The relative concentration of bad versus good news flows

Working paper

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Abstract

This paper examines flows of bad and good news as a feature of the firm's information environment. We argue that to the extent that managers delay reporting bad news, this leads to bad news being more concentrated. Measuring flows of bad and good news using flows of negative and positive abnormal stock returns, we find that firms with higher volatility of operations and managerial incentives to withhold bad news exhibit relatively more concentrated bad news flows. This relative concentration is also positively associated with lower earnings quality and a higher risk of shareholder litigation. Our results suggest that the relative concentration of bad and good news flows is related to the quality of the firm's information environment.

1. Introduction

We examine whether some firms opportunistically manage the flow of bad versus good news to the market. Opportunistically managed news flows result in a smaller number of larger bad news announcements and a larger number of smaller good news announcements. As a critical part of the price discovery process, news flows shape the firm's information environment. To capture the relative concentration of bad versus good news information flows, we construct a measure based on the occurrence of negative and positive abnormal stock returns. Intuitively our measure captures the difference in the number of days it takes for stock prices to reflect one unit of bad versus one unit of good news. We find that firms with higher operational volatility and managerial incentives to release good news on a timely basis but withhold bad news exhibit a higher relative concentration of bad news flows. We also find that firms with a higher relative concentration of bad news flows report lower quality earnings and have a higher risk of shareholder litigation. Our analysis suggests that the relative concentration of bad and good news flows is related to the quality of the firm's information environment.

Firms have discretion in timing their information releases. If investors are uncertain about whether a manager has received private information, a rational expectations equilibrium exists in which firms are better off delaying the release of bad news (Dye, 1985; Shin, 2003; Pae, 2005; Guttman, Kremer, and Skrzypacz, 2014). Firms that manage information flows opportunistically release good news immediately, but release bad news either at the same time as good news to cancel out the effect, or at the same time as other pieces of bad news when withholding is no longer possible. Ceteris paribus, this results in a larger number of smaller flows of good news and a smaller number of lumpier flows of bad

news, i.e., bad news flows are more concentrated than good news flows. We examine the relative concentration of bad versus good news flows across companies and over time.

To do this, we construct a new measure of the flow of bad versus good news. We use abnormal returns to proxy for firm specific information flows. This choice is theoretically founded on information economics and empirically supported by evidence attributing substantial variation in abnormal stock returns to firm disclosures (Beyer et al. 2010, p.300). Our measure, *Bad v. good flows*, distinguishes negative and positive abnormal stock returns and captures the difference between the number of days it takes prices to capture one unit of positive return versus one unit of negative return. This construction means that a positive value for *Bad v. good flows* indicates that bad news impounded in prices is more concentrated than good news and higher values indicate greater relative concentration of bad news flows.[1] Conversely, a negative value for *Bad v. good flows* indicates that good news impounded in prices is more concentrated than bad news and lower values indicate greater relative concentration of good news flows.

Across a large panel of company–years, we find that, on average, *Bad v. good flows* is negative, consistent with bad news being on average *less* concentrated than good news. This suggests that opportunistic management of news flows is not widespread. But in a substantial fraction of the population, about 30%, bad news is more concentrated than good news. Results by year and industry shows a substantial rise in this fraction in recent years, peaking in years of economic slowdown (e.g., 44% in 2002 and 48% in 2008), and within the high-tech sector, pharmaceuticals, and financial institutions.

[1] Our construction means that *Bad v. good flows* is positive if prices reflect good news over more days than they reflect bad news, implying that bad news is relatively more concentrated.

To explore the construct validity of our measure we draw on theoretical and empirical literature on the strategic timing of information flows to derive a comprehensive list of factors that enable and induce managers to delay flows of bad versus good news (e.g., operating volatility, uncertainty about future operations, poor operating performance, corporate financing events, contractual considerations) and of relevant constraints (e.g., competing sources of information, information acquisition ability). Testing the association of *Bad v. good flows* with these factors, gives a positive association with operational volatility, firm growth, debt and equity issues, reporting of earnings declines and losses, and negative market news, and a negative association with option grants, firm size, higher levels of insider ownership, and investor turnover. Reporting poor operating performance in the financial statements seems to be the strongest managerial incentive for the relative concentration of bad news flows, consistent with previous evidence that firms with impending earnings declines accelerate good news releases during the year to mitigate the market's response to negative earnings surprises (Miller 2002). This highlights the role of financial reporting in determining the flow of information to financial markets.

We explore how the relative concentration of information flows relate to financial reporting by examining their association with properties of reported earnings. A key argument in the literature on the interaction between voluntary disclosure and financial reporting (see Francis et al., 2008 for a review) is that since information quality is endogenous, reported earnings and voluntary disclosure share similar features. We therefore expect the relative concentration of bad and good news flows to be associated with noisier reported earnings. We document a positive association between *Bad v. good flows* and common inverse measures of earnings quality, such as the Dechow and Dichev (2002)

measure of accruals quality, absolute abnormal accruals, and earnings variability. This association remains after controlling for factors associated with firm fundamentals, suggesting that the relative concentration of bad and good news flows is associated with noisier reported earnings driven by managerial discretion.

An important consequence of concentrating bad news releases is that it may trigger class action lawsuits (Francis et al., 1994). Therefore, to the extent our measure captures the tendency to withhold bad and accelerate good news, we expect it to predict class action lawsuits. We document a positive association between *Bad v. good flows* and the probability of a class action lawsuit, controlling for other predictor variables, including earnings quality and stock return volatility. These results lend further credence to our measure.

We perform additional tests to probe the robustness of *Bad v. good flows* in capturing corporate disclosure policy. First we investigate changes in *Bad v. good flows* in the four years surrounding CEO successions. We document a substantial fall in *Bad v. good flows* in the two years following successions, consistent with prior evidence of higher management discipline following CEO turnover. Second, we re-calculate *Bad v. good flows* retaining only trading days adjacent to earnings announcements (of annual and quarterly earnings) and to corporate filings to the SEC (10Ks, 10Qs, and 8Ks), and observe that the redefined measure exhibits similar properties. Third, we adjust our measure to remove variation driven by market- and industry-wide that could reflect an asymmetry in the market's transmission speed of good versus bad news, and confirm that our results continue to hold. Our results are also robust to re-calculating *Bad v. good flows* after removing days with revisions in analyst earnings forecasts or stock recommendations. Finally, we document two structural shifts in our measure following the enactment of corporate

governance and disclosure regulation during our sample period (antitakeover protection laws in the mid-1980s and disclosure regulation in the early 2000s), that arguably constrained managerial incentives and opportunity to withhold the flow of bad relative to good news.

This paper contributes to the literature in three key ways. First, we construct a new measure of the relative concentration of information flows that relates directly to the quality of the firm's information environment. Our measure captures the firm's rate of information flows and offers a more holistic measure of the quality of a company's communication with financial markets that goes beyond the quality of financial reporting in the audited financial statements. This measure is also founded on theories of voluntary disclosure and can be generated for the universe of listed firms. Our measure is particularly relevant to the stream of the voluntary disclosure that examines firms' strategic timing of information flows, as it provides a way to identify evidence consistent with opportunistic withholding of bad news by a large cross-section of firms.

Second our paper links the opportunistic management of information flows to stock returns in a systematic fashion. We argue that the opportunistic management of information flows involves accelerating good news while storing up bad news and releasing it either with good news to cancel out the effect, or with other bad news when further withholding is no longer feasible. This leads to a greater relative concentration of bad news flows, which is then reflected in stock returns. Our evidence contributes to the literature examining how corporate information flows affect stock return volatility (e.g., Acharya, De Marzo, and Kremer, 2011; Shin, 2003, 2006; Kalev, Liu, Pham, and Jarnecic, 2004) by highlighting the

implications of accelerating good news and withholding bad news for the properties of stock returns.

Third, we contribute to the literature examining managerial incentives to delay the release of bad versus good news (for a review see Kothari, Shu, and Wysocki, 2009), by reaffirming the role of information asymmetry, managerial compensation, and insider ownership, and unravelling additional incentives relating to corporate financing transactions and poor operating performance, as well as an important constraint, namely institutional investor turnover. Our evidence suggests a strong link between the timing of information flows and the content and properties of reported earnings in the financial statements, highlighting the interplay between a firm's communication channels and echoing the need to examine reporting choices as part of the firm's overall communication strategy. At the same time our evidence confirms the link between a firm's disclosure strategies and investor trading (Bushee and Noe, 2000), highlighting the role of capital market players in shaping the firms' communication strategy.

While our results show that, on average, U.S. firms display a higher relative concentration of good news, it remains the case that higher values of *Bad v. good flows* are consistent with less timely reporting of bad news relative to good news. Our study therefore focuses on managerial incentives to opportunistically withhold bad news that lead to a higher relative concentration of bad news. The greater relative concentration of good news, on average, for U.S. firms may reflect a common policy of conservative bad news reporting. This finding itself deserves further research, which could explore the reasons for the higher good news concentration with an emphasis on institutional factors, such as the litigious environment in the U.S., that could affect variation in the practice across jurisdictions.

2. Related literature and predictions

Dye (1985) analyzes the circumstances and incentives behind the timing of information flows to capital markets. Assuming a given underlying distribution of cash flows, managers can time a firm's information releases. The possibility for partial disclosure arises as a result of a key qualification of the revelation principle, that investors are uncertain about whether managers have received private information. When the manager does not disclose, investors are unsure whether the manager has received information but chosen to conceal it, or whether the manager has not received information. Dye (1985) shows that if the market is unsure whether management has received private information, a rational expectations equilibrium exists in which managers withhold news that is below a certain threshold, while releasing news that is above the threshold. Thus, managers may withhold bad news, with investors pooling non-disclosers with firms whose managers have genuinely received no news. Shin (2003) extends the analysis to a multiple-signal setting, and shows that in equilibrium managers follow a 'sanitization' strategy, in which they sanitize disclosures by removing the bad news and leaving the good news. With this strategy the return variance is higher following a bad news disclosure than following a good news disclosure. Also in a multiple-signal setting, Pae (2005) shows that a firm that receives two signals discloses both if both are favorable and confirm each other, discloses the most favorable signal if it is sufficiently favorable relative to the other, and discloses neither when both are unfavorable. This implies that managers may withhold bad news when they simultaneously receive good news. Guttman, Kremer, and Skrzypacz (2014) identify additional conditions that may lead managers to withhold bad news. Adding multi-periods to the multiple-signal setting, they show that the market interprets later disclosures more

favorably, and managers may withhold disclosure to take advantage of the option to wait for a better signal.

An interesting property of investor uncertainty about the information that managers possess is that it decreases with time. Jung and Kwon (1988) address this issue, extending Dye's (1985) model to allow investors to revise their beliefs that the manager has not received information. Using the revised conditional probabilities, Jung and Kwon show that the threshold level for which the manager withholds bad news is unique, and is inversely related to the probability that the manager has access to private information. This finding has two implications. First, since investors' beliefs that managers have received information increase over time, managers release bad (good) news in late (early) announcements within the accounting period. Second, information intermediaries, e.g., the financial press and analysts, influence investors' beliefs that managers have received information and can restrain managers' ability to withhold bad news.

We consider cases of opportunistic withholding of bad news that affect relative concentration. Firms that manage information flows opportunistically accelerate the release of good news, but withhold bad news to release it later, either at the same time as good news to offset the effect, or with further flows of bad news when withholding is no longer possible. The eventual release of bad news is inevitable when it becomes excessively costly for firms to hide it. This is the point when firms exhaust investor uncertainty that managers possess information, so continued withholding of bad news bears the risk of adverse consequences from outsiders perceiving even worse bad news. Accelerating good news and withholding bad news to release it either with good news or with other bad news leads to a greater relative concentration of bad versus good news releases. This prediction forms the

basis for constructing our measure of the relative concentration of bad versus good news during the year.

