 52,849 firm-year observations and spans 29 years, t = 1990–2018. The sample period begins in 1990 because that is the first year in which some of the governance variables are available. We eliminate financial firms (SIC 6000–6999) and utilities (SIC 4400–5000) and winsorize annually all continuous variables at the top and bottom percentiles to avoid the effect of outliers. Table 1 reports descriptive evidence of the data used to run the main regression tests. Panel A shows summary statistics of the main variables of interest and Panel B shows the correlation matrix. The descriptive evidence presented in Table 1 is generally consistent with prior evidence.

Given the controversy over the use of Basu (1997)-based conservatism measures, we first assess the construct validity of *CO*. Similar to Khan and Watts (2009), we examine whether the empirical properties of *CO* are consistent with predictions of conservatism and with associations documented in the prior literature using other conservatism measures. We begin by placing firms into *CO* deciles each year. Then, we compute the mean of the different properties associated with conservatism for each decile and verify whether the mean values vary monotonically as we move along the *CO* deciles. If this is the case for most of the properties examined, we can conclude that *CO* is associated with the underlying unobserved level of conservatism. Examining the properties of *CO* deciles allows nonparametric tests of unconditional (univariate) predictions and avoids issues of potential nonlinearities in the relations examined. As shown in Table 1 Panel C, we find that the decile-average firm size, ROA, market-to-book ratio, and age decrease monotonically as we move from the least to the most conservative decile, while leverage, length of the operating cycle, volatility, and information asymmetries (the bid-ask spread) increase with conservatism. All these associations agree with theoretical predictions and with previous empirical evidence. We also find that the rank correlation between the *CO* deciles and the deciles of each of the individual conservatism proxies (*CO_K&W*, *CO_SKW* and *CO_CR*) is 1, 1 and 0.99, respectively.

One of the three components of *CO* is the firm-year proxy for conditional conservatism developed by Khan and Watts (2009), which we refer to as *CO_K&W*. *CO_K&W* is based on the Basu (1997) regression, which has been shown to suffer from several biases (Patatoukas and Thomas, 2011, 2016). According to prior studies, the Basu measure can detect conservatism in settings in which there is no conservatism. To make sure that *CO_K&W* captures conservatism, in Panel D of Table 1 we validate this proxy using the measure developed by Dutta and Patatoukas (2017). Their measure is called the Spread of Conditional Variances (SCV). It is the difference between the variance of accruals in the case of bad news (i.e., negative stock returns) and the variance of accruals in the case of good news (i.e., positive or zero stock returns). Dutta and Patatoukas show that SCV does not suffer from the biases that affect the estimates from the Basu regression. We apply this measure to three types of accruals: working capital accruals, total accruals and total accruals before depreciation. To perform the validation analysis, we construct deciles of *CO_K&W*, but without taking the three-year average, and compute SCV for each decile, and obtain the rank correlation between the *CO_K&W* decile and the ranking of SCV for each measure of accruals, which is a measure of the monotonicity of the rankings in the table. The definitions of accruals can be found in Appendix B. The rank correlation between *CO_K&W* and the spreads of the conditional variances of the three accruals measures that we consider is, respectively, 85%, 64% and 88%. Given these correlation ranks, and even with the shortcomings identified by Dutta and Patatoukas (2017), *CO_K&W* seems to rank firms properly according to their conditional conservatism level.

[11] In sensitivity tests, we also use a proxy for internal corporate governance constructed with data from EQUILAR: the average of the standardized values of a) Proportion of independent directors, b) Number of board meetings, and c) Whether the chairperson of the board is not the CEO. Including this additional control, we reach identical inferences. We opt to not include it in the main tests as data are only available from 2001 to 2011.

Table 1
Descriptive statistics.

Panel A: Summary statistics

	mean	sd	p25	p50	p75
RM (%)	−1.175	36.994	−18.464	2.216	20.139
DWCA (%)	−0.101	5.937	−2.959	−0.256	2.552
DA (%)	0.038	8.144	−3.644	0.365	4.144
CO (t-1)	5.395	2.791	3	5	8
Institutions	0.527	0.298	0.27	0.543	0.781
Analysts	1.488	1.092	0	1.609	2.398
ATI	0.755	1.088	0	0	2
ATI_dummy	0.621	0.485	0	1	1
High_mkt_share	0.533	0.499	0	1	1
Poor_fin_cond	−4.698	4.813	−5.532	−3.508	−2.229
High MTR	0.593	0.491	0	1	1
Auditing	0.423	0.494	0	0	1
NOA	0.666	0.635	0.316	0.506	0.784
Cycle	81.469	85.744	38.022	74.483	121.513
ROA	3.277	11.354	−0.01	4.58	8.946
SG	0.116	0.265	−0.014	0.077	0.197
MTB	1.863	1.336	1.081	1.449	2.137
Size	6.068	2.064	4.531	6.003	7.466
Leverage	0.428	0.977	0.013	0.149	0.433
BAS	4.037	2.03	2.563	3.609	5.048
Suspect	0.15	0.357	0	0	0
Hab_beater	0.082	0.274	0	0	0

Panel B: Pearson correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1) RM	**1.00**																				
2) DWCA	**0.04**	**1.00**																			
3) DA	**0.13**	**0.68**	**1.00**																		
4) CO (t-1)	**0.15**	**0.01**	**0.04**	**1.00**																	
5) Institutions	**−0.07**	**0.01**	**−0.02**	**−0.28**	**1.00**																
6) Analysts	**−0.12**	0.00	**−0.04**	**−0.41**	**0.38**	**1.00**															
7) ATI	**−0.04**	**−0.01**	−0.01	**−0.27**	**0.39**	**0.30**	**1.00**														
8) ATI_dummy	**0.04**	**0.02**	0.01	**0.30**	**−0.47**	**−0.36**	**−0.89**	**1.00**													
9) High_mkt_share	**0.08**	0.01	**0.03**	**−0.19**	**0.22**	**0.21**	**0.25**	**−0.30**	**1.00**												
10) Poor_fin_cond	**0.18**	**−0.02**	**−0.04**	**0.18**	**−0.07**	**−0.11**	**−0.03**	**0.02**	**0.12**	**1.00**											
11) High MTR	**−0.05**	0.01	0.00	**−0.16**	**0.12**	**0.40**	**0.07**	**−0.10**	**0.14**	**−0.08**	**1.00**										
12) Auditing	0.00	**−0.01**	**0.03**	**−0.13**	**0.17**	**0.12**	**0.25**	**−0.26**	**0.23**	**0.03**	**0.03**	**1.00**									
13) NOA	**0.12**	**0.03**	**0.03**	**−0.04**	**0.07**	**0.05**	−0.01	0.00	**−0.06**	**0.13**	**−0.02**	**−0.02**	**1.00**								
14 Cycle	**0.05**	**0.05**	**0.06**	**0.06**	**−0.08**	**−0.11**	**−0.01**	**0.03**	**−0.03**	**−0.06**	**−0.06**	**0.02**	**−0.06**	**1.00**							
15) ROA	**−0.04**	**0.06**	**0.17**	**−0.18**	**0.14**	**0.17**	**0.13**	**−0.13**	**0.17**	**−0.40**	**0.14**	**0.08**	**−0.06**	**−0.02**	**1.00**						
16) SG	**−0.12**	**0.01**	0.00	**−0.07**	**0.02**	**0.11**	**−0.05**	**0.06**	**−0.04**	**−0.18**	**0.09**	**−0.08**	**0.05**	**−0.16**	**0.19**	**1.00**					
17) MTB	**−0.34**	−0.01	**−0.06**	**−0.31**	**0.14**	**0.20**	**0.07**	**−0.07**	**−0.11**	**−0.66**	**0.09**	**−0.02**	**−0.13**	**−0.08**	**0.22**	**0.25**	**1.00**				
18) Size	**−0.10**	0.00	0.00	**−0.58**	**0.54**	**0.52**	**0.41**	**−0.47**	**0.39**	**−0.15**	**0.23**	**0.23**	**0.16**	**−0.15**	**0.28**	**0.11**	**0.36**	**1.00**			
19) Leverage	**0.14**	0.00	0.00	**0.22**	**−0.13**	**−0.12**	**−0.06**	**0.06**	**0.12**	**0.25**	**−0.05**	−0.01	**0.14**	**−0.02**	**−0.15**	**−0.05**	**−0.24**	**−0.21**	**1.00**		

Table 1 (*continued*)

Panel B: Pearson correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
20) BAS	**−0.05**	−0.01	**−0.06**	**0.22**	**−0.30**	**−0.15**	**−0.23**	**0.27**	**−0.31**	**0.04**	**−0.09**	**−0.18**	**−0.05**	**0.02**	**−0.36**	0.00	**−0.04**	**−0.48**	**0.15**	**1.00**	
21) Suspect	**−0.04**	0.01	**0.01**	**−0.08**	**0.02**	**0.16**	**0.04**	**−0.04**	0.01	**−0.10**	**0.07**	0.01	**−0.02**	−0.01	**0.07**	**0.04**	**0.09**	**0.05**	**−0.05**	**−0.02**	**1.00**
22) Hab_beater	0.01	**0.01**	−0.01	**−0.02**	0.00	**0.06**	0.01	0.00	0.01	**0.03**	**−0.02**	0.00	**0.05**	0.00	**−0.04**	**−0.02**	**−0.04**	0.00	**0.02**	0.00	−0.01

