Distracted Investors and Earnings Management [1]

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ABSTRACT

In this study, we examine whether investor distraction affects earnings management. We use a firm-level measure of investor distraction that captures times when institutional investors shift their attention to unrelated parts of their portfolios. Distracted investors temporarily loosen their monitoring intensity and managers may take advantage. Our main finding is that, when shareholders are distracted, managers engage more in earnings management by both manipulating accruals and real activities. Due to the exogenous nature of the measure of investor distraction, we argue that this association is causal. We further document that the presence of other monitoring forces such as analyst coverage and leverage diminishes the effect of investor distraction on earnings management.

Key words: distracted investors, earnings management, accruals, real earnings management

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1. Introduction

The objective of this paper is to examine how investor attention influences earnings management decisions. Attention is generally considered to be a resource in limited supply (e.g., Kahneman 1973; Baker, and Wurgler 2011). Institutional investors, who often hold a portfolio of hundreds or thousands of stocks, are subject to attention constraints. They cannot equally focus on all stocks they hold at a given point in time. Investors are thus prevented from monitoring all their portfolio firms with the same intensity simultaneously (Kempf, Manconi, and Spalt 2017). The implication of these attention constraints is that institutional investors may become "distracted" shareholders at certain points in time. While "distracted", they provide less than the optimal level of monitoring intensity. We investigate whether managers react to the temporary loosening of monitoring scrutiny, induced by investor distraction, by altering their earnings management decisions[2].

Accounting research documents that managers generally use two channels to inflate earnings and misrepresent the firm's financial information (Dechow, Ge, and Schrand 2010). First, a manager may manage accruals (e.g., Healy 1985; Jones 1991; Dechow, Sloan, and Sweeney 1995; Kothari, Leone, and Wasley 2005). She can borrow earnings from future periods, through the acceleration of revenues or deceleration of expenses, in order to improve current earnings. Second, a manager can manipulate real activities to increase earnings (e.g., Bushee 1998; Roychowdhury 2006; Mizik, and Jacobson 2007; Cohen, and Zarowin 2010). She can use price discounts to temporary increase sales, overproduction to report lower cost of goods sold, and reduction of discretionary expenditures to improve reported margins. Importantly, earnings management can be difficult for investors to detect in the short run

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[2] The earnings management setting is particularly well suited to investigate the impact of shareholder distraction on corporate actions because we can match the time-variation in earnings management decisions to the time-variation in the level of distraction of a firm's shareholders.

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(Kothari et al., 2015) and may have negative consequences on firms' long-run performance (e.g., Teoh, Welch, and Wong 1998; Mizik et al. 2007; Bhojraj et al. 2009; Gunny 2010; Li 2010; Cohen et al. 2010; Kim, and Sohn 2013; Kothari, Mizik, and Roychowdhury 2015). Shareholders therefore have an incentive to prevent management from manipulating earnings.

How does investor distraction influence earnings management? A first possibility is that the temporarily looser monitoring induced by distracted investors does not alter managers' earnings management decisions. Additional attention provided by "undistracted" shareholders could substitute for the lack of attention of distracted shareholders. A second possibility is that managers in firms with distracted investors engage less in earnings management. This scenario may occur if, because of investor distraction, managers feel released from the pressure to report good performance and perceive reduced costs attached to reporting bad or lower than expected performance. A third possibility is that managers in firms with distracted investors engage more in earnings management. In this case, the temporary looser monitoring, induced by investor distraction, makes earnings management more difficult to detect. If so, managers would have more latitude to inflate reported earnings by manipulating accruals and real activities.

Using a sample of 10,471 firm-year observations from 1995 to 2010, we analyze the empirical relationship between investor distraction and earnings management under the forms of discretionary accruals and real earnings management. To calculate discretionary accruals, we use the model developed in Kothari et al. (2005). To capture the manipulation of real activities, we follow Roychowdhury (2006) and focus on earnings management by manipulating sales, engaging in overproduction and cutting discretionary expenses. An important issue in our empirical analysis is that distraction cannot be directly observed. We thus follow Kempf et al. (2017), and use a firm-level measure of investor distraction. We use exogenous shocks to unrelated industries held by a given firm's institutional shareholders to

mark periods where shareholders are likely to shift attention away from the firm towards the part of their portfolio subject to the shock[3]. Kempf et al. (2017) confirm that this proxy does measure lack of investor attention. In particular, they show that when this proxy indicates a high level of investor distraction, investors are less likely to participate in conference calls and less likely to initiate a proposal in general meetings. In our empirical analysis, we examine how this measure of shareholder distraction affects earnings management decisions.[4]

Our main finding is that when shareholders are distracted, managers engage more in earnings management both by manipulating accruals and by manipulating real activities. The effect of investor distraction on earnings management is more significant for discretionary accruals. Our results are robust to the introduction of standard determinants of earnings management (size, leverage, book-to-market ratio, profitability, asset growth, volatility, momentum, analyst coverage, institutional ownership as well as year, industry and firm fixed effects). Moreover, we argue that the effect of investor distraction on earnings management is causal. This is because, by construction, the distraction measure we use captures shifts in investor attention due to shocks in unrelated industries, as discussed by Kempf et al. (2017). It therefore constitutes an exogenous change in monitoring intensity at the firm level.

The positive association between investor distraction and earnings management indicates that the looser monitoring induced by distracted investors is not fully compensated for

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[3] Institutional investors own the great majority of U.S. firms and existing evidence suggests that they are powerful shareholders that exert significant influence over managers (Froot, Scharfstein, and Stein 1992; Hartzell, and Starks 2003; Parrino, Sias, and Starks 2003; Graham, Harvey, and Rajgopal 2005; McCahery, Sautner, and Starks 2016). An important feature about U.S. institutional investors is that they are required by the SEC to periodically report their portfolio holdings. One can therefore observe the pool of institutional shareholders for each firm, and know for each institutional investor which other stocks they concurrently hold. This enables us to capture shifts in investor attention by looking at shareholders' portfolios.

[4] A more detailed description of the measure of distraction is provided in the methodology section. Intuitively, at the firm level, the distraction measure is a function of something distracting going on in another industry and of how much the firm's institutional investors are exposed to this industry (i.e., the weight of the industry in the investor's portfolio). The measure is then weighted across all the firm's institutional investors, where the weight captures how potentially important the investor is as a monitor of the firm (i.e., its ownership percentage and the fraction of the portfolio value invested in the firm).

by other investors. However, we expect the effect of investor distraction on earnings management to be less pronounced in firms where other monitoring forces are at play. Two potential sources of monitoring that may compensate for investor distraction are analyst coverage and financial leverage. Analysts are external monitors of managerial decisions (Jensen, and Meckling 1976; Healy, and Palepu 2001). With substantial training in finance, accounting and good industry background knowledge, analysts track corporate financial statements on a regular basis. Previous research shows that analyst coverage deters earnings manipulations (e.g., Yu 2008; Degeorge et al. 2013). Next to analyst coverage, financial leverage is a strong disciplinary tool to reduce managerial discretion and flexibility (Jensen 1986). Previous research shows that leverage is negatively associated with earnings management (e.g., Jelinek 2007; Nikolaev 2010).