Empirical studies of the strategic timing of information flows suggest that firms have incentives to either accelerate or decelerate the release of bad news. The former incentives relate to the tendency of firms to accelerate bad news to preempt shareholder litigation or lower the exercise price of stock options to maximize option gains (Kasznik and Lev, 1995; Skinner, 1994, 1997; Baginski, Hassel, and Kimbrough, 2002; Aboody and Kasznik, 2000; Donelson, McInnis, Mergenthaler, and Yu, 2012). The latter incentives relate to the tendency of firms to delay releasing bad news when managers wish to manage markets perceptions, face greater career concerns, or have personal wealth at stake (Dye and Sridhar, 1995; Shin, 2003; Kothari, Shu, and Wysocki, 2009). We add to this literature by considering further managerial incentives to strategically time information flows relating to the firm's internal information needs (capital raising needs, contemporaneous operating performance, properties of reported earnings) and the external information environment (capital market intermediaries, institutional ownership). We also add to this literature by proposing a new approach to identify firms that may be opportunistically managing information flows.

Extensive research on corporate disclosure and the financial reporting environment offers proxies for disclosure quality (for a review see Healy et al., 2001 and Beyer et al., 2010). Among these proxies, the AIMR-FAF ratings, discontinued since 1995, were arguably the most comprehensive as they evaluated corporate disclosures of US firms through multiple channels (e.g., annual reports, analyst meetings, conference calls). Other large-sample computer-based measures cover solely corporate disclosures in annual reports

(e.g., Li, 2008; Li, 2010; Kothari, Li, and Short, 2009). We contribute to this literature by constructing a large-sample measure of disclosure quality that covers all communication channels that firms use, as it is based on share price changes. While our measure reflects corporate disclosure practices, it inevitably captures effects of capital market intermediaries and institutional investors. We address this caveat empirically.

3. Research design

3.1 A measure of the relative concentration of bad versus good news flows

To measure information flows, we use the abnormal returns from a market model to capture firm specific information flows (Acharya et al., 2011; Shin, 2003, 2006; Kalev, Liua, Phamb, and Jarnciss, 2004).[2] Beyer et al. (2010) provide evidence supporting the theoretical association between abnormal returns and firm specific information flows by reviewing how key sources of accounting disclosures contribute to the information in security prices. Their results indicate that for the average US firm, about 30% of its quarterly stock return variance occurs on days when there are accounting disclosures, with management forecasts contributing the most information, followed by earnings announcements and SEC filings. While firms also disclose through additional channels (e.g. conference calls, investor days, meetings with analysts, press releases), this evidence attributes substantial variation in stock returns to firm disclosures.

As we wish to capture the relative concentration of bad versus good news flows, we distinguish negative and positive abnormal returns. We then measure the number of days that it takes stock price to capture one unit of each news type. We label the separate

[2] We regress daily firm stock returns (*Ret*) on daily market value-weighted returns and obtain abnormal returns (*AR*) by adding the intercept to the regression residual. We set *AR* to zero when *Ret* equals zero. We obtain similar results recalculating our measure using raw instead of abnormal returns.

measures of bad and good news flows *Bad flows* and *Good flows* and derive our measure of the relative concentration of bad versus good news, *Bad v. good flows*, as the difference between *Good flows* and *Bad flows*.[3]

$$Bad\ v.\ good\ flows = Good\ flows - Bad\ flows \tag{1}$$

Higher values of *Bad v. good flows* indicate greater relative concentration of bad relative to good news, i.e., bad news concentrated in fewer days than good news. To calculate *Bad flows*, the weighted average number of days for stock price to capture one unit of negative news during the year, we calculate the weighted average negative abnormal return transmitted daily standardized by total negative returns in the year. The weights are the (fractional) ranks, in order of magnitude, of standardized negative abnormal returns transmitted daily within each firm–year (assigning one to the highest). In detail

$$Bad\ flows_{it} = \sum_{i=1}^{n} \left[\left(AR_{i,d}^{-} / Tot\ AR_{i,t}^{-} \right) \times Rank_{i,d}^{-} \right] \Big/ \left| Tot\ AR_{i,t}^{-} \right| \tag{1}$$

where $AR_{i,d}^{-}$ is firm *i*'s abnormal stock return on day *d* if negative, $Tot\ AR_{i,t}^{-}$ is the sum of firm *i*'s daily negative abnormal returns in year *t*, $Rank_{i,d}^{-}$ is the rank of $AR_{i,d}^{-} / Tot\ AR_{i,t}^{-}$ for firm *i* in year *t*, and *n* is the number of days of negative abnormal stock returns. We take the natural log of all returns. We define *Good flows* similarly as

$$Good\ flows_{it} = \sum_{i=1}^{p} \left[\left(AR_{i,d}^{+} / Tot\ AR_{i,t}^{+} \right) \times Rank_{i,d}^{+} \right] \Big/ \left| Tot\ AR_{i,t}^{+} \right| \tag{2}$$

where $AR_{i,d}^{+}$ is firm *i*'s abnormal return on day *d*, if positive, $Tot\ AR_{i,t}^{+}$ is the sum of firm *i*'s daily positive abnormal stock returns in year *t*, $Rank_{i,d}^{+}$ is the rank of $AR_{i,d}^{+} / Tot\ AR_{i,t}^{+}$ for firm *i* in year *t* and *p* is the number of days of positive abnormal stock returns.

[3] We take this difference because if bad news is more concentrated than good news, bad news concentrates in fewer days than good news and *Good news* minus *Bad news* is positive.

To give the intuition for our information flow measures, we provide three examples. To simplify the exposition, we assume the number of trading days in a year is three. While all the news is positive in the examples, they apply equally to bad news flows, since the standardization cancels negative signs.

Example 1: All news transmits on one day
To calculate *Good flows* we first calculate the fraction of (abnormal) returns impounded in price on each day by dividing individual daily returns by the total return and rank this fraction from largest to smallest in column C. We use fractional ranks, i.e., we assign the median rank to tied cases.

	A	B	C	D
	Return	Return/Total	Fractional rank	B × C
Day 1	0.6	1.0	1	1.0
Day 2	0.0	0.0	2.5	0.0
Day 3	0.0	0.0	2.5	0.0
Total	0.6	1.0		1.0
Good flows	D/A = 1.0/0.6 = 1.67			

Total D gives the weighted average number of days over which price captures the news, one day in this example. *Good flows* is Total D divided by Total A, i.e., 1.0/0.6 = 1.67 days, giving the weighted average number of days for stock price to capture one unit of positive return.

Example 2: News transmits evenly over three days

	A	B	C	D
	Return	Return/Total	Fractional rank	B*C
Day 1	0.2	1/3	2	2/3
Day 2	0.2	1/3	2	2/3
Day 3	0.2	1/3	2	2/3
Total	0.6	1.0		2.0
Good flows	D/A = 2.0/0.6 = 3.33			

In this case the average number of days for stock price to capture news is 2. *Good flows* is 2.0/0.6 = 3.33 days.

Example 3: News spreads over three days, with half on the most informative day, one third on the second most informative day, and one sixth on the least informative day.

	A	B	C	D
	Return	Return/Total	Fractional rank	B*C
Day 1	0.3	1/2	1	½
Day 2	0.2	1/3	2	2/3
Day 3	0.1	1/6	3	½
Total	0.6	1.0		1.67

In this case the average number of days over which the news transmits is 1.67. *Good flows* is 1.67/0.6 = 2.78 days.

The total news in each example is 0.6. However the weighted average number of days over which stock price captures the news varies from 1, at one extreme where all news concentrates in one day, to 2 at the other extreme where news is equally dispersed over the three days. Dividing the weighted average number of days by the total abnormal return shows how long on average it takes for price to reflect one unit of information. For a given total amount of news, higher values of the flow measure are consistent with news that is less concentrated. Accordingly, for our measure of the relative concentration of bad versus good news, *Bad v. good flows*, we take the difference between *Good flows* and *Bad flows*. Higher values of *Bad v. good flows* indicate greater relative concentration of bad news, consistent with an increasing tendency for companies to opportunistically withhold bad news.

3.2 Determinants of the relative concentration of information flows

Having calculated our measure of the relative concentration of information flows we study the factors that cause this to vary over companies and years. We group these factors into three categories. The first includes factors relating to the firm's *business and information environment* that affect investor uncertainty about whether managers have private information and therefore the scope for timing releases of bad and good news. The second includes *managerial incentives* for timing information releases relating to contractual and other gains that managers can achieve by managing information flows. The third includes *constraints* on managers' ability to time information flows resulting from

external information intermediaries who can reduce investor uncertainty that managers have received information. Examining how our relative concentration measure varies with these factors sheds light on the underpinnings of managing information flows and serves as a construct validity test of our measure.

We regress *Bad v. good flows,* on the three vectors of variables capturing the business environment, management incentives, and constraints as follows,

$$\begin{aligned} Bad\ v.\ good\ flows_{i,t} = {} & \alpha + \beta Business\ environment_{i,t} \\ & + \gamma Management\ incentives_{i,t} + \delta Constraints_{i,t} + e_{i,t} \end{aligned} \tag{3}$$

Exhibit 1 summarizes the model components and variables. Below we describe the components of each vector that may influence the relative concentration of information flows.

Business environment

The firm's information environment may affect investor uncertainty about whether managers have private information and therefore the scope for managing information flows to financial markets. We first consider the volatility of the firm's operations. A volatile business environment increases uncertainty about managers' private information, making investors less sure whether the manager has received information but chosen to withhold it or whether the manager has not received information. Managers of firms with volatile operations therefore have greater flexibility to strategically time bad new releases. To capture volatility in the business environment, we include the firm's idiosyncratic return volatility, σAR, and an indicator of membership of a high-tech industry, *HighTech*. Appendix A provides exact definitions of all variables. As higher return volatility also

reflects a higher rate of news arrival (Kalev et al. 2004), including σAR also allows for the higher discretion to time information flows afforded by higher rates of news arrival.

Investor uncertainty about whether a manager is informed is higher for newly listed and high growth firms. Managers of newly listed firms face stronger incentives to withhold bad news as they need to maintain a positive outlook in the market to survive the listing and maintain a record of growth. Newly listed firms face a higher likelihood of negative earnings news leading to lawsuits (Beneish 1997). Growth stocks also face an asymmetric market response to bad news (Skinner and Sloan 2002). Investors may raise their expectations of future sales and growth for firms with high past growth, inflating price multiples. Over time, if managers of these firms disclose information suggesting that optimistic expectations in price multiples are not sustainable, inferior stock price performance ensues. To account for managers' ability and incentives to withhold bad news for newly listed and high growth firms, we include the number of years the company has been listed (*YrsListed*) and the firm's compound annual sales growth rate (*Salesgrowth*).

Management incentives

Managers are likely to opportunistically withhold bad news releases to financial markets if they perceive net benefits to doing so. We consider incentives relating to operating performance, contractual considerations, and corporate financing events.

a. Operating Performance

Earnings news in the financial statements may induce managers to time the flow of news to the market throughout the period. Bagnoli and Watts (2007) hypothesize that negative earnings news in the financial report creates incentives for managers to voluntarily disclose more private information to mitigate the market's response to negative earnings

surprises. Miller (2002) observes that firms with impending earning declines provide regular short-term forecasts that allow them to focus on current positive news and avoid discussing the impending decline. Such disclosure strategies enable managers to reap the benefits of high disclosure while avoiding the negative effect of unreliable forward-looking statements on their reputations and exposure to litigation risk. This is consistent with managers strategically withholding bad news when facing earnings declines. To account for managerial incentives to time information flows in view of impending bad news in reported earnings we include an indicator of reported earnings declines (*Neg*Δ*Earn*) and of losses (*NegEarn*). We also control for the level of operating performance by including return on assets (*ROA*).