Panel C: Means of selected characteristics of deciles of the conservatism proxy

CO deciles	CO_K&W	CO_SKW	CO_CR	ROA	MTB	Size	Leverage	Cycle	Volatility	BAS	Age
1	0.011	−9.818	0.321	14.265	3.114	7.948	0.216	67.353	0.028	3.498	18.560
2	0.054	−1.716	0.311	11.983	2.493	7.518	0.218	71.191	0.028	3.443	17.561
3	0.083	−0.956	0.343	9.807	2.190	6.845	0.238	73.814	0.029	3.695	16.255
4	0.106	−0.545	0.376	8.076	1.987	6.318	0.286	77.625	0.031	3.926	14.881
5	0.126	−0.222	0.408	6.994	1.869	5.845	0.313	79.001	0.033	4.118	14.383
6	0.145	0.038	0.454	6.027	1.749	5.433	0.363	80.734	0.035	4.350	13.952
7	0.163	0.416	0.518	5.460	1.644	5.079	0.445	82.697	0.036	4.513	13.781
8	0.183	0.834	0.616	5.015	1.526	4.698	0.546	85.307	0.038	4.747	13.481
9	0.210	1.574	0.826	4.969	1.404	4.270	0.755	86.510	0.041	5.104	13.398
10	0.258	8.304	1.593	5.054	1.348	4.181	1.627	88.022	0.043	5.418	13.608
Rank correlation	1.00	1.00	0.99	−0.96	−1.00	−1.00	1.00	1.00	−0.99	−0.99	−0.78
Predicted sign	(+)	(+)	(+)	(−)	(−)	(−)	(+)	(+)	(+)	(+)	(−)

Panel D: Validation of the Khan and Watts (2009) proxy of conditional conservatism CO_K&W

Conservatism Decile CO_K&W	Spread of Conditional Variances (SCV): WC Accruals	Spread of Conditional Variances (SCV): Total Accruals	Spread of Conditional Variances (SCV): Accruals bef. depr.
1	−0.014%	0.204%	0.132%
2	0.001%	0.225%	0.122%
3	0.008%	0.240%	0.210%
4	0.054%	0.345%	0.245%
5	0.076%	0.271%	0.234%
6	0.024%	0.340%	0.257%
7	0.074%	0.419%	0.387%
8	0.113%	0.443%	0.437%
9	0.062%	0.309%	0.294%
10	0.123%	0.298%	0.281%
Rank correlation	0.85	0.64	0.88
p-value	0.002	0.048	0.001

The sample comprises 52,849 firm-year observations for the period 1990–2018. *RM* is real earnings management computed as the addition of *APROD* and −1**AEXP*, which are Roychowdhury's (2006) abnormal production costs and abnormal discretionary expenses, respectively. *DWCA* and *DA* are working capital and total discretionary accruals, respectively, obtained with the modified Jones model. *CO* is a summary measure of conditional conservatism obtained as the decile ranks of the average of the following three standardized proxies for conservatism: CO_K&W, which is the three-year average of timeliness loss recognition (G_Score + C_Score). G_Score is the timeliness of earnings to good news, and C_Score is the incremental timeliness of earnings to bad news as developed by Khan and Watts (2009). CO_SKW is the negative of the ratio of the skewness of net income to the skewness of cash flow from operations. To obtain the skewness, we use rolling windows of five years ending at the current year. CO_CR is the three-year average of the conservatism ratio as developed by Callen et al. (2010). *Institutions* is the proportion of firm shares held by institutional investors. *Analysts* is the logarithm of one plus the number of analysts following the firm. *ATI* is the alternative takeover vulnerability index developed by Cremers and Nair (2005). If ATI is missing, we assign it a value of zero. *ATI_dummy* is an indicator variable that equals one if *ATI* is not available and zero otherwise. *High_mkt_share* is an indicator variable that equals one if the percentage of the company's sales to total sales of its 3-digit SIC industry is above the sample median. *Poor_fin_cond* is the negative of Altman's (1968) bankruptcy score. *High_MTR* is an indicator variable that takes the value of one if the firm has a high marginal tax rate and zero otherwise. A high marginal tax rate is assumed if the firm's marginal tax rate is above the sample median. To measure the marginal tax rate, we employ the proxy developed by Graham (1996a, b). *Auditing* is an indicator variable that equals one if the firm has a Top 8 auditor and the auditor tenure is above the sample mean and zero otherwise. *NOA* is net operating assets, defined as common shareholders' equity less cash and marketable securities plus total debt, divided by sales. *Cycle* is the days receivable plus the days inventory less the days payable. *ROA* is return on assets. *SG* equals the change in annual sales scaled by previous year's sales. *MTB* is the market-to-book value of assets ratio. *Size* is the log of market value of equity. *Leverage* equals short-term plus long-term debt scaled by market value of equity. *BAS* is the bid-ask spread, defined as the annual average of daily spread scaled by the midpoint between bid and ask. *Suspect* is an indicator variable that equals one if the firm is suspect of engaging in earnings management and zero otherwise. *Hab_beat* is an indicator variable that equals one

if the firm beats/meets analysts' the latest forecast consensus in the past four quarters and zero otherwise. Further details can be found in Appendix B.
Bold figures indicate statistical significance at the 0.01 level (two-tailed). All the variables are described in Appendix B.
Rank correlation is the rank correlation between the *CO* decile and the column ranking, and it is a measure of the monotonicity of the ranking in the table.
CO_K&W is the three-year average of timeliness loss recognition (G_Score + C_Score). G_Score is the timeliness of earnings to good news, and C_Score is the incremental timeliness of earnings to bad news as developed by Khan and Watts (2009). *CO_SKW* is the negative of the ratio of the skewness of net income to the skewness of cash flow from operations. To obtain the skewness, we use rolling windows of five years ending at the current year. *CO_CR* is the three-year average of the conservatism ratio as developed by Callen et al. (2010). ROA is return on assets computed using net income for the rolling four quarters ending with the third quarter of year t. *MTB* is the market-to-book value of equity ratio. *Size* is the log of market value of equity. *Leverage* equals short-term plus long-term debt scaled by market value of equity. *Cycle* is the days of receivables plus the days of inventory less the days of payables, all at the beginning of the year. *Volatility* is the standard deviation of one year of daily stock returns. *BAS* is the annual average of the daily spread scaled by the midpoint between bid and ask. *Age* is the difference between the first year when the firm appears in CRSP and the current year.
The firm-year proxy of conditional conservatism developed by Khan and Watts (2009) CO_K&W is based on the Basu (1997) regression, which has been shown to suffer from several biases (Patatoukas and Thomas, 2011, 2016). The Basu measure can detect conservatism in settings in which there is no conservatism. CO_K&W is one of the three components of our combined measure of conservatism. To make sure that CO_K&W captures conservatism, we validate this proxy using the measure developed by Dutta and Patatoukas (2017). The measure is called the Spread of Conditional Variances (SCV). It is the difference between the variance of accruals in the case of bad news (i.e., negative stock returns) and the variance of accruals in the case of good news (i.e., positive or zero stock returns). Dutta and Patatoukas show that SCV is robustly positive and it does not suffer from the biases that affect the estimates from the Basu regression. We apply this measure to three types of accruals: discretionary working capital accruals, total accruals and total accruals before depreciation. To perform the validation analysis, we construct deciles of CO_K&W, but without taking the three-year average, and compute SCV for each decile, and obtain the rank correlation between the CO_K&W decile and the ranking of SCV for each measure of accruals, which is a measure of the monotonicity of the rankings in the table. The definitions of accruals can be found in Appendix B.

Table 2
Conditional conservatism and earnings management.