We test whether the influence of investor distraction on earnings management is mitigated by analyst coverage or financial leverage. We focus on the manipulation of accruals, because the effect of investor distraction is more significant for this type of earnings management. Our empirical analysis shows that the interaction terms between investor distraction and analyst coverage and between investor distraction and financial leverage both have a significant negative effect on earnings management. These findings are consistent with the idea that, in presence of other monitoring forces, managers are less able to take advantage of the loosening in institutional investor monitoring to manage earnings.

Our paper contributes to the literature on the links between institutional ownership and earnings management. Previous research documents that institutional investors, in particular those with large holdings and longer investment horizons, monitor managers and deter earnings management (e.g., Bushee 1998; Chung, Firth, and Kim 2002; Roychowdhury 2006; Koh 2007). In this paper, we introduce the possibility that monitoring intensity of institutional

investors may vary over time. We argue that institutional investors cannot simultaneously monitor all firms with the same intensity and that it may affect earnings management practices. Our results suggest that what matters to deter earnings management is not only the level of institutional ownership but also the monitoring intensity exerted by institutional investors.

More generally, our study extends recent literature uncovering new factors that influence earnings management. For instance, recent studies show that leader's reported performance (Bratten, Payne, and Thomas 2015), internal governance (Ali, and Zhang 2015), performance commitments (Hou et al. 2015), short selling (Fang, Huang, and Karpoff 2016) and severance pay (Brown 2015) influences earnings management practices. We identify investor distraction as a new determinant of earnings management.

Our study finally relates to recent literature investigating the impact of investor distraction on corporate actions. Kempf et al. (2017) show that, when shareholders are distracted, managers announce and make more diversifying, value-destroying acquisitions. Shareholder distraction induces managers to invest less in CSR activities and weakens board oversight (Chen, Dong, and Lin 2016; Liu et al. 2017). In a related stream of the literature, DellaVigna, and Pollet (2009) and Hirshleifer, Lim, and Teoh (2009) link market underreaction to earnings announcements to the limited attention of investors. Despite a growing number of studies on the impact of attention constraints in the economics and finance literature, to date investor distraction is largely unexplored by the accounting literature. Our paper furthers this literature by relating investor distraction to earnings management, which represents an important corporate decision that has consequences for long-term value creation.

The paper proceeds as follows. Section 2 provides the background literature necessary to develop our hypotheses. Section 3 describes our data and methodology, with results and discussion contained in Section 4. Section 5 concludes.

2. Related literature and hypothesis development

Earnings management

Several studies analyze the forms and consequences of earnings management.[5] Dechow et al. (2010) find managers generally inflate earnings and misrepresent the firm's financial information either by manipulating accruals or by manipulating real activities. Importantly, both may have negative consequences for a firm's long-term performance. Earnings management degrades the information quality of earnings used by outside investors, leading to a higher cost of capital to finance new projects (e.g., Kim et al. 2013). Additionally, earnings management negatively impacts future earnings and stock returns.

In the case of accruals management, borrowing earnings from future periods generates a future loss. Teoh et al. (1998) provides evidence that issuers with unusually high accruals in the IPO year experience poor stock return performance in the three years thereafter. For real earnings management, escalated sales are likely to disappear once the firm reverts to old prices, overproduction creates less sustainable earnings and leads to excessive inventory, cuts in discretionary advertising expenses are likely to lower future sales, and cuts in discretionary R&D or employee training can hurt a firm's competitive edge over the longer term. A series of papers document the negative influence of real earnings management on firm future performance. For example, Bhojraj et al. (2009) examine the performance consequences of cutting discretionary expenditures and managing accruals to exceed analyst forecasts. They show that firms that narrowly beat analyst forecasts with low quality earnings exhibit a short-term stock price benefit relative to firms that miss forecasts with high quality earnings, however they show that this trend reverses over a 3-year horizon. Similarly, Kothari et al. (2015) and Cohen et al. (2010) link post-SEO stock-market underperformance to manipulation of real

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[5] See for example Healy 1985; Jones 1991; Dechow et al. 1995; Kothari et al. 2005; Bushee 1998; Roychowdhury 2006; Mizik and Jacobson 2007; Cohen and Zarowin 2010; Baber et al. 1991.

activities, and Gunny (2010) finds that real earnings management negatively impact future operating performance. Further, Mizik et al. (2007) focus on marketing activities and show that firms cutting marketing spending have significantly lower long-term post-SEO performance. Focusing on production costs, Li (2010) documents that stocks of firms with abnormally high levels of production costs underperform in the subsequent three years.

It is often difficult for investors to detect earnings management in the short-run (Kothari et al. 2015). This implies that a strong and continuous monitoring from investors is required to prevent managers from engaging in earnings management.

Institutional investors and monitoring

Institutional ownership has sharply increased over the last decades. Today, institutional investors own the great majority of U.S. firms and represent the most economically influential group of shareholders. As of 2012, U.S. institutional investors hold more than 70% of the aggregate market value of all NYSE/AMEX/NASDAQ stocks (Kempf et al. 2017). Existing evidence suggests that they exert significant power over managers and influence firms' decisions (e.g., Froot et al. 1992; Parrino et al. 2003; Hartzell et al. 2003; Graham et al. 2005; McCahery et al. 2016) and, in particular those institutional investors with large holdings and long-term investment horizon, monitor managers and deter earnings management (e.g., Bushee 1998; Chung et al. 2002; Roychowdhury 2006; Koh 2007). This group of investors monitor firms to ensure that managers maximize long-term shareholder value (e.g., Shleifer, and Vishny 1986; Maug 1998) and take action when they are not satisfied with management. They either intervene in the firm ("voice") or sell their shares ("exit"), or threaten to do so (e.g., Admati, and Pfleiderer 2009; Edmans 2009; Edmans, Fang, and Zur 2013). However, institutional investors do not monitor every firm with the same intensity. Among other factors, the intensity

with which an institutional investor monitors a firm depends on its stakes in that firm (Edmans, and Holderness 2016) and on the firm's weight in its portfolio (Fich, Harford, and Tran 2015).

In this paper, we introduce the possibility that the monitoring intensity of institutional investors may vary over time. Monitoring capacity is a scarce resource that can temporarily lead investors to supply less than optimal monitoring intensity. The idea that an institutional investor's attention is a resource in limited supply is grounded in behavioral psychology (e.g., Kahneman 1973; Baker et al. 2011)[6] and backed by survey evidence reporting that time and staffing considerations are the main impediment to investors' engagement with corporations (Goldstein 2011). Put simply, institutional investors are subject to attention constraints and therefore they are unable to monitor all firms they hold simultaneously. As a result, investors are likely to become distracted at certain points in time, as they focus their attention on a particular component of their portfolio (Kempf et al. 2017).

