The Conservatism Principle and the Asymmetric Timeliness of Earnings: An Event-Based Approach*

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1. Introduction
Traditionally, accounting conservatism is described by the adage “anticipate no profits, but anticipate all losses” (e.g., Bliss 1924). Ceteris paribus, this suggests that “bad news” is recognized earlier than “good news” in reported earnings. In an influential paper, Basu (1997) tested this asymmetric timeliness hypothesis by regressing annual earnings on contemporaneous returns using positive (negative) annual stock returns as a proxy for good (bad) news. He found that the contemporaneous sensitivity of earnings to negative returns is significantly higher than that of earnings to positive returns.1 In this paper, we rely on the accounting concept of materiality in conjunction with litigation risk and focus on extreme events to develop powerful tests of the asymmetric timeliness hypothesis.

We test the asymmetric timeliness hypothesis using an event-based approach that modifies Basu’s proxy for good/bad news. Asymmetric timeliness relates to when the information conveyed by an economic event or shock is recorded in periodic accounting earnings — earlier if it conveys bad news and later if it conveys good news. Basu (1997) and others use the sign of annual returns which reflect the aggregate positive or negative effect of all shocks occurring during a year for a firm as the proxy for good or bad news. To the extent that incremental information in individual economic shocks is recorded asymmetrically in periodic accounting reports (i.e., accounting earnings reflect bad news shocks in the concurrent period and good news shocks in subsequent periods), then the use of aggregate returns, that net off good news and bad news shocks occurring during the interval, will impair the researcher’s ability to detect asymmetric timeliness. To address this potential concern, Ryan (2006) recommends filtering of returns to measure good/bad news. Consistent with Ryan’s recommendation, in this paper we develop a proxy for good or bad news reflected in individual economic shocks which is likely to be more powerful in detecting asymmetric timeliness than an aggregate proxy.

1. Studies that have since used this method include Pope and Walker 1999, Ball, Kothari, and Robin 2000, Giner and Rees 2001, Ball, Robin, and Wu 2003, and Bushman and Piotroski 2006, examining international differences in conservatism; Basu, Hwang, and Jan 2002, studying conservatism and audit quality; and Givoly and Hayn 2000, Holthausen and Watts 2001, Ryan and Zarowin 2003, and Sivakumar and Waymire 2003, studying change in conservatism over time. See Ball, Kothari, and Nikolaev 2010 for a comprehensive list of studies that use the Basu methodology.
Because the economic impact of an individual shock is in general not directly observable, we rely on short-window returns as the measure of value-relevant information in an economic event. We assume that a good (bad) news shock has occurred if we observe an unusually high (low) three-day market-adjusted stock return for the firm during a given fiscal quarter. We argue that, assuming (semi-strong) market efficiency, economic shocks are incorporated in prices as soon as they are publicly observed. Thus, in our setting, we assume that an economic shock occurs and is observed, the market reacts to it, and the three-day market-adjusted return captures the value-relevant information in that shock. We test whether this information is incorporated in accounting earnings earlier if it reflects bad news than if it reflects good news.

We define good/bad news by identifying extreme stock return behavior based on a uniform cutoff for all firms as well as a firm-specific cutoff. Specifically, good (bad) news is defined as the three-day market-adjusted return (i) greater (less) than or equal to 10 percent (10 percent) during a quarter, or (ii) greater (less) than or equal to the mean plus (minus) 2.58 times the standard deviation of three-day market-adjusted returns over the preceding five years for a given firm. When identifying extreme returns, we exclude the returns of the earnings announcement window.

There are some conceptual reasons for testing the asymmetric timeliness in recording events that have a material economic impact. The accounting concept of materiality is a key factor governing the decisions of managers, auditors, litigators, and regulators. Our focus on extreme returns is motivated by the materiality concept in conjunction with shareholder litigation. Beaver (1993) and Watts (1993) note that the threat of litigation under the Securities Acts leads to conservative reporting, because the likelihood of litigation is higher when earnings and net assets are overstated rather than understated (Kellogg 1984). Because omissions or misstatements that are material in magnitude are more likely to trigger litigation (as indicated by the emphasis on “material” in various statements of the Securities Act of 1933), and/or enforcement actions by the Securities and Exchange Commission (SEC), we expect managers and auditors to especially apply conservative accounting to events that are material in magnitude.

Beaver and Ryan (2005) also provide support for the use of large-magnitude shocks in tests of asymmetric timeliness. In their model of conditional and unconditional conservatism, they show that the asymmetric relation between earnings and returns depends on the amount of accounting slack for recorded assets and the uncertainty of the write-down (or impairment) trigger. Their model and simulation results show that tests of asymmetric timeliness that are based on negative shocks that are too small to use up the available accounting slack have low power. Consistent with their model, our focus on extreme event returns can more sharply delineate the asymmetry in the relation between returns and both concurrent and subsequent earnings.

Our proxy for good/bad news enhances the power of our tests in two ways: (i) by focusing on short return windows to identify information shocks, and (ii) by identifying firm-specific shocks with material economic impact. To identify shocks with material economic impact, we focus on positive or negative returns that are significant in magnitude. We examine rolling three-day return windows and identify the window where we find significant returns indicating that a material economic event has occurred. Because

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2. To elaborate, “conditional” (or news-dependent) conservatism arises when book value is written down under sufficiently adverse circumstances but not written up under favorable circumstances. On the other hand, “unconditional” (or news independent) conservatism is determined at the inception of assets and liabilities (e.g., accelerated depreciation) and is a primary source of unrecorded goodwill. Unrecorded goodwill is a form of “accounting slack” that may preempt the application of conditional conservatism (e.g., asset impairment), unless the shock is negative enough to use up the slack.
we infer that an economic shock has occurred from the return performance, the short three-day window improves our ability to isolate the economic effect of the shock, thereby improving the power of our test. We use market-adjusted returns in order to exclude market-wide events that may not have any impact on an individual firm’s earnings. Our objective in testing only extreme firm-specific shocks is to maximize the power of our tests. In support of the above arguments, we also demonstrate how using longer return windows to capture value-relevant information in economic events and focusing our tests on shocks with lower economic impact impairs our ability to detect asymmetric timeliness in the data. Based on this sensitivity analysis, we find that it is the combination of the short event window and the extreme nature of news that yields higher power.

From a regression of seasonal earnings changes on extreme returns, our results show that the estimated differential coefficient on extreme negative returns is positive and significant. Moreover, as one would expect, we obtain a positive and significant coefficient estimate on extreme positive returns as well, which allows us to easily interpret the positive differential coefficient estimate on negative news as evidence of asymmetric timeliness. Further, consistent with the Basu 1997 regression results, the regression $R^2$ and the differential timeliness ratio are significantly higher for the sample of firms with extreme negative returns relative to the sample with extreme positive returns. An analysis of subperiods reveals that although the coefficient estimates on both extreme positive and extreme negative returns are lower after the year 2000, the timeliness ratio is in fact higher. However, further analysis shows that the increase in the timeliness ratio is driven mainly by the pre–Sarbanes-Oxley period (2000–02) and that the ratio in fact declines in the post-period, consistent with the findings of Srivastava and Tse 2009.

Additionally, we provide evidence on the dual effects of asymmetric timeliness. If accounting is indeed asymmetric, (i) bad news should have a higher correlation with earnings of the concurrent quarter relative to good news, and (ii) good news should have a higher correlation with subsequent earnings. Although asymmetric timeliness reflects both these effects, the delayed recognition of good news has received relatively less attention to date. Addressing this concern, Guay and Verrecchia (2006) discuss the need for future research to examine the speed of good news recognition in accounting earnings. Our analysis shows that, although there is no significant difference in the relation between good news and bad news with earnings changes over the following quarter, good news is more positively correlated with earnings changes cumulated over the subsequent two quarters and longer. Our results confirm the argument in Beaver and Ryan 2005 that focusing on large-magnitude shocks allows us to clearly document that the asymmetric relation between returns and subsequent earnings is directionally opposite to that between returns and concurrent earnings.

Conservatism is an accrual accounting property, and hence, should have minimal effect on net cash flows. Consistent with this notion, Givoly and Hayn (2000) find that, while earnings exhibit significant negative skewness in the cross-section, negligible

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3. While prior studies using the Basu method find positive and significant coefficient estimates on positive returns in regressions using pooled annual data, tests using recent annual data and quarterly data yield significant negative coefficients on positive returns, which are inconsistent with the well-documented positive returns–earnings association. These negative coefficients make it difficult to interpret the differential coefficient on negative returns because the differential is relative to a base estimate that is not consistent with expectations.

4. Also, Srivastava and Tse (2009) discuss the importance of determining whether the increasing trend in conservatism comes from early recognition of losses and/or delayed recognition of gains; these authors however use a different measure of conservatism that relies on the mapping of positive and negative accruals into future changes in cash flows.
skewness is observed in operating cash flows.\textsuperscript{5} Similarly, we find no evidence of asymmetric timeliness in operating as well as free cash flows using our approach.