Panel A: Conditional conservatism and real and accruals earnings management

	RM	APROD	AEXP	abs(DWCA)	DWCA > 0	DWCA < 0
	(1)	(2)	(3)	(4)	(5)	(6)
CO (t-1)	*0.937****	*0.383****	*0.562****	*−0.188****	*−0.216****	*0.157****
	8.195	*7.343*	*8.222*	*−13.384*	*−8.482*	*8.732*
Institutions	−6.588***	−2.600***	−4.061***	0.886***	1.382***	−0.384*
	−4.162	−3.487	−4.278	5.979	6.259	−1.981
Analysts	−2.728***	−1.125***	−1.651***	0.449***	0.547***	−0.318***
	−4.085	−4.061	−3.977	9.309	6.987	−6.154
ATI	−0.794	−0.443	−0.361	0.180***	0.226***	−0.134***
	−1.077	−1.328	−0.82	4.294	3.509	−2.901
ATI_dummy	−1.755	−0.52	−1.275	0.692***	0.995***	−0.387***
	−1.036	−0.661	−1.272	7.127	6.606	−3.27
High_mkt_share	3.008**	1.291*	1.605**	−0.661***	−0.662***	0.628***
	2.304	2.041	2.173	−6.643	−4.582	4.844
Poor_fin_cond	−0.728***	−0.159**	−0.577***	0.177***	0.206***	−0.144***
	−5.304	−2.454	−7.106	13.318	9.161	−9.476
High MTR	−2.503***	−1.399***	−1.149**	0.318***	0.402***	−0.207**
	−2.976	−3.149	−2.537	5.309	4.006	−2.427
Auditing	−1.383**	−0.603*	−0.708*	0.120*	0.098	−0.149**
	−2.113	−1.886	−1.832	2.036	1.169	−2.152
NOA	7.181***	2.443***	4.775***	−1.596***	−1.614***	1.502***
	8.341	5.07	11.19	−13.773	−9.563	9.485
Cycle	0.004	0.001	0.004	0.003***	0.005***	−0.001***
	0.679	0.233	1.125	8.27	6.866	−3.098
ROA	−0.02	−0.288***	0.263***	−0.008**	0.009*	0.025***
	−0.366	−11.679	6.708	−2.1	1.828	5.757
SG	−2.372*	1.500**	−3.826***	2.988***	3.938***	−2.226***
	−1.749	2.167	−4.277	13.75	9.238	−9.41
Size	2.586***	0.865***	1.784***	−0.584***	−0.687***	0.470***
	5.497	4.051	6.302	−14.193	−11.762	8.458
MTB	−10.524***	−4.738***	−5.878***	2.163***	2.520***	−1.763***
	−8.705	−8.244	−8.891	14.481	10.481	−8.874
Leverage	2.835***	1.082***	1.766***	−0.626***	−0.751***	0.486***
	6.119	5.621	6.248	−11.603	−9.429	8.264
BAS	−1.212***	−0.442***	−0.774***	0.441***	0.520***	−0.354***
	0.937***	0.383***	0.562***	−0.188***	−0.216***	0.157***
Pred_RM				0.169***	0.205***	−0.130***
				11.863	8.644	−7.185
Unexp_RM				−0.002*	0	0.004***
				−1.957	−0.271	3.655
Adjusted R-squared	0.196	0.205	0.213	0.18	0.176	0.195
First-step regressors included	YES	YES	YES	YES	YES	YES
Industry & year FE	YES	YES	YES	YES	YES	YES
Cluster firm & year	YES	YES	YES	YES	YES	YES

Panel B: Alternative earnings management proxies. Logit regressions with Habitual beater firms and Suspect firms. These firms have a high probability of managing earnings

	HAB_BEATERS	SUSPECT
	(1)	(2)
CO (t-1)	*−0.021****	*−0.012**
	−2.596	*−1.691*
Institutions	−0.884***	−0.316***
	−10.438	−4.3
Analysts	−0.280***	0.335***
	−9.052	11.331
ATI	0.111***	−0.016
	3.398	−0.619
ATI_dummy	0.314***	−0.02
	3.801	−0.303
High_mkt_share	0.014	−0.090*
	0.277	−1.929
Poor_fin_cond	0.002	−0.009**
	0.243	−2.017
High MTR	−0.146***	0.063
	−3.246	1.447
Auditing	0.05	−0.004

(*continued on next page*)

Table 2 (*continued*)

Panel B: Alternative earnings management proxies. Logit regressions with Habitual beater firms and Suspect firms. These firms have a high probability of managing earnings

	HAB_BEATERS	SUSPECT
	(1)	(2)
	1.29	−0.121
NOA	0.121***	0.111***
	3.599	3.287
Cycle	0.000	0.000
	1.371	0.811
ROA	−0.012***	0.007***
	−6.388	4.112
SG	−0.493***	−0.04
	−5.712	−0.67
Size	−0.212***	−0.081***
	−10.177	−4.419
MTB	−0.080***	0.087***
	−2.998	5.208
Leverage	0.264**	−0.179
	1.999	−1.462
BAS	−0.008	−0.062***
	−0.586	−4.649
Pseudo R-squared	0.100	0.061
Industry & year FE	YES	YES
Cluster firm & year	YES	YES

The *t*-statistics are reported below the coefficients. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01. Appendix B contains the precise definitions of the variables. In Panel A, regressors used in the estimation of the dependent variables are included but not reported (Chen et al., 2018).

Overall, the results in Panels C and D are consistent with our main combined measure of conservatism, *CO*, being a robust firm-year measure of conservatism.

Table 2 Panel A present the results from the estimation of model (1) using the full sample of data available. The evidence reported in columns (4), (5), and (6) provides descriptive evidence on H1, and supports our predictions: conservative firms engage in less accruals-based earnings management. Specifically, we find that conservatism is related to lower discretionary accruals, both for the absolute value of discretionary accruals *abs(DWCA)* (*CO* = −0.188, *p*-val < 0.01), and the signed positive and negative values *DWCA > 0* (*CO* = −0.216, *p*-val < 0.01), and *DWCA < 0* (*CO* = 0.157, *p*-val < 0.01).[12] These findings are consistent with the arguments by Watts (2003) and LaFond and Watts (2008) that conservatism reduces earnings management. In unreported analyses we repeat these tests using as dependent variable discretionary total accruals (DA), finding identical results. Regarding H2, we find evidence consistent with the existence of potential preferences and trade-offs in choosing earnings management instruments. When we use our proxy for real earnings management as the dependent variable in model (1), columns (1), (2), and (3) show that the coefficient on *CO* is significantly positive for the aggregate measure *RM* (*CO* = 0.937, *p*-val < 0.01), as well as for the separate components *APROD* (*CO* = 0.383, *p*-val < 0.01) and *AEXP* (*CO* = 0.562, *p*-val < 0.01), indicating that the disciplining role of conservatism prevents accruals-based (purely accounting) management but may lead managers to resort to real actions to manage earnings. This positive association is consistent with the analytical evidence in Demski (2004) and Ewert and Wagenhofer (2005) that indicates that introducing constraints to accruals-based earnings management may lead to greater real earnings management. In terms of economic significance, a five decile change in *CO* (i.e., moving from the first to the third quartile) results in a reduction in discretionary accruals (as per the modified Jones model) of −0.94% and in an increase in *RM* of 4.69%. Overall, the evidence suggests that conservatism reduces accrual-based earnings management and this creates a substitution effect that triggers an increase in real earnings management.[13]

Regarding the rest of control variables, our results generally agree with those in prior research and are consistent with trade-offs existing between accruals and real earnings management. In line with the existence of patterns in the data that suggest that there is substitution between the two types of manipulation, we find, for example, that *NOA* (our proxy for past accumulated accruals-manipulation) is negatively associated with accruals earnings management across all models, while it is positively associated with real earnings management. This is consistent with firms switching from accruals-based to real

[12] Notice that, when *DWCA* < 0 in column (6), *CO* is expected to be positive, indicating that conservatism pulls *DWCA* towards zero.

[13] To better understand the role played by managerial incentives, we repeat the analyses of Panel A using a sample of firms that are predicted to have incentives to manage earnings. In particular, we focus on firms that narrowly beat an earnings benchmark and those that narrowly miss it. These firms are expected to have similar incentives to manage earnings, being close to an earnings target, but to differ in that some of them meet the target, and some miss it, by a narrow margin. Recall that narrow beaters are defined as a) firm-years with earnings before extraordinary items over lagged assets between 0 and 0.005, b) firm-years with change in basic EPS excluding extraordinary items from last year between zero and two cents, or c) firm-years with actual EPS less the last analyst forecast consensus before the fiscal year end between zero and one cent. Narrow missers are defined as either a) firm-years with earnings before extraordinary items over lagged assets between 0 and −0.005, b) firm-years with change in basic EPS excluding extraordinary items from last year between zero and minus two cents, or c) firm-years with actual EPS less the last analyst forecast consensus before the fiscal year-end between zero and minus one cent. Using this alternative sample we obtain identical inferences.

earnings management when they exhaust the possibilities for further accruals manipulation. The rest of control variables, in general, have the expected signs described in Appendix A.

To assess the overall effect of conservatism on earnings management (considering both types together), we focus on firms that are classified as being 'suspect' of managing earnings, either through accrual accounting, real actions, or both. Suspect firms are those with a high probability of having managed earnings because they narrowly beat or meet important earnings benchmarks. We estimate model (2.a) with a logit regression where the dependent variable (SUSPECT) equals one if the firm is suspect and zero otherwise. We also run the model (2.b) using as dependent variable a proxy for whether the firm is a habitual beater of earnings benchmarks (HAB_BEAT). In this case, the dependent variable equals one if the firm beats or meets analysts' forecast consensus in the past four quarters and zero otherwise. Table 2 Panel B reports the results from these tests. The evidence indicates that conservatism reduces the likelihood of being a habitual beater (in column 1, $CO = -0.021$, p-val < 0.01) and a marginal beater, that is, a suspect firm (in column 2, $CO = -0.012$, p-val < 0.10). In terms of economic significance, moving from the bottom decile of CO to the top decile results in a reduction in the probability of being a habitual beater (suspect) of 1.87% (1.46%). Combined with the results in Panel A, the evidence suggests that, even if some level of substitution between accruals-based and real earnings management happens, conservatism is an efficient corporate governance mechanism that leads to a lower probability of manipulated financial statements.

