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Shareholder Litigation and Corporate Disclosures

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1. *Introduction*

This paper examines selected corporate disclosures in the context of shareholder litigation brought under Rule 10b-5 of the federal securities laws. In a typical 10b-5 case plaintiffs allege they bought stock at inflated prices because managers misled the market by disseminating overly optimistic information or by failing to disclose material adverse information.[1] The true information is revealed in a subsequent disclosure. We describe litigation-based disclosure incentives and provide descriptive evidence about firms' disclosures with respect to both the statements which precipitated lawsuits and the disclosures alleged to have misled the market.

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[1] Since the middle 1970s, a substantial portion of 10b-5 litigation has been brought under the "fraud on the market" theory. This theory is premised on the assumption that since the prices of securities traded in an informationally efficient market reflect all value-relevant

Our first set of tests investigates the extent to which firms in the biotechnology, computing, electronics, and retailing industries who disclosed adverse earnings news were targets of shareholder litigation during the years 1988–92.[2] We identify firms "at risk" for such litigation as those experiencing severe (i.e., 20% or greater) declines in earnings and sales. Of the 51 at-risk firms, only one was the target of a shareholder lawsuit related to this announcement. The fact that the average earnings decline reported by the at-risk firms is about 50% *more* than the average earnings decline reported by 43 firms in the same industries that experienced earnings-based 10b-5 litigation in the same period suggests that even a precipitous earnings decline does not by itself lead inevitably to a shareholder lawsuit.

One explanation for the low incidence of lawsuits among the at-risk firms concerns the nature of the adverse earnings disclosures. Skinner [1994] argues that because shareholders tend to sue only over earnings announcements with large negative returns, managers have an incentive to disclose bad earnings news early in order to reduce both the probability of being sued and the magnitude of estimated damages (if there is a suit). This argument suggests the at-risk firms preempted mandatory announcements by voluntarily disclosing adverse earnings news, and the litigation firms did not. Our results show the opposite. Specifically, for 28 of the 45 observations in the litigation sample, the litigation was based on an earnings forecast or a preemptive earnings disclosure, not an earnings announcement. For 46 of the 53 observations in the at-risk sample, the negative earnings news was not disclosed until the formal earnings announcement.

These results suggest that conditions other than poor earnings and the way these earnings are disclosed are necessary to link adverse earnings news and litigation. Our second set of tests focuses on the link alleged by plaintiffs: defendant firms' disclosures (dissemination of optimistic information or omission of relevant adverse information) induced plaintiffs to buy stock at inflated prices. These allegations suggest three investigations of the disclosures made by the litigation firms and the at-risk firms.

Our first investigation concerns the number, tone (optimistic, pessimistic, or neutral), and price response to disclosures made by the at-risk

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information on a timely basis, a plaintiff can reasonably rely on price in making investment decisions. Omitted or misleading information harms the integrity of price in this function, so managers and others who engage in misleading disclosures or fail to disclose relevant information have committed a fraud on the market. This theory can be used to meet the reliance test in securities litigation (discussed in section 3); plaintiffs can say they relied on the integrity of the market price instead of showing that they relied on a specific disclosure that contained bad or missing information.

[2] Section 4 describes our sample selection procedures and our reasons for focusing on adverse earnings news as the event triggering the filing of the shareholder lawsuits and for restricting our analysis to these four industries.

and shareholder lawsuit firms. While the shareholder lawsuit firms have about three times as many disclosures as the at-risk firms in the year preceding the adverse earnings news, we find no evidence of differences in optimism across the two sets of disclosures.[3] Preannouncement stock returns are positive on average for the shareholder lawsuit sample and negative for the at-risk sample. The market response to the adverse earnings reports of the lawsuit firms is negative (−17.16% on average) and more severe than the response for the at-risk sample (−7.63% on average); for both samples together, however, we find no evidence that more severe price responses are associated with proportionately more disclosures with an optimistic tone.

The pattern of preannouncement positive returns for shareholder lawsuit firms is consistent with plaintiffs' claim that inflated prices (allegedly created by a series of defective disclosures) are drastically and suddenly corrected when the truth emerges in the adverse earnings report. However, for a reduced subsample of shareholder lawsuits where we could identify specific dates of alleged misleading statements or alleged material omissions in other statements, we find no evidence of a systematic positive share price response to the allegedly defective disclosures.

Second, we examine analysts' earnings forecasts to provide evidence on the extent to which adverse earnings news was anticipated in the two samples. If the at-risk firms warned investors of impending adverse earnings (as suggested by their negative preannouncement returns and less severe reactions to the adverse earnings reports), we expect to observe small forecast errors at the adverse earnings announcement and a pattern of negative forecast revisions. Conversely, if litigation firms misled the market in the manner alleged by plaintiffs (as suggested by their positive preannouncement returns and severe market reactions to the adverse earnings news), we expect to observe large forecast errors at the adverse earnings announcement and a pattern of positive forecast revisions.

Our analysis of forecast errors and forecast revisions shows no evidence of greater anticipation of bad news by the analysts following the at-risk firms than by the analysts following the litigation firms. In fact, we observe more negative forecast errors for the at-risk firms than for the litigation firms, and there is little difference in the sign or magnitude of forecast revisions over the preceding year.

Finally, our third subset of tests investigates the defensive use of disclosures. If credible public information exists to temper or offset

[3] A substantial difference in the number of disclosures between the litigation firms and the at-risk firms is expected, given the size differences between the two groups. Specifically, the mean (median) market value of the litigation firms one year before the adverse earnings quarter is $1.04 billion ($370.27 million) and the mean (median) value for the at-risk firms is $134.93 million ($38.71 million). While these differences are substantial, the inclusion of a size variable in our tests of shareholder wealth effects of disclosures does not materially affect the results or any inferences.

disclosures which are potentially legally disputable as being unduly optimistic, then regardless of the disclosures pointed to by plaintiffs as misleading or missing altogether, the integrity of price as a measure of value is preserved. In later sections we describe both the elements of this disclosure-based defense and the composition of disclosures by and about our sample firms (e.g., earnings versus product disclosures and pessimistic versus optimistic disclosures).

We argue that the appropriate measure of the market reaction to the adverse earnings news should condition on prior and concurrent disclosures (i.e., the total mix of information available) and we compare unconditional and conditional market reactions to provide evidence on the magnitude and significance of their difference. The average conditional price decline for the shareholder lawsuit firms is less than half the average unconditional decline (−7.86% versus −17.16%). Firm-specific regressions show, however, that this difference is significant at the .10 level for only nine of the firms in the litigation sample.

The results of this study are relevant for decisions about corporate disclosure policies in at least two ways. First, the fact that we find no evidence that preemptive disclosures deter litigation completely or that a failure to engage in such disclosures inevitably invites litigation questions the *deterrence* value of these disclosures (preemptive disclosures might, however, reduce the costs of litigation). Second, although we find that the number and tone of prior disclosures has no impact on the *average* market response to adverse earnings news, firm-specific tests show that conditioning on prior and concurrent disclosures significantly reduces the magnitude of percentage price declines observed for a subset of firms. These results suggest that prior and concurrent disclosures may sometimes reduce the severity of litigation if not its incidence.

Firm size may be linked to corporate disclosure strategies in ways that could confound the implications of our results for corporate disclosure policies. Previous research has shown, for example, that firm size is linked to both institutional ownership and analyst following (O'Brien and Bhushan [1990]); either of these could be associated with disclosure patterns and even the probability of being the target of securities litigation. While we find no evidence of an association between firm size and shareholder wealth effects of disclosures for our samples, it is possible that firm size is correlated with one or more factors which determine either the incidence or severity of securities litigation, and that these factors should be considered in assessing the litigation-related effects of disclosure strategies.

In the next section we describe the relation of our research to both the disclosure literature and previous research on shareholder litigation. Section 3 describes the structure of shareholder litigation over misleading or omitted information and the information mix defense. Section 4 reports the sample selection procedures. Sections 5, 6, and 7 report the results of our empirical work and section 8 concludes the paper.