In summary, our evidence supports both predictions of the asymmetric timeliness hypothesis — that is, on average, bad news is contemporaneously reflected in accounting earnings and returns, while the accounting recognition of good news is delayed to later periods. We contribute to the growing literature on conservatism by modifying the Basu methodology to enhance the power of the test of asymmetric timeliness. Our methodology can be applied to situations where tests have failed to identify asymmetric timeliness using the traditional approach.

The rest of the paper is organized as follows. Section 2 describes our hypotheses. Section 3 discusses the data and research design. Empirical results are reported in section 4, followed by concluding remarks in section 5.

2. Hypotheses development

Traditionally, conservatism in accounting means that when in doubt choose the solution that will be least likely to overstate assets and income (Kieso, Weygandt, and Warfield 2010: 50). Paragraph 95 of the Statement of Financial Accounting Concepts (SFAC) No. 2 states: “... if two estimates of amounts to be received or paid are about equally likely, conservatism dictates using the less optimistic estimate.” In emphasizing the conservatism principle, accounting practice prefers skepticism in recognizing gains when some uncertainty attaches to the successful completion of the transaction and requires a higher standard of verification before recognizing gains. On the other hand, less stringent requirements are imposed in recognizing expenses/losses from incomplete transactions, as mandated, for example, by standards on pensions, environmental liabilities, and asset impairment.\textsuperscript{6} As a consequence of conservative accounting, bad news is more likely to be incorporated in accounting earnings on a timely basis compared to good news.

Prior studies that examine accounting conservatism have used various measures of conservatism, for example, choice among alternative accounting methods (Leftwich 1983; Bowen, DuCharme, and Shores 1995), the level and rate of accumulation of negative non-operating accruals, skewness of earnings relative to skewness of operating cash flows or returns (Basu 1995; Givoly and Hayn 2000; Ball et al. 2000), unrecorded or “hidden” reserves (Penman and Zhang 2002), and the market-to-book ratio (Stober 1996). Basu (1997) and related papers focus on the timing dimension of conservatism. They rely on the conservative accounting rule, “anticipate no profits, but anticipate all losses”, which leads to more timely recognition of bad news relative to good news.\textsuperscript{7} These studies use contemporaneous positive/negative annual stock returns as the measure of publicly available good/bad news. They estimate a regression of (price-scaled) accounting earnings on contemporaneous stock returns with a differential coefficient for negative returns. They find that the contemporaneous sensitivity of earnings to negative returns is significantly higher than that of earnings to positive returns.

Recent research has shown that this methodology for testing asymmetric timeliness yields results that are difficult to interpret when using quarterly data. For example, Basu,

\textsuperscript{5} Negative earnings skewness is also documented by a number of previous studies, for example, Deakin 1976, Frecka and Hopwood 1983, and Watson 1990.

\textsuperscript{6} Watts and Zimmerman (1986: 205–06) and Watts (2003) discuss alternative explanations for conservative reporting: contracting (conservatism as a means of efficient contracting with debt-holders and managers); shareholder litigation (conservatism reduces expected litigation costs); taxation (conservative reporting reduces the present value of taxes); and accounting regulation (conservatism reduces the political costs imposed on or by standard-setters and regulators).

\textsuperscript{7} Ryan (2006) maintains that asymmetric timeliness, despite its limitations, is the most direct implication of conditional conservatism and should retain its primacy of place in the literature.
Hwang, and Jan (2003) report a positive coefficient estimate on negative returns as expected, but a negative coefficient estimate on positive returns, which is inconsistent with the well-documented positive returns–earnings association. For our sample period as well, we similarly obtain a negative coefficient estimate on positive returns from the Basu regression using quarterly data. The positive differential coefficient on negative returns is not readily interpretable as evidence of asymmetric timeliness because it is relative to a base coefficient that is inconsistent with our expectations.

Another concern with using annual returns to measure good/bad news is that negative returns over long intervals are bounded from below (~100 percent) while positive returns are unbounded. This results in negative returns having lower variance than positive returns. In fact, consistent with Dietrich, Muller, and Riedl 2007, for our sample period we find that the variance of positive annual returns is about seven times larger than the variance of negative annual returns. This difference in variances of negative and positive returns contributes to a difference in the ratio of earnings variance to return variance of the two groups. The interpretation of the differential coefficient on negative returns as evidence of asymmetric timeliness may be difficult, to the extent this coefficient is driven by the lower bound on annual returns.8 Our tests of asymmetric timeliness using extreme three-day returns are less subject to the above concern regarding differential variances. In our sample, we find that the variance of extreme market-adjusted event returns for positive news firms (0.049) is only about one and a half times that for negative news firms (0.031). Moreover, we obtain similar results when we standardize the model, so that the returns of both positive and negative news firms have equal (unit) variance.

**Extreme three-day returns as a measure of good/bad news**

In an efficient market, prices incorporate the effect of economic events as soon as they are revealed. We assume that unusually high/low returns over a three-day interval capture information in an economic event or shock that has just been revealed. Thus, we measure good (bad) news as unusually high (low) three-day market-adjusted returns for a firm during a given quarter. Note that an unusual three-day return is our measure of value-relevant information contained in a publicly disclosed news event (although we make no attempt to find out the specifics of this news event). Thus, we take an event perspective rather than study the association between accounting earnings and contemporaneous returns. Consistent with this perspective, the short return window enhances our ability to isolate the economic impact of the event. If asymmetric timeliness relates to when the incremental information in individual economic events is recorded, using returns over the entire period as an aggregate proxy for good/bad news could reduce the power of the test (see Givoly, Hayn, and Natarajan 2007 and Ryan 2006).9 Our use of extreme short event window returns (as opposed to annual/quarterly returns) alleviates this concern and improves our ability to detect the effects of asymmetric timeliness.

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8. The criticism in Dietrich et al. 2007 is based on the “reverse” regression methodology used in these tests. However, Ball et al. (2010) argue that, because the objective is to understand a property of accounting earnings (i.e., conservatism), it is appropriate to use earnings as the dependent variable (and returns as the independent variable). Additionally, note that this concern does not apply to the difference in R²’s documented by Basu 1997 and related studies.

9. In a similar vein, a recent paper by Ball and Easton 2011 argues that returns later in the year primarily capture the effect of future earnings expectations, and that asymmetric timeliness using the Basu regression should be mainly detected from the relation between these returns and earnings. Rather than partitioning on returns of early versus late periods of the year, we filter returns based on finer partitions of daily (three-day) returns of extreme magnitude.
Our focus on material economic events is motivated by conceptual as well as statistical reasons. Shareholder litigation is considered by many as a potential source of conservatism (see Watts 2003). Litigation produces asymmetric payoffs: Overstating earnings and net assets is more likely to generate litigation costs than understating earnings and net assets. Conservatism, by understating earnings and net assets, reduces the firm’s expected litigation costs. Consistent with this view, Skinner (1994) finds that managers voluntarily disclose bad news early to avoid costs of potential litigation. While, in general, managers and auditors have the incentive to recognize losses on a timely basis relative to gains to reduce litigation risk, the incentive is more pronounced when losses are material in magnitude. Materiality plays a significant role in determining when litigation is triggered and hence is an important decision factor for managers, auditors, litigators, and regulators. The Financial Accounting Standards Board (FASB) defines materiality in SFAC No. 2 as follows: “... materiality is the magnitude of omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it probable that the judgment of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement.” Several accounting pronouncements also emphasize materiality. For example, an extraordinary event or transaction is required to be classified separately in the income statement if it is material (FASB’s Accounting Standards Codification ASC 225-20). Another example is the requirement for reporting of segment information based on a 10 percent threshold applied to revenues, profits, and identifiable assets of the operating segment (ASC 280-10).

Auditing standards too emphasize the concept of materiality (see Statement of Auditing Standards No. 47). The auditor’s consideration of materiality is a matter of professional judgment and is affected by what the auditor perceives as the view of a reasonable person who is relying on the financial statements (Boynton, Johnson, and Kell 2001: 171). The auditor is required to provide “reasonable assurance” that all material misstatements are detected. While no exact rules for determining materiality are prescribed, a common rule of thumb applied by auditors is that total (aggregated) misstatements of more than 3 percent to 5 percent of net income before taxes would cause financial statements to be materially misstated. Suits against auditors under the Securities Act of 1933 usually allege material misstatements or omissions (e.g., see section 11, Civil Liabilities on Account of False Registration Statement). Moreover, under the civil provisions of the 1933 Act, monetary damages recoverable equal the magnitude of loss suffered by the plaintiff based on the prevailing price of the security. Thus, managers and auditors will be more conservative in recognizing negative events that are material in magnitude, because the likelihood of litigation and its potential cost are higher for material misstatements or omissions (Grimm 2009).