4.1. Discussion of main results

In our main analyses, to identify the causal links flowing from conditional conservatism to earnings management, we study the passage of SFAS 121 in 1996, which introduced more stringent impairment tests for long-lived assets. In these tests, we focus on the period spanning four years before the implementation of the regulation to four years after (1992–1999) to better isolate the effects of the standard. In Table 3, Panel A, we provide evidence that SFAS 121 led to increases in conditional conservatism. In particular, we regress a firm-year proxy for conditional conservatism, *CO_K&W* without taking the three-year average, on a dummy variable, *F121*, for the passage of SFAS 121 (taking the value of one for the period after its implementation, and zero otherwise), and the rest of control variables used in models (1) to (4). The coefficient of *F121* is positive and significant (0.015, p-val < 0.01). We also estimate a standard Basu (1997) model augmented with *F121*. The interaction of the returns variable with the bad news dummy and *F121* (*Neg*Ret*F121*) is positive and significant (0.032, p-val < 0.05), consistent with SFAS 121 leading to increased conditional conservatism levels. This evidence validates our use of this regulation as providing exogenous variation in conditional conservatism.

In Panel B of Table 3 we report the results of the estimation of models (3) and (4). In the two first columns the dependent variable is discretionary accruals (total accruals in column 1, and working capital accruals in column 2).[14] In column 3 the dependent variable is real earnings management, and in columns 4 and 5, whether the firm is classified as a habitual beater or as a marginal beater, respectively. The main coefficient of interest is *F121*Treated*, that is, the differential effect of the passage of SFAS 121 on treated firms (relative to control firms) in the period after it was passed (1996–1999). As we can see, this coefficient is negative and significant for the two discretionary accruals proxies (coeff. = −0.147, p-val < 0.01 for total accruals in column 1, and coeff. = −0.176, p-val < 0.01 for working capital accruals in column 2), and positive and significant for the real earnings management proxy (coeff. = 0.680, p-val < 0.05 in column 3). The *F121* coefficient, which captures the direct effect (unrelated to conservatism) of the passage of the regulation on earnings management is not significant, as predicted. Therefore, the only effect of the passage of the regulation over earnings management occurred through its changes on conditional conservatism. This is, therefore, consistent with conservatism having a causal effect on earnings management, and creating the hypothesized trade-off between accruals and real earnings management. Fig. 1 depicts the difference in conditional conservatism for treated *versus* control groups, before and after SFAS 121. This figure provides further assurance that SFAS 121 significantly affected conditional conservatism, as well as indicates that the parallel trends assumption holds in the pre-period between treatment and control groups.

To gauge the overall effect, in columns 4 and 5 we study the impact of SFAS 121 on benchmark beating. Regarding habitual beaters (column 4), the coefficient on *F121*Treated* is negative and significant (coeff. −0.033, p-val < 0.10). As with the previous earnings management measures, F121 is not significant on its own, showing that the only effect of the passage of SFAS 121 on earnings management was through its effect on conditional conservatism. Overall, this is again consistent with conservatism having a causal effect on earnings management. In this case, conservatism decreases the probability that a firm becomes a habitual beater of earnings targets. Finally, in column 5, we study marginal beaters, that is, firms suspect of managing earnings to beat the earnings benchmark. In this case, the effect of conservatism is not significant, as *F121*Treated* is negative, as expected, but not significant at conventional levels.

Table 3, Panel C provides further validation for the use of SFAS 121 as a valid shock to conditional conservatism. We conduct a placebo test, where we replicate the findings of Panel B assuming SFAS 121 was enacted in 1993. For this analysis we consider as our empirical sample the period from 1990 to 1997. As expected, we find no evidence on effects for *Treated* firms surrounding this placebo event (*F121*Treated* is not significant). In the spirit of Patatoukas and Thomas (2011, 2016) and Laurion and Dutta (2016), we conduct a further placebo test, by looking at the association between conditional conservatism

[14] As already mentioned, SFAS 121 introduced more stringent impairment tests for long-lived assets. Often, these impairments also affect working capital accruals that are part of impaired business units. For this reason, we also analyze the effect on discretionary working capital accruals.

Table 3
Exogenous shock to conditional conservatism: the passage of SFAS 121 in 1996.

Panel A: Effect of the passage of SFAS 121 on conditional conservatism

	CO_K&W (1)	Augmented Basu (1997) regression	EARNINGS/P (2)
F121	*0.015***	Neg	−0.011***
	3.014		−2.795
Institutions	−0.004	Ret	0.037***
	−0.578		9.234
Analysts	0.003**	*Neg*Ret*	*0.077***
	2.529		*6.446*
ATI	0.001	F121	0.004
	0.606		0.932
ATI_dummy	−0.004	Neg*F121	−0.005
	−0.769		−0.989
High_mkt_share	0.005**	Ret*F121	−0.030***
	2.248		−4.489
Poor_fin_cond	0.000	*Neg*Ret*F121*	*0.032**
	0.551		*2.018*
High MTR	−0.005**	MTB	0.007***
	−1.988		5.734
Auditing	−0.003**	Neg*MTB	0.004***
	−2.343		2.74
NOA	0.013***	Ret*MTB	−0.002*
	3.439		−1.824
Cycle	0.000**	Neg*Ret*MTB	−0.031***
	2.551		−6.627
ROA	0.000		
	0.47		
SG	−0.002		
	−0.594		
Size	−0.038***		
	−13.301		
MTB	0.000		
	0.054		
Leverage	0.022***		
	6.151		
BAS	0.001		
	0.902		
Adjusted R-squared	0.740	Adjusted R-squared	0.311
Firm FE	YES	Firm FE	YES
Cluster firm & year	YES	Cluster firm & year	YES

Panel B: Effect of the exogenous increase in conditional conservatism on earnings management

	abs(DA) (1)	abs(DWCA) (2)	RM (3)	HAB_BEATERS (4)	SUSPECT (5)
F121	*0.051*	*−0.153*	*0.603*	*−0.191*	*−0.242*
	0.201	*−0.923*	*0.38*	*−0.912*	*−1.234*
Treated	*0.294****	*0.393****	*−2.493****	*0.031**	*0.007*
	3.206	*7.459*	*−6.109*	*1.945*	*0.444*
*F121*Treated*	*−0.147****	*−0.176****	*0.680***	*−0.033**	*−0.005*
	−3.484	*−5.483*	*2.461*	*−1.74*	*−0.239*
Institutions	0.229	0.659**	−7.726***	−0.299**	−0.083
	0.715	2.212	−2.746	−2.141	−0.656
Analysts	0.406***	0.464***	−3.115***	0.611***	0.337***
	2.851	4.207	−3.479	11.112	6.861
ATI	0.082	0.129*	−0.421	0.081*	0.02
	0.894	1.654	−0.395	1.705	0.471
ATI_dummy	0.24	0.472***	−0.105	0.170	0.082
	0.829	2.627	−0.038	1.263	0.680
High_mkt_share	−0.726***	−0.612***	3.297*	−0.111	0.006
	−4.022	−4.900	1.869	−1.404	0.078
Poor_fin_cond	0.217***	0.164***	−0.634***	−0.024**	−0.004
	5.69	7.109	−2.806	−2.479	−0.518
High MTR	0.171	0.150*	−2.399	−0.078	0.030
	1.063	1.752	−1.517	−1.194	0.457
Auditing	0.000	−0.011	−2.063**	−0.074	−0.043
	−0.004	−0.119	−1.998	−1.326	−0.774
NOA	−0.821**	−1.872***	10.202***	0.045	0.146**

Table 3 (*continued*)

Panel B: Effect of the exogenous increase in conditional conservatism on earnings management

	abs(DA) (1)	abs(DWCA) (2)	RM (3)	HAB_BEATERS (4)	SUSPECT (5)
	−2.159	−7.735	8.113	0.714	2.108
Cycle	0.000	0.004***	0.001	0.000	0.001
	0.181	4.191	0.059	−0.024	1.462
ROA	−0.083***	−0.003	−0.230***	−0.012***	0.017***
	−8.212	−0.400	−2.996	−3.785	5.094
SG	2.571***	3.515***	−3.770	−0.176	0.022
	5.102	7.981	−1.000	−1.507	0.239
Size	−0.553***	−0.633***	3.400***	−0.135***	−0.078**
	−3.904	−6.979	3.393	−3.531	−2.285
MTB	1.795***	1.831***	−10.135***	−0.150***	0.124***
	5.413	9.278	−4.644	−3.76	4.063
Leverage	−0.597***	−0.668***	3.436***	0.318	−0.339
	−5.316	−6.438	4.984	1.595	−1.605
BAS	0.333***	0.372***	−1.720***	−0.037**	−0.077***
	6.494	7.51	−4.847	−2.240	−3.501
Pred_RM	0.089***	0.127***			
	3.227	7.291			
Unexp_RM	−0.002	0.000			
	−1.575	0.23			
Adjusted R-squared	0.151	0.162	0.203	0.042	0.048
First-step regressors	YES	YES	YES	–	–
Industry& year FE	YES	YES	YES	YES	YES
Cluster firm & year	YES	YES	YES	YES	YES