2. *Previous Research on Voluntary Disclosures and Shareholder Litigation*

Our analysis is related to two distinct strands of research. The first is investigations of corporate disclosure policies. Assuming both credible disclosures and zero costs to disclose, analytical models (e.g., Ross [1979], Grossman [1981], and Milgrom [1981]) suggest full disclosure will occur because investors will assume that nondisclosers have the worst possible information. Adding fixed disclosure costs to these models yields the implication that only firms whose information implies a value increase above the fixed cost of disclosure will in fact disclose the information (Verrecchia [1983; 1990]). The cost of disclosure has been identified with giving away proprietary information generally (Dye [1986]) and with providing information that will help competitors (Darrough and Stoughton [1990], Wagenhofer [1990], Newman and Sansing [1992], and Gigler [1994]). A third force affecting firms' disclosure policies is investor uncertainty about what information managers have. In such a setting, Dye [1985] and Jung and Kwon [1988] have shown that less-than-full disclosure will be observed.

Much of the empirical accounting research on voluntary disclosures has focused on the properties of management earnings forecasts and has documented significant share price responses to such disclosures as well as their relative infrequency and accuracy (e.g., Patell [1976], Penman [1980], and Waymire [1985]; King, Pownall, and Waymire [1990] summarize and evaluate this literature). Researchers have investigated other aspects of disclosure policies: Gibbins, Richardson, and Waterhouse [1990] investigate how firms manage their disclosure policies; Lang and Lundholm [1993] examine how disclosure policies are rated by industry analysts; and Frankel, McNichols, and Wilson [1992] report a positive association between seeking external financing and issuing management earnings forecasts, supporting a link between discretionary disclosures and perceived benefits in capital markets.

Within the voluntary disclosure literature, the research which is most closely related to ours is Skinner's [1994] investigation of the incentives for firms to disclose adverse information. Skinner argues that the U.S. legal system induces an asymmetric loss function for firms and managers because shareholders tend to sue only if there is a large negative return at an earnings announcement. This loss function creates an incentive for managers to disclose bad news voluntarily in order to reduce the costs of litigation. These costs can be thought of as the product of the probability of being sued and the costs incurred if litigation occurs. For example, the earlier the disclosure which corrects the allegedly defective information in the market (and precipitates the litigation), the shorter the class period, other things being equal. A shorter class period reduces the size of the class, hence also the damages.

The second line of research to which this paper is related is the empirical literature on shareholder litigation; see, for example, Kellogg [1984] and Alexander [1991]. Kellogg investigates 56 lawsuits against exchange-listed firms during the period 1967–79 in which the basis of the suit is an alleged error or failure to disclose material information in the financial statements, or a substantial adjustment in asset carrying values. He documents significant negative price adjustments when the erroneous information is corrected (or the omission is cured) as well as in the months preceding the disclosure.

Alexander's primary focus is on the settlement process, as opposed to the grounds for bringing the suit or the relation between litigation and share price responses to adverse news. Based on an analysis of 17 computer and computer-related firms undertaking initial public offerings during the first half of 1983, she argues that structural incentives create a strong tendency toward settlements (as opposed to trials) that are largely unrelated to the merits of the case. Our results do not bear directly on this argument; while we test for a relation between disclosures and the incidence of litigation, we do not investigate the relation between disclosures and outcomes (i.e., values of settlements or outcomes of trials).

3. Shareholder Litigation under Rule 10b-5 and the Information Mix Defense

This section first discusses some elements of the type of securities litigation considered in this paper. The second subsection discusses the information mix defense.

3.1 SHAREHOLDER LITIGATION UNDER RULE 10b-5

Since the 1940s, Rule 10b-5 has acted as an all-purpose fraud remedy in securities litigation against firms with established trading records. Section 10b of the 1934 Securities Exchange Act makes it unlawful to make an "untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made . . . not misleading. . . . " We will discuss four elements of a 10b-5 case: materiality, causation, reliance, and damages.

A determination of materiality involves separating important information from trivial information. Legal formulations of materiality are verbal (as opposed to quantitative); the currently preferred formulation was set out by the Supreme Court in 1976, in the context of a proxy statement.[4] In this opinion, two characteristics are associated with materiality: (1) there is a substantial likelihood that a reasonable shareholder would consider an omitted fact important in making a decision; (2) disclosure of the omitted fact would have been viewed by the reasonable shareholder as altering the mix of information available about the firm.

[4] *TSC Industries v. Northway*, 426 U.S. 438, 96 Supreme Court 2126 (1976).

Materiality is related to causation in that material information is that which would (causally) affect a decision made by a reasonable investor. In a litigation setting, causality and materiality might be demonstrated together by showing that a specific information release (and not some other information event or some industry or economy-wide force) is uniquely associated with a statistically significant movement in share price.[5] Reliance is also related to causation in that it concerns the impact of the alleged false, misleading, or omitted information on the specific plaintiff in the case. In order to demonstrate reliance, the plaintiff must show he read or heard about the false or misleading disclosures or he read or otherwise became familiar with the disclosure that omitted material information. (Causality then implies that this information—or lack of it—figured as a substantial factor in his decision.)

In a large class action it is impractical for all members of the class to demonstrate reliance; however, under the fraud on the market theory (see n. 1) they need not do so.[6] Plaintiffs can say they relied on the integrity of the market price instead of showing that they relied on a specific disclosure that contained bad or missing information. Thus, the fraud on the market theory is a mechanism for establishing reliance in a class action lawsuit involving an exchange-listed or *NASDAQ* stock.

The element of damages is less well articulated than the other elements. In the *Blackie* decision the court discussed damages in the abstract in a way that suggests damages are to be measured as the difference between the intrinsic value of the security and the inflated price paid by the plaintiff. The inflation in price is established by the drop in price when the correct and complete information is disclosed.[7]

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[5] However, a significant price reaction is not *necessary* to establish the materiality of either the alleged misleading disclosures or the subsequent revelation of truth. In litigation brought by shareholders of Control Data Corporation, the Appeals Court reversed the ruling of the federal judge who found that the plaintiffs failed to substantiate damage claims because of the absence of significant market reactions to alleged misrepresentations. The U.S. Supreme Court upheld the appellate decision in 1991. Savett [1992] argues that even where there is no significant market reaction to a revelation, there may be a sound basis for a claim if the prices of competitor firms' stocks increased at the time the defendant firm's stock remained flat.

[6] This theory was articulated in *Blackie v. Barrack*, 524 F.2d 891 (9th Circuit, 1975) and endorsed by the Supreme Court some years later in *Basic, Inc. v. Levinson*, 108 Supreme Court 978 (1988). Both cases involved disclosures about merger negotiations.

[7] Under this view damages might be based on the price change at the time of the correct and complete information disclosure, assuming the price just before the disclosure is the best measure of the inflated price. Alternatively, Judge Easterbrook's discussion of damages (in *Flamm v. Eberstadt*, 814 F.2d 1163 [7th Circuit, 1987]) implies that a fraud on the market plaintiff can recover the difference between his price and the price based on full and accurate information; this measure of damages assumes the entire price change is due to the fraud on the market. In either case it is possible to use a market model, possibly including both an industry index and a market index, to remove the effects of general market and industry conditions (see Hurd and Wagner [1990]).

3.2 THE INFORMATION MIX DEFENSE

This defense is derived from the presumption of market efficiency which supports fraud on the market cases and is alluded to in the *Basic* decision. Specifically, if information which the defendant has failed to disclose has been publicly disclosed by other credible information sources, or if credible information disclosures by others have effectively counterbalanced the allegedly misleading disclosures by the defendant, there has been no damage to the integrity of the market price as a measure of intrinsic value.[8] The information mix defense requires the presence of sufficient information, of a sufficiently credible nature, to correct whatever valuation errors might be caused by the defendant's information disclosures or lack thereof.[9]

4. Sample Selection

Our analyses are performed on two samples of firms drawn from four industries with a high incidence of litigation during 1988–92: biotechnology (SIC codes 2833–2836 and 8731–8734), computers (SIC codes 3570–3577 and 7370–7374), electronics (SIC codes 3600–3674), and retailing (SIC codes 5200–5961). We analyze only four industries because investigations of the information mix defense require substantial familiarity with industry-specific information which may temper or offset alleged misleading statements.[10]

The "shareholder lawsuit" sample consists of firms that were or are targets of 10b-5 litigation during the period January 1988–September 1992. The source of these data is the *Securities Class Action Alert.*[11] Plaintiffs' allegations in these lawsuits center on misleading disclosures (or material nondisclosures) which were "corrected" by an adverse

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[8] The information mix defense was successfully used in at least two cases: *Apple Computer* (886 F.2d 1109 [9th Cir. 1989]) and *Convergent Technologies* (91 CDOS 6897, 1991). The *Convergent Technologies* opinion contains the following description of the standard of review imposed: "Thus, to prevail, the plaintiffs must demonstrate that a particular statement, when read in light of all the information then available to the market, or a failure to disclose particular information, conveyed a false or misleading impression."