We consider separately the role of bad market news. Acharya et al. (2011) suggest that when firm performance correlates with market conditions, negative market news elicit a clustering of negative announcements by firms, even when the arrival of the underlying information is not clustered. The reason for firms' clustering of bad news releases in this case is because of the more favorable interpretation of a firm's disclosures in the presence of negative market news. To account for managerial incentives to cluster disclosures of bad news with bad market news, we include the proportion of days in the fiscal year with negative market returns (*NegMRetDays*).

b. Contractual considerations

Compensation plans may affect managers' disclosure decisions. When managers receive stock options, they may adopt disclosure strategies to maximize trading profits on their portfolios. When managers receive stock option grants, they have incentives to disclose bad news and withhold good news, to minimize stock price. Aboody and Kasznik

(2000) find that CEOs delay good news and accelerate bad news around stock option grant dates. Conversely, when managers are considering exercising stock options, they have incentives to delay bad news or accelerate good news.[4] Noe (1999) finds that insider sales increase primarily following good news management earnings forecasts. As stock option grants and exercisable options induce different disclosure strategies, we include the number of options granted, #*OptionsGrant*, and the number of exercisable stock options, #*OptionsEx*.

Manager's equity ownership may affect the strategic timing of information flows, with the effect varying with the ownership level. At lower managerial ownership levels evidence suggests that managers engage in stronger selling activity (Core and Larcker, 2002; Ofek and Yermack, 2000) that may induce a strategy of withholding bad news.[5] At higher levels of ownership managers are less likely to strategically time disclosures. Firms with higher managerial ownership have reduced agency and monitoring costs so their managers are less likely to be concerned about the stock price reaction to unfavorable information. To account for a non-linear effect of managerial ownership on the relative concentration of information flows, we include both *DirStk*% and its square, *DirStk*%^{2}, to capture the effects of lower levels of ownership.[6]

c. Corporate financing events

[4] A constraint on this disclosure pattern is litigation costs associated with insider sales strategies. Cheng and Lo (2006) find that insider sales do not motivate changes in disclosure. We account separately for the effect of litigation when considering constraints on the asymmetric timing of information flows.

[5] Core and Larcker (2002) find that firms with low managerial ownership are more likely to grant options to managers to increase their equity exposure, while Ofek and Yermack (2000) show that managers receiving option grants diversify their risk by selling shares.

[6] Yeo, Tan, Ho, and Chen (2002) also find a non-linear association between managerial ownership and the informativeness of earnings; at low (high) levels of management ownership the informativeness of earnings increases (decreases) with managerial ownership.

If a firm intends to issue additional equity to finance future operations within an accounting period, managers face incentives to withhold information that might have a negative price impact to avoid exacerbating the negative stock market reaction due to information asymmetry. Research suggests that around equity offerings firms follow disclosure strategies to lower the cost of equity capital, e.g., making more frequent, detailed, and optimistic disclosures about their performance in anticipation of the offering (Lang and Lundholm 2000).[7] To account for managerial incentives to withhold bad news during seasoned equity offerings, our model includes an indicator of issues of common or preferred stock (*SEO*).

Debt issues can also affect managers' disclosure decisions. Managers face strong incentives to withhold bad news around debt issues as debtholders are concerned more about bad than good news. Due to their asymmetric payoff function, debtholders have a limited ability to benefit from increases in firm value. Conversely, bad news implies a higher risk of default that affects their payoff directly. Consistent with this, Easton et al. (2009) find that bond trades increase around earnings announcements, especially when they convey bad news, and bond prices react more strongly to negative unexpected earnings. Similarly, DeFond and Zhang (2011) find that the bond market reacts more strongly to bad than to good news.[8] To account for managerial incentives to withhold bad news when firms issue debt, we include an indicator of long-term debt issues (*DebtIssues*).

[7] There is arguably a cost to strategically timing information releases around equity offerings. Lee and Masulis (2009) find that lower information quality, proxied by the quality of accruals, is associated with higher underwriting fees and a higher probability of a withdrawn equity offering. For equity offerings to induce withholding of bad news, the net gain that managers make by hiding information must outweigh the implied costs.

[8] Similar to equity issues there is a related reputational cost to strategically withholding bad news during debt issues. Ashbaugh et al. (2006), Bharath et al. (2008), Boubakri and Ghouma (2008), and Graham et al. (2008) provide evidence that rating agencies and bondholders assign lower credit ratings and charge higher debt costs to firms with poor information quality.

The role of news in the debt market depends on the risk of debt (Easton et al. 2009). When a company approaches default, debtholders face a higher risk of economic loss and, therefore, news about firm performance is more relevant. As the relevance of bad news for the debt market increases with default risk, so do managers' incentives to withhold bad news. Default risk may also lead to biased information flows through their effect on managers' career concerns. Kothari, Shu, and Wysocki (2009) argue that when managers approach financial default, their career concerns about contract termination increase and they face greater incentives to delay bad news. To account for the effect of default risk on the timing of bad news flows, we include the company's debt to total assets ratio, *Debt/Assets*.

Constraints

a. Competing sources of information

Larger firms have superior communication channels that increase the market's ability to be informed about the firm. Therefore, managers of larger firms have less flexibility to time information releases. To account for the effect of firm size on the asymmetric timing of information flows, we include the company's market capitalization, *MktCap*. Similar to larger firms, firms followed by more analysts have more information available to outsiders (Duchin, 2010), constraining managers' ability to strategically time information flows to the market. Evidence also suggests, however, that analysts' incentives to initiate coverage are stronger for stocks that they expect to perform well (Hayes, 1998), as this ensures a higher trading volume, allowing analysts to maximize their commissions. Irvine (2001) confirms this and shows that analysts realize higher trading commissions when they issue regular positive stock recommendations. This means analysts favor

following firms with regular good news flows, as this ensures more business, regular Buys, and higher revenues. The association between analyst coverage and the dispersion of bad and good news is, therefore, an empirical question. We capture analyst coverage by the number of analysts following the company, *#Anal*.

b. Institutional information acquisition

The ability of institutional investors to acquire private information may restrain managers' strategic timing of information flows. Similar to Maffett (2012), we measure institutions' ability to acquire private information based on their investment horizon. Prior research suggests transient institutions, i.e., those with short investment horizons, are more likely to seek and trade based on private information than non-transient institutions, i.e., those with long-term investment horizons (Yan and Zhang, 2009; Bushee and Goodman, 2007; Bushee and Noe, 2000). The key factor inducing the information acquisition process is trading frequency, which allows investors to exercise governance through the alternative exit channel of selling shares (Edmans et al., 2013; Edmans, 2009). To account for the restraining effect of investor trading frequency on managers' ability to strategically time information flows, we calculate a measure of investor turnover (*InvestorTurnover*) based on the *churn rates* of the firm's institutional holdings, i.e., the average frequency with which institutional investors rotate positions in their portfolios (Gaspar et al., 2005).[9] Higher rates indicate higher trading frequency and shorter investment horizons.[10] Analyst coverage and

[9] Calculating investor turnover rates involves two stages. First, we calculate for each institutional investor a measure of portfolio turnover in each quarter (Gaspar et al., 2005 p.143). Second, we calculate the investor turnover ratio at the firm level by calculating the weighted average of the total portfolio churn rates of its institutional investors over the four quarters each year.

[10] As an alternative measure of investment turnover we use the classification of Bushee (2001) and Bushee and Noe (2000) of institutional investors into *transient* and *non-transient* institutions. Transient institutions have high portfolio turnover. Non-transient institutions include dedicated institutional investors that hold large and stable holdings in a small number of firms and quasi-indexers that hold large diversified portfolios and trade

institutional trading are also important for our specification to control for variation in the relative concentration of bad versus good news flows driven by analysts and institutional trading rather than managerial disclosures.

c. Shareholder litigation risk

An important constraint managers face in timing information releases to the market is the risk of shareholder litigation if they withhold bad news. Fear of litigation may induce managers to disclose bad news promptly (Skinner 1994, Kasznik and Lev 1995, Field et al. 2005). If managers reveal bad news promptly, they avoid large stock price drops upon earnings announcements that may trigger class action lawsuits (Francis et al. 1994). To account for the constraining effect of litigation risk on managers' timing of information flows we include an indicator variable for firms operating in high legal exposure industries, *HighLit*, similar to Field et al. (2005).

4. Sample and results

4.1 Sample

To compute our measure of the asymmetric timing of information flows we obtain daily stock returns from CRSP. For factors affecting the relative concentration of information flows we obtain accounting data from Compustat, stock market data from CRSP, executive compensation data from ExecuComp, analyst forecast data from I/B/E/S, lawsuit cases from the Securities Class Action Clearinghouse (securities.stanford.edu), and institutional ownership data from Thomson Reuters. The initial sample with available accounting, lawsuit, and stock market data from Compustat and CRSP consists of 158,915 firm–years over fiscal years 1964 to 2012. Standard & Poor's ExecuComp database offers

infrequently (Bushee and Noe 2000). As data on this classification is available up to 2009, we report our main results using *InvestorTurnover*.

executive compensation data for the firms in the S&P1500 Index from 1992. Adding compensation data from ExecuComp, analyst forecast data from I/B/E/S, and institutional ownership data from Thomson Reuters reduces the sample to 15,240 observations over 1992–2012. We report our multivariate analysis separately for each sample to maximize the number of usable observations. To limit the influence of outliers, we winsorize all variables at the 0.5% and 99.5% percentiles.

We estimate the multivariate regression models using robust standard errors with clustering by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals. We include annual dummies to control for year fixed effects.

4.2 Descriptive statistics

Table 1 presents statistics for our concentration measures, *Bad flows*, *Good flows*, and *Bad v. good flows*, capturing the relative concentration of information flows. Panel A reports overall statistics. The average number of days over which a unit of bad news transmits, *Bad flows*, is higher (15.1 days) than the good news equivalent (13.8 days) across the sample firms. The average relative concentration of bad news is negative at −1.321, with a considerable standard deviation of almost three days (2.884). This negative relative concentration is also evident in the unstandardized averages; the weighted average number of days it takes for bad news to show up in prices is 31 days, compared to 28 days for good news (not tabulated).[11] Hence, on average for US firms, bad news spreads over more days than good news. However, relative concentration of bad news is positive in 29% of firm–years. For this sub-sample (panel B), the average relative concentration of bad news is 1.627 with units of bad news spread over 14.1 days compared to 15.7 days for good news.

[11] The negative relative concentration is also evident in the number of days with negative versus positive abnormal returns (102 versus 95 days).

Panel C reports statistics across years. Over the five decades of data in our sample, mean *Bad v. good flows* is negative but increases from a low of −2.796 in the 1960s to −0.987 during 2000–2012. In this latest period, bad news is more concentrated than good news (*Bad v. good flows* > 0) in 33% of firm–years. A within-year analysis shows a substantial rise in this percentage to 44% in 2002 and 48% in 2008, both years when US firms faced adverse economic conditions. In these years, mean *Bad v. good flows* is at its highest, reaching −0.015 in 2008. This pattern suggests an association between the relative concentration of bad news and periods of economic downturns, when more firms are prone to withholding bad news.[12]

Table 1, panel D reports statistics across the 48 Fama–French industry groups. Among the industries with the highest fraction of firms where bad news is more concentrated than good news *(Bad v. good flows* > 0) are communication (telephone and other communication companies), real estate, business services (including computer programming and other related services), healthcare, electronic equipment, chemicals, retail, and banking. Most of these industries have higher flows of both good and bad news than the sample average of 14 days.