Hypothesis development

Earnings management has important consequences for long-run value creation and thus it is necessary to understand the factors that favor or deter it. We examine how shareholder distraction influences earnings management. We propose three possible scenarios regarding the potential impact of investor distraction on earnings management. The empirical analysis examines which one prevails.

The first possibility is that the temporarily looser monitoring induced by "distracted" investors does not alter managers' earnings management decisions (Hypothesis 1). In this instance, additional attention of those shareholders who are "undistracted" may substitute for

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[6] Experimental laboratory evidence shows that limited attention affects how both naïve and sophisticated individual investors, as well as finance professionals, interpret accounting data (see the review of Libby, Bloomfield, and Nelson (2002)).

the lack of attention of distracted shareholders. Alternatively, one could argue that managers may not notice investor distraction and thus do not respond to it. However, survey evidence suggests that managers generally know who their key shareholders are and interact frequently with them directly or through Investor Relations departments (e.g., Froot et al. 1992; Parrino et al. 2003; Hartzell et al. 2003; Graham et al. 2005; McCahery et al. 2016). In addition, Kempf et al. (2017) show that, when a firm's investors are distracted, they are less likely to participate in conference calls and less likely to initiate a proposal in general meetings. These findings suggest that, through investor inaction, shareholder distraction should be relatively easy to detect for managers.

HYPOTHESIS 1. *There is no association between investor distraction and earnings management*

The second possible scenario is that managers in firms with "distracted" investors engage less in earnings management (Hypothesis 2). When shareholders are distracted, managers may feel released from the pressure to report good performance and perceive reduced costs attached to reporting bad or lower than expected performance.

HYPOTHESIS 2. *There is a negative association between investor distraction and earnings management*

The third possibility is that managers in firms with "distracted" investors engage more in earnings management. The temporarily looser monitoring induced by "distracted" investors implies that earnings management is more difficult to detect, which offers managers more discretion to manage reported earnings and to misrepresent the firm's financial information

(Kothari et al. 2015). Managers may therefore take advantage of shareholder distraction to manage earnings in order to inflate short-term performance, at the detriment of firm long-term performance.

HYPOTHESIS 3. *There is a positive association between investor distraction and earnings management*

Hypothesis 3 predicts that the temporarily looser monitoring induced by distracted investors promotes earnings management because it is not fully compensated for by undistracted shareholders. However, we expect the effect of investor distraction on earnings management to be less pronounced in firms where other monitoring forces are at play and partially compensate for investor distraction. We focus on two other sources of monitoring, namely analyst coverage (Hypothesis 3a) and financial leverage (Hypothesis 3b).

Analysts are external monitors of managerial decisions (Jensen et al. 1976; Healy et al. 2001). With substantial training in finance and accounting and good industry background knowledge, analysts track corporate financial statements on a regular basis and deter earnings manipulations. Empirically, Yu (2008) finds that firms followed by more analysts manage their earnings less. Degeorge et al. (2013), using data from 21 countries, find that in countries with high financial development, increased within-firm analyst coverage results in less earnings management.

Next to analyst coverage, financial leverage is a strong disciplinary tool to reduce managerial discretion and flexibility (Jensen 1986). Financial leverage constrains managers' abilities to take decisions that do not maximize firm value in two ways. First, required debt repayments reduce the cash available to management for non-optimal spending. Second, when a firm employs debt financing, it undergoes the scrutiny of lenders. Previous research shows

that leverage is negatively associated with earnings management. Jelinek (2007) documents that increased leverage is associated with a reduction in earnings management. Nikolaev (2010) shows that debt contracts entail covenants constraining managerial opportunism and increase the demand for timely recognition of economic losses in accounting earnings.

HYPOTHESIS 3a. *The positive effect of investor distraction on earnings management is less pronounced for firms with greater analyst coverage*

HYPOTHESIS 3b. *The positive effect of investor distraction on earnings management is less pronounced for firms with greater financial leverage*

3. Data and research design

Data sources

To perform our analysis, we collect data from four main databases. Accounting data are from COMPUSTAT, market data from CRSP, data on analyst coverage are from I/B/E/S, and institutional investor data are from Thomson Reuters 13F Filings. We obtain data on investor distraction from Alberto Manconi. We require our sample firms to have available data from these different data sources. We further restrict our sample to firms for which we can compute our main dependent, independent, and control variables. We exclude financials as well as utilities and firms that do not have data for at least five consecutive years. Because data for investor distraction are only available until 2010, our sample ends in 2010. Our final sample consists of 10,471 U.S. firm-year observations over the 1995-2010 period.

Measuring earnings management

Our main dependent variables are standard measures of earnings management capturing either the manipulation of accruals or the manipulation of real activities. Based on a model developed by Kothari et al. (2005), we calculate *Discretionary Accruals* as the residuals from the following regression (industry subscripts omitted):

$$Accruals_{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2(\Delta SALES_{it} - \Delta REC_{it}) + \beta_3 PPE_{it} + \beta_4 ROA_{it} + \varepsilon_{it}$$

(1)

where

$Accruals_{it}$ are total accruals computed as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets.

$ASSETS_{it-1}$ are the total assets for the previous year.

$\Delta SALES_{it}$ is the difference between sales in the current year and previous year scaled by one-year lagged total assets

ΔREC_{it} is the difference between accounts receivable at the end of the current year and account receivable at the end of the previous year scaled by one-year lagged total assets

PPE_{it} is the net amount of property, plant, and equipment at the end of the year scaled by one-year lagged total assets

ROA_{it} is the income before extraordinary items scaled by one-year lagged total assets

Each fiscal year, we assign firms to the 48 industry classifications of Fama and French. If, for a given fiscal year – industry, more than 15 observations are available, we estimate the model (1). Further details of the computation are in the Appendix.

Next, we compute several measures of real earnings management. Following Roychowdhury (2006), we consider three types of REM activities: sales manipulation

(abnormal reduction cash flows from operations), overproduction (abnormal increase in production costs), and cutting discretionary expenses (abnormal decrease in R&D, advertising and SG&A expenditures).

Sales manipulation reflects managers' attempts to increase sales during the year by offering "limited-time" price discounts or more lenient credit terms. We use abnormal decreases in cash flow from operations to detect sales manipulation (cash inflow per sale is lower as margins decline due to price discounts or more lenient credit terms). Following Roychowdhury (2006), we calculate abnormal decreases in cash flows from operations (*REM CFO*) as the residuals form the following regression (industry subscripts omitted):

$$CFO_{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2 SALES_{it} + \beta_3 \Delta SALES_{it} + \varepsilon_{it} \qquad (2)$$

where

CFO_{it} are cash flows from operations scaled by one-year lagged total assets

$ASSETS_{it-1}$ are the total assets for the previous year

$SALES_{it}$ are sales in the current year scaled by one-year lagged total assets

$\Delta SALES_{it}$ is the difference between sales in the current year and previous year scaled by one-year lagged total assets

If, for a given fiscal year – industry, more than 15 observations are available, we estimate the model (2). We multiply the residuals by -1, to obtain a positive number for abnormal decreases in cash flow from operations.