[9] The *Apple Computer* opinion states: "Even in a fraud on the market case, corporate insiders are not relieved of their duty to disclose material information where that information has received only brief mention in a few poorly-circulated or lightly regarded publications . . . In order to avoid Rule 10b-5 liability, any material information which insiders fail to disclose must be transmitted to the public with a degree of intensity and credibility sufficient to effectively counterbalance any misleading impression created by insiders' one-sided representations."

[10] Apple Computer successfully refuted plaintiffs' allegations that an employee's optimistic statements about future orders were misleading by introducing testimony from four securities analysts that "it is well understood within the investment community that computer orders are 'soft'" and that market participants interpreted the employee's statements in that light (886 F.2d 1109 [9th Cir. 1989]).

[11] O'Brien and Hodges [1991, p. I–2] report that the publisher, Investors Research Bureau, Inc., believes the newsletter covers 90% of all class action securities cases.

earnings report.[12] We identified 45 defendant firms (47 lawsuits); *CRSP* data were not available for two firms, leaving a sample of 3 biotechnology firms, 24 computer firms, 8 electronics firms, and 8 retailing firms (45 lawsuits total).

The sample of firms "at risk" for shareholder litigation over adverse earnings news is taken from *Compustat* firms in the same four industries with quarterly earnings per share (both before and after extraordinary items) and sales declines of at least 20% (measured relative to quarter-ago and year-ago results) during the years 1987–91.[13] Observations with quarter-ago and year-ago *EPS* numbers less than $.10 in absolute value were excluded to ensure that significant declines were not due solely to small denominators. Of the 70 adverse earnings quarters meeting these criteria, we were unable to identify earnings report dates for 16 observations; *CRSP* data were unavailable for another firm-quarter. The final at-risk sample contains 12 biotechnology firms, 23 computer-related firms, 9 electronics firms, and 7 retailing firms (53 adverse earnings quarters total).

We focus only on adverse earnings news (as opposed to large price declines or some other precipitating factor in shareholder litigation) for several reasons.[14] First, allegations based on earnings-related disclosures account for a substantial portion of class action securities litigation.[15] Second, based on statements in the financial press (see, for example, Tucker [1991]), we believe there is a presumption in the financial community that reporting adverse earnings places a firm "at risk" for litigation. Third, selecting firms only on the basis of large price declines is inappropriate because a price decline is not sufficient to support a

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[12] Our selection criteria do not preclude lawsuits filed by shareholders who sold stock based on alleged pessimistic statements or omissions of favorable information which were corrected by a positive disclosure. However, these lawsuits are rare and none was observed in our sample.

[13] Surprise was based on a random walk measure of quarterly earnings rather than on analysts' earnings forecasts for two reasons. First, we had no a priori reason to believe that firms who are not followed by analysts are immune to litigation. Second, as a practical matter, the latter approach requires searching *IBES* around earnings announcement dates. This procedure has two disadvantages: (1) only consensus earnings forecasts are available to us and the reporting lag problems in these consensus data complicate measuring earnings surprise; and (2) it restricts attention to forecast errors relative to formal earnings announcements, which to some extent precludes investigating early and voluntary disclosures of bad news.

[14] Other events that may trigger the filing of shareholder lawsuits include share price decline for some reason other than adverse earnings news, resignation or dismissal of top officers, and investigation by governmental agencies (see Bershad and Lerach [1986]).

[15] In Francis, Philbrick, and Schipper [1994] we investigate the allegations made by plaintiffs in a large cross-section of class action securities suits filed between 1988 and 1992. Earnings-related disclosures were cited as the precipitating factor in over 80% of these suits; other factors included product disclosures, governmental or stock exchange investigations, and announcements of default or bankruptcy.

fraud on the market claim; it must be demonstrated that the price movement is causally related to a disclosure.

We do not impose multiple restrictions, such as choosing a sample based on some combination of earnings changes and price reactions to earnings announcements. While it captures the allegation that extreme negative price changes around earnings disclosures trigger litigation, we believe this approach has two disadvantages. First, since it requires an ex ante decision about the magnitude of price response required to trigger litigation, the approach precludes investigating this characteristic as a feature of the sample. Second, this approach captures return responses only to formal earnings announcements (and not to forecasts or preemptive disclosures) which precludes investigating whether voluntary and early disclosures of bad news deter litigation.

There is no strong evidence of clustering by year or by fiscal quarter in either the at-risk or shareholder litigation sample. Only one firm-quarter observation (Software Toolworks) is in both the at-risk sample and the shareholder lawsuit sample. Four other at-risk firms (Bolar Pharmaceutical, Cray Research, Windmere Inc., and TCBY Industries) were targets of litigation over an earnings report but not the one identified by the *Compustat* screen. Three other at-risk firms experienced shareholder litigation but are excluded from the shareholder lawsuit sample.[16]

5. *Evidence on the Relation between Adverse Earnings News and Litigation*

In this section we provide evidence on the magnitude and form of earnings revelations that precipitated shareholder litigation. Table 1, panel A shows changes in earnings and sales relative to the previous quarter and the one-year-ago quarter.[17] By construction, the earnings changes for the at-risk sample are negative and greater in magnitude than 20%. The mean and median data indicate substantial relative performance declines, in some cases greater than 100%.

Panel B shows standardized earnings and sales for the adverse earnings quarter, computed by subtracting the historical mean quarterly earnings (sales) from the earnings (sales) reported for the adverse earnings quarter and dividing by the standard deviation of historical

[16] Avant-Garde Computing faced shareholder litigation over earnings-related information during the period 1983–85; this period predates the 1988 Supreme Court ruling concerning fraud on the market lawsuits. Cetus Corp. shareholders filed lawsuits during the period 1987–91 which were not precipitated by earnings-related information. Ramtek Corp. experienced litigation over financial results pertaining to a fiscal quarter identified by the *Compustat* screen; however, the lawsuit was precipitated by a subsequent correction of previously reported adverse earnings.

[17] For comparison with the at-risk sample, results for the litigation sample exclude observations where the absolute value of quarter-ago and year-ago *EPS* numbers is less than $.10.

TABLE 1

Changes in Earnings and Sales for the At-Risk and Shareholder Lawsuit Firms (1987–91)[a]

Panel A: Earnings and Sales Changes[b]

	At-Risk		Shareholder Lawsuit		Difference	
Variable	Mean	Median	Mean	Median	*t*-Statistic	Wilcoxon
Δ*EPS* − *BE* (1 qtr)	−122.0%	−97.5%	−76.0%	−56.1%	3.229	2.877
Δ*EPS* − *BE* (4 qtr)	−144.7%	−105.6%	−107.4%	−70.6%	1.638	2.273
Δ*EPS* − *AE* (1 qtr)	−125.4%	−100.0%	−82.6%	−60.0%	2.747	2.545
Δ*EPS* − *AE* (4 qtr)	−141.1%	−104.3%	−98.2%	−59.5%	2.288	2.599
Δ*Sales* (1 qtr)	−48.1%	−40.5%	−4.8%	−4.3%	63.975	7.130
Δ*Sales* (4 qtr)	−51.9%	−43.5%	60.6%	8.7%	11.484	7.766

Panel B: Standardized Earnings and Sales[c]

	At-Risk		Shareholder Lawsuit		Difference	
Variable	Mean	Median	Mean	Median	*t*-Statistic	Wilcoxon
EPS − *BE* (20 qtrs)	−1.682	−1.360	−1.003	−.162	2.827	10.246
EPS − *BE* (5 qtrs)	−2.379	−1.510	−1.421	−.169	2.038	8.009
EPS − *AE* (20 qtrs)	−1.516	−1.329	−1.093	−.144	1.034	7.970
EPS − *AE* (5 qtrs)	−2.776	−1.542	−1.550	−.654	1.393	6.160
Sales (20 qtrs)	−.890	−.804	1.159	1.195	98.491	52.256
Sales (5 qtrs)	−1.344	−.645	1.651	1.495	33.395	52.513

[a]The at-risk sample contains 53 observations where quarterly earnings (before and after extraordinary items) and sales declined by more than 20% relative to quarter-ago and year-ago results. Sample is restricted to firms in the biotechnology (SIC codes 2833–36, 8731–34), computer (SIC codes 3570–77, 7370–74), electronic (SIC codes 3600–3674), and retailing (SIC codes 5200–5961) industries. The shareholder lawsuit sample consists of 45 lawsuits filed in federal court against defendant firms in the same four industries which alleged misleading disclosures and which were precipitated by adverse earnings disclosures.