As described earlier, we define a firm as a good (bad) news firm for a quarter if the cumulative market-adjusted return in any three-day window during the quarter is greater

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10. On the other hand, the literature also includes theoretical studies of managerial incentives to disclose good news earlier than bad news (Verrecchia 1983, 2001) and empirical studies showing that disclosure of bad news tends to be delayed (in the case of bad news earnings announcements, see Givoly and Palmon 1982, Chambers and Penman 1984, Kross and Schroeder 1984, Begley and Fischer 1998, and Bagnoli, Kross, and Watts 2002).

11. Staff Accounting Bulletin 99 reiterates the definition of materiality in SFAC No. 2 and clarifies its application.

12. Consistent with the importance of materiality, Wright and Wright (1997) use data from actual audit engagements and find that the auditor’s decision to waive an audit adjustment (which reflects the auditor’s discovery of a potential breach in the client’s accounting system) is correlated with the materiality of the proposed adjustment.
(less) than or equal to 10 percent (−10 percent), or is greater (less) than or equal to the mean plus (minus) 2.58 times the standard deviation of three-day adjusted returns for that firm (calculated over the previous five years).\textsuperscript{13,14} As a further restriction, three-day adjusted returns that are less than 5 percent in absolute value are not included in the good/bad news samples. To identify these extreme returns, we apply our criteria to rolling three-day adjusted returns in a quarter for each firm. If a firm-quarter has consecutive rolling three-day adjusted returns that fall outside our cutoff, we cumulate returns over a period longer than three days in order to include the total reaction to the news event. For example, if we find two consecutive rolling three-day adjusted returns exceeding our cutoff, we consider the four-day window to obtain the total reaction to the news. Further, because our purpose is to study the reporting of an economic event other than an earnings announcement, we exclude returns that fall during a three-day interval surrounding an earnings announcement. When multiple extreme three-day adjusted returns occur during the quarter, we cumulate the three-day adjusted returns during the quarter if they are all of the same sign. If there are multiple three-day intervals in the same quarter with a mix of extreme positive and extreme negative adjusted returns, we exclude that firm-quarter observation.\textsuperscript{15} Thus, our final sample includes firm-quarters when a significant event(s) conveying clearly positive or negative news occurred as evidenced by the unusual price reaction.

The market adjustment of returns is based on the value-weighted market index. We use market-adjusted returns in order to exclude market-wide events that are not expected to impact an individual firm’s earnings.\textsuperscript{16} On the other hand, by focusing on firm-specific returns, it is likely that we exclude some market-wide events that may have an impact on an individual firm’s earnings. Our objective in testing only firm-specific events is to maximize the power of our tests.

We estimate a regression of change in earnings per share (EPS) for quarter $t$, deflated by beginning-of-quarter price, on the unusual three-day adjusted return (or cumulated return) observed during quarter $t$, separately for the good news and the bad news samples. Quarterly earnings changes are defined as EPS of the current quarter minus EPS of the same quarter of the previous year. We use net income per share as our earnings measure because extreme news can be incorporated in any component of accounting earnings.\textsuperscript{17} Consistent with prior research, we hypothesize that, on average, bad news in quarter $t$ is more likely to be incorporated in accounting earnings of quarter $t$, while the accounting recognition of quarter $t$ good news is more likely to be delayed to subsequent periods. Thus, we expect that the slope coefficient and the $R^2$ for the bad news sample will be

\textsuperscript{13} Application of the firm-specific cutoff alleviates the concern that the sample may be overrepresented by firms with high return volatility. In fact, we find that the volatility (standard deviation) of daily returns is not significantly different for the pooled positive and negative news sample relative to firms excluded from our sample (median: 0.027 vs. 0.026).

\textsuperscript{14} In examining the timeliness of analysts’ downgrade recommendations following bad news, Ljungqvist, Marston, Starks, Wei, and Yan (2007) use similar cutoffs based on the standard deviation of daily returns to identify bad news from short-window returns.

\textsuperscript{15} This is consistent with Givoly et al. 2007, who use a simulation procedure to show that aggregating multiple events with different signs reduces the power of the test of asymmetric timeliness.

\textsuperscript{16} Similarly, Ball and Shivakumar (2006) explain that they use market-adjusted returns to control for exogenous (to financial reporting) shifts in expected returns. Market adjustment may lead to calendar-time clustering in the case of thinly traded stocks, for example, the shocks in October 1987, October 1989, and September 2001. The elimination of penny stocks from our sample, and consistent results when the fourth calendar quarters of 1987 and 1989 and the third calendar quarter of 2001 are excluded from our sample, help mitigate concerns with respect to this potential problem.

\textsuperscript{17} Results based on earnings before extraordinary items and discontinued operations are substantially similar.
significantly higher than that for the good news sample. However, this test addresses only one aspect of asymmetric timeliness. To provide evidence on the dual aspects of asymmetric timeliness, we also need to test whether good news is in fact incorporated in earnings with a delay. Thus, from a regression of earnings changes of subsequent quarters on extreme returns of quarter $t$, we expect the slope coefficient and the $R^2$ to be higher for the good news sample than for the bad news sample.

**Subsequent period analyses by prior research**

Several previous studies examine the effect of current good/bad news on earnings of subsequent periods. For example, in examining cross-country differences in the degree of accounting conservatism, Ball et al. (2000) use accumulated net income over two years ($t$ and $t + 1$) as the dependent variable and regress it on returns of year $t$ allowing for a differential coefficient on negative returns (reported in their Table 7). They find that, while the coefficient estimates generally increase (compared to those estimated with net income of year $t$ as the dependent variable), contrary to expectation the estimated coefficient on positive returns (for the U.S. sample) is negative and the differential coefficient on negative returns in fact increases. Basu (1997) estimates a regression of aggregate earnings over a four-year period on returns over the same period and finds that the differential coefficient on negative returns continues to be positive and significant although it is smaller compared to the one for the annual regression (reported in his Table 5). Similarly, Roychowdhury and Watts (2007) document a monotonic decrease in the differential coefficient on negative returns when the return window is lengthened from one to four years. However, while these papers show a reduction in the effect of conservatism on earnings over longer intervals, they do not directly test whether positive returns have a higher correlation with subsequent earnings than negative returns.18

Pope and Walker (1999) include lagged returns as additional independent variables in the regression of earnings on contemporaneous returns and find that, for the U.S. sample, the differential coefficient on negative lagged returns continues to be positive although it declines with longer lags. From their result (reported in their Table 6), positive returns do not have a higher correlation with earnings than negative returns as far as three years ahead. Ryan and Zarowin (2003) document similar results over different subperiods from 1966 to 2000. Because we do not have clear predictions about the rate at which good news gets incorporated in earnings on average, it is hard to evaluate the prior findings that do not show a stronger association of subsequent earnings with positive returns relative to negative returns. Beaver and Ryan (2005) provide an alternative explanation for why the observed asymmetry may be in the same direction for concurrent as well as subsequent earnings, contrary to the asymmetric timeliness hypothesis. They argue that, while unconditional conservatism (e.g., in the form of accelerated depreciation) is a primary source of unrecorded goodwill, which constitutes a form of “accounting slack”, it preempts the application of conditional conservatism as long as the shocks to the market value of assets are not negative enough to use up this slack. Thus, negative news that is too small to use up the available accounting slack for recorded assets may exhibit a higher correlation with subsequent earnings than positive news. We believe that, consistent with their theory, our focus on extreme events will enable us to document asymmetry with respect to concurrent earnings that is in the opposite direction to that with respect to subsequent earnings.

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18. In a related recent study, Srivastava and Tse (2009) use the association of negative versus positive accruals with future changes in cash flows as their measure of conservatism to examine the delayed recognition of gains. They find that both gains recognition and loss recognition generally contribute to trends in conservatism.
3. Data and research design

Our initial sample includes all firms with data available on CRSP and quarterly COMPUSTAT databases covering the period 1982–2007. We use the preceding 20 quarters (5 years) to estimate the mean and standard deviation of three-day market-adjusted returns for each firm.\footnote{We require at least three prior years of daily returns data for calculating the mean and standard deviation of three-day adjusted returns for each firm.} Hence, our final sample includes data from 1987 to 2007. Of a total of 496,360 firm-quarter observations with data on CRSP, 107,056 (21.6 percent) are identified as those with extreme good/bad news. We exclude observations where the beginning-of-quarter price is less than 10 cents. Further, to ensure that our results are not affected by outliers, we exclude firm-quarters with price-deflated EPS in the upper or lower 1 percent of observations.\footnote{Winsorization instead of truncation does not have a significant impact on results.} The final sample includes 91,500 firm-quarter observations identified as extreme good/bad news comprising 23.4 percent of all firm-quarters with required accounting data on the quarterly COMPUSTAT database.\footnote{The implicit assumption of constant return volatility across time due to our use of a constant cutoff to identify firms with extreme news could potentially lead to time clustering in our sample. However, we find that the percentage of extreme news observations to total observations with required data does not vary much across years and is in fact the same over the early and late subperiods. Note that our use of the firm-specific cutoff which is based on the mean and standard deviation of daily returns over rolling five-year windows does take into account the time variation in return volatility.} As expected, in the extreme news sample, the number of good news observations is almost twice as high as the number of bad news observations (65.8 percent vs. 34.2 percent).\footnote{In comparison, using positive versus negative annual returns, 41 percent of observations are classified as bad news for the sample period 1963–90 in Basu 1997, and 37 percent for the sample period 1976–96 in Pope and Walker 1999.}