Overproduction refers to producing more goods than necessary to increase earnings. We define production costs as costs of goods sold plus inventories scaled by lagged total assets. We

identify overproduction by means of abnormal positive productions costs. Following

Roychowdhury (2006), we calculate compute abnormal production costs (*REM Prod*) as the

residuals of the following regression:

$$Prod_{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2 SALES_{it} + \beta_3 \Delta SALES_{it} + \beta_4 \Delta LSALES_{it} + \varepsilon_{it} \qquad (3)$$

where

$PROD_{it}$ are the production costs scaled by one-year lagged total assets

$ASSETS_{it-1}$ are the total assets for the previous year

$SALES_{it}$ are sales in the current year scaled by one-year lagged total assets

$\Delta SALES_{it}$ is the difference between sales in the current year and previous year scaled by one-year lagged total assets

$\Delta LSALES_{it}$ is the lagged difference between sales in the current year and previous year scaled by one-year lagged total assets

If, for a given fiscal year – industry, more than 15 observations are available, we estimate the model (3).

Discretionary expenses often include advertising, employee training, maintenance, and other expenses. The manager has the discretion to cut such expenses to increase reported earnings. Following Roychowdhury (2006), we calculate compute abnormal discretionary expenditures (*REM Disc. Exp.*) as the residuals of the following regression:

$$Disc. Exp._{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2 SALES_{it} + \varepsilon_{it} \qquad (4)$$

where

$Disc.Exp._{it}$ are R&D expenses plus advertising expenses plus SG&A expenses scaled by lagged total assets[7].

$ASSETS_{it-1}$ are the total assets for the previous year

$SALES_{it}$ are sales in the current year scaled by one-year lagged total assets

If, for a given fiscal year – industry, more than 15 observations are available, we estimate the model (4).

We also compute a measure of total real earnings management (*REM Total*), which sums the abnormal decrease in cash flow from operations, the abnormal increase in production costs, and the abnormal decrease in discretionary expenditures.

$$REM\ Total_{it} = REM\ CFO_{it} + REM\ Prod_{it} + REM\ Disc.Exp._{it} \qquad (5)$$

Measuring investor distraction

Our main independent variable is investor distraction. We use Kempf et al. (2017)'s measure of investor distraction ($Distraction_{it}$). This is a firm-level measure that captures how much institutional investors of the firm *i* are distracted at quarter *q*:

$$Distraction_{it} = \sum_{f=1}^{f=N} \sum_{IND=1}^{IND=12} w_{ifq-1} * w_{ifq-1}^{IND} * IS_{ifq}^{IND} \qquad (6)$$

where

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[7] While it is standard in the literature to set missing values for R&D and advertising expenditures to zero when SG&A is available, see for example Roychowdhury (2006), recent findings show that this retreatment is not very accurate. In particular, Koh, and Reeb (2015) investigate whether missing R&D expenditures in financial statements indicates a lack of innovation activity and find that 10.5% of firms with missing R&D do file and receive patents. We therefore choose not to set missing values for R&D and advertising to zero.

IS_{iq}^{IND} captures whether a distracting event occurs in another industry, that is whether there is an industry shock. Extreme events in a specific industry are attention grabbing (Barber, and Odean 2007). Extreme events are captured based on industry returns. IS_{iq}^{IND} takes the value one if an industry has the highest or lowest return across all 12 Fama-French industries in a given quarter, and zero otherwise.

w_{iq-1}^{IND} captures how much investor f cares about the other industries (other than the industry of firm i). It is measured by the weight of each industry (*IND*) in the portfolio of investor i. w_{ifq-1} captures how important investor i is for firm f. This variable is defined as follows:

$$w_{ifq-1} = \frac{QPFweight_{ifq-1} + QPercOwn_{ifq-1}}{\sum_{f=1}^{f=N}(QPFweight_{ifq-1} + QPercOwn_{ifq-1})} \tag{7}$$

where

$PercOwn_{ifq-1}$ is the fraction of firm i's shares held by investor f

$PFweight_{ifq-1}$ is the market value weight of firm i in investor f's portfolio[8].

As a result, the measure of investor distraction gives more weight to investors that own relatively more shares of firm i. This is because managers care more about their largest shareholders and because these shareholders have the incentive to monitor (Edmans et al. 2016). It also gives more weight to investors for which firm i represents a bigger portion of their portfolio. This is because investors spend on average more time and effort analyzing the biggest positions in their portfolio (Fich et al. 2015).

In conclusion, this measure captures whether shocks occur in other industries, whether investors care about those other industries, and whether investors affected by the unrelated

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[8] To minimize the impact of outliers, all stocks held by investor f in quarter q-1 are sorted by $PFweight_{ifq-1}$ into quintiles, denoted $QPFweight_{ifq-1}$. Similarly, firm i's shareholders stakes are sorted by $PercOwn_{ifq-1}$ into quintiles, denoted $QPercOwn_{ifq-1}$.

industry shocks are potentially important monitors. Note that we smooth the measure over the last four quarters before the quarter at which we observe earnings management.

Research design

The main objective of our empirical analysis is to study the effect of investor distraction on earnings management. We control for standard determinants of earnings management based on prior literature (e.g., Bushee 1998; Kothari et al. 2005; Roychowdhury 2006; Yu 2008; Kothari et al. 2015; Bratten et al. 2015). Because our main dependent variables are residuals of regressions already including sales and sales growth, we do not add them in the regressions. We lagged by one year our control variables to limit potential simultaneity bias. In our baseline analysis, we run the following regression:

$$Earnings\ Management_{i,t} = \beta_0 + \beta_1 Distraction_{i,t} + \beta_2 Size_{i,t-1} + \beta_3 Leverage_{i,t-1} + \beta_4 BookToMarket_{i,t-1} + Profitability_{i,t-1} + Asset\ Growth_{i,t-1} + \beta_5 Momemtum_{i,t-1} + \beta_6 Volatility_{i,t-1} + \beta_7 Analyst\ Coverage_{i,t-1} + \beta_8 Institutional\ Ownership_{i,t-1} + Fiscal\ year\ FE_t + Firm\ FE_i + \varepsilon_{i,t-1}$$

(8)

where

Earnings Management is measured by *Discretionary Accruals* or one of the measures of real earnings management (*REM CFO, REM Prod, REM Disc. Exp., and REM Total*).

Distraction is the Kempf et al. (2017)'s measure of investor distraction smoothed over the last four quarters before the quarter at which we observe earnings management.

Size is the lagged natural logarithm of total assets.

Profitability is the ratio of income before extraordinary items divided by total assets.

Leverage is the ratio of total debt over total assets.

BookToMarket is the ratio of the book value of the firm divided by its market value.

Asset growth is the ratio of the change in total assets divided by lagged total assets.

Momentum is the cumulated monthly returns in excess of the CRSP universe value-weighted returns over the last twelve months.[9]

Volatility is the standard deviation of daily returns in excess of the CRSP universe value-weighted returns measured over the three previous fiscal years.