[b]Δ*EPS* (Δ*Sales*) is the difference between the *EPS* (*sales*) reported for the adverse earnings quarter and the *EPS* (*sales*) reported in the previous quarter (1 qtr) or the one-year ago quarter (4 qtr); *BE* (*AE*) denotes *EPS* measured before (after) extraordinary items and discontinued operations.

[c]*EPS* − *BE* (20 qtrs) is the earnings per share (*BE* = before extraordinary items, *AE* = after extraordinary items) for the adverse earnings quarter less the mean *EPS* for the 20 quarters preceding the adverse earnings quarter, divided by the standard deviation of *EPS* for these 20 quarters. Calculations denoted by (5 qtrs) subtract the mean *EPS* for the preceding 5 same fiscal quarters as the adverse earnings quarter, divided by the standard deviation of *EPS* for these 5 quarters.

quarterly earnings (sales). The standardized numbers indicate departures of the earnings and sales for the adverse earnings quarter from the firm's past history. For the at-risk sample, mean and median data indicate significant earnings and sales declines in the adverse earnings quarter relative to prior quarters.

Given our decision to select an at-risk sample with severe earnings and sales declines, and given the extremely low incidence of litigation for this sample, it is of interest to know whether the litigation firms reported even worse earnings and sales. The mean and median data for the shareholder lawsuit sample are always less negative than for the

at-risk sample, and mean and median standardized sales and sales changes relative to a year ago are both positive. Tests of mean and median differences in earnings and sales changes and in standardized earnings and sales indicate that the at-risk firms reported significantly worse earnings and sales news than the shareholder lawsuit firms. Thus, our results do not support a conclusion that severe adverse earnings news alone is sufficient to precipitate litigation.

For both samples, we identified the first disclosure containing precise information about adverse earnings (the "adverse earnings disclosure"). The following disclosure sources were searched using the Dialog data base: press releases, *PR Newswire*, national newspapers (*Wall Street Journal*, *New York Times*), and analyst reports.[18] Table 2 reports information on the form of the adverse earnings disclosure identified by our search (for the at-risk firms) or by the plaintiff's allegations (for the shareholder lawsuit firms). Three forms were defined: forecasts (earnings projections made before the end of the adverse earnings quarter), preemptive disclosures (earnings projections made after the end of the adverse quarter but before the formal earnings announcement), and formal earnings announcements. In all cases, the source of the disclosure is firm management; in a few cases, the firm disclosed the adverse earnings news to security analysts who then disseminated the information.

As indicated in panel A of table 2, within the at-risk sample, 46 of 53 earnings reports (87%) were quarterly earnings announcements, while within the shareholder lawsuit sample, 28 of 45 similar events (62%) were earnings forecasts or preemptive disclosures. In addition, the data in panel B of table 2 indicate that the shareholder lawsuit firms in general made both forecasts and preemptive announcements earlier (relative to both the end of the quarter and the formal earnings announcement) and made their formal earnings announcements no later than the at-risk firms.

Taken as given, the results in table 2 indicate that early disclosure of adverse earnings news is not a complete protection against litigation and a failure to disclose bad news early does not necessarily lead to litigation. In the context of suggestions in prior research and in the financial press that timely disclosures of bad news can be used to avert certain negative consequences (Skinner [1994] and Lev [1992]), we interpret our results as indicating that timely disclosures cannot be relied on to avert negative legal consequences. The possibility remains, however, that such disclosures may provide benefits in the form of reduced litigation-related costs.

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[18] *PR Newswire* is an electronic reporting network produced by PR Newswire Association, the nation's largest press communication network. *PR Newswire* contains the complete text of corporate news releases. About 70% of the items reported by *PR Newswire* are business/financial in nature. In addition to *PR Newswire* reports, we collected data on corporate press releases which were not reported by *PR Newswire* (these are largely product disclosures). Finally, we obtained security analysts' research reports on the sample firms from *Investext*.

TABLE 2

Form and Timing of Adverse Earnings Disclosure Made by At-Risk and Shareholder Lawsuit Firms (1987–91)[a]

Panel A: Form of Report[b]

	At-Risk Sample	Shareholder Lawsuit Sample
Forecast	3	18
Preemptive disclosure	4	10
Announcement	46	11
No report found	—	7
Total	53	45

Panel B: Timing of Report

	At-Risk Sample		Shareholder Lawsuit Sample	
	Mean	Median	Mean	Median
Number of days forecasts made before end of adverse earnings quarter	7	9	20	20
Number of days forecasts made before formal adverse earnings announcement	28	27	46	47
Number of days preemptive disclosure made after end of adverse earnings quarter	13	14	19	8
Number of days preemptive disclosure made before formal earnings announcement	23	20	42	32
Number of days formal earnings announcement made after end of adverse earnings quarter	49	41	37	42

[a]See table 1 for sample descriptions.

[b]Three forms were defined: forecasts (earnings projections made before the end of the adverse earnings quarter), preemptive disclosures (earnings projections made after the end of the adverse quarter but before the formal earnings announcement), and formal earnings announcements made after the end of the adverse earnings quarter. For seven shareholder lawsuit firms, we were unable to determine the form of the adverse earnings report from the description of the lawsuit.

6. *Evidence on Plaintiffs' Allegations*

The results reported in tables 1 and 2 suggest that other factors, in addition to poor earnings, are necessary to link adverse earnings news and litigation. In this section, we focus on the link alleged by plaintiffs: that defendant firms' disclosure strategies induced plaintiffs to buy stock at inflated prices. We begin by examining whether, relative to the at-risk sample, the shareholder lawsuit firms made more optimistic preearnings disclosures (section 6.1) and experienced both more positive stock price movements prior to the adverse earnings disclosure and more negative responses to the disclosure itself (section 6.2). Finally, we report analysts' earnings forecast errors at the adverse earnings

disclosure and the pattern of their earnings forecast revisions over the year preceding the adverse earnings disclosure to provide additional evidence of whether the bad news was anticipated by market participants (section 6.3).

6.1 ANALYSIS OF PRE-EARNINGS DISCLOSURES

To identify the set of pre-earnings disclosures made by or about our sample firms, we searched the Dialog data bases described earlier for the year preceding the adverse earnings disclosure. We read and coded each disclosure (which might contain multiple pieces of information) according to a predetermined coding rule: each disclosure was classified by source (e.g., press release versus *PR Newswire* report) and each piece of information in the disclosure was classified by type (e.g., earnings versus product information), tone (positive, negative, or neutral), and timeliness (whether it was a new or redundant disclosure).[19] Table 3 reports descriptive data on the disclosures and pieces of information we found.[20]

Panel A shows a striking difference in the number of disclosures between the at-risk sample and the shareholder lawsuit sample. Although the shareholder lawsuit sample contains only 45 observations (versus 53 for the at-risk sample), in total, the shareholder lawsuit firms have over four times as many press releases, almost twice as many stories in *PR Newswire* and national circulation newspapers, and about six times as many analyst reports. To the extent the lawsuit firms are larger, these differences are not unexpected.[21]

The data in panel B show the type and tone of the pieces of information coded. The shareholder lawsuit firms and the at-risk firms contain approximately the same number of average pieces of information per

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[19] One of the authors then reviewed all coding to ensure accuracy and consistency. We also coded whether the information was historical or forecast (results not reported). Consistent with their larger analyst following, the shareholder lawsuit firms have more forecast-type information overall and as a percentage of total disclosures (1,590/4,180 or 38% versus 406/1,319 or 30.8%).

[20] For the 37 at-risk firms in the biotechnology and computer industries, we also identified 112 disclosures published in local newspapers and 422 disclosures in trade journals. We read and coded these disclosures according to the predetermined coding rules and examined their related shareholder wealth effects. Over 81% of these disclosures conveyed either neutral or redundant news, compared to 69% (press releases), 35% (*PR Newswire*), 71% (national circulation newspapers), and 28% (analyst reports). For these 37 firms, we found that the explanatory power of returns-disclosure regressions which excluded local newspaper and trade journal disclosures was higher than if these disclosures were included. Therefore, we exclude trade journal and local newspaper articles from the set of disclosures analyzed.