Table 2 reports statistics for the other variables hypothesized to affect variation in the relative concentration of bad news across firms. For accounting and stock market variables we report statistics on the full sample (158,915 observations), while for analyst,

[12] We also note a substantial increase in both bad and good news flows in 2004 (bad flows rise from 15 to almost 18 days and good flows rise from 14 to 17). This rise is sustained up to 2007 and from 2010 to 2012. This pattern likely reflects the acceleration of information flows targeted by the 2004 SEC ruling for 8-K disclosures. In mid-2004 the SEC expanded considerably the number of events that are reportable on Form 8-K under the Securities Exchange Act of 1934 to include events like entry to material definitive agreements, considerations under business combinations, creation of financial obligations, events triggering off-balance sheet arrangements, etc. Further to the increase in reportable events, the SEC shortened the filing deadline to four business days after the occurrence of an event triggering the disclosure requirements of the form. Both provisions were intended to provide investors with better and faster disclosure of important corporate events.

compensation, and institutional ownership data we report statistics on the smaller sample (15,240 observations). We note though that the variables exhibit similar distributions in both samples.[13] The average firm in our sample has a listing history of 13 years, but with a standard deviation of 11 years, so we capture the effect of newly listed firms. By design, average relative size (market capitalization adjusted for the year and industry average) is close to one (1.047). The average frequency of equity issues is 2.4%, of debt issues is 45%, profit decreases 40%, and reported losses 28%. The average fraction of trading days with negative market news is 47%. Almost one in five sample firms operates in a high-tech industry or one with high legal exposure. Finally, sample firms on average have a following of 12 analysts, 4% of their stock held by managers, and a turnover rate of 31%, which means the average firm's institutional investors turn over 17% of their portfolios in a quarter, or around 62% in a year, implying an average institutional investor holding horizon of 19 months.

Table 3 reports the averages of key variables separately for firms with more concentrated bad than good news (*Bad v. good flows* > 0) and the remaining sample firms (*Bad v. good flows* ≤ 0). For firms with *Bad v. good flows* > 0, mean *Bad v. good flows* is 1.627, indicating that for these firms, bad news flows are more concentrated than good news flows by over one and a half days. This contrasts with the average *Bad v. good flows* of −2.509 for the remaining firms. The difference in *Bad v. good flows* between the two groups is due to the lower concentration of good news (15.8 vs. 12.9 days) and the higher concentration of bad news (14.1 vs. 15.5 days). Firms with positive *Bad v. good flows* have worse operating performance (earnings declines, losses, lower ROA), lower sales growth,

[13] The most noticeable differences are in years listed, ROA, and size, which have higher means in the smaller sample, consistent with the latter capturing longer listed, more profitable, and larger firms.

higher leverage, a higher frequency of equity and debt issues, higher analyst coverage, lower investor turnover and insider ownership, and are more likely to operate in a high litigious industry.

Taken together, the results in tables 1–3 suggest that the practice of opportunistic withholding of bad news is not widespread; U.S. firms concentrate good news more than bad news. Nonetheless, the evidence suggests that the opportunistic withholding of bad news occurs in a substantial portion of the population, about 30%. This relative concentration of bad news appears to be associated with adverse economic conditions, poor operating performance, capital raising, and capital market participation.

4.3 Empirical Results

4.3.1 Determinants of the relative concentration of information flows

Table 4 reports the results of regressing *Bad v. good flows* on the three vectors of variables capturing the business environment, management incentives, and constraints (equation 3). The first column reports results on the full sample, where we retain all business environment variables, all variables proxying for managerial incentives unrelated to executive compensation, and constraints related to firm size and litigation risk. *Bad v. good flows* varies with three of the four business environment factors in the predicted direction. Idiosyncratic return volatility and sales growth have positive coefficients (9.621, t = 5.20 and 0.064, t = 3.14), and listing age has a negative coefficient (−0.007, t = −2.44).[14] This evidence suggests that the volatility and growth rate of the company's business environment are the key factors enabling a higher relative concentration of bad news. *Bad v. good flows* also varies with six of the seven managerial incentives proxies, increasing with

[14] Repeating the analysis using the standard deviation of sales or the standard deviation of operating cash flows as alternative measures of business volatility to σAR, leaves the results qualitatively similar.

reporting of earnings declines, losses, negative market news, ROA, equity offerings, and debt issues.[15] This evidence reaffirms poor operating performance reported in the financial statements and capital raising activities as key firm drivers of the relative concentration of bad versus good news and negative market news as an important incremental trigger of bad news clustering.[16] Finally, *Bad v. good flows* is inversely associated with market capitalization (−0.228, t = −2.36), suggesting that firm size constrains the higher relative concentration of bad versus good news. In column 2 we add lagged *Bad v. good flows* to capture the dynamics of timing information flows. Lagged *Bad v. good flows* has a positive coefficient (0.107, t = 10.19), consistent with firms' information disclosure strategies having a persistent component. Collectively these results suggest that the relative concentration of bad versus good news flows persists over time, increases with the company's operational volatility, growth rate, reporting of bad earnings news in the financial statements, negative market news, and debt and equity issues, and decreases with firm size.

The third column of Table 4 presents the results of regressing *Bad v. good flows* on all variables capturing the business environment, management incentives, and constraints. Some additional insights emerge from this. First, *Bad v. good flows* increases with managerial ownership at lower levels of ownership (*DirStk%*^{2} = 2.346 t = 2.77) and with

[15] Since the indicator of earnings declines, *Neg*Δ*Earn*, is the strongest managerial incentives proxy associated with *Bad v. good flows,* we investigate further the role of the sign of news that the manager possesses on the timing of information flows. *Neg*Δ*Earn* identifies realized bad news about the profitability of invested assets. The manager, however, also has information about future investments that can affect information flows during the year. To investigate the role of expected bad news, we add an identifier, *NegREV*1*,* of firm–year observations where the analyst consensus EPS forecast for the subsequent year (FY2) is revised downwards following this year's earnings announcement (FY1). We find that *Bad v. good flows* is positively associated with *NegREV*1, consistent with both expected and realized bad news triggering the relative concentration of bad versus good news flows.

[16] We obtain similar results when we use an indicator of negative cumulative market returns during the firm's fiscal year as an alternative measure for negative market news.

analyst coverage (*#Anal* = 0.031, *t* = 3.62). Second, relative concentration of bad news decreases with option grants (*#OptionsGranted* = −0.044, *t* = −1.96), managerial ownership at higher levels of ownership (*DirStk%* = −2.054, *t* = −2.94) and with institutional investor turnover (*InvestorTurnover* = −1.983, *t* = −5.45).[17] These results suggest that low levels of insider ownership and high analyst following are additional drivers of the relative concentration of bad versus good news and higher levels of insider ownership and investor turnover are important constraints. The results also suggest an inverse association between stock option grants and the relative concentration of bad news, consistent with the evidence of Aboody and Kasznik (2000) that firms accelerate bad news around periods of stock option grants.

Taken together, the results in Table 4 suggest that the relative concentration of bad news flows persists and is associated with volatile operations, bad earnings news in the income statement and in the market, debt and equity issues, managerial ownership, firm size, stock option grants, analyst coverage, and investor turnover. As well as offering insights into the determinants of the relative concentration of information flows, these results provide construct validity to our measure by associating it with the company's business environment, managerial incentives, and capital market players.

4.3.2 The relative concentration of information flows and financial reporting

A company manages the flow of bad versus good news strategically as part of an overall reporting and disclosure policy. Prior literature examines the interaction between the

[17] We repeat the analysis allowing for investor turnover to have a binary instead of a continuous effect. Similar to Maffett (2012) we test the effects of the highest and lowest quintiles of investor turnover assuming the highest (lowest) quintile represents more transient (dedicated) institutions. As expected, the effect pertains to the highest quintile of investor turnover (*InvestorTurnoverQ*5 = −0.507, *t* = −5.60, *InvestorTurnoverQ*1 = 0.099, *t* = 0.43), i.e., transient–frequently-trading institutional holders. We make a similar inference when we repeat the analysis using the Bushee (2001) and Bushee and Noe (2000) classification of institutional investors into transient and non-transient types.

quality of mandatory reporting and of voluntary disclosures (Francis et al., 2008). A key argument is that since information quality is endogenous, there is a positive association between the quality of mandatory and voluntary disclosure. Francis et al. (2008) provide evidence to support this proposition. Therefore, to the extent reporting and disclosure choices align, we expect firms that opportunistically withhold bad news to have lower quality reported earnings. To examine this, we test the association between our relative concentration measure and earnings quality proxies.

We use four earnings quality proxies: accruals quality (*AQ*); absolute abnormal accruals (*AbsAA*); earnings variability (*σEarn*); and a combined measure based on the common factor score of these metrics (*EQ*). Accruals quality, *AQ*, is based on the Dechow and Dichev (2002) model, extended by McNichols (2002), and measures the extent to which working capital accruals map into cash flows in the current, prior, and future periods and changes in revenues and property, plant, and equipment. The absolute value of abnormal accruals, *AbsAA*, is based on the modified Jones (1991) model. The standard deviation of earnings, *EarnVar*, correlates with various earnings quality measures, such as earnings smoothness, earnings predictability, poor matching of revenue and expenses, etc. (e.g., Francis, LaFond Olsson, and Schipper, 2004; Dichev and Tang, 2009). Higher values of *AQ*, *AbsAA,* and *EarnVar* indicate noisier reported earnings (e.g., accrual estimation errors, volatility). The combined measure, *EQ*, is the common factor score from a factor analysis of *AQ*, *AbsAA*, and *EarnVar*. *EQ* offers a potentially more comprehensive measure of earnings quality as it combines the variation of multiple earnings properties. *EQ* has the same ordering as the underlying variables, so larger values of *EQ* indicate lower quality reported earnings. We expect to find a positive association of *Bad v. good flows* with *EQ*

and the other earnings quality proxies. Calculating earnings quality measures reduces our sample from 158,915 to 84,960 firm–year observations.

Table 5 reports the regression results. Controlling for persistence, *Bad v. good flows* is positively associated with all earnings quality proxies, exhibiting the strongest association with *EQ* (0.108, t = 3.36). Since a company's business model and operating environment affects both asymmetric information flows and earnings quality, we repeat the regression with *EQ*, adding additional controls for innate business fundamentals (following Dechow and Dichev, 2002; Francis et al., 2004, 2005), e.g., cash flow volatility, sales volatility, operating cash cycle, cumulative losses, intangible assets intensity, and capital assets intensity. Column five reports the results. The coefficient on *EQ* remains positive (0.059, t = 2.12), mitigating concerns that the underlying business model drives the association between *Bad v. good flows* and *EQ*, and lending further support to the inverse association between discretionary earnings quality and the relative concentration of bad news flows. Taken together, the results in Table 5 suggest that firms with a higher concentration of bad relative to good news have noisier reported earnings driven by managerial discretion, consistent with our conjecture concerning the alignment of the firm's disclosure and reporting practices.[18]

4.3.3 The relative concentration of information flows and class action lawsuits

If managers release bad news on a timely basis, they avoid large stock price drops upon earnings announcements that may trigger class action lawsuits (Francis et al. 1994). Conversely, if companies withhold bad news they face a higher probability of a lawsuit.

[18] An alternative explanation is that the noisier properties of reported earnings drive the asymmetry in the relative concentration of bad news. To mitigate this concern we re-estimate equation (3) adding *EQ*. In this specification managerial incentives and constraints are significant, but not *EQ* (−0.072, t = −0.82).This suggests that managerial incentives and constraints have a first order effect in determining the relative concentration of information flows.

Therefore, to the extent our measure captures companies' opportunistic withholding of bad news, we expect *Bad v. good flows* to be positively associated with the possibility of a class action lawsuit. To test this, we model the probability of a class action lawsuit (*Lawsuit* = 1) as a function of *Bad v. good flows* and other factors affecting the probability of litigation suggested by Field et al. (2005). We include, market capitalization (*MtkCap*), stock volatility (σ*Ret*), past returns (Ret_{t-1}), stock turnover *(Turnover)*, and indicator variables for high tech and regulated industries (*HighTech*, *Regulated)* and for negative earnings surprises and earnings declines (*NegSurprise, Neg*Δ*Earn*). Appendix A provides detailed definitions of the variables. Table 6 reports the logistic regression results. We use 84,960 observations for this test, as in Table 5. As expected, the probability of lawsuit increases with stock volatility, lower past returns, and stock turnover, and is higher in high tech industries and companies reporting negative earnings surprises or earnings declines. Firms with a greater relative concentration of bad news flows are also more likely to be sued, evidenced by the positive coefficient on *Bad v. good flows* (0.150, t = 7.18). As lower earnings quality can trigger litigation and is positively associated with the relative concentration of bad news flows, we add *EQ* in the next column. The coefficient on *Bad v. good flows* remains positive (0.153, t = 7.23), despite the positive loading of *EQ* (0.205, t = 3.51). Therefore, the documented association between *Bad v. good flows* and the probability of lawsuit is robust to the effect of earnings quality. The final column of table 6 reports the results of repeating the logistic regression adding all remaining determinants of *Bad v. good flows*. The coefficient on *Bad v. good flows* remains positive (0.139, t = 5.67). Collectively, the results in table 6 suggest that the relative concentration of bad news can trigger class

action lawsuits. This association is robust to other factors affecting the risk of litigation. We view these results as lending further credence to our relative concentration measure.