Analyst coverage is the number of analysts forecasting one-year ahead EPS.

Institutional ownership is the percentage of ownership by institutional investors with respect to the firm's total shares outstanding.

Size, profitability and book-to-market are standard control variables of corporate policies. We control for leverage because it proxies for constrained free cash flows that should restrain managerial opportunism (e.g., Jensen 1986; Jelinek 2007; Nikolaev 2010). We expect a negative effect on earnings management. We control for asset growth, because fast growing firms are likely to devote more efforts to keep increasing their growth rate rather than to focus on their margins or profitability (e.g., Aghion, and Stein 2008). Moreover, real activities management tends to undermine future growth and value creation. Fast growing firms should thus have lower incentives to engage in real activities management[10]. Overall, we expect asset growth to be negatively associated with earnings management. We also control for momentum and volatility. Momentum indicates whether the firm has been over performing the market benchmark over the previous fiscal year. We thus expect a negative effect on earnings management because the management of an already well-performing firm does not need to have recourse to earnings management to inflate the firm share price. We expect a positive effect of volatility on earnings management because a more volatile share price implies a higher likelihood of drops in share price, which can encourage management to manipulate earnings.

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[9] We correct for delisting following Shumway (1997).

[10] Previous literature confirms that asset growth affects variation in earnings management (Bratten et al., 2016).

Moreover, we take into account analyst coverage because it proxies for the external monitoring of earnings management by financial analysts (e.g., Jensen et al. 1976; Healy et al. 2001; Yu 2008; Degeorge et al. 2013). We expect a negative effect of analyst coverage on earnings management. Finally, we control for institutional ownership because it captures the monitoring effect that institutional investors as a whole may have on earnings management (e.g., Froot et al. 1992; Parrino et al. 2003; Hartzell et al. 2003; Graham et al. 2005; McCahery et al. 2016; Bushee 1998; Koh 2007). We thus expect a negative effect on earnings management.

Depending on the specification, we add either industry or firm fixed effects. Standard errors are clustered by firms and robust to heteroscedasticity (Petersen 2009). While fiscal year fixed effects control for homogeneous shock across firms for a given fiscal year, industry and firm fixed effects respectively capture time-invariant industry and firm characteristics. Further details on variables computation are in the Appendix.

To test hypotheses 3a and 3b and investigate whether the effect of investor distraction on earnings management is attenuated in presence of other monitoring forces (analyst coverage and financial leverage), we run the following two regressions:

$Earnings\ Management_{i,t} = \beta_0 + I_1 Distraction_{i,t} * Analyst\ Coverage_{i,t-1} + \beta_1 Distraction_{i,t} + \beta_2 Size_{i,t-1} + \beta_3 Leverage_{i,t-1} + \beta_4 BookToMarket_{i,t-1} + Profitability_{i,t-1} + Asset\ Growth_{i,t-1} + \beta_5 Momemtum_{i,t-1} + \beta_6 Volatility_{i,t-1} + \beta_7 Analyst\ Coverage_{i,t-1} + \beta_8 Institutional\ Ownership_{i,t-1} + Fiscal\ year\ FE_t + Firm\ FE_i + \varepsilon_{i,t-1}$ (9)

$Earnings\ Management_{i,t} = \beta_0 + I_2 Distraction_{i,t} * Leverage_{i,t-1} + \beta_1 Distraction_{i,t} + \beta_2 Size_{i,t-1} + \beta_3 Leverage_{i,t-1} + \beta_4 BookToMarket_{i,t-1} + Profitability_{i,t-1} + Asset\ Growth_{i,t-1} + \beta_5 Momemtum_{i,t-1} + \beta_6 Volatility_{i,t-1} + \beta_7 Analyst\ Coverage_{i,t-1} + \beta_8 Institutional\ Ownership_{i,t-1} + Fiscal\ year\ FE_t + Firm\ FE_i + \varepsilon_{i,t-1}$ (10)

Where $Distraction_{it} * Analyst\ Coverage_{i,t-1}$ and $Distraction_{it} * Leverage_{i,t-1}$ are two interactions terms capturing the effect of investor distraction conditional on the number analysts covering the firm and the firm's financial leverage. We are interested in the sign and significance of the coefficients I_1 and I_2.

4. Results

Descriptive statistics

Table 1 contains descriptive statistics for the variables described in Section 3. For a median firm the absolute value of discretionary accruals is 4% of lagged assets, which is of similar magnitude as that of other studies (e.g., Francis et al. 2004; Bergstresser, and Philippon 2006; Yu 2008). Discretionary accruals represent on average 25% of the total accruals (absolute value of 0.01/-0.04). The median firm in our sample abnormally decreases its cash flow from operations but does not abnormally increase its production costs or abnormally decrease its discretionary expenditures. Our measure of total real earnings management has a positive value for only 30% of the firm-year observations. The median firm in our sample has a book leverage of 20%, a book-to-market of 0.78, profitability of 15% and asset growth of 8%. The median firm is covered by eight analysts and has an institutional ownership of 73%. The median firm has a volatility of the monthly stock returns over the 36 months prior to earnings report of 10%. The cumulated returns in excess of the CRSP benchmark over the 12 months prior to the earnings report are 3% on average. Finally, the average level of distraction is 0.17, which is in line with Kempf et al. (2017) and Chen et al. (2016).

[*Insert Table 1 about here*]

Earnings management and investor distraction

Table 2 reports the results of the regression of discretionary accruals on investor distraction plus the control variables (equation 8). Column 1 shows the results for the specification including industry fixed effects and Column 2 shows the results for the specification including firm fixed effects. In both cases, investor distraction has a very significant (p-value < 0.01) positive association with discretionary accruals.

[*Insert Table 2 about here*]

The coefficients on our control variables have their expected signs although some of them are not significant[11]. For the specification with firm fixed effects, results show that analyst coverage and book leverage are negatively related to discretionary accruals, which is consistent with the monitoring role of analysts and the disciplining effect of leverage. The absence of a significant effect of institutional ownership as a whole on discretionary accruals calls for further discussion. One potential explanation for this result is the existence of heterogeneity in the effect of institutional investors on earnings management. While long-term investors with big stakes in the company have higher means and incentives to monitor management and deter earnings management, investors with a short-term investment strategy might encourage earnings management because it inflates stock price in the short-run (e.g., Bushee 1998; Koh 2007; Cella, Ellul, and Giannetti 2013). The insignificant coefficient on institutional ownership as a whole might thus hide conflicting effects from two different subgroups of institutional investors[12]. A second explanation is that what matters to deter earnings management is not so

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[11] A possible explanation is that firm fixed effects partially capture the influence of some firm characteristics that are persistent over time.

[12] Hotchkiss, and Strickland (2003) document no effect of institutional ownership as a whole on stock price reactions to earning announcements but they find a positive impact for firms with a higher proportion of ownership by momentum investors and high turnover investors. Bushee, and Noe (2000) show that the net effect on stock return volatility of having both transient investors and quasi-indexer in a firm is roughly zero, because each type of investor has opposite effects.

much the level of institutional ownership but rather the monitoring intensity exerted by institutional investors that we capture through our measure of investor distraction.