[21] Another disclosure difference that may be size-related concerns differences in prospective versus historical information. For example, the shareholder lawsuit firms made 87 prospective disclosures about the decline-quarter earnings (versus 31 historical disclosures), while the at-risk firms made 20 prospective and 52 historical disclosures. Concerning other quarters' earnings, the lawsuit firms made 26 prospective and 609 historical disclosures, while the at-risk firms made 6 prospective and 329 historical disclosures.

TABLE 3

Descriptive Information on Disclosures By and About At-Risk and Shareholder Lawsuit Firms Prior to Adverse Earnings Disclosures (1987–91)[a]

Panel A: By Source of Disclosure[b]

	At-Risk Sample	Shareholder Lawsuit
Disclosure Source	# Disclosures (%)	# Disclosures (%)
Press release	127 (13.2%)	532 (19.8%)
PR Newswire	224 (23.3%)	437 (16.3%)
National circulation newspaper	480 (49.8%)	932 (34.7%)
Broker-analyst reports	132 (13.7%)	787 (29.3%)
Total	**963 (100%)**	**2,688 (100%)**

Panel B: By Type of Information Conveyed by Disclosure

	At-Risk Sample				Shareholder Lawsuit			
Type of Information	Positive	Neutral	Negative	Total	Positive	Neutral	Negative	Total
Decline-quarter earnings	0	0	72	72	17	3	98	118
Other quarterly earnings	147	34	154	335	376	108	151	635
Short-term forecasts	56	6	63	125	247	67	271	585
Long-term forecasts	49	1	24	74	161	68	128	357
Product related	109	172	61	342	251	1,111	115	1,477
FDA drug related	15	2	13	30	20	4	1	25
Corporate structure	31	118	15	164	57	299	53	409
Stock information	51	47	34	132	217	91	160	468
Litigation	3	6	32	41	26	39	37	102
Going concern	1	0	3	4	1	0	3	4
Total	**462**	**386**	**471**	**1,319**	**1,373**	**1,807**	**1,000**	**4,180**

Panel C: Number and Tone of Information Conveyed by Disclosure (by Firm)

	Mean	Median	Minimum	Maximum
At-Risk Sample				
# (%) positive	8.7 (34.7)	5.0 (33.3%)	0.0 (0.0%)	62.0 (85.7%)
# (%) neutral	7.3 (27.4)	5.0 (27.8%)	0.0 (0.0%)	45.0 (81.8%)
# (%) negative	8.9 (37.9)	5.0 (36.7%)	1.0 (3.2%)	59.0 (80.0%)
Total	24.9	18.0	3.0	161.0
Shareholder Lawsuit Sample				
# (%) positive	30.5 (39.4)	26.0 (35.6%)	0.0 (0.0%)	112.0 (85.7%)
# (%) neutral	39.8 (32.6)	19.0 (32.9%)	0.0 (0.0%)	296.0 (67.3%)
# (%) negative	22.6 (28.0)	17.0 (23.0%)	1.0 (8.0%)	98.0 (100%)
Total	**92.9**	**63.0**	**2.0**	**440.0**

[a]See table 1 for sample descriptions.

[b]All disclosures made by or about each firm during the period beginning one year before the end of the adverse earnings quarter and ending with the adverse earnings disclosure were collected. With the exception of *Wall Street Journal* articles referenced in *Wall Street Journal Indexes*, disclosures were obtained from Dialog data bases.

disclosure (4,180/2,688 or 1.55 versus 1,319/963 or 1.37). The shareholder lawsuit firms (or analysts following these firms) disclosed some positive and neutral earnings news pertaining to the adverse earnings quarter while the at-risk firms disclosed only negative news. These results are consistent with plaintiffs' allegations, with at-risk firms using disclosure strategy to avert litigation or with a claim that bad news for the litigation firms was truly unexpected.

Panel C of table 3 reports information on the number and tone of pieces of information *by firm* over the entire year preceding the adverse earnings disclosure. On average, the set of disclosures for shareholder lawsuit firms contains 39.4% positive statements versus 34.7% for at-risk firms. The shareholder lawsuit firms had fewer negative disclosures as a percentage of total disclosures (mean is 28%) than the at-risk firms (mean is 37.9%). However, chi-square tests fail to reject the null hypothesis of equal proportions of positive, neutral, and negative disclosures both within and between the at-risk and shareholder lawsuit firms (at the .05 level).[22] Thus, these results do not support the view that a series of falsely optimistic disclosures, not offset in any way by neutral or negative disclosures, was used by management to inflate prices during the year preceding the adverse earnings disclosure. However, the results in panel B (that the shareholder litigation firms had 17 positive disclosures about the decline-quarter's earnings while the at-risk firms made none) indicate that there may be some differences between the two sets of firms in terms of these disclosures.

6.2 SHAREHOLDER WEALTH EFFECTS OF DISCLOSURES

Even if few differences exist in the overall tone of disclosures between at-risk and litigation firms, it is possible that the litigation firms made misleading or otherwise defective disclosures that had a substantial impact on share prices. We investigate this possibility by measuring share price movements at the adverse earnings disclosure (table 4), over the year preceding the adverse earnings report (table 5), and in response to specific disclosures alleged by plaintiffs to be misleading or defective (table 6).

Table 4 reports the results of estimating the following regression:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \lambda_{1,i}\delta_{1,i,t} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ = return on security i on day t, $R_{m,t}$ = return on value-weighted market portfolio on day t, $\delta_{1,i,t} = 1$ if t = day of adverse earnings announcement (chosen from the day before, of, or after the press release date of the earnings disclosure based on the magnitude of share price response, i.e., the date with the largest response is used as the announcement day), 0 otherwise, and t begins one year prior to the end of the adverse earnings quarter and ends on the day of the adverse earnings announcement, but excludes returns for the week of the October 19, 1987 stock market crash. Results are not sensitive to this exclusion.

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[22] The chi-square statistic for equal proportions of positive, neutral, and negative disclosures for the shareholder litigation sample is 4.78, significant at the .10 level. No other chi-square statistics are significant at conventional levels. These statistics are calculated for disclosures over the year preceding the adverse earnings disclosure.

TABLE 4

Market Reaction to Adverse Earnings Disclosures (1987–91)

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \lambda_{1,i}\delta_{1,i,t} + \varepsilon_{i,t}$$

Panel A: At-Risk Sample[a]

	α	β	λ_1	R^2	n
Pooled Estimate	.0003	.8517	−.0763	.0252	14,893
(t-Statistic)	(.746)	(16.803)	(−9.990)		
Minimum	−.0041	−.1017	−.5034	.0000	53
1st quartile	−.0016	.2924	−.1041	.0057	53
Median	−.0001	.7523	−.0582	.0409	53
3rd quartile	.0019	1.2643	−.0253	.1033	53
Maximum	.0060	2.3364	.0326	.3791	53
# < 0 at α = .10	—	—	16	—	53

Panel B: Shareholder Lawsuit Sample[a]

	α	β	λ_1	R^2	n
Pooled	−.0002	1.4343	−.1716	.1670	11,458
(t-Statistic)	(−.688)	(35.745)	(−31.57)		
Minimum	−.0168	.4921	−.5595	.0224	45
1st quartile	−.0016	1.1762	−.2198	.1399	45
Median	.0001	1.4385	−.1552	.2333	45
3rd quartile	.0009	1.6272	−.0807	.3188	45
Maximum	.0042	2.3452	.1288	.5092	45
# < 0 at α = .10	—	—	37	—	45

Variable definitions: $R_{i,t}$ = return on security i on day t; $R_{m,t}$ = return on value-weighted market portfolio on day t; $\delta_{1,i,t} = 1$ if t = day of adverse earnings announcement, 0 otherwise; t begins one year prior to the end of the adverse earnings quarter and ends on the day of the adverse earnings announcement.

[a]See table 1 for sample descriptions.

The pooled sample excess return on the day of the adverse earnings report for the at-risk sample is −7.63%, with a t-statistic of −9.99.[23] Of 53 announcement-day excess returns, 36 are at the tenth percentile or lower of the empirical distribution of excess returns and 16 have t-statistics that indicate significance at conventional levels. In contrast, the shareholder lawsuit sample has a pooled sample excess return of −17.16%, with a t-statistic of −31.57. The difference in pooled excess returns between the at-risk sample and the shareholder lawsuit sample is significant at the .001 level, based on a conventional t-test. In addition,

[23] The pooled estimates are obtained from a single *OLS* regression on the entire time-series cross-section of observations. We also estimated equation (1) separately for each firm and tested the appropriateness of pooling the λ_1 coefficients across firms. Based on a conventional F test, we were unable to reject (at the .10 level) the hypothesis that the λ_1 coefficients are equal. The mean value of λ_1 computed from the firm-specific estimates was not significantly different (based on a t-test) from the pooled estimate for both the at-risk and shareholder litigation samples.