Panel C: Placebo test assuming that SFAS 121 was enacted in 1993

	abs(DA) (1)	abs(DWCA) (2)	RM (3)	HAB_BEATERS (4)	SUSPECT (5)
F121	0.847**	0.704**	−2.929	−0.123	−0.271
	2.392	2.529	−1.203	−0.735	−1.468
Treated	0.118	0.162***	−2.040***	0.059**	0.009
	1.646	3.589	−4.273	2.193	0.219
*F121*Treated*	*−0.001*	*0.034*	*−0.085*	*−0.039*	*−0.008*
	−0.024	*0.974*	*−0.225*	*−1.286*	*−0.206*
Control variables	YES	YES	YES	YES	YES
First-step regressors	YES	YES	YES	–	–
Industry& year FE	YES	YES	YES	YES	YES
Cluster firm & year	YES	YES	YES	YES	YES

Panel A: The sample is restricted to the eight-year window 1992–1999. *CO_K&W* is the Khan and Watts (2009) firm-year proxy for conservatism described in Section 3.2 but without taking the three-year average. *EARNINGS/P* is income before extraordinary items scaled by lagged market value of equity. *F121* equals one if the year is greater than or equal to 1996 and zero otherwise. *Ret* is annual stock returns ending three months after fiscal year end. *Neg* is an indicator variable that equals one if *Ret* < 0 and zero otherwise. The rest of variables are described in Appendix B. t-statistics reported below the coefficients. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01.

Panel B: The sample spans 1992–1999. *F121* equals one if the year ≥ 1996 and zero otherwise. *Treated* is the reverse decile ranking of average conservatism for the seven years ending in 1995. High values of *Treated* indicate low conservatism. The measurement of *Treated* aims to capture average conservatism without including the endogenous anticipation effects of the passage of SFAS 121 in 1996. Other variables are described in Appendix B. t-statistics below the coefficients. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01. Columns (4) and (5) report logit regressions.

Panel C: The sample spans 1990–1997. *F121* equals one if the year ≥ 1993 and zero otherwise. *Treated* is the decile ranking of average conservatism for the seven years ending in 1993. High values of *Treated* indicate low conservatism. The rest of variables are described in Appendix B. t-statistics reported below the coefficients. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01. For parsimony, we only report the coefficients of interest. Columns (4) and (5) report logit regressions.

and lagged earnings management, measured five years before. Untabulated results suggest no association between conditional conservatism and these lagged EM measures, as expected.[15]

To further validate our identification strategy, we provide, in Table 4 Panels A and B, additional evidence of changes in conditional conservatism surrounding SFAS 121 adoption by using alternative conservatism proxies. In particular, in Panel A, we show the change in the measure proposed by Dutta and Patatoukas (2017): the Spread of Conditional Variances (SCV) pre- and post-SFAS 121. We provide comparisons using a one-year and a two-year window. The evidence is consistent with greater conditional conservatism overall, and also, with greater changes when we look at measures of total accruals SCV (TACC), or accruals before depreciation, than working capital accruals SCV(WCA). This is as expected, given that greater impairments are likely to affect working and long-term accruals (consider, for example, the case where a cash generating

[15] In particular, we repeat the analyses of Table 2, measuring RM and AM at time *t*-5, and we find no association between our proxy for conditional conservatism and RM (coeff=0.077, *t*-stat=1.29), abs(DA) (coeff=0.007, *t*-stat=0.371) and abs(DWCA) (coeff=0.001, *t*-stat=0.036).

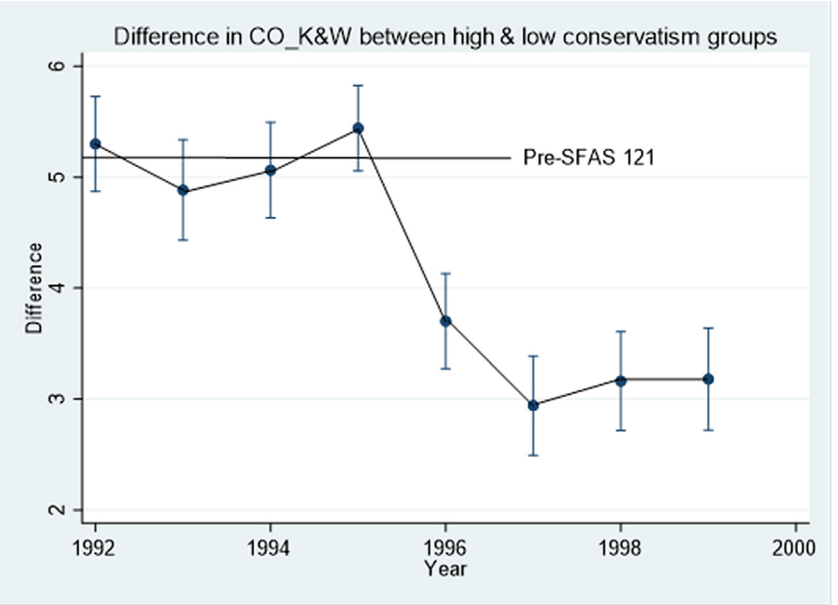

Fig. 1. Difference between High and Low *CO_K&W* firms before and after SFAS 121. The sample spans 1992–1999 and depicts the difference between High and Low conditional conservative firms before and after the passage of SFAS 121 in 1996. *High (Low) CO_K&W* are the treated (control) firms, where our measure of conditional conservatism *CO_K&W* is measured as the reverse decile ranking of average conservatism for the seven years ending in 1995. High values indicate low conservatism. High (low) means being in the top (bottom) two deciles of the reverse ranking.

unit has to be impaired, this would affect both current and fixed assets), but they should be particularly material when we consider long-term accruals. A limitation of the SCV proxy is that it cannot be used at the firm-year level, and thus, we cannot use it to replicate all of our analyses. As additional evidence, we follow Dutta et al. (2019) and in Panel B, we provide evidence of increased conditional conservatism surrounding SFAS 121 (*F121*DCFOres*CFOres* = 0.037, *t*-stat = 2.608). In this Panel, we use as dependent variable conditionally conservative accruals (CCACC) as measured following Lawrence, Sloan and Sun (2018).[16]

4.2. Additional analyses: The role of conservatism in reducing earnings management in rich vs poor information environments

As an additional analysis, we repeat our main tests focusing on settings where we expect that the consequences of conservatism will be greater. To do so, we study firms with differing information environments. First, we partition the full sample based on a composite index of firms' information environment quality, denoted IQ. For each firm-year observation, IQ equals the mean of the standardized values of five variables suggested by prior research (Lang and Lundholm, 1993, 1996, Riedl and Serafeim, 2011, LaFond and Watts, 2008): (1) the number of analysts covering the firm during the year; (2) minus one times the consensus analyst earnings-per-share (EPS) forecast error, calculated as the absolute value of actual EPS for the firm-year minus the median (consensus) analyst EPS forecast from the 10th month of the fiscal year from the IBES Summary database divided by the absolute value of actual EPS;[17] (3) minus one times the standard deviation of analyst EPS forecasts divided by the absolute value of the median EPS forecast; (4) minus one times the standard deviation of daily stock returns during the year; and (5) minus one times the average daily equity bid-ask spread divided by the average of the bid-ask spread during the year. Firms in the lowest (highest) IQ quartile are classified as having low (high) information environment quality. Using these partitions, we re-run our main tests (model 1).

Table 5 Panel A presents the results from this test. If conservatism plays a more important role in settings with greater information asymmetries as hypothesized in LaFond and Watts (2008), we expect to see a stronger association between conservatism and our earnings management proxies in settings with Low IQ. The results confirm this expectation. When examining real earnings management, columns (1) and (2), we find that the coefficient on *CO* is twice the size for the Low IQ subsample (*CO* = 1.096, *p*-val < 0.01) than for the High IQ subsample (*CO* = 0.499, *p*-val < 0.01). The difference between the

[16] As an additional test, we run the Dutta et al. (2019) model interacting it with future changes in EM. Similar to LaFond and Watts (2008), the idea behind this test is that if the future change in RM (AM) is positive, it is associated with greater (lower) conditional conservatism. Thus, the sign on the coefficient of interest *DCFOres*CFOres*ΔEM (t+1)* is positive for ΔRM and negative for ΔAM. Unreported results are consistent with this expectation. The coefficient on *DCFOres*CFOres*ΔEM (t+1)* is positive and significant for ΔRM (t+1) (coeff=0.227, *t*-stat=2.74), and negative and significant when the EM proxy is ΔDA (t+1) (coeff=−0.556, *t*-stat=−3.79) and ΔDWCA (t+1) (coeff=−0.282, *t*-stat=−2.91). It is also negative and significant for our aggregate EM proxies: ΔHab_Beater (t+1) (coeff=−0.038, *t*-stat=−1.89) and ΔSuspect (t+1) (coeff=−0.037, *t*-stat=−1.92).

[17] Our results are unaffected if we instead use the mean consensus forecast or measure the consensus forecast at other points during the year.

Table 4
Alternative measures of conservatism.