To test whether bad news is incorporated in accounting earnings earlier than good news, we estimate the following regression using the combined good news and bad news samples:

$$
\Delta E_{it} = \beta_0 + \beta_1 D + \beta_2 E_{Rit} + \beta_3 E_{Rit} * D + \epsilon_{it}
$$

where \(\Delta E_{it} = \text{EPS of quarter } t \text{ of year } \tau \text{ minus EPS of quarter } t \text{ of year } \tau - 1 \text{ for firm } i\), divided by the security price at the beginning of quarter \(t\), year \(\tau\); \(E_{Rit} = \text{extreme three-day market-adjusted return of firm } i \text{ occurring during the quarter } t \text{ (as defined earlier)}\); \(D = 1 \text{ if } E_{Rit} < 0, \text{ and zero otherwise}\); \(\beta_0\) is the intercept; \(\beta_1\) is the coefficient on the dummy variable; \(\beta_2\) is the coefficient measuring the impact on accounting earnings of value-relevant information conveyed by extreme positive returns; \(\beta_3\) is the differential coefficient on extreme negative returns; and \(\epsilon_{it}\) is the error term. We expect the estimate of the differential coefficient \(\beta_3\) to be positive and significant if bad news is recognized in earnings earlier than good news. We use seasonal earnings changes as the dependent variable instead of earnings levels because we examine the \textit{incremental} earnings effect of the economic content of individual events captured by extreme returns.\footnote{Using a similar specification, Givoly et al. (2007) simulate the relation between individual events and incremental earnings response (i.e., earnings changes) versus aggregate events and aggregate earnings response (i.e., earnings levels).} In addition, the use of earnings changes alleviates the concern raised by Ball, Kothari, and Nikolaev 2011 that the correlation between expected earnings and returns can bias the estimate of asymmetric timeliness.

To compare the explanatory power of bad news versus good news for earnings changes, we estimate the following regression separately for the extreme negative and positive returns samples:
\[ \Delta E_{it} = x_0 + x_1 ER_{it} + \varepsilon_{it}^{'} \]  

(2).

We expect \( x_1 \) and the \( R^2 \) from (2) to be higher for the bad news sample compared to the good news sample, indicating that bad news is reflected in accounting earnings on a more timely basis than good news.

Because events other than the extreme one occurring during the quarter may also impact accounting earnings, the \( R^2 \) from (2) may include the effect of the common variation explained by the extreme event and other events if the two variables are correlated. Thus, we modify (2) and include an additional variable that captures the effect of other events that may occur during the quarter — the market-adjusted returns for the rest of the quarter (i.e., excluding the extreme event return).\(^{24}\) For the good news and the bad news samples separately, we estimate the regression:

\[ \Delta E_{it} = \theta_0 + \theta_1 ER_{it} + \theta_2 OR_{it} + u_{it} \]  

(3),

where \( OR_{it} \) equals other returns, or the market-adjusted returns of firm \( i \) for quarter \( t \) excluding the extreme returns, \( ER_{it} \).

To estimate the incremental effect of the extreme event returns (or the unique variation explained by the extreme event), we run the following regression separately for the good news and the bad news samples:

\[ \Delta E_{it} = \gamma_0 + \gamma_2 OR_{it} + v_{it} \]  

(4),

and compare the incremental \( R^2 \) of (3) relative to (4) for the good news versus the bad news samples. We expect the impact on accounting earnings of extreme bad news as indicated by the incremental \( R^2 \) to be significantly higher than the impact of extreme good news.

To test whether the accounting recognition of good news is delayed until subsequent quarters, we estimate the following regression using the combined good news and bad news samples:

\[ \Delta E_{it+1,t+j} = \beta_0 + \beta_D D + \beta_2 ER_{it} + \beta_3 R_{it+1,t+j} + \varepsilon_{it+1,t+j} \]  

(1a),

where \( \Delta E_{it+1,t+j} \) is the change in EPS for the period comprising quarters \( t + 1 \) to \( t + j \) (\( j = 1, \ldots, 3 \)), deflated by price at the beginning of quarter \( t \). We expect the estimate of the differential coefficient on negative returns, \( \beta_3 \), to be negative and significant, if more good news relative to bad news gets incorporated in accounting earnings of subsequent quarters.

To compare the explanatory power of good news versus bad news for earnings changes of subsequent quarters, we estimate the following regression separately for the good news and the bad news samples:

\[ \Delta E_{it+1,t+j} = \alpha_0 + \alpha_D D + \alpha_2 ER_{it} + \alpha_3 R_{it+1,t+j} + \varepsilon_{it+1,t+j} \]  

(2a).

We expect the \( R^2 \) to be higher for the good news sample relative to the bad news sample. Similar to the concurrent-period regressions, we also estimate the regressions

\[ \Delta E_{it+1,t+j} = \theta_0 + \theta_D D + \theta_2 ER_{it} + \theta_3 R_{it+1,t+j} + u_{it+1,t+j} \]  

(3a),

where \( R_{it+1,t+j} \) = market-adjusted return of fiscal quarters \( t + 1 \) to \( t + j \) for firm \( i \), and

\(^{24}\) Naturally, accounting earnings will also reflect other information that is only revealed to the public when earnings are announced. This will not affect our analysis as long as the publicly available news in the fiscal quarter is uncorrelated with other information conveyed through the earnings announcement.
TABLE 1  
Descriptive statistics of the samples of positive and negative news firms over all quarters during the period 1987–2007  

<table>
<thead>
<tr>
<th>Variables</th>
<th>Positive News $(N = 60,174)$</th>
<th>Negative News $(N = 31,326)$</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>STD</td>
</tr>
<tr>
<td>$EPS$</td>
<td>0.008</td>
<td>0.014</td>
<td>0.048</td>
</tr>
<tr>
<td>$\Delta E$</td>
<td>0.31%</td>
<td>0.23%</td>
<td>0.051</td>
</tr>
<tr>
<td>$ER$</td>
<td>24.63%</td>
<td>16.53%</td>
<td>0.221</td>
</tr>
<tr>
<td>$OR$</td>
<td>-10.81%</td>
<td>-8.72%</td>
<td>0.194</td>
</tr>
<tr>
<td>MV</td>
<td>1,525</td>
<td>194</td>
<td>8,948</td>
</tr>
<tr>
<td>Sales ($\text{millions}$)</td>
<td>298</td>
<td>43</td>
<td>1,322</td>
</tr>
</tbody>
</table>

Notes:  
Variable definitions: $EPS$ equals quarterly earnings per share after extraordinary items and discontinued operations divided by the beginning-of-quarter price. $\Delta E$ equals the change in earnings per share calculated relative to the same quarter of the previous year and expressed as a percentage of the beginning-of-quarter price. $ER$ is extreme three-day market-adjusted return occurring during a quarter. Extreme returns are defined by a ±10 percent cutoff applied to all firms, or a firm-specific cutoff based on the mean ± 2.58 times the standard deviation of three-day adjusted returns for each firm. Positive/negative news is based on the sign of $ER$. $OR$ equals “other returns” measured as market-adjusted returns of the quarter excluding the extreme event return, $ER$. MV is market value of the firm at the end of the quarter. Sales refers to quarterly sales in millions. STD denotes standard deviation.

$^a$ $t$-test of difference in means of the positive news and the negative news samples.

$^b$ Wilcoxon signed rank test of difference in distributions of the positive news and the negative news samples.

$$\Delta E_{t+1,t+j} = \gamma_0' + \gamma_1' R_{t+1,t+j} + v_{t+1,t+j} \quad (4a).$$

The incremental $R^2$ of (3a) relative to (4a) is expected to be higher for the good news sample compared to that for the bad news sample.