TABLE 5

Change in Market Value of Common Stock At and Prior to Adverse Earnings Disclosures (1987–91)

Panel A: At-Risk Sample[a]

	$ Change (in 000s) on Announcement Day	$ Change (in 000s) 1 Year Prior to Decline Quarter to Day before Announcement	Col. 2 as % of Market Value 1 Year Prior to Decline Quarter
Mean	-7,870.05	-42,770.20	-6.35
Minimum	-189,581.00	-747,654.00	-85.50
1st quartile	-5,024.68	-35,556.10	-48.82
Median	-1,680.63	-4,652.06	-25.08
3rd quartile	-470.50	248.74	3.30
Maximum	532.00	261,303.80	265.72
# > 0	2	15	15
# = 0	5	0	0
# < 0	46	38	38

Panel B: Shareholder Lawsuit Sample[a]

	$ Change (in 000s) on Announcement Day	$ Change (in 000s) 1 Year Prior to Decline Quarter to Day before Announcement[b]	Col. 2 as % of Market Value 1 Year Prior to Decline Quarter[b]
Mean	-140,681.00	2,005.02	3.17
Minimum	-1,163,219.00	-1,341,850.00	-61.53
1st quartile	-123,789.00	-99,861.70	-30.57
Median	-44,856.70	2,876.26	1.22
3rd quartile	-13,743.80	147,787.60	30.91
Maximum	14,600.21	1,187,436.00	105.65
# > 0	1	23	23
# = 0	0	0	0
# < 0	43	21	21

[a]See table 1 for sample descriptions.

[b]The results exclude the change in the market value of Genentech Inc.'s stock which experienced a $2.3 billion wealth loss over the sample period. With this observation, the mean change in market value prior to the earnings announcement is -$49.33 million (1.75%).

only 3 of the negative excess returns for the shareholder lawsuit firms lie above the tenth percentile of the empirical distribution and 37 of the 45 negative excess returns have *t*-statistics greater in magnitude than 1.7.[24]

The dollar magnitude of the percentage price decline reported in table 4 is shown in the first column of table 5.[25] For the at-risk sample, the

[24] There are two additional differences between the at-risk and shareholder lawsuit firms. First, market model beta estimates and sample R^2 values are larger for the shareholder lawsuit firms (β = 1.4343, R^2 = .1670) than for the at-risk firms (β = .8517, R^2 = .0252). As a benchmark, the median market model R^2 values for exchange-listed and *NASDAQ* firms are .06 and .015 respectively, and the median betas are .83 and .61 (see exhibit 31A–7 in Marais and Schipper [1992]). Second, the at-risk firms have more volatile returns than the shareholder lawsuit firms as measured by the standard deviation of raw returns (.0499 versus .0372).

TABLE 6

Shareholder Wealth Effects of Alleged Misleading Disclosures Made by 11 Shareholder Lawsuit Firms [a]

Panel A: Mean Excess Returns (*t*-Statistics) Associated with Disclosures and Omissions with Identifiable Dates ($n = 25$)

Day −1	.0071	(.9093)
Day 0	.0008	(.0919)
Day +1	−.0143	(−2.2883)
Days −1, +1	−.0064	(−.4932)

Panel B: Mean Excess Returns (*t*-Statistics) Associated with Misleading Optimistic Disclosures with Identifiable Dates

	All Disclosures ($n = 16$)		Disclosures Accompanied by Good News ($n = 11$)		Disclosures Accompanied by Bad News ($n = 5$)	
Day −1	−.0032	(−.5758)	.0000	(.0007)	−.0039	(−.3781)
Day 0	−.0068	(−.5527)	.0057	(.4838)	−.0344	(−1.4857)
Day +1	−.0142	(−2.5590)	−.0102	(−2.4412)	−.0290	(−2.1034)
Days −1, +1	−.0242	(−1.7882)	−.0045	(−.4564)	−.0673	(−2.3958)

Panel C: Mean Excess Returns (*t*-Statistics) Associated with Material Omissions of Adverse Information in Some Disclosure

	All Disclosures ($n = 9$)		Disclosures Accompanied by Good News ($n = 7$)		Disclosures Accompanied by Bad News ($n = 2$)	
Day −1	.0275	(1.4327)	.0283	(1.1082)	.0251	(6.7478)
Day 0	.0161	(1.3591)	.0165	(1.2084)	.0148	(.6260)
Day +1	−.0145	(−.9308)	.0079	(1.1696)	−.0819	(−4.5244)
Days −1, +1	.0291	(1.1759)	.0528	(2.2988)	−.0420	(−4.4998)

[a] Information on alleged misleading or omitted disclosures is taken from the *Securities Class Action Alert*. We were able to identify 25 specific allegations with identifiable dates for 11 of the 45 sample shareholder lawsuits.

mean and median shareholder wealth changes are −$7.87 million and −$1.68 million respectively. For the shareholder lawsuit sample, the mean and median shareholder wealth losses are $140.68 million and $44.86 million respectively. Columns 2 and 3 of table 5 show the dollar and percentage change in security prices over the year preceding the adverse earnings report. Among the 53 at-risk observations, 38 have negative returns to shareholders over the previous year. The mean shareholder wealth loss over the year prior to the decline quarter is $42.8 million (6.35% of market value) and the median loss is $4.65 million (25.08% of market value). The shareholder lawsuit sample contains 23 (of 45) observations where shareholder wealth changes are positive over the year preceding the decline quarter; the median wealth change is +$2.88 million (+1.22%) and the mean change is +$2.0 million (+3.17%).[26]

[25] This dollar change is measured as the market price on day −1 minus the market price on day 0, the day of the adverse earnings announcement, times the number of shares outstanding at that time.

[26] These results exclude a $2.3 billion wealth loss for Genentech Inc. The mean including this observation is −$49.33 million (+1.75%).

The dollar-value changes at the earnings announcement are, of course, affected by both differences in size and differences in percentage price responses between the at-risk and litigation samples. Because these value changes are inputs to damages calculations, it is possible that the litigation firms have larger estimated damages (which may affect the decision to file suit).[27] Preannouncement returns, which may also affect the decision to sue, also differ between the two samples. Over two-thirds (71%) of the at-risk firms had negative returns over the year preceding the adverse earnings news, compared to just under half (47%) of the litigation firms. While these results are roughly consistent with plaintiffs' allegations about inflated share prices prior to the adverse earnings disclosures, they do not support the view that positive predisclosure returns are a necessary condition for litigation.

Table 6 reports the shareholder wealth effects of 25 allegedly defective disclosures made by 11 litigation firms. If the plaintiffs' allegations that these disclosures led to inflated share prices are correct, we would expect to see, on average, positive price responses to the disclosures. In contrast, if these disclosures were attempts by managers to provide early warnings of the impending adverse earnings, we would expect the average price response to these disclosures to be negative. We have no unambiguous prediction when the disclosure is allegedly defective because of omitted information.

For the entire sample of 25 disclosures (panel A), there is no evidence of a positive market reaction on the day before or the day of the disclosure and there is a reliably negative reaction ($t = -2.29$) on the day following the disclosure. The same is true for the subset of 16 allegedly misleading optimistic disclosures (panel B), and there is some evidence that when there is a concurrent bad news disclosure, the overall share price impact is negative. Finally, for nine cases in which it was alleged that material information was omitted (panel C), the share price response is positive on average for seven disclosures containing good news and negative for two disclosures containing bad news.

Given the very small sample sizes, we believe these results should be interpreted cautiously. Taken as given, however, the results suggest that allegedly misleading optimistic disclosures did not in fact have a positive impact on share prices. The absence of significant positive price reactions (and some evidence of negative reactions) to disclosures which allegedly omitted material adverse information are largely predictable, under the assumption that market agents had no other access to the omitted information at the time of the allegedly defective disclosure.

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[27] Other inputs to the damages calculation include price volatility and trading volume during the class period as well as the length of the class period itself. Because of the importance of these other factors, it would not be appropriate to conclude that firm size and/or the price response at the adverse earnings disclosure drives the damages calculation.