[*Insert Table 3 about here*]

Table 3 reports the results of the regressions of different types of real earnings management on investor distraction plus the control variables. Columns 1-4 show the results using specifications with industry fixed effects for abnormal cash flow from operations, abnormal production costs, abnormal discretionary expenditures, and total real earnings management. Columns 4-8 show the results of specifications including firm fixed effects. A first takeaway is that, in both specifications, firms with greater investor distraction experience a significant decrease in abnormal cash flow from operations ($p<0.01$) and increase in abnormal production costs ($p<0.01$). The effect of investor distraction on discretionary expenditures is however not significant[13]. This may be because opportunistic reductions of R&D and SG&A expenditures are an opaque channel to overstate earnings, which impairs investors' ability to detect earnings management and to assess its consequences for future performance. In that sense, Kothari et al. (2015) show that earnings management through discretionary expenses is difficult to detect for investors even when firms are under considerable scrutiny (SEO). Thus, in that case, whether shareholders are distracted or not may not affect the ability of managers to engage in manipulation of discretionary expenditures. The overall effect of investor distraction on total real earnings management is positive and significant.

The results from Tables 2 and 3 provide empirical evidence in favor of Hypothesis 3 and do not support Hypothesis 1 and 2. They indicate that, when shareholders are distracted,

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[13] In unreported regressions, we investigate the effect of investor distraction on the following different types of discretionary expenditures: R&D, SG&A, and advertising expenditures. While there is positive and significant effect of investor distraction at a 10% significance level on advertising and SG&A expenditures, we do not observe any significant effect on R&D expenditures.

managers manipulate not just accruals but also real activities in order to inflate reported earnings. Our findings are consistent with the idea that managers take advantage of the temporarily loosening of monitoring intensity induced by distracted investors to engage in both forms of earnings management. When investors are distracted, they are less likely to detect earnings management, which provides extra incentive for managers to engage in it.

We argue that the effect of investor distraction on earnings management is causal. This is because, by construction, the measure of investor distraction we use captures shifts in investor attention due to shocks in unrelated industries of their portfolio firms, as discussed by Kempf et al. (2017). It therefore constitutes an exogenous change in monitoring intensity at the firm level. As such, we can interpret our findings as follows. An exogenous increase in investor distraction produces an exogenous reduction in the monitoring intensity of shareholders. As investors are less able to detect earnings management and to react to it, managers are more likely to engage in earnings management.

Is the decrease in investor monitoring compensated for by analyst coverage or financial leverage?

The positive association between investor distraction and earnings management indicates that the temporary looser monitoring induced by distracted investors is not fully compensated for by other investors that are not distracted. However, we expect the effect of investor distraction on earnings management to be less pronounced in firms where other monitoring forces are at play. These additional monitors may partially compensate for investor distraction. Based on prior literature, we concentrate on two other sources of monitoring: analyst coverage and financial leverage. We focus on earnings management in the form of discretionary accruals because the effect of investor distraction on this type of earnings management is more significant. In addition, most papers that document a monitoring effect of leverage and analyst

coverage on earnings management use discretionary accruals (e.g., Degeorge et al. 2013; Jelinek 2007; Nikolaev 2010; Yu 2008).

Columns 1-2 of Table 4 report the results of regression 9 of discretionary accruals on investor distraction, investor distraction interacted with analyst coverage, and our usual control variables, with industry and firm fixed effects respectively. Investor distraction still has a positive effect on earnings management but the interaction between investor distraction and analyst coverage has a negative impact. The influence of investor distraction on discretionary accruals therefore decreases with analyst coverage. The coefficient on the interaction term is negative and significant ($p<0.01$). Setting all variables to their mean values, all else equal, an increase in analyst coverage by one analyst from its mean value decreases the effect of investor distraction on discretionary accruals by more than 13% from 0.53 to 0.46.

Columns 3-4 of Table 4 report the results of regression 10 of discretionary accruals on investor distraction, investor distraction interacted with lagged book leverage, and the usual control variables, with industry and firm fixed effects respectively. As was the case for analyst coverage, the influence of investor distraction on discretionary accruals decreases with book leverage. The coefficient on the interaction term is negative and significant ($p<0.01$). Setting all variables to their mean values, all else equal, an increase in book leverage by 10 percentage points from its mean value more than halves the impact of investor distraction on discretionary accruals from 0.47 to 0.21.

[*Insert Table 4 about here*]

While we cannot rule out alternative explanations for each result taken separately, taken together these results suggest that the impact of investor distraction on earnings management is more pronounced in firms where institutional investors are the main source of monitoring and

diminished for firms where other external and internal monitoring forces are at play. These results thus validate Hypotheses 3a and 3b.

5. Conclusion

The paper examines how investor attention affects earnings management decisions. Our key conjecture is that institutional investors are subject to attention constraints. These constraints impede them from exerting equal monitoring intensity for all firms in which they invest simultaneously. At a given point in time, institutional investors may become distracted shareholders, in the sense that they shift their attention to other parts of their portfolio and loosen their monitoring intensity. We follow Kempf et al. (2017) and use a firm-level proxy for investor distraction, which captures when institutional investors experience shocks in unrelated parts of their portfolios.

We find strong evidence that managers take advantage of shareholder distraction to engage in earnings management. We document a significant impact on both discretionary accruals and real activities manipulation. We argue this effect is causal because the distraction measure captures shifts in investor attention caused by shocks in unrelated industries. Further, we show that the presence of other monitoring forces such as analyst coverage and leverage diminishes this effect. Our results are consistent with the idea that earnings management is difficult to detect (Kothari et al. 2015) and without continuous and stringent monitoring, managers have more discretion to engage in earnings management.

Previous research extensively studies the forms and consequences of earnings management. In particular, it reveals that the manipulation of accruals and real activities might have negative consequences for long-run value creation (e.g., Teoh et al. 1998; Mizik et al. 2007; Bhojraj et al. 2009; Gunny 2010; Li 2010; Cohen et al. 2010; Kim et al. 2013; Kothari et al. 2015). The main contribution of this paper is two-fold. First, it sheds light on a new determinant of accruals

and real activities management. Second, our results suggest that earnings management is an important channel through which lower monitoring intensity by institutional shareholders impacts firm value.