4. Empirical results  

Descriptive statistics  
Table 1 reports descriptive statistics for the positive news and negative news samples. The mean extreme three-day adjusted return is $-20.5$ percent for the negative news sample relative to 24.6 percent for the positive news sample. Correspondingly, the mean change in EPS as a percentage of beginning-of-quarter price is $-0.25$ percent for the negative news sample relative to 0.31 percent for the positive news sample. The price-deflated change in EPS of the two samples is significantly different using the $t$-test as well as the Wilcoxon signed rank test. Note that the mean of the remaining returns of the quarter excluding the extreme event returns has the opposite sign to that of the extreme returns for both samples. This indicates that the effect of the extreme event returns would be dampened if we use the returns of the entire quarter as the measure of good/bad news. The negative news
TABLE 2
Effect of negative versus positive news on concurrent-quarter change in earnings

<table>
<thead>
<tr>
<th>Variables</th>
<th>Regression (2)</th>
<th>Regression (1)</th>
<th>Regression (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>60,174</td>
<td>31,326</td>
<td>91,500</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.001</td>
<td>0.003</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.84)</td>
<td>(5.27)***</td>
<td>(0.84)</td>
</tr>
<tr>
<td>D</td>
<td>0.002</td>
<td>0.003</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(3.42)***</td>
<td>(3.19)***</td>
<td>(1.83)*</td>
</tr>
<tr>
<td>ER_{it}</td>
<td>0.012</td>
<td>0.030</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td>(4.55)***</td>
<td>(6.50)***</td>
<td>(4.55)***</td>
</tr>
<tr>
<td>ER_{it}*D</td>
<td>0.018</td>
<td>0.024</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(4.99)***</td>
<td>(4.75)***</td>
<td>(2.79)***</td>
</tr>
<tr>
<td>Average Adj $R^2$</td>
<td>0.41%</td>
<td>1.27%</td>
<td>1.04%</td>
</tr>
<tr>
<td>Ratio of $R^2$s (p-value)$^a$</td>
<td></td>
<td></td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Differential Timeliness Ratio</td>
<td>2.58</td>
<td>2.32</td>
<td>3.97</td>
</tr>
</tbody>
</table>

Notes:
The table presents results of quarterly cross-sectional regressions of seasonal earnings changes on extreme negative/positive event returns:

$$\Delta E_{it} = \beta_0 + \beta_1 D + \beta_2 ER_{it} + \beta_3 ER_{it} * D + \epsilon_{it}$$ (1)

$$\Delta E_{it} = \alpha_0 + \alpha_1 ER_{it} + \epsilon_{it}'$$ (2)

We report means of coefficient estimates and adjusted $R^2$s from cross-sectional regressions estimated for each quarter. Fama-MacBeth $t$-statistics with Newey-West autocorrelation adjustment are reported in parentheses. Differential timeliness ratio equals $({\beta}_2 + {\beta}_3)/{\beta}_2$, where coefficient estimates are means from quarterly cross-sectional regressions.

Variable definitions: $\Delta E_{it}$ is change in earnings per share for firm $i$ quarter $t$ (relative to the same quarter of the previous year), deflated by price at the beginning of quarter $t$. $ER_{it}$ is extreme three-day market-adjusted return of firm $i$ occurring during quarter $t$. Extreme returns are defined by a $\pm 10$ percent cutoff applied to all firms, or a firm-specific cutoff based on the mean $\pm 2.58$ times the standard deviation of three-day adjusted returns. Positive/negative news is based on the sign of $ER_{it}$. $D$ is a dummy variable that takes on a value of one if $ER_{it} < 0$, and zero otherwise.

$^a$F-test of the ratio of the variance of $Y$-hat of the negative news sample to the variance of $Y$-hat of the positive news sample, where $Y$-hat is the predicted value estimated from cross-sectional time-series regressions using standardized variables.

*, **, *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

The sample includes significantly larger firms relative to the positive news sample, where size is measured by market value (price times common shares outstanding) as well as sales. Untabulated results show that, relative to firms that are excluded from the test samples, the sample firms (combined negative and positive news) have higher median price-deflated EPS (0.013 vs. 0.009) and price-deflated change in EPS (0.18 percent vs. 0.01 percent) and are significantly larger in size as measured by the median market value ($198$ vs. $119$ million).
Extreme event returns and concurrent earnings changes

Table 2 reports the results of quarterly cross-sectional regressions (2) for the samples of positive news and negative news firms. The coefficient estimates and $R^2$s estimated for each of 84 quarters of our sample period are averaged across quarters.\footnote{25} Table 2 reports mean coefficient estimates and $p$-values associated with Fama-MacBeth $t$-statistics with Newey-West autocorrelation adjustment. The regression results are consistent with the hypothesis that bad news is incorporated in accounting earnings earlier than good news. The mean estimate of the slope coefficient $z_f$ is higher for the negative news sample (0.030) compared to that of the positive news sample (0.012). The regression of earnings changes on extreme returns estimated by combining the positive news and negative news samples (Regression 1) yields a mean differential slope coefficient $\beta_3$ of 0.018 for the negative news firms, which is significant at the 1 percent level. The differential timeliness ratio, $(\beta_2 + \beta_3)/\beta_2$, reported in the last row, equals 2.6.\footnote{26}

Comparing the positive and negative news samples, we find that the average $R^2$ from the regression of scaled earnings changes of quarter $t$ ($\Delta E_t$) on extreme returns of quarter $t$ ($ER_t$) is higher for the negative news sample (1.27 percent) relative to the positive news sample (0.41 percent). However, simply comparing the magnitude of $R^2$s of the two samples does not indicate whether they are statistically significantly different. The discussion in Basu 1999 also points out the difficulty in interpreting ratios of coefficients and $R^2$s in Pope and Walker 1999 absent statistical tests. We address this issue by first estimating the cross-sectional time-series regression (2) using standardized variables (mean = 0 and variance = 1). We then conduct an $F$-test of the ratio of the variance of $Y$-hat of the negative news sample to the variance of $Y$-hat of the positive news sample, where $Y$-hat is the predicted value of scaled earnings changes estimated from the standardized regression (2). Note that the variance of standardized scaled earnings changes (Y) equals one for both samples and hence the ratio of variances of $Y$-hat is equivalent to the ratio of $R^2$s and has an $F$ distribution. The $F$-test indicates that the ratio of $R^2$s is significantly greater than one. Alternatively, we also test the significance of the mean difference in quarterly regression $R^2$s of the negative versus positive news samples using the Fama-MacBeth $t$-statistic (as in Ball et al. 2000). Based on this test, the $R^2$ of the negative news sample is significantly greater than that of the positive news sample (untabulated). Overall, the results based on extreme returns as measures of good/bad news are consistent with the asymmetric timeliness hypothesis.

The last two columns of Table 2 report the regression results of two subperiods, 1987–97 and 1998–2007. While the mean coefficient estimates for both positive and negative news are lower in magnitude in the latest subperiod, we find that the mean estimate of the differential coefficient is significantly positive and the differential timeliness ratio is in fact higher in the latest subperiod (4.0 versus 2.3).\footnote{27} Overall, these results suggest that the finding of bad news having a higher impact on concurrent accounting earnings than good news is robust across subperiods.\footnote{28}

\hyperlink{Hyp25}{25} We obtain substantially similar results when we estimate pooled cross-sectional time-series regressions similar to Basu 1997 instead of the quarterly regressions reported in our tables.

\hyperlink{Hyp26}{26} Results using size-adjusted (raw) returns instead of market-adjusted returns are similar, except that the differential coefficient on negative news is significant at the 5 percent (10 percent) level and the differential timeliness ratio is lower at 1.8 (1.9) when we use size-adjusted (raw) returns.

\hyperlink{Hyp27}{27} An increase in the timeliness ratio over time is also reported by Givoly and Hayn 2000 from their estimation of the Basu regression over annual periods from 1950 to 1998 (also evident from Figure 3 in Basu 1997). However, note that the higher timeliness ratio in the latest subperiod is driven by the pre–Sarbanes-Oxley period as discussed later.

\hyperlink{Hyp28}{28} Untabulated results of year-by-year analysis also demonstrate the robustness of our results to time periods examined. We find that the differential coefficient on negative news is positive and significant in 17 of 21 sample years and the coefficient on positive news is positive and significant in 16 of 21 years.
Analysis of power: Effect of (i) length of window and (ii) magnitude of extreme news

We focus on extreme positive/negative returns over three-day event windows to enhance the power of our tests to detect asymmetric timeliness as discussed in section 2. Givoly et al. (2007) analyze the properties of the differential timeliness coefficient and the ratio of the coefficient on negative versus positive news. They first show that the differential coefficient on negative returns estimated from a firm-specific Basu regression is positive and significant for roughly twice the number of firms using quarterly time-series data relative to the annual time-series. Second, these authors argue that aggregating multiple random return shocks in an interval would impair the power of the differential coefficient on negative returns to detect asymmetric timeliness. Using a simulation procedure, these authors show that aggregation of shocks (from 1 to 20) monotonically reduces the differential timeliness measure. Third, the differential coefficient is higher in magnitude when either positive or negative news dominates the cumulative news conveyed by multiple events relative to when neither positive nor negative news dominates. Our approach combines the advantages indicated by their findings, in that we focus on short three-day windows to isolate the economic effect of individual events and we only retain observations which indicate clearly positive or clearly negative news in a given quarter and exclude mixed news observations.