TABLE 7

Market Reaction to Adverse Earnings Disclosures Conditional on Number and Tone of Prior Disclosures (1987–91)

$$R_{i,t} = \alpha + \beta R_{m,t} + \gamma_1 \delta_{1,i,t} + \gamma_2(\delta_{1,i,t} \times NDISC_{i,t}) + \gamma_3(\delta_{1,i,t} \times TDISC_{i,t}) + \varepsilon_{i,t}$$

	α	β	γ_1	γ_2	γ_3	R^2
At-Risk Sample[a]						
Coefficient Estimate	.0003	.8524	−.0695	−.0210	.0209	.0254
t-Statistic	(.745)	(16.816)	(−6.453)	(−1.375)	(.930)	
Shareholder Lawsuit Sample[b]						
Coefficient Estimate	−.0002	1.4351	−.1654	−.0051	−.0116	.1670
t-Statistic	(−.689)	(35.745)	(−15.987)	(−.435)	(−.890)	

Variable definitions: $R_{i,t}$ = return on security i on day t; $R_{m,t}$ = return on value-weighted market portfolio on day t; $\delta_{1,i,t} = 1$ if t = day of adverse earnings announcement, 0 otherwise; t begins one year prior to the end of the adverse earnings quarter and ends on the day of the adverse earnings announcement; $NDISC_{i,t} = 1$ if firm i had more than the median number of disclosures prior to the decline-quarter announcement (separate median cutoff values are used for the at-risk and shareholder lawsuit samples); $TDISC_{i,t} = 1$ if more than half of all of firm i's disclosures convey positive news, 0 otherwise.

[a]See table 1 for sample descriptions.

Insignificant share price responses to individual misleading disclosures do not preclude the possibility that a series of misleading statements led to inflated share prices which were drastically corrected when the truth was revealed. We investigate this possibility by examining the market reaction to the adverse earnings disclosure after conditioning on the number and tone of all pre-earnings disclosures:

$$R_{i,t} = \alpha + \beta R_{m,t} + \gamma_1 \delta_{1,i,t} + \gamma_2(\delta_{1,i,t} \times NDISC_{i,t}) + \gamma_3(\delta_{1,i,t} \times TDISC_{i,t}) + \varepsilon_{i,t}. \quad (2)$$

In the regression, a dummy variable is used to indicate firms with greater than the median number of disclosures ($NDISC = 1$). A dummy variable is also used to capture the tone of disclosures ($TDISC = 1$ if more than half of a firm's disclosures were coded positive, 0 otherwise).[28] We capture the effects of the disclosures on the announcement-day abnormal return by including the dummy variables as interaction terms with the announcement-day dummy variable. The regression results, reported in table 7, indicate that neither relatively greater frequency of disclosures nor relatively greater optimism of disclosures has any reliable effect on announcement-day returns for either the at-risk sample or the shareholder lawsuit sample.

[28] We also reran the regression using a within-sample relative measure of optimism ($TDISC$ was coded 1 if the firm had more positive disclosures than the median sample firm and at-risk and shareholder lawsuit samples were coded separately) and using a measure of optimism that excluded nonneutral disclosures ($TDISC$ was coded 1 if more than half the firm's nonneutral disclosures conveyed positive news). The results were qualitatively similar to those reported in table 7.

6.3 ANALYSIS OF ANALYSTS' EARNINGS FORECAST ERRORS AND REVISIONS

In this section, we examine analysts' earnings forecasts at and preceding the adverse earnings disclosure to provide evidence on whether analysts anticipated the adverse earnings news. Analysts may have revised their forecasts based on information from sources other than management. We do not identify such instances separately since our interest is in whether the at-risk firms escaped litigation because their earnings reports were anticipated by market agents and, hence, not easily characterized by plaintiffs as correcting previous faulty disclosures.

Anticipation is measured using analysts' earnings forecast errors at the adverse earnings disclosure and revisions in analysts' earnings forecasts over the preceding year. Forecast errors equal the difference between reported *EPS* for the adverse earnings quarter and the most recent analyst forecast for the adverse earnings quarter, scaled by the latter. (Analysts' forecasts are collected from analysts' research reports available on *Investext.*) We also compute forecast errors based on the most recent *Value Line* forecast for the adverse earnings quarter. Forecast revisions equal the quarter-to-quarter change in *Value Line* forecasts for the adverse earnings quarter. We do not compute revisions in analysts' forecasts over the preceding year because of an insufficient time series of analysts' reports.

If the at-risk firms directly or indirectly warned investors of impending adverse earnings (as suggested by their negative preannouncement returns and less severe reactions to the adverse earnings reports), we expect to observe small forecast errors at the adverse earnings announcement and a pattern of negative forecast revisions over the year preceding the adverse earnings disclosure. Conversely, if litigation firms misled the market in the manner alleged by plaintiffs (as suggested by their positive preannouncement returns and severe market reactions to the adverse earnings news), we expect to observe large negative forecast errors at the adverse earnings announcement and a pattern of nonnegative forecast revisions.

Table 8 reports forecast errors and forecast revisions for the two samples; three points about these results are noteworthy. First, consistent with the size differentials noted in section 4, the litigation firms are more widely followed than the at-risk firms: only 14 at-risk firms were followed by a security analyst versus 38 litigation firms, and *Value Line* followed 6 of the at-risk firms versus 24 of the litigation firms. Second, the forecast errors imply no greater anticipation of bad news for at-risk firms than for litigation firms; median forecast errors are *more* negative for the at-risk firms (the difference is significant at the .01 level for forecast errors based on analysts' forecasts). Finally, there is no evidence of greater downward revision activity over the year preceding the adverse earnings disclosure for the at-risk firms than for the litigation firms.

TABLE 8

Analysts' Earnings Forecast Errors and Revisions in Analysts' Earnings Forecasts of At-Risk and Shareholder Lawsuit Firms Near to Adverse Earnings Disclosures (1987–91)[a]

	At-Risk			Shareholder Lawsuit			Difference[b]	
Variable	Median	*n*	# < 0	Median	*n*	# < 0	Median	Sign
Earnings forecast errors:								
$(A - F)/F$	−1.0261	14	14	−.5255	38	37	4.613	.376
$(A - VL)/VL$	−.6500	6	6	−.6384	24	24	.325	—
Revision in earnings forecasts:								
$(VL1 - VL)/VL$	.0000	6	2	−.0263	22	13	.636	4.500
$(VL2 - VL1)/VL1$	−.0500	5	2	−.0294	21	11	.494	1.002
$(VL3 - VL2)/VL2$	−.0417	3	1	.0000	17	4	.913	1.525
$(VL4 - VL3)/VL3$	−.0286	2	1	.0000	12	5	1.863	2.917

Variable definitions: All earnings numbers refer to reported or forecasted *EPS* for the adverse earnings quarter. A = reported *EPS*; F = the broker-analyst's *EPS* forecast that is nearest to the adverse earnings disclosure date; VL = *Value Line*'s *EPS* forecast nearest to the adverse earnings disclosure date; $VL1$, $VL2$, $VL3$, and $VL4$ = *Value Line*'s *EPS* forecast one, two, three, and four quarters, respectively, preceding the adverse earnings disclosure date.

[a]See table 1 for sample descriptions.

[b]Wilcoxon statistic is reported for the difference in medians. χ^2 statistic is reported for the difference in signs of revision variables.

7. *Evidence on the Information Mix Defense*

The information mix defense asserts that information existed in the market which offset or tempered allegedly misleading statements. In separate litigation involving Apple Computer and Convergent Technologies, defendants rebutted some of plaintiffs' claims by showing that information necessary to make the alleged statements not misleading was adequately reported by the press or was generally believed to be in the public domain. In both cases, the information mix defense was applied on a statement-by-statement basis; that is, defendants provided testimony and evidence on why a particular statement was not misleading when interpreted in light of other information.

Just as the event study analysis reported in section 6 gives empirical content to the issues of materiality, causation, and damages, we believe the tests described below provide empirical content to the largely qualitative application of the information mix defense. Our statistical formulation of this defense does not seek to replicate the point-by-point analyses of these cases. Rather, we provide empirical evidence on how prior and concurrent disclosures affect measures of the share price decline at the adverse earnings disclosure. Because this share price response is one of several inputs to damages calculations, evidence that the market reaction conditioned on prior and concurrent disclosures (the "conditional" reaction) is less (or more) severe than the unconditional reaction has implications for estimating damages in this type of litigation.