5. Additional analysis

5.1 The relative concentration of bad news and CEO succession

To further assess whether our measure of the relative concentration of bad versus good news flows reflects the strategic withholding of bad news, we investigate changes of *Bad v. good flows* associated with changes in a company's CEO. To the extent that strategic withholding of bad news is part of a corporate disclosure and reporting policy determined by the CEO, we expect CEO succession to cause a structural shift in the practice. Given the opportunistic nature of the practice and evidence on the association of CEO turnover with poor performance in the period leading up to successions (Kaplan and Minton 2012) as well as evidence of higher intensity of management discipline following successions (Parrino et al., 2003; Farrel and Whidbee, 2000), we expect a decline in the strategic withholding of bad news after CEO successions.[19] We start by identifying CEO successions within our sample and isolating the four years surrounding each succession (similar to Parrino et al., 2003) having each firm serve as its own control. This yields 9,270 firm–year observations with available accounting and stock market data. We then test the change in *Bad v. good flows* in the two post-succession years compared to the two pre-succession years, adding a *NewCEO* indictor to equation 3. Table 7 reports the results. The coefficient on *NewCEO* is negative (−0.304, $t = -5.40$), indicating that the relative concentration of bad versus good

[19] Kaplan and Minton (2012) find CEO turnover is significantly related to firm performance for both forced and unforced turnover. Our specification (equation 3) already includes multiple factors associated with CEO turnover, e.g. stock price volatility, negative operating performance, sales growth, mitigating concerns about the endogeneity of CEO turnover in our tests.

news flows is on average 30% lower in the two years after the CEO succession. Using *NewCEOYear*1 and *NewCEOYear*2 to identify the first and second post-succession years, column (2) shows that the decline is sustained in the second year of succession (25%), consistent with a change in the company's communication strategy rather than just an intertemporal shift in disclosure. The results in Table 7 show that our measure reflects corporate disclosure policies and offers insights into changes in disclosure policies following top management changes.

5.2 *The relative concentration of bad news around firm disclosures*

To further assess whether firm disclosures drive our measure of the relative concentration of bad versus good news flows, we re-calculate our measure retaining only trading days adjacent to firm disclosures. We focus on earnings announcement dates of annual and quarterly earnings and on dates of filings of 10-Ks (annual financials), 10-Qs (quarterly financials) and of 8-Ks (current events) to the SEC.[20] We obtain the earnings announcement dates from I/B/E/S and the SEC filing dates from SEC analytics (the latter covering the period post-2009). Initial analysis of the filing dates shows that the average firm files ten 8-Ks during the fiscal year, yielding an average of fifteen filings per year (including the annual and quarterly financials). We obtain stock returns for the three day window [–1, 1] around the earnings announcement or filing and recalculate *Bad v. good flows* using only these dates in each firm–year combination. To maximize the number of usable observations given the shorter sample period for this additional test (2009–2012) we

[20] The SEC requires US firms to file 8-K forms for a list of important corporate events (e.g. entry into or termination of a definitive agreement, acquisition of assets, material impairments, notice of delisting or bankruptcy, changes in corporate governance, changes in fiscal year end, suspension of trading) within (usually) four business days after the occurrence of the event triggering the disclosure.

repeat the analysis using the larger sample with available accounting and stock market data. This yields 13,432 firm–year observations.

Table 8, panel A reports descriptive statistics on the re-calculated measure of *Bad v. good flows*. Mean and median *Bad v. good flows* are negative (−0.292, −0.309), as in Table 1, but the standard deviation increases 4.5-fold to 13 days. The difference in the distribution of the re-calculated measure is also evident in the conditional analysis, where *Bad v. good flows* is positive for 48% of observations. In this subsample bad news flows are concentrated in 12 days compared to 20 days for good news flows. This eight day difference indicates a substantially higher relative concentration of bad versus good news within this subsample. Table 8, panel B reports the regression results for the re-calculated *Bad v. good flows* on all business environment variables, all variables proxying for managerial incentives unrelated to executive compensation and constraints related to firm size and litigation risk. *Bad v. good flows* varies with three managerial incentives, increasing with reporting of earnings declines and losses, as in Table 4, and decreasing with operating performance. Also, as in Table 4, *Bad v. good flows* is inversely associated with market capitalization and with high legal exposure industries. This evidence reaffirms poor operating performance as a key motive to withhold bad news, and firm size and litigation risk as constraints.

5.3 *The relative concentration of information flows—filtering out systematic variation*

Given our measure is based on stock returns, it could reflect an asymmetry in the market's transmission speed of good versus bad news. Alternatively it could reflect an asymmetry in the market response to bad versus good news driven by investor sentiment or

overconfidence.[21] We perform an additional test to remove variation in our measure driven by systematic market- or industry-wide factors and focus on the idiosyncratic (firm-specific) element. We adjust *Bad v. good flows* for each firm–year combination with the mean value of *Bad v. good flows* for all remaining firms operating in the same Fama and French (1997) industry group as the sample firm. We find (results not tabulated) that both mean and median adjusted *Bad v. good flows* are positive (0.031, 0.175), with a standard deviation of almost 2.5 days. Adjusted *Bad v. good flows* is positive in 53% of firms–years in the sample, indicating cases where bad news is more concentrated than good news. Repeating the regression analysis, the adjusted *Bad v. good flows* exhibits similar associations with the business environment variables, managerial incentives, and constraints as the unadjusted measure (Table 4). We also test an additional adjustment of our measure that focuses on the concentration of bad flows. We adjust *Bad flows* for each firm–year combination with mean *Bad flows* of all remaining firms exhibiting similar good flows concentration (i.e., operating in the same *Good flows* decile each year). We confirm that adjusted *Bad flows* exhibit similar associations with the business environment variables, managerial incentives, and constraints as *Bad v. good flows* in Table 4. These additional results mitigate concerns that systematic market- or industry-wide asymmetries in the flows of good versus bad news drive the variation in our measure of the relative concentration of bad news.

5.4 The relative concentration of bad versus good news in changing regimes of corporate governance

Changes in governance or disclosure regulation over time can affect managers' scope and incentives to withhold bad news. Our sample period spans several years with

[21] Several theoretical models predict an asymmetric market response to bad versus good news that might be attributed to investor sentiment or overconfidence (e.g. Barberis, Shleifer, and Vishny, 1998, Daniel, Hirsleifer, and Subramanyam, 1998).

changes in regimes of corporate governance or disclosure. Investigating the impact of these changes could shed light on the governance mechanisms that constrain opportunistic withholding of bad news, while offering further construct validity to our measure of the relative concentration of bad versus good news as a measure of the quality of the firm's information environment.

We investigate two regulatory shifts during our sample period. The first is the passage of antitakeover laws in the US in the mid-1980s, which constituted an important change in firms' corporate governance structures that could have affected managerial incentives to withhold bad news. The second-generation statement antitakeover laws affected firms incorporated in different US states at different times from 1985 to 1991 (see appendix B). The laws ensured an increase in antitakeover provisions that reduced the threat of a hostile takeover and insulated managers from the pressure of the market for corporate control. Given that hostile takeovers are often associated with poor operating performance and financial distress, such provisions may have reduced the pressure to withhold bad news. With an increase in antitakeover provisions, managers may feel also more secure about their labor market prospects and therefore become less concerned about concealing poor performance. This change in antitakeover protection is therefore likely to have reduced managerial incentives to withhold bad news. To test this prediction, we re-estimate equation (3) adding an indicator of firms incorporated in a state that passed an antitakeover law (*Antitakeover*) and interaction terms with the factors determining *Bad v. good flows*. The staggered enactment of the antitakeover laws across US states allows identification in this case of the causal effect of a change in corporate governance on a firm's disclosure policy; the states where the laws were not passed provide control firms for the treatment firms in

states that passed the laws. We run this part of the analysis over the period 1985–1995. The first two columns of Table 9 report the results. The coefficient on *Antitakeover* is insignificant at conventional levels (−0.016, t = −0.38). Including interaction terms, however, the coefficients on *Antitakeover* × *NegEarn* and *Antitakeover* × *Debt*/*Assets* are negative (−0.249, t = −2.45 and −0.241, t = −2.00), suggesting that losses and financial distress are less likely drive the relative concentration of bad versus good news after the passage of the antitakeover laws. This is consistent with managers of loss making and financially distressed firms feeling less pressure to withhold bad news following the enactment of antitakeover protection.

The second regulatory shift that we consider is the enactment of SEC regulations during the 2000s. Regulation Fair Disclosure (Reg FD), enacted in October 2000, prohibited firms' selective private disclosures, likely constraining managers' ability to regulate the flow of news within the financial year before formal public disclosures. The SEC also issued additional requirements for Form 8-K reporting in mid-2004 to expand considerably the number of current events reportable in 8-Ks and shorten the filing deadline to accelerate firms' information flows within the financial year (see footnote 13). These changes aimed to improve the timeliness of the disclosure of important corporate events, arguably constraining the opportunity to withhold news flows from investors. To test the effect of these two pieces of regulation, we re-estimate equation (3) adding an indicator of fiscal periods ending on or after October 2000 (*SEC REG FD*) and an indicator of fiscal periods ending on or after August 2004 (*SEC REG 8K*). We conduct this part of the analysis on the period 1996–2006. The third column of Table 9 reports the results. While the coefficient on *SEC REG FD* is not significant at conventional levels (−0.096, t = −0.90), the coefficient on

SEC REG 8K is negative and highly significant (−0.265, $t = -7.54$), indicating a substantial decline in the relative concentration of bad news following the 2004 8-K requirements. As the significant structural shift in our measure appears after the 8-K requirements, we repeat the analysis adding interactions between (*SEC REG 8K*) and the determinants of *Bad v. good flows*. The last column of Table 9 reports the results. The coefficients on *SEC REG 8K* × *HighTechInd*, *SEC REG 8K* × *Debt/Assets* and *SEC REG 8K* × *MktCap* are negative and significant (−0.150, $t = -2.66$, −0.658, $t = -5.61$, and −0.826, $t = -1.79$ respectively), suggesting that high tech, financially distressed, and larger firms are more constrained from increasing the relative concentration of bad relative to good news following the 2004 8-K requirements. This is consistent with SEC's 8-K requirements constraining the opportunity to withhold bad news.

The results in Table 9 offer evidence of two structural shifts in the relative concentration of bad versus good news over our sample period related to changes in corporate governance and disclosure regulation. This evidence supports the restraining effect of regulation on the asymmetric flows of bad versus good news, while offering additional construct validity to our measure.

5.5 *Analyst earnings forecasts and stock recommendations*

While earnings announcements and firm disclosures are a key source of information flows, sell-side analysts play an important role in price discovery. Bradley et al. (2014a) provide evidence that analysts' recommendations are an important information disclosure channel. Bradley et al. (2014b) show that the market reacts more strongly to stock recommendation downgrades than upgrades, especially for contrarian revisions, i.e., recommendations that contradict a sizeable recent stock price movement. Given that stock recommendation

downgrades are much rarer than upgrades, recommendation revisions may also result in bad news being more concentrated than good news over the year. Our evidence so far associates our measure of the relative concentration of information flows with firm disclosure policy. We now re-calculate *Bad v. good flows* removing all days with a revision in an analyst earnings forecast or a recommendation revision. Re-estimating equation (3) using the recalculated measure (results not tabulated) preserves all key results of Table 4, reaffirming the association of *Bad v. good flows* with managerial incentives and constraints on withholding bad news.