Panel A: Change in SCV (Dutta & Patatoukas, 2017) around the passage of SFAS 121

Period	SCV(WCA)	SCV(Accruals bef. depr.)	SCV(TACC)
1995	0.06%	0.21%	0.20%
1996	0.191%*	0.426%*	0.384%*
1994 & 1995	0.12%	0.24%	0.26%
1996 & 1997	0.226%*	0.452%*	0.475%*

Panel B: Dutta, Patatoukas and Wang (2019) model

	CCACC b/t
DCFOres	−0.002**
	−2.376
CFOres	−0.028***
	−3.985
*DCFOres*CFOres*	*0.025***
	2.683
F121	0.001
	0.002
F121*DCFOres	−0.001
	−0.914
F121*CFOres	−0.020**
	−2.555
*F121*DCFOres*CFOres*	*0.037***
	2.608
Constant	−0.001
	−0.262
Adjusted R-squared	0.139
Controls Included	YES
Industry& year FE	YES
Cluster firm & year	YES

The sample is restricted to the eight-year window 1992–1999. In Panel A, we use the Spread of Conditional Variances (SCV) measure developed by Dutta and Patatoukas (2017). SCV is the difference between the variance of accruals in the case of bad news (i.e., negative stock returns) and the variance of accruals in the case of good news (i.e., positive or zero stock returns). In Panel B, we build on the Dutta, Patatoukas and Wang (2019) model to provide further evidence on the effect of conservatism. *F121* equals one if the year is greater than or equal to 1996 and zero otherwise. *CCACC* is conditionally conservative accruals scaled by market value of equity at the beginning of the fiscal year $(PRCC\_F*CSHO)_{t-1}$. Conditionally conservative accruals are measured as in Lawrence, Sloan and Sun (2018) as min((-FOPO,0)), where min(x,y) is the minimum of × and y. *CFO* is cash flow from operations taken from the statement of cash flows, scaled by the beginning-of-year total assets. *CFOres* is cash flow news, measured as the residual of the AR(1) regression $CFO_{it} = \alpha + \beta\ CFO_{it-1} + \varepsilon_{it}$, estimated by industry (two-digit SIC) and year. We require a minimum of twenty observations per industry-year. *DCFOres* is an indicator variable that equals one if *CFOres* < 0 and zero otherwise. The rest of variables are described in Appendix B. t-statistics reported below the coefficients. Standard errors are clustered by firm and year. Significance: * p < 0.10, ** p < 0.05, *** p < 0.01.

coefficients is statistically significant at p-val < 0.025. We find comparable results for the accruals-based earnings management tests, columns (3) and (4), where the results suggest a strong negative association between conservatism and accruals earnings management in the Low IQ subsample (*CO* = −0.127, *p*-val < 0.01), while the association is smaller in settings with High IQ (*CO* = −0.065, *p*-val < 0.01).[18] The difference between the coefficients is statistically significant at *p*-val < 0.089.

We repeat these analyses in a second setting where conservatism is again expected to play a more significant role: in firms without a credit rating (NO CR) in Compustat *versus* those with a credit rating (YES CR). When the firm has no credit rating, we expect conservatism to play a stronger informational role. Table 5 Panel B reports the findings from this final test. The results are comparable to those reported in Table 5 Panel A and consistent with an enhanced role of conservatism in this setting.

4.3. Additional analyses: Exogenous shocks to the information environment

In our final set of tests, we examine two exogenous shocks to firm-level transparency and external monitoring. In particular, we study 1) the passage of SFAS 131, on segment reporting, and 2) the passage of Regulation SHO, which removed short

[18] Untabulated results with total discretionary accruals, *abs(DA)*, produce identical inferences.

Table 5
Role of conditional conservatism in reducing earnings management: rich vs. poor information environments.

Panel A: Role of conservatism in reducing earnings management in Low/High information quality environments

	RM Low IQ (1)	RM High IQ (2)	abs(DWCA) Low IQ (3)	abs(DWCA) High IQ (4)
CO (t-1)	*1.096***	*0.499***	*−0.127***	*−0.065***
	5.13	*3.512*	*−4.151*	*−3.684*
Institutions	−8.500***	4.014	−0.313	−0.660***
	−3.493	1.658	−1.081	−4.053
Analysts	−5.477***	−1.335	0.401***	0.092
	−5.911	−1.454	3.239	1.402
ATI	2.167	−0.656	−0.205	0.142**
	1.481	−0.794	−1.147	2.647
ATI_dummy	0.528	0.152	0.138	0.433***
	0.167	0.074	0.317	3.783
High_mkt_share	4.492**	−0.296	−0.129	0.032
	2.225	−0.153	−0.604	0.313
Poor_fin_cond	−0.906***	−0.867***	0.128***	0.146***
	−4.882	−4.307	7.162	6.978
High MTR	−1.97	−0.247	0.232	−0.223***
	−1.488	−0.203	1.488	−2.8
Auditing	−1.676	−2.198**	0.044	0.130*
	−1.136	−2.182	0.306	1.912
NOA	7.819***	5.388***	−1.083***	−0.914***
	5.708	4.592	−5.488	−9.079
Cycle	0.01	−0.008	0.003***	0.003***
	1.198	−0.817	4.081	5.097
ROA	0.063	−0.396***	−0.012**	0.031***
	1.085	−3.93	−2.179	3.926
SG	−7.141**	−2.304	2.443***	2.482***
	−2.507	−0.83	7.227	5.696
Size	−0.583	3.889***	0.011	−0.518***
	−0.696	5.732	0.105	−6.618
MTB	−8.533***	−11.031***	0.930***	1.610***
	−5.617	−8.999	5.896	8.582
Leverage	1.958***	6.452***	−0.241***	−0.714***
	5.141	3.121	−5.011	−5.003
BAS	−0.586*	−1.665*	0.126***	0.663***
	−1.953	−1.831	3.163	11.707
Pred_RM			0.063***	0.110***
			3.591	6.707
Unexp_RM			−0.002	−0.001
			−1.018	−0.876
Adjusted R-squared	0.182	0.249	0.123	0.167
First-step regressors	YES	YES	YES	YES
Industry& year FE	YES	YES	YES	YES
Cluster firm & year	YES	YES	YES	YES

Panel B: Role of conservatism in reducing earnings management in firms without a credit rating

	RM (NO CR) b/t	RM (YES CR) b/t	abs(DWCA) (NO CR) b/t	abs(DWCA) (YES CR) b/t
CO (t-1)	*0.943***	*0.533***	*−0.208***	*−0.042***
	7.049	*4.103*	*−10.809*	*−3.695*
Institutions	−8.868***	2.496	1.329***	−0.192
	−4.580	0.998	5.919	−1.074
Analysts	−3.581***	−1.518	0.713***	0.032
	−4.675	−1.689	9.078	0.594
ATI	−1.589	0.572	0.338***	−0.046
	−1.529	0.67	4.633	−1.112
ATI_dummy	−2.922	3.869*	0.933***	−0.228*
	−1.242	1.967	5.853	−1.786
High_mkt_share	3.394**	−1.401	−0.778***	0.265**
	2.297	−0.81	−5.974	2.165
Poor_fin_cond	−0.755***	−1.425***	0.201***	0.176***
	−5.443	−3.106	11.348	7.465
High MTR	−2.445**	−0.587	0.361***	−0.114
	−2.507	−0.564	4.623	−1.357

Table 5 (*continued*)

Panel B: Role of conservatism in reducing earnings management in firms without a credit rating				
	RM (NO CR) b/t	RM (YES CR) b/t	abs(DWCA) (NO CR) b/t	abs(DWCA) (YES CR) b/t
Auditing	−1.462*	−1.169	0.097	0.149**
	−1.827	−1.067	1.322	2.451
NOA	8.698***	3.023***	−2.206***	−0.370***
	7.306	3.452	−11.424	−5.468
Cycle	0.005	−0.006	0.003***	0.004***
	0.776	−0.657	6.544	6.068
ROA	0.044	−0.333***	−0.019***	0.020***
	0.762	−4.602	−4.31	3.943
SG	−3.106*	−1.122	3.283***	1.812***
	−1.846	−0.51	13.575	6.89
Size	1.481**	2.080***	−0.361***	−0.185***
	2.389	2.841	−7.739	−4.685
MTB	−9.628***	−11.782***	2.146***	1.369***
	−7.641	−9.699	11.355	9.504
Leverage	3.245***	1.288***	−0.735***	−0.193***
	5.054	3.238	−8.941	−7.423
BAS	−1.251***	0.217	0.453***	0.294***
	−4.941	0.464	9.404	7.694
Pred_RM			0.187***	0.087***
			9.356	8.449
Unexp_RM			−0.001	−0.002
			−0.98	−1.241
Adjusted R-squared	0.204	0.235	0.155	0.156
First-step regressors	YES	YES	YES	YES
Industry& year FE	YES	YES	YES	YES
Cluster firm & year	YES	YES	YES	YES

Panel A presents regressions for partitions of the sample based on a composite proxy for information environment quality (IQ) defined as the mean of the standardized values of (1) the number of analysts covering the firm during the year; (2) minus one times the consensus analyst earnings-per-share (EPS) forecast error using the absolute value of actual EPS for the firm-year minus the median (consensus) analyst EPS forecast from the 10th month of the fiscal year from IBES Summary data, divided by the absolute value of actual EPS; (3) minus one times the standard deviation of analyst EPS forecasts divided by the absolute value of the median EPS forecast; (4) minus one times the standard deviation of daily stock returns during the year; and (5) minus one times the average daily equity bid-ask spread divided by the average of the bid-ask spread during the year. Firms in the lowest (highest) IQ quartile are classified as having low (high) information environment quality.
Panel B presents regressions for partitions of the sample based on whether the firm has a credit rating or not. NO CR indicates that the firm does not have a credit rating in Compustat and zero otherwise.
The rest of variables are described in Appendix B. t-statistics are reported below the coefficients. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

selling constraints for a randomly selected sample of Russell 3,000 firms. These two external shocks are expected to decrease earnings management. Therefore, in firms that were more conditionally conservative prior to these external shocks, the effects of the shocks on earnings management (either accruals-based or real) should be less pronounced. This is because conservatism already contributed to improve the information environment, leading to lower accruals-based earnings management and a trade-off with real earnings management.