Our statistical technique considers two ways that the mix of information about a firm may affect the market reaction to the adverse earnings disclosure. First, share price responses to other information released concurrent with the adverse earnings disclosure, but which is not alleged to correct previous defective disclosures, may be improperly attributed to the adverse earnings information. For example, a firm may issue a pessimistic forecast of a future quarter's earnings in the same press release that discloses the adverse earnings which is the subject of the litigation. Our statistical tests are similar to those used by Hoskins, Hughes, and Ricks [1986] to control for the price effects of information released concurrently with earnings.

Second, prior disclosures about the adverse earnings quarter may revise investors' expectations, but they must not be sufficiently detailed or credible to move prices fully or we would not have observed a significant share price response to the subsequent adverse earnings disclosure. An example is a security analyst's report predicting poor earnings for the adverse earnings quarter but not specifying the magnitude of the expected decline. Because our statistical approach weights all disclosures equally, our evidence on the price effects of such revisions is limited to the *average* price response to *all* adverse earnings disclosures.

The effects of prior and concurrent disclosures are captured simultaneously in the following conditional return-generating model:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + \sum_{k=1}^{10} \lambda_{k,i} \delta_{k,i,t} + \varepsilon_{i,t} \tag{3}$$

where:

$\delta_{k,i,t}$ = 1 (−1) if firm i announced positive (negative) news of type k on day t; 0 if the firm announced neutral, redundant, or no type k news on day t;[29]

k = type of information, $k = 1, \ldots, 10$;

- $k = 1$ (adverse earnings quarter);
- $k = 2$ (other quarter earnings disclosures);
- $k = 3$ (short-term earnings or sales forecast);
- $k = 4$ (long-term earnings or sales forecast);
- $k = 5$ (product information);
- $k = 6$ (FDA drug filing, ruling);
- $k = 7$ (corporate structure disclosures);
- $k = 8$ (stock-related information);
- $k = 9$ (litigation);
- $k = 10$ (going-concern information).

Equation (3) is estimated separately for each firm; for convenience, table 9, panel A reports only the pooled *OLS* results. Evidence on how the mix of information about a firm affects the market reaction to the

[29] To check the validity of our coding rules, we also estimated this regression including redundant disclosures and without signing the news conveyed by the disclosure. The lower explanatory power of these regressions supports the coding rules and the decision to code the disclosure of redundant or neutral news as a "nonevent."

TABLE 9

Market Reaction to Adverse Earnings Disclosures Conditional on Concurrent and Prior Disclosures (1987–91)

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \sum_{k=1}^{10} \lambda_{k,i}\,\delta_{k,i,t} + \varepsilon_{i,t}$$

Panel A: Estimated Coefficients (*t*-Statistics) from Pooled *OLS* Regression

Coefficient	At-Risk[a]	Shareholder Lawsuit[a]
α	.0003 (.707)	−.0005 (−1.563)
β	.8422 (16.647)	1.4336 (35.033)
λ_1	.0584 (8.210)	.0786 (20.760)
λ_2	−.0033 (−.829)	.0032 (1.273)
λ_3	.0170 (3.064)	−.0009 (−.405)
λ_4	−.0046 (−.686)	.0073 (2.674)
λ_5	.0205 (4.398)	.0103 (4.217)
λ_6	.0435 (3.483)	.0129 (.854)
λ_7	.0164 (1.946)	.0178 (3.838)
λ_8	.0019 (.273)	.0075 (3.300)
λ_9	.0389 (3.551)	.0112 (1.759)
λ_{10}	.0888 (4.175)	−.0322 (−1.732)
R^2	.0304	.1354

Panel B: Comparison of Conditional and Unconditional Share Price Response to Adverse Earnings Disclosures

Difference	At-Risk[a]	Shareholder Lawsuit[a]
Pooled	−.0179 (−1.628)	−.0930 (−9.941)
Minimum	−.2389	−.3361
1st quartile	−.0268	−.0655
Median	−.0003	−.0013
3rd quartile	.0000	.0001
Maximum	.0028	.0690
# < 0 at α = .10	2	9

Variable definitions: $R_{i,t}$ = return on security i on day t; $R_{m,t}$ = return on value-weighted market portfolio on day t; t begins one year prior to the end of the adverse earnings quarter and ends on the day of the adverse earnings announcement; $\delta_{k,i,t} = 1$ if firm i announced positive (negative) news of type k on day t; 0 if the firm announced neutral, redundant, or no type k news on day t; k = type of information, $k = 1, \ldots, 10$, where $k = 1$ (adverse earnings quarter); $k = 2$ (other quarter earnings disclosures); $k = 3$ (short-term earnings or sales forecast); $k = 4$ (long-term earnings or sales forecast); $k = 5$ (product information); $k = 6$ (FDA drug filing, ruling); $k = 7$ (corporate structure disclosures); $k = 8$ (stock-related information); $k = 9$ (litigation); $k = 10$ (going-concern information).

[a]See table 1 for sample descriptions.

adverse earnings disclosure is found by comparing the firm-specific excess returns which do not control for any concurrent or prior disclosures (λ_1 estimated from equation (1)) with the firm-specific excess returns which condition on this other information (λ_1 estimated from equation (3)); these differences are reported in panel B of table 9.[30] The difference in conditional and unconditional pooled market reactions to

[30] The differences are adjusted for the fact that the announcement-day indicator variable in equation (1) is of opposite sign to the indicator variable which captures the adverse earnings disclosures in equation (3).

adverse earnings reports is not quite significant at the .10 level for the at-risk sample (−7.63% versus −5.84%, *t*-statistic on difference is 1.628). For the shareholder lawsuit sample, the pooled estimate of the market reaction to the adverse earnings report conditional on all other concurrent and prior disclosures is −7.86%, or 9.30% less negative than the unconditional market reaction of −17.16% (*t*-statistic on difference is 9.941).

Table 9 also indicates that the conditional excess return is significantly less negative than the unconditional excess return for only two at-risk firms and nine litigation firms, indicating that the mitigating effects of prior and concurrent disclosures on price responses to adverse earnings news are restricted to a small subsample of firms. Thus, our results do not support the view that firms are fully exploiting disclosure strategies to reduce the severity of market responses to adverse earnings news.

8. Summary and Conclusions

This paper provides descriptive evidence about firms' disclosure strategies with respect to the adverse earnings reports that precipitated 10b-5 lawsuits and the disclosures alleged to mislead the market. We examine share returns and patterns of disclosures by and about 51 firms with substantial earnings and sales declines (the at-risk sample) and 43 defendant firms in shareholder litigation over allegedly misleading or omitted adverse earnings-related information.

Only one of the 51 firms at risk for shareholder litigation experienced a lawsuit over the adverse earnings disclosure even though the at-risk firms experienced larger earnings declines than the shareholder lawsuit firms. Thus, we did not find evidence of a simple causal relation between the presence or magnitude of adverse earnings reports and the incidence of shareholder litigation. The result that litigation for our sample tends to be precipitated by earnings forecasts or preemptive earnings reports (not by earnings announcements) suggests that voluntary and early disclosures, sometimes advocated as an ex ante defensive mechanism, may not be an effective deterrent to litigation. Of course, we cannot rule out the possibility that the disclosures we examine were simply not early enough (relative to the end of the quarter) or forceful enough (relative to the outcome) to preempt the adverse earnings news which precipitated the litigation.

We examine the preearnings disclosures, analyst earnings forecast activity, and pre- and announcement-day stock return patterns of the two samples to provide empirical evidence on plaintiffs' claims that managements' misleading disclosures led to inflated prices which were "corrected" at the adverse earnings disclosure. While we do not find evidence that the pre-earnings disclosures of the shareholder lawsuit firms are disproportionately optimistic or that analysts revised their earnings forecasts upward over the year preceding the adverse earnings disclosure, the

pattern of positive preannouncement returns followed by an extreme negative reaction to the adverse earnings disclosure is consistent with plaintiffs' allegations. Additional tests, however, show no evidence that the dissemination of good news during the period preceding an adverse earnings signal exacerbates the price decline at the earnings announcement, which casts some doubt on the view that optimistic statements inflate share prices and establish conditions such that a drastic price correction occurs when the truth (in the form of earnings) emerges.

Finally, we find some empirical evidence to support an "information mix" defense, insofar as we observe significantly smaller (in magnitude) market reactions to adverse earnings news when the analysis is conditioned on the type and tone of prior and concurrent disclosures. The difference is confined, however, to a relatively small subsample of firms.

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