6. Conclusion

We construct a new measure of the relative concentration of bad versus good news flows. If managers opportunistically withhold bad news, bad news concentrates in fewer days in a financial year than good news, increasing the relative concentration of bad versus good news. Our measure is based on the flows of positive versus negative idiosyncratic stock returns and captures the number of days it takes for price to reflect one unit of negative versus one unit of positive news. We find that firms with higher operational volatility and incentives to delay bad news exhibit a higher relative concentration of bad versus good news flows, while firms with higher levels of insider ownership and institutional investor turnover exhibit lower relative concentration. We also find that firms with higher relative concentration of bad versus good news flows report earnings of lower quality and have a higher probability of shareholder litigation. Viewed collectively the evidence suggests that our measure of the relative concentration of information flows is directly related to the quality of the firm's information environment.

Exhibit 1

Factors affecting the relative concentration of bad versus good news flows		*Construct*	*Variable name*
Business environment	Operational volatility	Idiosyncratic volatility	σAR
	Uncertainty about future operations	Membership of high-tech industries	*HighTech*
	Firm characteristics	Firm listing age	*YrsListed*
		Sales growth rate (%)	*Salesgrowth*
Management incentives	Operating performance	Reporting earnings declines	*Neg*Δ*Earn*
		Reporting losses	*NegEarn*
		ROA	*ROA*
	Market performance	Negative over positive market return days	*NegMRetDays*
	Contractual considerations	Option grants	*#OptionsGrant*
		Exercisable options	*#OptionsEx*
		Insider Ownership	*DirStk*%, *DirStk*%^{2}
	Corporate financing events	Equity offerings	*SEO*
		Debt Issues	*DebtIssues*
		Financial distress	*Debt/Assets*
Constraints	Competing information sources	Size	*MktCap*
		Number of analysts following	*#Anal*
	Institutional information acquisition	Investor turnover	*InvestorTurnover*
	Shareholder litigation risk	Membership of high legal exposure industries	*HighLit*

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Appendix A
Definition of variables in alphabetical order

Variable	*Description*
AbsAA	Absolute abnormal accruals based on the Jones (1991) model.
#Anal	Number of analysts following the firm.
AQ	Standard deviation of the firm's residuals from years *t*−4 to *t* from annual cross-sectional estimates of the modified Dechow and Dichev (2002) model, i.e., regressions of the firm's year *t* working capital accruals on years *t*−1, *t*, and *t*+1 cash flows from operations, the year *t* change in revenues and the year *t* property, plant, and equipment (all variables scaled by average total assets).
AR	Excess daily stock returns measured as the intercept plus the residual from a regression of a firm's daily stock returns on market returns.
Antitakeover	Equals 1 if the firm is incorporated in a state that has passed an antitakeover law (see Appendix B), 0 otherwise.
Bad v. good flows	The difference between the concentration of good news (*Good flows*) and bad news (*Bad flows*). *Bad flows* is the average number of days it takes price to reflect one unit of negative news during year *t. Good flows* is the average number of days it takes price to reflect one unit of positive news during year *t.*
BadflowsMarket	The percentage of days over the firm's fiscal year with negative market returns.
BadMarketNews	Equals 1 when the cumulative market returns over the firm's fiscal year are negative, 0 otherwise.
CapIntensity	Net book value of PP&E to total assets.
Debt/Assets	Debt divided by total assets.
DebtIssues	Equals 1 if the company has issued long-term debt during year *t* (item DLTIS - Long-Term Debt – Issuance >1), 0 otherwise.
DirStk%	Percentage of stock held by executive directors.
EarnVar	The standard deviation of the firm's net income before extraordinary items (NIBE) scaled by total assets over years *t*−6 *to t*.
EQ	Common factor score obtained from a factor analysis of *AQ*, *AbsAA*, and *EarnVar*.
HighLitInd	Equals 1 for firms in high legal exposure industries, which are those with above-median lawsuit rates following Field et al. (2005). We derive the lawsuit rates using all class action lawsuits filed from 1996 onwards under the Securities Act of 1934. We extract these lawsuits from the Securities Class Action Clearinghouse (securities.stanford.edu).
HighTechInd	Equals 1 if the firm is a member of a high-tech industry. High-tech firms are firms with Standard Industrial Classification (SIC) codes 2833–2836, 3570–3577, 3600–3674, 7371–7379 and 8731–8734.
InvestorTurnover	Weighted average of the total portfolio churn rates of the firms' institutional investors over the four quarters of the year (Gaspar et al. 2005). We obtain the churn rate for each institutional investor and each quarter as follows $$CR_{it} = \frac{\sum_{j \in Q} \lvert N_{jit}P_{jt} - N_{jit-1}P_{jt-1} - N_{jit}\Delta P_{jt} \rvert}{\sum_{j \in Q} \left(N_{jit}P_{jt} + N_{jit-1}P_{jt-1}\right)/2}$$ where P_{jt} and N_{jit} are the price and number of shares of company *j* held by institutional investor *i* at the end of quarter *t*. Investor turnover for the firm, which measures the investment horizon of institutional shareholders, is calculated as $InvestorTurnover_{kt} = \sum_{j \in S} w_{kit}(\frac{1}{4}\sum_{r=1}^{4} CR_{i,t-r+1})$, where *S* is the set of shareholders in company *k* and w_{kit} is the weight of investor *i* in the total percentage held by institutional investors at the end of quarter *t*.
IntIntensity	The firm's reported R&D and advertising expense as a proportion of its sales revenues.
Lawsuit	Equals 1 if there is a class action lawsuit, 0 otherwise. We extract all class action lawsuits filed from 1996 onwards under the Securities Act of 1934 from the Securities Class Action Clearinghouse website (http://securities.stanford.edu).
Losses	Proportion of losses (negative *NIBE*) for the firm over years *t*−6 to year *t*.
MktCap	Natural logarithm of the firm's market capitalization divided by the natural logarithm of the median market capitalization by industry and year.
NewCEO	Equals 1 in the first and second CEO succession years, 0 otherwise.

NewCEOYear1	Equals 1 in the first CEO succession year, 0 otherwise.
NewCEOYear2	Equals 1 in the second CEO succession year, 0 otherwise.
NegEarn	Equals 1 when the firm's *NIBE* is negative, 0 otherwise.
NegΔEarn	Equals 1 when the change in the firm's *NIBE* from years $t-1$ to t is negative, 0 otherwise.
NegMRetDays	The fraction of days in the firm's fiscal year when the market return is negative.
NegSurprise	Equals 1 when the forecast error for year t is negative, 0 otherwise. Forecast error is the difference between the I/B/E/S actual EPS and the median analyst consensus forecast outstanding at the earnings announcement date.
OperCycle	Log of the firm's average trade receivables period plus the average stockholding period. The trade receivables period is 360/(Sales/Average trade receivables) and the stockholding period is 360/(Cost of goods sold/average inventory).
#OptionsExer	Natural logarithm of the number of exercisable stock options held by the firm's CEO during the year.
#OptionsGranted	Natural logarithm of the total number of options granted to the firm's CEO during the year.
ROA	Net income before extraordinary items divided by average total assets over years t and $t-1$.
Salesgrowth	Compound annual growth rate in sales over years $t-2$ to year t.
SEO	Equals 1 if the firm receives funds from issuance of common or preferred stock during year t (SCSTKC - Sale of Common and Preferred Stock > 1), 0 otherwise.
SEC REG(FD)	Equals 1 for fiscal years ending on or after October 2000, 0 otherwise.
SEC REG(8K)	Equals 1 for fiscal years ending on or after August 2004, 0 otherwise.
σ*AR*	Standard deviation of daily abnormal stock returns during year t.
σ*CFO*	Standard deviation of the firm's cash flow from operations (scaled by average total assets) from years $t-6$ to t.
σ*Ret*	Standard deviation of daily stock returns during year t.
σ*Sales*	Standard deviation of the firm's sales revenues (scaled by average total assets) from years $t-6$ to t.
Turnover	Percentage of non-zero trading days over total trading days in year t.
YrsListed	The number of years between year t and the year that the firm has its first record on the CRSP files.

Appendix B Passage of Antitakeover Laws by State (see Armstrong et al. 2012).

State	Year of enactment of the law	State	Year of enactment of the law
Alabama		Montana	
Alaska		Nebraska	1988
Arizona	1987	Nevada	1991
Arkansas		New Hampshire	
California		New Jersey	1986
Colorado		New Mexico	
Connecticut	1989	New York	1985
Delaware	1988	North Carolina	
District of Columbia		North Dakota	
Florida		Ohio	1990
Georgia	1988	Oklahoma	1991
Hawaii		Oregon	
Idaho	1988	Pennsylvania	1989
Illinois	1989	Rhode Island	1990
Indiana	1986	South Carolina	1988
Iowa		South Dakota	1990
Kansas	1989	Tennessee	1988
Kentucky	1987	Texas	
Louisiana		Utah	
Maine	1988	Vermont	
Maryland	1989	Virginia	1988
Massachusetts	1989	Washington	1987
Michigan	1989	West Virginia	
Minnesota	1987	Wisconsin	1987
Mississippi		Wyoming	1989
Missouri	1986		

Table 1

Descriptive statistics for the relative concentration of information flows

Descriptive statistics for the relative concentration of information flows (*Bad v. good flows*). *Bad flows* (*Good flows*) is the concentration of bad (good) news, i.e., the average number of days for one unit of bad (good) news to transmit to price. The sample with available accounting, lawsuit and stock market data from Compustat and CRSP consists of 158,915 firm−years observations over fiscal years 1964–2012.

Panel A:Overall

	Mean	StdDev.	Q1	Median	Q3
Bad flows	15.085	8.897	8.440	13.138	19.764
Good flows	13.762	8.406	7.541	11.775	18.016
Bad v. good flows	−1.321	2.884	−2.671	−1.001	0.180
Bad v. good flows > 0	0.287	0.452	0.000	0.000	1.000

Panel B:Conditional analysis (Bad v. good flows > 0*)*

Bad flows	14.143	8.754	2.210	48.845	14.143
Good flows	15.774	9.528	2.101	46.578	15.774
Bad v. good flows	1.627	1.758	0.000	8.014	1.627

Panel C: Across Years

	Obs	*Bad flows*	*Good flows*	*Bad v. good flows*	*Bad v. good flows* > 0
1960s	5,110	22.468	19.685	−2.796	0.192
1970s	25,231	16.116	14.542	−1.565	0.254
1980s	34,986	15.441	13.660	−1.770	0.254
1990s	43,717	12.941	11.952	−0.989	0.300
2000−2012	49,871	15.578	14.594	−0.987	0.331
1999	4,823	10.855	9.610	−1.254	0.208
2000	4,578	9.398	8.546	−0.855	0.260
2001	4,423	10.492	10.147	−0.350	0.361
2002	4,404	11.423	11.302	−0.127	0.441
2003	4,163	15.468	14.115	−1.363	0.248
2004	4,030	18.115	16.838	−1.289	0.311
2005	3,842	19.354	17.930	−1.412	0.318
2006	3,784	19.757	18.240	−1.518	0.309
2007	3,635	18.489	17.066	−1.455	0.321
2008	3,574	11.019	11.006	−0.015	0.482
2009	3,551	12.987	11.910	−1.081	0.259
2010	3,398	19.969	18.464	−1.501	0.292
2011	3,286	19.470	18.378	−1.124	0.347
2012	3,204	20.636	19.594	−1.008	0.367

Table 1(*cont'd*)