Based on our data and analyses, we further demonstrate the effect of shortening the event window over which returns are cumulated and the effect of identifying more extreme events on the measure of asymmetric timeliness. In Table 3, we report the following results from estimating the cross-sectional regression (1) for each quarter: the mean coefficient estimate on positive extreme returns ($\beta_2$), the mean differential coefficient estimate on negative extreme returns ($\beta_3$), and the ratio of the coefficient estimates of negative and positive extreme returns, ($\beta_2 + \beta_3$)/$\beta_2$. In panel A, we compare results for the same set of firms when the independent variable is measured as the three-day market-adjusted return (as reported in Table 2) versus (i) market-adjusted returns cumulated over 15 days (i.e., we extend the return window by six days on either side of the three-day window), and (ii) market-adjusted returns cumulated over the full fiscal quarter. We find that the estimated coefficient on positive extreme returns increases, while the estimated differential coefficient decreases as the window is lengthened. Further, the differential timeliness ratio, ($\beta_2 + \beta_3$)/$\beta_2$, decreases monotonically from 2.6 to 1.6 to 1.4 as the return window is lengthened from 3 days to 15 days to the full quarter.30

In panel B, we identify different magnitudes of extreme three-day event returns using cutoffs of ±5 percent, ±8 percent, and ±10 percent (we do not apply the firm-specific cutoff for this test). We find that the differential timeliness ratio, ($\beta_2 + \beta_3$)/$\beta_2$, decreases monotonically from 2.2 to 1.8 to 1.4 as the cutoff for identifying the magnitude of extreme news decreases from ±10 percent to ±8 percent to ±5 percent. Overall, these results show that our focus on extreme returns over short event windows enhances the power of our tests to detect the asymmetric timeliness of negative versus positive news.

In the above analysis, we hold one of the effects constant and examine the sensitivity of results to the other effect (e.g., in panel B, we keep the three-day return window constant but vary the magnitude of extreme news). Turning one “dial” at a time helps us to

29. Taking an alternative view, Basu (2009) argues that focusing on individual economic events as in Givoly et al. 2007 is inconsistent with the fact that periodic income reporting records the aggregate effect of events occurring in the fiscal period and only rarely attempts to identify the impact of individual events (e.g., some extraordinary items).

30. The results are substantially the same when we replicate the full quarter analysis for our sample but partition on positive and negative quarterly returns instead of extreme three-day returns (timeliness ratio = 1.5).

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isolate the effect of short event windows vis-à-vis extreme news on the power of the test. From Table 3, it appears that both the short event window used to measure news and the extreme nature of news contribute to the improvement in results.

TABLE 3
Analysis of power: Effect of (i) aggregation over shorter windows and (ii) increasing magnitude of extreme returns on the differential timeliness ratio

Panel A: Effect of varying the return window to capture value-relevant information in extreme events

<table>
<thead>
<tr>
<th></th>
<th>Quarter</th>
<th>15-day</th>
<th>3-day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Coefficient on Positive News ($\beta_2$)</td>
<td>0.0278</td>
<td>0.0256</td>
<td>0.0115</td>
</tr>
<tr>
<td></td>
<td>(7.26)**</td>
<td>(7.79)**</td>
<td>(4.55)**</td>
</tr>
<tr>
<td>Differential Coefficient ($\beta_3$)</td>
<td>0.0015</td>
<td>0.0147</td>
<td>0.0182</td>
</tr>
<tr>
<td></td>
<td>(1.70)*</td>
<td>(3.04)**</td>
<td>(4.99)**</td>
</tr>
<tr>
<td>Differential Timeliness Ratio $[(\beta_2 + \beta_3)/\beta_2]$</td>
<td>1.41</td>
<td>1.57</td>
<td>2.58</td>
</tr>
</tbody>
</table>

Panel B: Effect of varying the magnitude of extreme returns as the measure of good/bad news

|                      | $|ER| > 5\%$ | $|ER| > 8\%$ | $|ER| > 10\%$ |
|----------------------|-------------|-------------|--------------|
|                      | (1)         | (2)         | (3)          |
| Coefficient on Positive News ($\beta_2$) | 0.0236 | 0.0132 | 0.0139 |
|                      | (2.58)** | (4.50)**  | (3.90)** |
| Differential Coefficient ($\beta_3$) | 0.0089 | 0.0104 | 0.0162 |
|                      | (1.65)* | (2.13)** | (2.53)** |
| Differential Timeliness Ratio $[(\beta_2 + \beta_3)/\beta_2]$ | 1.38 | 1.79 | 2.16 |

Notes:
The table presents results of quarterly cross-sectional regressions of seasonal earnings changes on extreme negative/positive event returns:

$$\Delta E_{it} = \beta_0 + \beta_1 D + \beta_2 ER_{it} + \beta_3 ER_{it}^* D + e_{it}$$

We report means of coefficient estimates from cross-sectional regressions estimated for each quarter. Fama-MacBeth $t$-statistics with Newey-West autocorrelation adjustment are reported in parentheses. Variables are defined in Table 2.

Panel A reports means of coefficients estimated from quarterly cross-sectional regressions (1) for all return intervals for the combined samples of positive and negative news firms that are identified on the basis of the three-day event return window. While negative and positive news firms are identified based on the initial three-day return criterion (as in Table 2), extreme returns for these identified constant samples are measured as market-adjusted returns cumulated over the entire fiscal quarter in column 1, and, in column 2, over a 15-day window by adding six days on either side of the three-day event window. Results reported in column 3 are the same as those reported in Table 2. In panel B, positive and negative news firms are identified on the basis of varying extreme return cutoffs ($\pm 5$ percent, $\pm 8$ percent, and $\pm 10$ percent) applied to all firms (we do not apply the firm-specific cutoff for this test). The number of observations in each column equals the number of firm-quarters identified by the respective cutoff as having extreme returns.

*, **, *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
We also benchmark our results with those of prior studies which use returns over the entire quarter to measure good/bad news. We estimate the Basu regression using market-adjusted returns of the entire quarter as the independent variable, earnings levels as the dependent variable, and designate the top (bottom) decile of the COMPUSTAT returns distribution as good (bad) news. Using these two deciles to estimate (1), we find that, although the estimated differential coefficient on negative news is positive and significant, the coefficient estimate on positive news is negative (untabulated).31 This suggests that the improvement in results is obtained not merely by the extreme nature of returns but the combination of extreme returns captured over a short return interval.

**Incremental R² results**

From Table 4, the incremental R² of (3) relative to (4) is higher for the sample of negative news firms (1.28 percent) relative to the sample of positive news firms (0.66 percent).32 Thus, even after excluding the effect of the common variation explained by the extreme event and other events occurring during the quarter, the (incremental) R² is significantly higher for the negative news sample relative to the positive news sample. To test whether the incremental R²’s are significantly different, we invoke the Frisch-Waugh-Lovell (FWL) theorem that proves the equivalence between the OLS estimator for a subvector of parameters and that obtained from OLS on the model after projecting the regressand and the regressors of interest orthogonally from other regressors (see Davidson and Mackinnon 1993: 19–24). That is, for positive news and negative news samples separately, we estimate in the first stage the cross-sectional time-series regression of (i) \( \Delta E_{it} \) on \( OR_{it} \), and (ii) \( ER_{it} \) on \( OR_{it} \), and then in the second stage we estimate the regression of standardized errors from (i) on standardized errors from (ii). We conduct an F-test of the ratio of the variance of \( Y \)-hat of the negative news sample to the variance of \( Y \)-hat of the positive news sample, where \( Y \)-hat is the predicted value estimated from the second stage regression using standardized variables. Based on the F-test, the incremental R² of the positive news sample is significantly lower than that of the negative news sample. Similarly, we find significant difference in incremental R²s from quarterly regressions of the negative and positive news samples using the Fama-MacBeth t-statistic (untabulated).

**Robustness tests**

Our definition of extreme event returns includes three-day adjusted returns relating to single as well as multiple events during a quarter. We analyze these subsamples separately to examine whether the asymmetric timeliness of negative versus positive news is evident for single as well as for multiple events. Our results show that the negative news subsample has a higher R² and slope coefficient estimate than the positive news subsample for both multiple and single event samples (untabulated). Similar to Basu et al. 2003, we also examine whether the asymmetric timeliness of negative versus positive news is more pronounced.

31. The magnitude of the differential coefficient is slightly higher than that obtained from the Basu regression (i.e., using the sign of quarterly returns instead of returns of extreme deciles to measure good/bad news). Discussions of untabulated results in O’Hanlon 1998 and Basu 2005 state that using extreme returns as an interactive variable or using squared returns to capture extreme returns obtain higher differences in slope coefficients of positive and negative news firms.

32. The low explanatory power of quarterly returns-earnings regressions is consistent with previous evidence. For example, Warfield and Wild (1992) report an R² of 0.4 percent from a regression of quarterly returns on (deflated) quarterly earnings estimated over the period 1983–86; Freeman and Tse (1992) also report an R² of 0.4 percent from a regression of unexpected quarterly returns on (deflated) quarterly unexpected earnings over the period 1984–87. This low explanatory power is consistent with the argument in Easton, Harris, and Ohlson 1992 and Dechow 1994 that the timing difference in accounting recognition of value-relevant events is more pronounced in short return intervals.
in the fourth quarter relative to interim quarters. In view of the legal liability exposure of auditors, fourth quarter earnings are expected to be more conservatively reported than interim earnings (which are generally reviewed but not audited). We find that negative news has a higher correlation with earnings changes than positive news in both interim and fourth quarters (untabulated). The difference in \( R^2 \)s of the negative and positive news samples is marginally higher in the fourth relative to interim quarters (fourth: 0.82 percent vs. interim: 0.70 percent).