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TABLE 1

Descriptive Statistics

Variable	Obs.	Mean	S.D.	p25	p50	p75
Earnings Management						
Accruals	10,471	-0.04	0.07	-0.07	-0.04	-0.01
Discretionary Accruals	10,471	0.01	0.32	-0.07	-0.00	0.06
REM CFO	10,469	-0.18	0.38	-0.27	-0.11	-0.02
REM Prod	10,391	-0.06	0.33	-0.19	-0.05	0.06
REM Disc. Exp.	2,656	0.06	0.65	-0.09	0.05	0.19
REM Total	2,645	-0.34	1.60	-0.62	-0.22	0.08
Investor Distraction						
Distraction	10,471	0.17	0.05	0.14	0.17	0.20
Control Variables						
Size	10,471	7.19	1.39	6.21	7.04	8.04
Book Leverage	10,471	0.22	0.19	0.05	0.20	0.33
Book-to-Market	10,471	0.78	0.44	0.45	0.70	1.02
Profitability	10,471	0.14	0.12	0.10	0.15	0.20
Asset Growth	10,471	0.15	0.37	-0.00	0.08	0.20
Momentum	10,471	0.03	0.39	-0.22	-0.02	0.21
Volatility	10,471	0.11	0.05	0.07	0.10	0.14
Analyst Coverage	10,471	10.12	6.85	5.00	8.00	14.00
Institutional Ownership	10,471	0.71	0.22	0.57	0.73	0.87

This table reports descriptive statistics for the main variables of our empirical analysis. Please refer to the Appendix for variable definitions and detail about variable computation.

TABLE 2

Discretionary accruals and investor distraction

Discretionary Accruals	Industry Fixed Effects	Firm Fixed Effects
Distraction	0.535***	0.524***
	(0.122)	(0.171)
Size	0.006	-0.031*
	(0.005)	(0.019)
Book Leverage	-0.015	-0.138***
	(0.024)	(0.047)
Book-to-Market	0.001	-0.011
	(0.011)	(0.023)
Momentum	-0.031***	-0.051***
	(0.009)	(0.013)
Volatility	0.041	0.279
	(0.103)	(0.241)
Profitability	-0.083	-0.358***
	(0.050)	(0.088)
Asset Growth	0.006	0.020
	(0.009)	(0.016)
Analyst Coverage	-0.001	-0.001
	(0.001)	(0.002)
Institutional Ownership	0.040*	0.074
	(0.021)	(0.052)
Observations	10,471	10,471
Year fixed effects	YES	YES
Industry fixed effects	YES	NO
Firm fixed effects	NO	YES
Firm cluster	YES	YES
Adjusted R-squared	0.152	0.124

This table reports the results of regressions of discretionary accruals on investor distraction and some control variables. All specifications include year fixed effects. In column 1, we add industry fixed effects to the regression. In column 2, we add firm fixed effects. Standard errors (in parentheses) are clustered by firms and robust to heteroscedasticity. Constants are not reported. *, **, and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Definitions for all variables are provided in the appendix.

TABLE 3

Real earnings management and investor distraction

Real Earnings Management (REM)	(1) REM CFO	(2) REM Prod	(3) REM Disc. Exp.	(4) REM Total	(5) REM CFO	(6) REM Prod	(7) REM Disc. Exp.	(8) REM Total
Distraction	0.585***	0.484***	0.100	0.917**	0.432***	0.304**	-0.114	0.794*
	(0.120)	(0.113)	(0.326)	(0.451)	(0.142)	(0.128)	(0.318)	(0.440)
Size	-0.003	0.019***	0.054***	0.088***	-0.017	0.028	-0.052	0.206**
	(0.005)	(0.006)	(0.017)	(0.026)	(0.021)	(0.019)	(0.064)	(0.092)
Book Leverage	-0.025	0.069**	0.077	0.145	-0.195***	0.016	0.307	-0.035
	(0.020)	(0.028)	(0.098)	(0.149)	(0.057)	(0.051)	(0.247)	(0.309)
Book-to-Market	0.048***	0.061***	0.088**	0.234***	0.062**	-0.029	-0.049	-0.038
	(0.014)	(0.014)	(0.034)	(0.066)	(0.024)	(0.021)	(0.052)	(0.107)
Momentum	-0.046***	-0.036***	0.026	-0.088*	-0.047***	-0.029***	0.035	-0.005
	(0.011)	(0.009)	(0.029)	(0.049)	(0.014)	(0.010)	(0.032)	(0.061)
Volatility	0.147	-0.110	0.330	0.580	0.458**	-0.055	0.112	0.060
	(0.107)	(0.116)	(0.321)	(0.558)	(0.206)	(0.169)	(0.439)	(0.883)
Profitability	-0.444***	-0.728***	0.765***	0.105	-0.435**	-0.556***	0.554*	0.450
	(0.060)	(0.060)	(0.149)	(0.300)	(0.170)	(0.143)	(0.328)	(0.668)
Asset Growth	-0.035***	-0.000	-0.031	-0.061	-0.039***	-0.025	-0.042	-0.135**
	(0.008)	(0.008)	(0.022)	(0.041)	(0.014)	(0.016)	(0.037)	(0.067)
Analyst Coverage	-0.003***	-0.004***	-0.008***	-0.019***	-0.003	-0.005***	0.001	-0.014*
	(0.001)	(0.001)	(0.003)	(0.004)	(0.002)	(0.002)	(0.006)	(0.008)
Institutional Ownership	-0.037	-0.016	0.051	0.102	-0.044	-0.026	0.014	-0.284
	(0.024)	(0.026)	(0.082)	(0.136)	(0.064)	(0.043)	(0.137)	(0.257)
Observations	10,467	10,390	2,656	2,645	10,467	10,390	2,656	2,645
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	NO	NO	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES
Firm cluster	YES	YES	YES	YES	YES	YES	YES	YES
Adjusted R-squared	0.180	0.121	0.131	0.160	0.181	0.316	0.294	0.339

This table reports the results of regressions of real earnings management on investor distraction and some control variables. All specifications include year fixed effects. In columns 1-4, we add industry fixed effects to the regression. In columns 5-8, we add firm fixed effects. Standard errors (in parentheses) are clustered by firms and robust to heteroscedasticity. Constants are not reported. *, **, and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Definitions for all variables are provided in the appendix.

TABLE 4

Effect of investor distraction on earnings management conditional on analyst coverage or financial leverage

Discretionary Accruals	Analyst Coverage		Book Leverage	
	Ind. FE	Firm FE	Ind. FE	Firm FE
Distraction	1.004***	1.241***	1.023***	1.064***
	(0.178)	(0.251)	(0.147)	(0.214)
*Distraction*Analyst Coverage*	-0.048***	-0.070***		
	(0.013)	(0.018)		
*Distraction*Book Leverage*			-2.621***	-2.666***
			(0.438)	(0.583)
Control variables	YES	YES	YES	YES
Observations	10,471	10,471	10,471	10,471
Year fixed effects	YES	NO	YES	NO
Industry fixed effects	NO	YES	NO	YES
Firm fixed effects	YES	YES	YES	YES
Firm cluster	YES	YES	YES	YES
Adjusted R-squared	0.154	0.126	0.156	0.127

This table reports the results of regressions of discretionary accruals on investor distraction and some control variables. All specifications include year fixed effects. In columns 1 and 3, we add industry fixed effects to the regression. In columns 2 and 4, we add firm fixed effects. In columns 1 and 2, we add to the regression the interaction term *Distraction*Analyst Coverage.* In columns 3 and 4, we add to the regression the interaction term *Distraction*Book Leverage*. Standard errors (in parentheses) are clustered by firms and robust to heteroscedasticity. Constants and other control variables are not reported. *, **, and *** represent significance levels of 0.10, 0.05 and 0.01, respectively. Definitions for all variables are provided in the appendix.