The details of how we conduct these analyses and the results obtained are provided in the Online Appendix. With respect to the SFAS 131 shock, we hypothesize that conservatism was already contributing to a better information environment and increased monitoring, and was already decreasing accruals-based earnings management and increasing real earnings management before the passage of SFAS 131. If our prediction holds, the effects of SFAS 131 over accruals and real earnings management should be less pronounced for firms that were already more conservative. Our findings are consistent with these expectations. Second, we show that Regulation SHO reduced accruals earnings management in pilot firms and had no effect on nonpilot firms, consistent with the findings of Fang et al. (2016). Interestingly, our results suggest Regulation SHO led to an increase in real earnings management for pilot firms, which is not investigated by Fang et al. (2016). In the main result of this test, we show that these two documented effects were significantly less pronounced for firms that were more conservative prior to the implementation of the pilot program.

Overall, and consistent with these regulations improving the information environment and the monitoring over the financial reporting system, we find lower accruals-based earnings management and increases in real earnings management after their passage. We find that these shocks did not affect conditional conservatism and that the effects of these regulations are substantially less pronounced for firms that were more conservative before their passage, consistent with conditional conservatism already eliciting these transparency effects for them.

5. Summary and conclusions

Ball (2001), Watts (2003) and LaFond and Watts (2008), among others, argue that the asymmetric recognition of good and bad news in earnings leads to less earnings management. Despite this being a well-accepted assumption, there is no empirical evidence to support it. In fact, there are still voices claiming that any type of conservatism is akin to building cookie jar reserves that will assist earnings management in the future, and the analytical literature offers mixed views on the matter. The work of Chen et al. (2007) and Gao (2013) suggests that conservatism imposes additional costs to managing earnings, thereby reducing the expected benefits of manipulation and thus constraining earnings management. However, recent research by Bertomeu et al. (2017) and Caskey and Laux (2017) suggests that conservatism may create incentives for earnings management.

We predict that conditional conservatism lowers the incentives for accruals-based earnings management, because firms that have conservative reporting policies risk losing their conservatism-related benefits if they stray away from their conservative reporting. However, we also acknowledge that managers can take real actions to achieve their financial reporting goals. In the face of short-term incentives to beat earnings targets or circumvent board monitoring, at the margin, we predict managers in conservative firms will be more likely to manage earnings through the manipulation of real activities.

To test these predictions, we empirically analyze the impact of conditional conservatism on both accruals and real earnings management. Our empirical results, including the analysis of external shocks both to conditional conservatism and to the firm information environment to better identify causal effects, support our arguments. Conservatism reduces accruals-earnings management but also encourages real earnings management. This switch raises the question of what the net effect of conservatism is and whether its benefits outweigh its costs. We provide evidence that more conservative firms have lower probability of managing earnings by either method to achieve earnings benchmarks. This indicates that, in terms of the aggregate level of earnings management, the displacement of one type of manipulation by the other is moderate and, overall, conditional conservatism constrains earnings management.

Our empirical results provide support to the common untested assumption that conditional conservatism reduces earnings management (Watts, 2003, LaFond and Watts, 2008) and contribute to the literature on the trade-offs between accounting and real earnings management (Cohen et al., 2008, Cohen and Zarowin, 2010, Zang, 2012). Although conservatism triggers the documented trade-off between the two types of earnings management, the overall effect of conservatism is beneficial. It reduces the overall likelihood of engaging in any type of earnings management to meet or beat earnings benchmarks. We thus add to a large stream of recent literature on the benefits of conditional conservatism.

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Appendix A. Determinants of the decision to choose accrual-based vs. real earnings management

(a) *Corporate Governance:* Firms that are closely monitored may find it costlier to manipulate real activities as these manipulations have real costs for investors. On the other hand, accruals manipulations might be seen as a benign form of achieving earnings targets that do not affect the underlying economics of the firm and can even be used to convey information to the market about future profitability (Healy and Wahlen, 1999). For instance, institutional investors, being more sophisticated, are likely to exert a higher effort in monitoring operational decisions that can have long-term economic implications (Bushee, 1998, Roychowdhury, 2006), and they are less likely to pay excessive attention to accruals manipulations, particularly if these are within reasonable boundaries. We use three proxies for governance: the proportion of institutional investors (*Institutions*), the number of analysts following (*Analysts*), and the alternative takeover vulnerability index (*ATI*) developed by Cremers and Nair (2005). This index is based on the one developed by Gompers et al. (2003). It focuses on only three key antitakeover provisions shown to be critical to takeovers.[19] These three provisions are the existence of classified boards, blank-check preferred stock ("poison pill"), and restrictions on shareholders on calling special meetings or acting through written consent. We assign the index

[19] We do not use the Gompers et al. (2003) index because a few data items necessary to construct it are not available since 2007. We appreciate the assistance of Martijn Cremers in the construction of ATI.

an initial value of 4 and remove a point for the existence of each of these three provisions to create a value between 1 and 4, where a higher value implies less protection against takeovers and a higher quality of external governance. Because the data to construct the index is only available for 40 percent of observations, following Biddle et al., 2009), we set observations with missing *ATI* to zero. We then include an indicator variable (*ATI_dummy*) that takes the value of one if the data is missing and zero otherwise. In summary, we expect that the three governance proxies will have a negative association with real earnings management and a positive association with accruals earnings management.

(b) *Market Share:* Firms that are leaders in their own industries and exert certain dominance in the markets they operate in have more room to deviate from optimal operational policies than firms that operate in competitive industries. For this reason we expect to observe that firms with a high market share are more likely to engage in real earnings management than firms that are followers.

(c) *Financial condition*: Firms in poor financial condition, especially those approaching bankruptcy, are not expected to deviate from optimal operating and investment policies to restore financial health (Graham et al., 2005). Therefore, we expect these firms to engage in less real earnings management. At the same time, poor financial condition firms are also likely to engage in accruals management to increase reported income. To control for the firm's financial condition, *Poor_fin_cond,* we use Altman's (1968) bankruptcy z-score. Because higher values of z-score indicate better financial health, we multiply *Z-Score* by minus one. We expect to observe a negative (positive) association between real (accrual) earnings management and *Poor_fin_cond* .

(d) *Taxation:* Real manipulations are likely to directly affect the firm's taxable income because they tend to have real cash flow implications. For example, reducing R&D expenditures increases taxable income, whereas increasing bad debt expense does not. We measure tax incentives for earnings management with an indicator variable (*High MTR*) that takes the value of one if the firm has a high marginal tax rate. Firms with high marginal tax rates are expected to engage in less real earnings management and more accruals earnings management. However, to the extent that accruals manipulation can also affect taxable income, accruals management might confound these predictions. Finally, if managers' intention is to maximize earnings, they may accomplish it by doing both real and accruals management regardless of the tax cost. This can also change our predictions.

(e) *Auditing*: We expect that high quality auditors are more likely to detect and disallow aggressive accrual-based earnings management activities. On the other hand, auditors are not expected to curtail real operating decisions because this is not part of their responsibilities. To measure the quality of the firm's auditor, we employ an indicator variable (*Auditing*) that equals one if the firm has a Big 8 auditor and the auditor tenure is above the sample mean and zero otherwise.[20] We expect to observe a negative (positive) association between accruals (real) earnings management and *Auditing*.

(f) *Past accruals-based earnings management*: Past accruals-based earning management is likely to influence current and future accruals management because of the articulation between the income statement and the balance sheet and because of the limitations imposed by GAAP. Therefore, if a firm has aggressively managed accruals in the past, in the future it will have little or no room for additional accruals management. To capture this effect, we use the measure of balance sheet bloat developed by Barton and Simko (2002). *NOA* equals net operating assets (i.e., shareholders' equity less cash and marketable securities and plus total debt) divided by sales. To the extent that managers exhaust the possibility of managing accruals, they are expected to resort to managing real activities. We expect to observe a negative (positive) association between accruals (real) earnings management and *NOA*.