Consistent with Basu 1997 and Basu et al. 2003, our results indicate that conservatism is higher in periods in which auditors face a high legal liability exposure relative to periods in which their legal liability exposure is relatively low. For the portion of our sample period that overlaps with that of Basu et al. 2003, we designate the periods 1987 and 1992–98 as low liability periods and 1988–91 as a high liability period. Further, we designate 1999 as a low liability period (due to the continuing effects of the Securities Litigation Uniform Standards Act passed in 1998). We designate 2000–02, the period prior to the passage of the Sarbanes-Oxley Act (SOX), as a high auditor liability period due to the

### TABLE 4
Incremental explanatory power of extreme event returns for seasonal earnings changes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Positive News</th>
<th>Negative News</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{Intercept} )</td>
<td>0.005 (7.94)***</td>
<td>-0.004 (4.59)***</td>
</tr>
<tr>
<td>( \text{ER}_{it} )</td>
<td>0.026 (8.37)***</td>
<td>0.041 (8.51)***</td>
</tr>
<tr>
<td>( \text{OR}_{it} )</td>
<td>0.002 (7.76)***</td>
<td>0.022 (12.73)***</td>
</tr>
<tr>
<td>Adj ( R^2 )</td>
<td>0.28%</td>
<td>0.39%</td>
</tr>
<tr>
<td>Incremental ( R^2 )</td>
<td>0.66%</td>
<td>1.28%</td>
</tr>
<tr>
<td>F-test (p-value)(^a)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Ratio of Incremental ( R^2 )'s (p-value)(^b)</td>
<td></td>
<td>(0.0001)</td>
</tr>
</tbody>
</table>

**Notes:**

The table presents results of cross-sectional regressions estimated for each quarter:

\[
\Delta E_{it} = \theta_0 + \theta_1 OR_{it} + \theta_2 ER_{it} + u_{it} \quad (3)
\]

\[
\Delta E_{it} = \gamma_0 + \gamma_1 OR_{it} + v_{it} \quad (4)
\]

We report means of coefficient estimates from quarterly regressions. Fama-MacBeth \( t \)-statistics with Newey-West autocorrelation adjustment are reported in parentheses. \( OR_{it} \) is market-adjusted returns of firm \( i \) for quarter \( t \), excluding the extreme event return, \( ER_{it} \). Other variables are defined in Table 2. Incremental \( R^2 \) refers to the difference in \( R^2 \)'s of (3) and (4) estimated for each sample using cross-sectional time-series regressions.

\(^a\)Test of significance of incremental \( R^2 \) of unrestricted (3) relative to restricted (4).

\(^b\)Test of the ratio of incremental \( R^2 \)'s of the negative news and the positive news samples. As explained in the text, we apply the Frisch-Waugh-Lovell (FWL) theorem (Davidson and Mackinnon 1993: 19–24) to obtain residuals used in the second-stage standardized regression and conduct an \( F \)-test of the ratio of the variance of \( Y \)-hat of the negative news sample to the variance of \( Y \)-hat of the positive news sample.

***Significant at the 1 percent level.
perceived effects of the impending legislation. The post-SOX period (2003–07) is designated as a low auditor liability period due to the auditor independence requirements and internal control weakness opinions that may mitigate auditor culpability in lawsuits; further, improvement in internal controls may also reduce the probability of audit failures. In addition, the designation of the period 2003–07 as low liability is also consistent with the fact that beginning in 2003 several judicial circuits either rejected or narrowed the scope of the “fraud-on-the-market” theory, thereby limiting litigation exposure (e.g., see In Re. Merrill Lynch & Co. Research Reports Securities Litigation 2003, DeMarco v. Lehman Brothers 2004, and Shiring v. Tier Technologies 2007). In general, we are more comfortable interpreting results when the classification of auditors’ liability exposure is externally validated (i.e., up to 1998). Although we are less confident in interpreting results in our later sample period, it is still interesting to examine the effects in the pre- and post-SOX periods.

The estimate of the differential coefficient on negative extreme returns is −0.007 for 1987 (low liability), 0.039 for 1988–91 (high liability), 0.019 for 1992–99 (low liability), 0.022 for 2000–02 (high liability), and 0.004 for 2003–07 (low liability). Similarly, the mean difference in \( R^2 \) of the negative versus the positive news samples is −0.47 percent for 1987 (low liability), 1.2 percent for 1988–91 (high liability), 0.77 percent for 1992–99 (low liability), 1.2 percent for 2000–02 (high liability), and 0.0 percent for 2003–07 (low liability).

**Extreme event returns and changes in cash flows**

Conservatism is an accrual accounting property and hence should have minimal effect on cash flows. While cash flows from operations are unaffected by operating accruals, institutional evidence suggests that managers have discretion in the reporting of operating cash flows via the classification of items as operating, investing, or financing. Hence, we may observe asymmetric timing of bad news with respect to operating cash flows similar to accrual accounting earnings albeit to a lesser degree, as documented in Basu 1997.

We replicate our Table 2 with change in operating cash flows (CFO) as the dependent variable instead of change in earnings. From Table 5, we find that the mean differential coefficient estimate on negative extreme returns estimated from quarterly cross-sectional regressions is insignificant. Also, the average \( R^2 \)’s from quarterly cross-sectional regressions of changes in operating cash flows of quarter \( t \) (scaled by \( P_{t-1} \)) on extreme event returns of quarter \( t \) are not substantially different for the samples of negative versus positive extreme returns. Thus, these results indicate that the asymmetric timing of recognition of bad news versus good news is not evident in operating cash flows as it is in accrual accounting earnings.

Because free cash flows are unaffected by either operating or investing accruals, we should in general not observe any asymmetry in the timing of bad news versus good news in free cash flows (see Ijiri and Nakano 1989). Results with changes in free cash flows as the dependent variable indicate no asymmetry in the recognition of bad news versus good news.

---

33. On the other hand, the level of asymmetric loss recognition may be driven by other forces related to the litigation exposure of the firm or its top executives. In fact, companies may become more conservative in their accounting in the post-SOX period due to the tightening of corporate governance and stricter accountability standards for top executives (Lobo and Zhou 2006).

34. We also find that the Basu regression using quarterly data obtains a lower mean differential coefficient estimate in the post-SOX period relative to the pre-SOX period (although the coefficient estimate on positive news continues to be negative). Lobo and Zhou (2006) find a higher differential coefficient estimate from annual Basu regressions in the initial post-SOX period up to 2003; Srivastava and Tse (2009), examining a longer period after SOX, show a decline in the (Basu) differential coefficient estimate after 2003 (in their Figure 3A).

35. These authors implicitly argue that financing accruals are not as conservative as operating and investing accruals because liabilities are not accounted for under a higher of cost or market value rule to parallel the lower of cost or market value rule for assets. We thank an anonymous reviewer for pointing this out.
Overall, our finding of no asymmetric timeliness with respect to both operating and free cash flows is consistent with the previous finding that, unlike earnings, cash flows exhibit negligible skewness in the cross-section (Basu 1995; Givoly and Hayn 2000).

Table 6 presents the results of the quarterly cross-sectional regression (2a) for the samples of positive and negative news firms and the combined regression (1a). If negative news is incorporated in accounting earnings earlier than positive news, we expect a higher correlation between subsequent quarters’ earnings changes and extreme returns of quarter \( t \) for positive news firms relative to negative news firms. We find that the mean estimate of the

### Extreme event returns and subsequent earnings changes

Table 6 presents the results of the quarterly cross-sectional regression (2a) for the samples of positive and negative news firms and the combined regression (1a). If negative news is incorporated in accounting earnings earlier than positive news, we expect a higher correlation between subsequent quarters’ earnings changes and extreme returns of quarter \( t \) for positive news firms relative to negative news firms. We find that the mean estimate of the


TABLE 6
Effect of positive news versus negative news on seasonal earnings changes of subsequent quarters

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>( \Delta E_{it+1} )</th>
<th>( \Delta E_{it+1,t+2} )</th>
<th>( \Delta E_{it+1,t+3} )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive News</td>
<td>Negative News</td>
<td>Combined</td>
</tr>
<tr>
<td>( N )</td>
<td>58,207</td>
<td>31,224</td>
<td>89,431</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.000</td>
<td>-0.001</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(-0.11)</td>
<td>(-0.57)</td>
<td>(-0.11)</td>
</tr>
<tr>
<td>( D )</td>
<td>-0.001</td>
<td>0.000</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(-0.64)</td>
<td>(1.13)</td>
<td>(-0.64)</td>
</tr>
<tr>
<td>( ER_{it} )</td>
<td>0.016</td>
<td>0.010</td>
<td>0.016</td>
</tr>
<tr>
<td></td>
<td>(6.30)**</td>
<td>(3.06)**</td>
<td>(6.30)**</td>
</tr>
<tr>
<td>( ER_{it} \cdot D )</td>
<td>-0.007</td>
<td>-0.011</td>
<td>-0.007</td>
</tr>
<tr>
<td></td>
<td>(-1.55)</td>
<td>(-1.82)*</td>
<td>(-1.55)</td>
</tr>
<tr>
<td>Adj ( R^2 )</td>
<td>0.37%</td>
<td>0.15%</td>
<td>0.58%</td>
</tr>
<tr>
<td>Ratio of ( R^2 ) (p-value)(^a)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
</tbody>
</table>