Appendix

Variables	Definitions
Accruals	Computed according to Kothari et al. (2005). We define total accruals as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets. Using Compustat data items: $$Accruals = \frac{\Delta DATA4 - \Delta DATA1 - \Delta DATA5 + \Delta DATA34 - \Delta DATA14}{L.DATA6}$$
Discretionary Accruals	We follow Kothari et al. (2005). For each Fama-French industry and fiscal year, if more than 15 observations are available, discretionary accruals are the residuals of the regression of total accruals on the inverse of lagged total assets, the change in sales minus the change in receivables scaled by lagged total assets, net property, plants and equipment scaled by lagged total assets, and return on assets defined as income before extraordinary items divided by total assets. $$Accruals_{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2(\Delta SALES_{it} - \Delta REC_{it}) + \beta_3 PPE_{it} + \beta_4 ROA_{i,t} + \varepsilon_{it}$$ Where sales is the Compustat item *DATA12*, receivables is the Compustat item *DATA2*, assets is the Compustat item *DATA6*, net property, plants and equipment is the Compustat item *DATA141*, and income before extraordinary items is the Compustat item *DATA18*.
REM CFO	We follow Roychowdhury (2006) to compute abnormal cash flow from operations. For every Fama-French industry and fiscal year, abnormal cash flow from operations are the residuals of the following regression: $$CFO_{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2 SALES_{it} + \beta_3 \Delta SALES_{it} + \varepsilon_{it}$$ Where *CFO* is the cash flow from operation (Compustat *DATA308*) scaled by lagged total assets, *SALES* (Compustat *DATA12*) is sales scaled by lagged total assets (Compustat *DATA6*), and *ΔSALES* is the change in sales scaled by lagged total assets. Abnormal decreases in cash flow from operations are used as a signal of sales manipulation (cash inflow per sale is lower as margins decline due to price discounts or more lenient credit terms). We multiply the residuals by -1, to obtain a positive number for an abnormal decrease in cash flow from operations.
REM Prod	We follow Roychowdhury (2006) to compute abnormal production costs. We define production costs as costs of goods sold (Compustat *DATA41*) plus inventories (Compustat *DATA3*) scaled by lagged total assets (Compustat *DATA6*). For every Fama-French industry and fiscal year, abnormal productions costs are the residuals of the following regression: $$PROD_{it} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}}\right) + \beta_2 SALES_{it} + \beta_3 \Delta SALES_{it} + \beta_4 \Delta LSALES_{it} + \varepsilon_{it}$$ Where *SALES* (Compustat *DATA12*) is sales scaled by lagged total assets (Compustat *DATA6*), *ΔSALES* is the change in sales scaled by lagged total assets, and *ΔLSALES* is the lagged change in sales scaled by lagged total assets.

REM Disc. Exp.	We follow Roychowdhury (2006) to compute abnormal reductions of discretionary expenditure. We define discretionary expenditures as R&D (Compustat *DATA46*) plus advertising (Compustat *DATA45*) plus SG&A (Compustat *DATA132*) scaled by lagged total assets (Compustat *DATA6*). For every Fama-French industry and fiscal year, abnormal discretionary expenditures are the residuals of the following regression: $$DISC.EXP = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{it-1}} \right) + \beta_2 SALES_{it} + \varepsilon_{it}$$ Where *SALES* (Compustat *DATA12*) is sales scaled by lagged total assets (Compustat *DATA6*). Abnormal reductions in discretionary expenses are used as an attempt to reduce reported expenses to increase earnings. We multiply the residuals by -1, to obtain a positive number for an abnormal decrease in discretionary expenditures.
REM Total	Sum of real activities manipulations that are earnings-increasing. That is sum of abnormal decreases in cash flow from operations, abnormal increases in costs of productions, and abnormal decreases in discretionary expenditures: $$REM\ TOTAL_{it} = REM\ CFO_{it} + REM\ PROD_{it} + REM\ Disc.Exp._{it}$$
Distraction	We use the measure of investor distraction developed by Kempf, Manconi and Spalt (2017). We obtain the data for the period 1986-2010 from Alberto Manconi. They compute an investor-level distraction score, and then aggregate across all investors in the firm. $Distraction_{iq}$ measures how much institutional investors of the firm i are distracted at quarter q: $$Distraction_{iq} = \sum_{f=1}^{f=N} \sum_{IND=1}^{IND=12} w_{ifq-1} * w_{iq-1}^{IND} * IS_{iq}^{IND}$$ Where: IS_{iq}^{IND} captures whether a distracting event occurs in another industry, that is whether there is an industry shock (highest or lowest return across all 12 Fama-French industries). w_{iq-1}^{IND} captures how much investor *f* cares about the other industry (other than the industry of firm *i*), that it the weight of each other industry in its portfolio. w_{ifq-1} captures both the weight of investor *f* in the firm *i* and the weight of firm in investor's *f* portfolio: $$w_{ifq-1} = \frac{QPFweight_{ifq-1} + QPercOwn_{ifq-1}}{\sum_{f=1}^{f=N}(QPFweight_{ifq-1} + QPercOwn_{ifq-1})}$$ With $PercOwn_{ifq-1}$ the fraction of firm *i*'s shares held by investor *f*, $PFweight_{ifq-1}$ the market value weight of firm *i* in investor *f*'s portfolio. To minimize the impact of outliers and measurement error, they sort all stocks held by investor *f* in quarter *q-1* by $PFweight_{ifq-1}$ into quintiles, denoted $QPFweight_{ifq-1}$. Similarly, they sort firm i's shareholders by $PercOwn_{ifq-1}$ into quintiles, denoted $QPercOwn_{ifq-1}$.
Size	Natural logarithm of total assets (Compustat *DATA6*).
Book Leverage	Total debt (Compustat *DATA34 + DATA9*) divided by total assets (Compustat *DATA6*).

Book-to-Market	Total assets (Compustat *DATA6*) divided by market capitalization (Compustat *DATA25 * DATA199*) plus preferred stocks (Compustat *DATA10*), total debt (Compustat *DATA34 + DATA9*) and minus deferred taxes (Compustat *DATA74*).
Profitability	Return on assets defined as income before extraordinary items divided by total assets (Compustat *DATA18 / DATA6*)
Asset Growth	Change in total assets divided by lagged total assets (Compustat *DATA6*).
Momentum	Cumulated monthly returns in excess of the CRPS universe value-weighted returns over the last twelve months (CRPS: *RET - VWRET*). We correct for delisting as in Shumway (1997).
Volatility	Standard deviation of the monthly return in excess of the CRPS universe value-weighted returns over the last three years.
Analyst Coverage	Number of analysts forecasting one-year-ahead earnings (IBES *numest*).
Institutional Ownership	Institutional investor ownership expressed as a percentage of a firm's total shares outstanding (Thomson Reuters 13-F Filings database).