(g) *Length of the operating cycle*: The longer the cycle, the greater the possibilities to manage accruals and the lesser the need to resort to managing real activities. To capture this effect, we use the length of the operating cycle (*Cycle*), computed as the days of receivables plus the days of inventories less the days of payables, all at the beginning of the year. We predict a positive (negative) association between accruals (real) earnings management and *Cycle*.

(h) *Effect of real earnings management on accruals-based earnings management*: Because of the sequential nature of the decisions to manage earnings (the decision to manipulate real activities must be taken early in the year), in the equations where the dependent variable is discretionary accruals (model (1.b)), we include as explanatory variables the fitted values and the residuals of the real earnings management equation. We denote these variables as *Predicted RM* and *Unexpected RM*, respectively.

Appendix B. Variable descriptions

RM	Real earnings management proxy computed as the addition of APROD and −1*AEXP, which are Roychowdhury's (2006) abnormal production costs and abnormal discretionary expenses, respectively.
APROD	Abnormal production costs, as in Roychowdhury (2006), are estimated as the residuals of the following model: $PROD_t/Assets_{t-1} = \alpha + \beta_0\ 1/Assets_{t-1} + \beta_1\ Sales_t/Assets_{t-1} + \beta_2\ \Delta Sales_t/Assets_{t-1} + \beta_3\ \Delta Sales_{t-1}/Assets_{t-1} + \varepsilon_t$. To estimate this model, we run cross-sectional regressions for each Fama-French industry/fiscal-year grouping, imposing a minimum of 15 observations per regression. Production costs (*PROD*) are defined as the sum of costs of goods sold and the change in inventory during the year. More positive values of *APROD* indicate more income increasing real earnings management.

(*continued on next page*)

[20] Research has documented that top auditors can constrain accruals earnings management (DeFond and Jiambalvo, 1993, Francis et al., 1999) and that auditing quality increases with auditor tenure (Stice, 1991 and Bell et al., 2015). We do not use a dummy variable indicating whether the firm has a Big 8 auditor because most of the firms in our sample fall in this group, and this results in very little cross-sectional variation in the variable.

AEXP	Abnormal discretionary expenses, as in Roychowdhury (2006), are estimated as the residuals of the following model: $DEXP_t/Assets_{t-1} = \alpha + \beta_0\ 1/Assets_{t-1} + \beta_1\ Sales_{t-1}/Assets_{t-1} + \varepsilon_t$, where discretionary expenses (*DEXP*) are defined as the sum of SG&A, R&D and advertising expenses. More negative values of *AEXP* indicate more income increasing real earnings management.
DA	Discretionary accruals obtained with the modified Jones model. $TAccr_t/Assets_{t-1} = \alpha + \beta_0\ 1/Assets_{t-1} + \beta_1\ (\Delta Sales_t - \Delta REC_{it})/Assets_{t-1} + \beta_2\ PPE_t/Assets_{t-1} + \beta_3\ ROA_{t-1} + \beta_4\ SG_t + \varepsilon_t$. Total accruals (*TAccr*) is the difference between earnings before extraordinary items and cash flows from operations reported in the statement of cash flows. *ΔSales* is change in sales. *ΔREC* is the change in accounts receivable. *PPE* is gross property, plant and equipment. All the variables, including the intercept are scaled by total assets at the end of year *t-1*. We also include an unscaled intercept in all our regressions. To control for the influence of firm performance and growth, we follow the recommendations of Kothari et al. (2005) and Collins et al. (2017) and also include as regressors lagged *ROA* (defined as net income scaled by total assets) and current growth in sales (*SG*). The model is estimated for each Fama and French (1997) industry-fiscal year grouping, imposing a minimum of 15 observations per regression.
DWCA	Discretionary working capital accruals obtained with the modified Jones model (Dechow et al., 1995): $WCAccr_t/Assets_{t-1} = \alpha + \beta_0\ 1/Assets_{t-1} + \beta_1\ (\Delta Sales_t - \Delta REC_{it})/Assets_{t-1} + \beta_3\ ROA_{t-1} + \beta_4\ SG_t + \varepsilon_t$. where working capital accruals (*WCAccr*) is measured using data from the statement of cash flows to reduce measurement error (Hribar and Collins, 2002). *WCAccr* equals (RECCH + INVCH + APALCH + TXACH + AOLOCH) scaled by lagged total assets. The Compustat acronyms inside the parentheses in this expression represent the changes in accounts receivable, inventories, accounts payable, taxes payable, and other items.[21] All other variables and estimation methods are as described for DA.
CO (t-1)	Previous-year summary measure of conditional conservatism obtained as the decile ranks of the average of the following three standardized proxies for conservatism: CO_K&W, which is the three-year average of timeliness loss recognition (G_Score + C_Score). G_Score is the timeliness of earnings to good news, and C_Score is the incremental timeliness of earnings to bad news as developed by Khan and Watts (2009). CO_SKW is the negative of the ratio of the skewness of net income to the skewness of cash flow from operations. To obtain the skewness, we use rolling windows of five years ending at the current year. CO_CR is the three-year average of the conservatism ratio as developed by Callen et al. (2010).
Institutions	Proportion of firm shares held by institutional investors.
Analysts	Logarithm of one plus the number of analysts following the firm.
ATI	The alternative takeover vulnerability index developed by Cremers and Nair (2005). It ranges from 1 to 4. If ATI is missing, we assign it a value of zero.
ATI_dummy	An indicator variable that equals 1 if ATI is not available and 0 otherwise.
High_mkt_share	An indicator variable that equals one if the percentage of the company's sales to total sales of its 3-digit SIC industry is above the sample median.
Poor_fin_cond	The negative of Altman's (1968) bankruptcy score measure at the beginning of the year. It equals 3.3*Net income + Sales + 1.4*Retained earnings + 1.2*Working capital + 0.6*Market value of equity, with all variables scaled by total assets except market value of equity, which is scaled by total liabilities. Higher values of *Poor_fin_cond* indicate worse financial condition.
High_MTR	An indicator variable that takes the value of one if the firm has a high marginal tax rate and zero otherwise. A high marginal tax rate is assumed if the firm's marginal tax rate is above the sample median. To measure the marginal tax rate, we employ the proxy developed by Graham (1996a, 1996b). We thank Prof. Graham for making his data available at https://faculty.fuqua.duke.edu/~jgraham/taxform.html.
Auditing	An indicator variable that equals one if the firm has a Top 8 auditor and auditor tenure is above the sample mean and zero otherwise.
NOA	Net operating assets defined as common shareholders' equity less cash and marketable securities plus total debt, divided by sales.
Cycle	Days of receivables plus the days of inventories less the days of payables.
ROA	Return on assets computed using net income for the rolling four quarters ending with the third quarter of the current year, scaled by total assets at the end of the third quarter.
SG	Change in annual sales scaled by previous year's sales.
MTB	Market value of assets (market value of equity + total assets – book value of common equity – deferred taxes on balance sheet) divided by the book value of assets.
Size	Log of market value of equity.
Leverage	Short-term plus long-term debt scaled by market value of equity.
BAS	Bid/Ask spread is the annual average of daily spread scaled by the midpoint between bid and ask.
Pred_RM	Fitted values of the estimation of model (1.a).
Unexp_RM	Residual values of the estimation of model (1.a).
Suspects	An indicator variable that equals one if the firm is suspect of engaging in earnings management and zero otherwise. Suspect firms are either a) firm-years with earnings before extraordinary items over lagged assets between 0 and 0.005, b) firm-years with change in basic EPS excluding extraordinary items from last year between zero and two cents, or c) firm-years with actual EPS exceeding by up to one cent the last analyst forecast consensus before the fiscal year-end.
Habitual beater	An indicator variable that equals one if the firm beats/meets analysts' latest forecast consensus in the past four quarters and zero otherwise. It is based on IBES reported analyst forecasts and actuals.
F121	Indicator variable that equals one if the year is greater than or equal to 1996 and zero otherwise.
Ret	Annual stock returns ending three months after fiscal year end.
Neg	Indicator variable that equals one if Ret < 0 and zero otherwise.
CCACC	Conditionally conservative accruals are measured as in Lawrence et al. (2018) as min((-FOPO,0)), where min(x,y) is the minimum of x and y. CFO is cash flow from operations taken from the statement of cash flows, scaled by the beginning-of-year total assets.
CFOres	Cash flow news, measured as the residual of the AR(1) regression $CFO_{it} = \alpha + \beta\ CFO_{it-1} + \varepsilon_{it}$, estimated by industry (two-digit SIC) and year. We require a minimum of twenty observations per industry-year.
DCFOres	Indicator variable that equals one if CFOres < 0 and zero otherwise.

[21] A positive (negative) value of RECCH and INVCH represents a decrease (increase) in accounts receivable and inventories, while a positive (negative) value of APALCH, TAXCH, and AOLOCH represents an increase (decrease) in accounts payable, taxes payable, and other items. We recode missing values of RECCH, INVCH, APALCH, and TAXCH as zero if there is a nonmissing value of AOLOCH. Conversely, if AOLOCH is missing but the other items are not missing, then we recode AOLOCH as zero.

Appendix C. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jaccpubpol.2020.106738.

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