Panel D: Across Fama and French's (1997) 48 industry groups

Industry Name	FFSIC	*N*	*Bad v. good flows* > 0	*Good flows*	*Bad flows*
Communication	32	7,529	0.370	25.456	26.671
Tobacco Products	5	263	0.359	23.140	24.550
Real Estate	46	1,280	0.343	14.579	15.643
Beer & Liquor	4	658	0.324	20.305	21.832
Business Services	34	1,492	0.323	12.787	13.894
Healthcare	11	2,393	0.307	10.995	11.910
Restaurants, Hotels, Motels	43	9,610	0.306	13.967	15.228
Transportation	40	709	0.305	17.723	19.302
Electronic Equipment	36	6,266	0.301	10.429	11.329
Chemicals	14	3,815	0.300	17.342	18.876
Textiles	16	1,584	0.300	13.700	15.142
Retail	42	6,720	0.299	12.624	13.855
Aircraft	24	3,080	0.297	15.394	16.802
Shipping Containers	39	2,982	0.292	17.052	18.600
Banking	44	3,116	0.290	12.541	13.850
Printing and Publishing	8	1,588	0.289	16.624	18.275
Wholesale	41	6,833	0.288	13.968	15.391
Agriculture	1	4,724	0.287	14.823	16.239
Machinery	21	8,292	0.287	13.397	14.640
Consumer Goods	9	627	0.287	13.769	15.363
Utilities	31	3,675	0.287	14.554	16.003
Petroleum and Natural Gas	30	1,063	0.286	14.943	16.548
Computers	35	14,666	0.285	11.149	12.269
Apparel	10	306	0.284	13.268	14.527
Almost Nothing	48	551	0.283	12.064	13.248
Insurance	45	2,161	0.283	13.123	14.498
Business Supplies	38	3,023	0.282	13.028	14.457
Food Products	2	3,904	0.281	11.684	12.889
Construction Materials	17	3,697	0.278	17.226	18.925
Coal	29	4,851	0.277	14.939	16.557
Automobiles and Trucks	23	1,825	0.275	9.982	11.176
Personal Services	33	831	0.274	11.290	12.834
Fabricated Products	20	1,142	0.274	10.034	11.046
Recreation	6	4,750	0.274	15.902	17.479
Defense	26	1,731	0.274	11.326	12.598
Medical Equipment	12	416	0.272	14.108	15.849
Non−Metallic and	28	4,620	0.271	11.148	12.259

Industrial Metal					
Steel Works Etc	19	3,214	0.266	14.558	16.084
Measuring and Control Equipment	37	9,943	0.266	10.910	12.106
Rubber and Plastic Products	15	2,073	0.265	12.762	14.287
Construction	18	7,128	0.261	11.727	12.942
Pharmaceutical Products	13	1,393	0.260	11.960	13.366
Candy & Soda	3	457	0.256	15.612	17.383
Electrical Equipment	22	3,021	0.253	13.527	15.145
Trading	47	372	0.237	16.798	18.986
Precious Metals	27	1,191	0.236	15.801	17.775
Shipbuilding, Railroad Equipment	25	1,105	0.235	10.571	12.177
Entertainment	7	2,245	0.228	11.895	13.644

Table 2
Descriptive statistics of key variables

The sample with available accounting, lawsuit and stock market data from Compustat and CRSP consists of 158,915 firm–year observations over fiscal years 1964–2012. Adding analyst forecast data from I/B/E/S, compensation data from ExecuComp, and institutional ownership data from Thomson Reuters reduces the final sample to 24,929 observations over 1992–2012. Appendix A defines all variables.

	Obs.	Mean	StdDev.	Q1	Median	Q3
σ*AR*	158,915	0.034	0.023	0.019	0.028	0.042
HighTechInd	158,915	0.184	0.388	0.000	0.000	0.000
YrsListed	158,915	13.088	11.003	5.000	9.000	18.000
Salesgrowth	158,915	0.155	0.409	−0.001	0.094	0.214
NegΔEarn	158,915	0.404	0.491	0.000	0.000	1.000
NegEarn	158,915	0.273	0.445	0.000	0.000	1.000
ROA	158,915	−0.004	0.190	−0.011	0.040	0.080
NegMRetDays	158,915	0.466	0.042	0.440	0.456	0.488
SEO	158,915	0.024	0.152	0.000	0.000	0.000
DebtIssues	158,915	0.451	0.498	0.000	0.000	1.000
Debt/Assets	158,915	0.243	0.204	0.067	0.221	0.366
MktCap	158,915	1.047	0.471	0.726	1.014	1.322
HighLitInd	158,915	0.192	0.394	0.000	0.000	0.000
#OptionsGranted	15,240	3.016	1.778	2.093	3.421	4.283
#OptionsExer	15,240	4.365	1.663	3.616	4.587	5.468
DirStk%	15,240	0.035	0.072	0.002	0.007	0.027
$DirStk\%^2$	15,240	0.007	0.031	0.000	0.000	0.001
#Anal	15,240	12.434	9.014	6.000	10.000	17.000
InvestorTurnover	15,240	0.305	0.050	0.270	0.304	0.339

Table 3
Key variables: conditional analysis

The distribution of key variables between firms with positive asymmetry in the dispersion of bad versus good news (*Bad v. good flows* >0) and remaining firms. The sample with available accounting, lawsuit and stock market data from Compustat and CRSP consists of 158,915 firm–year observations over fiscal years 1964–2012. Adding analyst forecast data from I/B/E/S, compensation data from ExecuComp and institutional ownership data from Thomson Reuters reduces the final sample to 24,929 observations over 1992–2012. Appendix A defines all variables.

Mean	*Bad v. good flows* >0	*Bad v. good flows* ⩽0	*Diff.*	*z−value*
Bad v. good flows	1.627	−2.509	4.135	312.41
Good flows	14.143	15.465	−1.322	53.39
Bad flows	15.774	12.951	2.823	−30.66
σ*AR*	0.033	0.035	−0.001	−16.44
HighTechInd	0.177	0.187	−0.010	−4.86
YrsListed	13.429	12.951	0.478	1.72
Salesgrowth	0.145	0.159	−0.014	−4.10
NegΔEarn	0.500	0.366	0.135	49.51
NegEarn	0.293	0.264	0.029	11.64
ROA	−0.005	−0.003	−0.002	−12.35
NegMRetDays	0.470	0.464	0.005	21.45
SEO	0.034	0.019	0.015	17.80
DebtIssues	0.471	0.443	0.028	10.19
Debt/Assets	0.246	0.242	0.004	3.59
MktCap	1.042	1.050	−0.008	−1.23
HighLitInd	0.200	0.188	0.011	5.24
Obs	45,642	113,273		
#OptionsGranted	2.998	3.025	−0.027	−0.62
#OptionsExer	4.391	4.351	0.041	1.96
DirStk%	0.032	0.036	−0.004	−2.27
$DirStk\%^2$	0.006	0.007	−0.001	−2.27
#Anal	12.692	12.294	0.399	4.34
InvestorTurnover	0.303	0.306	−0.003	−3.40
Obs	5,381	9,859		

Table 4 Determinants of the relative concentration of bad versus good news (*Bad v. good flows*)
Results of regressing *Bad v. good flows* on factors related to the firm's business environment, management incentives, and constraints (Exhibit 1). The sample with available accounting, lawsuit and stock market data from Compustat and CRSP consists of 158,915 firm−years over fiscal years 1964–2012. Adding analyst forecast data from I/B/E/S, compensation data from ExecuComp and institutional ownership data from Thomson Reuters reduces the final sample to 24,929 observations over 1992–2012. Appendix A defines all variables. */**/*** indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals.

Variables	Pred. Sign	(1) *Bad v. good flows*	(2) *Bad v. good flows*	(2) *Bad v. good flows*
Constant		−7.118***	−7.025***	−2.066
		(−13.72)	(−12.74)	(−0.97)
Bad v. good flows$_{t-1}$	+		0.107***	0.004
			(10.19)	(0.53)
Business environment				
σ*AR*	+	9.621***	8.274***	28.249***
		(5.20)	(4.83)	(4.03)
HighTechInd	+	0.047	0.047	−0.091
		(1.34)	(1.38)	(−1.06)
YrsListed	−	−0.007**	−0.006**	−0.005
		(−2.44)	(−2.29)	(−1.58)
Salesgrowth	+	0.064***	0.093***	1.050***
		(3.14)	(4.59)	(7.39)
Managerial incentives				
NegΔEarn	+	0.792***	0.778***	1.217***
		(20.49)	(20.28)	(7.81)
NegEarn	+	0.171***	0.150***	−0.001
		(3.93)	(3.71)	(−0.00)
ROA	+/−	0.632***	0.591***	2.101***
		(10.30)	(10.04)	(4.05)
NegMRetDays	+	8.554***	9.166***	4.621
		(7.16)	(7.16)	(1.13)
#OptionsGranted	−			−0.044*
				(−1.96)
#OptionsExer	+			0.006
				(0.32)
DirStk%	−			−2.054***
				(−2.94)
DirStk%^{2}	+			2.346***
				(2.77)
SEO	+	0.898***	0.812***	0.121
		(3.68)	(3.48)	(0.33)
DebtIssues	+	0.084***	0.084***	0.151**
		(3.48)	(3.63)	(2.24)
Debt/Assets	+	−0.001	−0.013	−0.201
		(−0.02)	(−0.19)	(−0.96)
Constraints				
MktCap	−	−0.228**	−0.215**	−1.230***
		(−2.36)	(−2.37)	(−3.44)
#Anal	+			0.031***
				(3.62)
InvestorTurnover	−			−5.910***

				(−5.10)
HighLitInd	−	−0.007	−0.003	0.125
		(−0.13)	(−0.05)	(1.32)
Annual Dummies		Yes	Yes	Yes
Observations		158,915	158,915	15,240
Adj. R−squared		0.0847	0.0945	0. 774

Table 5 The relative concentration of bad versus good news and earnings quality

Results of regressing *Bad v. good flows* on earnings quality, management incentives and constraints (see Exhibit 1). The sample consists of 158,915 observations over 1992–2012 with available accounting, lawsuit and stock market data from Compustat and CRSP. Calculating the earnings quality measure (*EQ*) reduces usable observations to 84,960 observations. Appendix A defines all variables. */**/*** indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals.

Variables	Pred. Sign	(1) *Coef* (*t-stat*)	(2) *Coef* (*t-stat*)	(3) *Coef* (*t-stat*)	(4) *Coef* (*t-stat*)	(5) *Coef* (*t-stat*)
Constant		−3.538***	−3.560***	−3.562***	−3.556***	−3.996***
		(−138.45)	(−132.27)	(−137.65)	(−139.43)	(−14.67)
Bad v. good flows$_{t-1}$	+	0.097***	0.098***	0.098***	0.097***	0.095***
		(8.67)	(8.68)	(8.67)	(8.66)	(8.52)
EQ	+	0.108***				0.059**
		(3.36)				(2.12)
AQ	+		1.291**			
			(1.96)			
AbsAA	+			0.562*		
				(1.87)		
σEarn	+				0.876***	
					(2.82)	
IntIntensity						−1.323*
						(−1.90)
CapIntensity						0.485***
						(3.47)
OperCycle						0.128***
						(3.45)
σCFO						0.394
						(1.37)
σSales						0.311***
						(2.77)
Losses						0.130
						(1.49)
Annual Dummies		Yes	Yes	Yes	Yes	Yes
Observations		84,960	84,960	84,960	84,960	84,960
Adj. R-squared		0.0478	0.0475	0.0474	0.0477	0.0489

Table 6 The relative concentration of bad versus good news and class action lawsuits

Results from logistic regressions of the probability that a firm is sued in a class action lawsuit (*LAWSUIT* = 1) as a function of the relative concentration of information flows (*Bad v. good flows*) and other factors associated with the probability of litigation (see Field, Lowry, and Shu, 2005). The sample consists of 158,915 observations over 1992–2012 with available accounting, lawsuit and stock market data from Compustat and CRSP. Calculating the earnings quality measure (*EQ*) reduces usable observations to 84,960 observations. Appendix A defines all variables. */**/*** indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals.

		(1)	(2)	(3)
	Pred.	*Coef*	*Coef*	*Coef*
Variable	Sign	*(t-stat)*	*(t-stat)*	*(t-stat)*
Constant		−27.288***	−27.555***	−10.845**
		(−8.64)	(−8.73)	(−2.02)
Bad v. good flows	+	0.150***	0.153***	0.139***
		(7.18)	(7.23)	(5.67)
MktCap	+	0.635***	0.704***	1.423***
		(3.78)	(4.22)	(3.97)
σ*Ret*	+	17.957***	16.736***	47.205***
		(3.98)	(3.21)	(3.35)
Ret_{t-1}	−	−0.289**	−0.296**	−0.409***
		(−2.18)	(−2.25)	(−2.70)
Turnover	+	21.841***	22.095***	2.914
		(6.88)	(6.94)	(0.97)
HighTechInd	+	0.569***	0.507***	−0.416***
		(6.43)	(5.79)	(−3.30)
Regulated	+	0.509	0.549	0.330
		(1.51)	(1.62)	(0.70)
NegSurprise	+	0.458***	0.465***	0.220
		(4.36)	(4.39)	(1.53)
NegΔEarn	+	0.418***	0.413***	0.547***
		(5.44)	(5.50)	(4.07)
EQ	+		0.205***	0.041
			(3.51)	(0.22)
YrsListed				0.006
				(0.87)
Salesgrowth				0.477
				(1.00)
NegEarn				−0.076
				(−0.21)
ROA				0.490
				(0.39)
NegMRetDays				−1.124
				(−0.14)
#OptionsGranted				0.015
				(0.33)
#OptionsExer				0.027
				(0.47)
DirStk%				−1.335
				(−0.42)
$DirStk\%^2$				−1.014
				(−0.10)
SEO				0.755**
				(2.26)
DebtIssues				−0.122
				(−1.09)

Debt/Assets			0.514
			(1.34)
#Anal			0.031***
			(2.61)
InvestorTurnover			−1.865
			(−0.92)
HighLitInd			1.582***
			(9.18)
Annual dummies	NO	NO	Yes
Observations	84,960	84,960	11,523
Likehihood Ratio	−844.91	−659.16	−570.16

Table 7 The relative concentration of bad versus good news around CEO successions

Results of regressing *Bad v. good flows* on factors related to the firm's business environment, management incentives, and constraints (Exhibit 1) over the four years around CEO successions, with indicators of the post−succession period (*NewCEO*, *NewCEOYear*1, *NewCEOYear*2). The sample comprises 9,270 firm–year observations over the four years around the CEO succession for 1,703 firms undergoing CEO succession within our sample period. The original sample consists of 158,915 observations over 1992–2012 with available accounting, lawsuit and stock market data from Compustat and CRSP. *NewCEO* equals 1 in the first and second year of the CEO succession, 0 otherwise. *NewCEOYear*1 equals 1 in the first year of the CEO succession, 0 otherwise. *NewCEOYear*2 equals 1 in the second year of the CEO succession, 0 otherwise. Appendix A defines all variables. */**/*** indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals.

	(1)	(2)	
Variables	Pred. Sign	*Bad v. good flows* Coef./(*t*-stat)	*Bad v. good flows* Coef./(*t*-stat)
Constant		−1.683	−1.640
		(−0.79)	(−0.76)
Bad v. good flows$_{t-1}$	+	0.046***	0.045**
		(2.66)	(2.49)
NewCEO	−	−0.304***	
		(−5.40)	
*NewCEOYear*1	−		−0.301***
			(−4.95)
*NewCEOYear*2	−		−0.250***
			(−3.32)
σ*AR*	+	13.171**	13.315**
		(2.50)	(2.53)
HighTechInd	+	0.038	0.040
		(0.50)	(0.53)
YrsListed	−	−0.001	−0.001
		(−0.18)	(−0.21)
Salesgrowth	+	0.919***	0.917***
		(5.44)	(5.45)
*Neg*Δ*Earn*	+	1.095***	1.096***
		(8.08)	(8.07)
NegEarn	+	0.116	0.119
		(1.21)	(1.24)
ROA	+/−	1.409***	1.413***
		(6.32)	(6.32)
NegMRetDays	+	2.342	2.252
		(0.51)	(0.49)
SEO	+	−0.001	−0.001
		(−0.01)	(−0.01)
DebtIssues	+	2.342	2.252
		(0.51)	(0.49)
Debt/Assets	+	−0.021	−0.022
		(−0.07)	(−0.07)
MktCap	−	0.297***	0.298***
		(2.97)	(2.97)
HighLitInd	−	−0.001	−0.001
		(−0.01)	(−0.01)
Annual Dummies		Yes	Yes
Observations		9,270	9,270
Adj. R-squared		0.0786	0.0786

Table 8 The relative concentration of bad versus good news around firm disclosures

Descriptive statistics and results of regressing *Bad v. good flows* on factors related to the firm's business environment, management incentives, and constraints (Exhibit 1). The calculation of *Bad v. good flows* uses trading days adjacent to earnings announcements (annual and quarterly) and filings to the SEC (10K, 10Q, 8K). The sample consists of 13,432 observations over 1999–2012 with available accounting, lawsuit and stock market data from Compustat and CRSP. Appendix A defines all variables. */**/*** indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals.

Panel A: Descriptive statistics

	Mean	StdDev.	Q1	Median	Q3
Bad flows	16.198	12.869	7.961	12.479	20.203
Good flows	15.873	12.631	8.059	12.267	19.313
Bad v. good flows	−0.292	12.963	−5.141	−0.309	4.388
Bad v. good flows >0	0.481	0.500	0.000	0.000	1.000
Conditional analysis (Good v. bad flows >0)					
Bad flows	11.859	8.750	6.183	9.422	14.686
Good flows	19.838	14.866	10.409	15.426	24.099
Bad v. good flows	8.031	10.680	1.963	4.624	9.645

Panel B: Regression results

Variables	Pred. sign	*Bad v. good flows* *Coef(t-stat)*
Constant		3.096
		(0.75)
σ*AR*	+	−5.264
		(−1.33)
HighTechInd	+	0.361
		(1.36)
YrsListed	−	0.010
		(1.19)
Salesgrowth	+	−0.031
		(−0.09)
NegΔEarn	+	2.469***
		(7.17)
NegEarn	+	0.626***
		(3.38)
ROA	+/−	−2.302*
		(−1.75)
NegMRetDays	+	−6.450
		(−0.78)
SEO	+	1.345
		(0.92)
DebtIssues	+	0.408
		(1.09)
Debt/Assets	+	−0.607
		(−1.51)
MktCap	−	−1.540***
		(−4.34)
HighLitInd	−	−0.339*
		(−1.70)
Annual dummies		Yes
Observations		13,432
Adj. R-squared		0.0175

Table 9 The relative concentration of bad versus good news and regulatory shifts

Results of regressing *Bad v. good flows* on factors related to the firm's business environment, management incentives, and constraints (Exhibit 1) including indicators of regulatory shifts (state antitakeover laws, Regulation FD, SEC ruling on 8K firms) and interaction terms. *Antitakeover* equals 1 if the firm is incorporated in a state that has passed an antitakeover law (see Appendix B), 0 otherwise. *SEC REG FD* equals 1 for fiscal years ending on or after October 2000, 0 otherwise. *SEC REG 8K* equals 1 for fiscal years ending on or after August 2004, 0 otherwise. The original sample consists of 158,915 observations over 1992–2012 with available accounting, lawsuit and stock market data from Compustat and CRSP. The state antitakeover laws test covers the period 1985–1995 (66,860 observations). The SEC regulations (Reg FD and 8Ks) test covers the period 1996–2006 (48,164 observations). Appendix A defines all remaining variables. */**/*** indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by firm and year to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals.

Variables	Pred. sign	*State antitakeover laws*		*SEC regulation (FD & 8K forms)*			
		Sample period:1985–1995				*Sample period:1996–2006*	
Constant		−3.478***	−2.936***	Constant		−4.789***	
		(−4.08)	(−3.51)			(−3.92)	
Antitakeover	−	−0.016	−0.238	*SEC REG FD*	−	−0.096	−0.099
		(−0.38)	(−0.47)			(−0.90)	(−0.93)
				SEC REG 8K	−	−0.265***	
						(−7.54)	
Antitakeover ×			0.252	*SEC REG 8K* ×			−4.065
σ*AR*			(0.10)	σ*AR*			(−0.55)
Antitakeover ×			−0.069	*SEC REG 8K* ×			−0.150***
HighTechInd			(−0.97)	*HighTechInd*			(−2.66)
Antitakeover ×			0.005	*SEC REG 8K* ×			0.003
YrsListed			(1.05)	*YrsListed*			(0.57)
Antitakeover ×			0.066*	*SEC REG 8K*×			0.054
Salesgrowth			(1.73)	*Salesgrowth*			(0.69)
Antitakeover ×			0.003	*SEC REG 8K* ×			0.428***
NegΔEarn			(0.04)	*NegΔEarn*			(4.80)
Antitakeover ×			−0.249**	*SEC REG 8K* ×			0.117
NegEarn			(−2.45)	*NegEarn*			(1.30)
Antitakeover ×			0.078	*SEC REG 8K* ×			0.181
ROA			(0.67)	*ROA*			(0.48)
Antitakeover ×			0.877	*SEC REG 8K* ×			0.112
NegMRetDays			(0.64)	*NegMRetDays*			(0.13)
Antitakeover ×			−0.413	*SEC REG 8K* ×			0.079
SEO			(−0.87)	*SEO*			(0.87)

Antitakeover × *DebtIssues*			0.022 (0.42)	*SEC REG 8K* × *DebtIssues*			0.117 (1.30)
Antitakeover × *Debt/Assets*			−0.241** (−2.00)	*SEC REG 8K* × *Debt/Assets*			−0.658*** (−5.61)
Antitakeover × *MktCap*			−0.090 (−0.68)	*SEC REG 8K* × *MktCap*			−0.826* (−1.79)
Antitakeover × *HighLitInd*			−0.018 (−0.22)	*SEC REG 8K* × *HighLitInd*			−0.082 (−0.47)
σ*AR*	+	8.945*** (4.91)	8.788*** (3.35)	σ*AR*			6.900*** (2.85)
HighTechInd	+	0.024 (0.54)	0.073 (1.16)	*HighTechInd*			0.022 (0.39)
YrsListed	−	−0.019*** (−5.35)	−0.022*** (−4.72)	*YrsListed*			−0.006* (−1.79)
Salesgrowth	+	0.029 (1.12)	−0.012 (−0.29)	*Salesgrowth*			0.089*** (3.11)
NegΔEarn	+	0.635*** (14.92)	0.635*** (10.01)	*NegΔEarn*			0.657*** (8.27)
NegEarn	+	0.105* (1.75)	0.270** (2.56)	*NegEarn*			−0.033 (−1.24)
ROA	+/−	0.673*** (9.08)	0.609*** (5.78)	*ROA*			0.634*** (11.09)
NegMRetDays	+	5.858*** (2.96)	5.395** (2.53)	*NegMRetDays*			8.155*** (2.81)
SEO	+	0.728** (2.04)	0.992** (2.18)	*SEO*			0.017 (0.05)
DebtIssues	+	0.047 (1.49)	0.036 (0.66)	*DebtIssues*			0.086** (2.14)
Debt/Assets	+	−0.158** (−2.13)	0.003 (0.03)	*Debt/Assets*			0.017 (0.23)
MktCap	−	−0.552*** (−5.90)	−0.489*** (−3.37)	*MktCap*			−0.179 (−0.82)
HighLitInd	−	0.051 (0.87)	0.068 (0.75)	*HighLitInd*			0.062 (1.08)
Annual dummies							
Observations		66,860	66,860			48,164	48,164
Adj. R-squared		0.0762	0.0769			0.0528	0.0552