Notes:
The table presents results of quarterly cross-sectional regressions of change in earnings of subsequent quarters on extreme negative/positive event returns of the current quarter:

\[
\begin{align*}
\Delta E_{it+1,t+j} &= \beta_0 + \beta_1 D + \beta_2 ER_{it} + \beta_3 ER_{it} \cdot D + \epsilon_{it+1,t+j} (j = 1, \ldots, 3) \\
\Delta E_{it+1,t+j} &= \alpha_0 + \alpha_1 ER_{it} + \epsilon_{it+1,t+j} (j = 1, \ldots, 3)
\end{align*}
\]

(1a)

The dependent variable is change in earnings of the subsequent quarter (\( \Delta E_{it+1} \)), subsequent 2 quarters (\( \Delta E_{it+1,t+2} \)), and subsequent 3 quarters (\( \Delta E_{it+1,t+3} \)) in the three columnar panels of the table. We report means of coefficient estimates from cross-sectional regressions estimated for each quarter. Fama-MacBeth \( t \)-statistics with Newey-West autocorrelation adjustment are reported in parentheses.

Variable definitions: \( \Delta E_{it+1,t+j} \) is the change in EPS for quarters \( t + 1 \) to \( t + j \) \((j = 1, \ldots, 3)\), deflated by price at the beginning of quarter \( t \). Change in EPS is calculated relative to the same quarter of previous year. \( ER_{it} \) is extreme three-day market-adjusted return of firm \( i \) occurring during quarter \( t \), where extreme returns are as defined in Table 2. Positive/negative news is based on the sign of \( ER_{it} \). \( D \) is a dummy variable that equals one if \( ER_{it} < 0 \), and zero otherwise.

\(^aF\)-test of the ratio of the variance of \( Y \)-hat of the negative news sample to the variance of \( Y \)-hat of the positive news sample, where \( Y \)-hat is the predicted value from standardized models estimated over the sample period.

\*, **, *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
TABLE 7
Analysis of power: Effect of (i) aggregation over shorter windows and (ii) increasing magnitude of extreme returns on the differential timeliness of positive versus negative news in relation to earnings changes of subsequent quarters

Panel A: Effect of varying the return window to capture value-relevant information in extreme events

<table>
<thead>
<tr>
<th></th>
<th>Quarter</th>
<th>15-day</th>
<th>3-day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Coefficient on Positive News ($\beta_{2}^{*}$)</td>
<td>0.0656</td>
<td>0.0670</td>
<td>0.0546</td>
</tr>
<tr>
<td></td>
<td>(16.40)***</td>
<td>(11.88)***</td>
<td>(8.72)***</td>
</tr>
<tr>
<td>Differential Coefficient ($\beta_{3}^{*}$)</td>
<td>-0.0087</td>
<td>-0.0163</td>
<td>-0.0295</td>
</tr>
<tr>
<td></td>
<td>(-1.30)</td>
<td>(-1.82)*</td>
<td>(-3.98)***</td>
</tr>
<tr>
<td>Timeliness Ratio ([\beta_{2}^{<em>}/(\beta_{2}^{</em>} + \beta_{3}^{*})])</td>
<td>1.15</td>
<td>1.31</td>
<td>2.18</td>
</tr>
</tbody>
</table>

Panel B: Effect of varying the magnitude of extreme returns as the measure of good/bad news

| | $|ER| > 5\%$ | $|ER| > 8\%$ | $|ER| > 10\%$ |
|---------|-----------|-----------|-----------|
| (1)     | (2)       | (3)       |
| Coefficient on Positive News ($\beta_{2}^{*}$) | 0.0479  | 0.0568  | 0.0737  |
|         | (4.61)*** | (8.77)*** | (8.54)*** |
| Differential Coefficient ($\beta_{3}^{*}$) | -0.0289 | -0.0466 | -0.0618 |
|         | (-1.63)*  | (-3.18)*** | (-3.85)*** |
| Timeliness Ratio \([\beta_{2}^{*}/(\beta_{2}^{*} + \beta_{3}^{*})]\) | 2.52    | 5.57    | 6.19    |

Notes:
The table presents results of quarterly cross-sectional regressions of seasonal earnings changes of the subsequent three quarters on extreme negative/positive returns:

\[
\Delta E_{it+1,t+3} = \beta_{0}^{*} + \beta_{1}^{*}D + \beta_{2}^{*}ER_{it} + \beta_{3}^{*}ER_{it}D + e_{it+1,t+3}
\]  

(1a)

We report means of coefficient estimates from cross-sectional regressions estimated for each quarter. Fama-MacBeth $t$-statistics with Newey-West autocorrelation adjustment are reported in parentheses. Variables are defined in Table 6. Panel A reports means of coefficients estimated from quarterly cross-sectional regressions (1) for all return intervals for the combined samples of positive and negative news firms that are identified on the basis of the three-day event return window. While negative and positive news firms are identified based on the initial three-day return criterion (as in Table 6), extreme returns for these identified constant samples are measured as market-adjusted returns cumulated over the entire fiscal quarter in column 1, and, in column 2, over a 15-day window by adding six days on either side of the three-day event window. Results reported in column 3 are the same as those reported in Table 6. In panel B, positive and negative news firms are identified on the basis of varying extreme return cutoffs ($\pm 5$ percent, $\pm 8$ percent, and $\pm 10$ percent) applied to all firms (we do not apply the firm-specific cutoff for this test). The number of observations in each column equals the number of firm-quarters identified by the respective cutoff as having extreme returns.

*, **, *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
differential coefficient on negative extreme returns is negative but insignificant in the subsequent quarter (panel A) and negative and significant when earnings changes are cumulated over the subsequent two and three quarters (panels B and C). Similarly, $R^2$s with respect to all subsequent quarters are significantly higher for the positive news sample based on the $F$-test. Based on the Fama-MacBeth approach, the $R^2$ of the positive news sample is significantly higher than that for the negative news sample when earnings are cumulated over the subsequent two and three quarters.

**Analysis of power: Effect of (i) length of window and (ii) magnitude of extreme errors**

In Table 7, we further demonstrate the effect of shortening the event window over which returns are cumulated, and the effect of identifying more extreme events on the correlation between subsequent quarters' earnings changes and positive news relative to negative news. The table follows the same format as Table 3 except that the coefficient estimates reported are from (1a). We only report results with earnings changes cumulated over the subsequent three quarters; results for earnings changes over the subsequent two quarters are substantially similar. In panel A, we compare results for the same set of firms when the independent variable is measured as the three-day market-adjusted return versus (i) market-adjusted returns cumulated over 15 days (i.e., we extend the return window by six days on either side of the three-day window), and (ii) market-adjusted returns cumulated over the full fiscal quarter. We find that the differential coefficient on negative extreme returns becomes less negative as the window is lengthened. Further, the timeliness ratio of positive to negative news coefficients, that is, $\beta_2^\prime / (\beta_2^\prime + \beta_3^\prime)$, decreases monotonically from 2.2 to 1.3 to 1.1 as the return window is lengthened from 3 days to 15 days to the full quarter. In panel B, we identify different magnitudes of extreme three-day event returns using cutoffs of ±5 percent, ±8 percent, and ±10 percent. We find that the timeliness ratio, $\beta_2^\prime / (\beta_2^\prime + \beta_3^\prime)$, decreases monotonically from 6.2 to 5.6 to 2.5 as the cutoff for identifying the magnitude of extreme news decreases from ±10 percent to ±8 percent to ±5 percent. Overall, our results show that our focus on extreme returns over short event windows enhances the power of our tests to detect asymmetry in the relation between positive versus negative returns and subsequent earnings.

**Incremental $R^2$ results**

The results of incremental explanatory power of extreme returns for subsequent earnings changes are reported in Table 8. Consistent with the $R^2$ results in Table 6, we find that the incremental $R^2$ for extreme positive returns is significantly higher than that for extreme negative returns when earnings changes are cumulated over the subsequent one, two and three quarters based on the $F$-test. However, when we use the alternative Fama-MacBeth approach referred to earlier, we find that the difference is insignificant for the subsequent one quarter, but significant for the subsequent two and three quarters. Overall, it appears that the impact of good news on accounting earnings is delayed by at least a quarter relative to the impact of bad news.

In summary, Tables 6 and 8 document an asymmetric relation between returns and earnings cumulated over the subsequent two quarters or longer in the opposite direction to that between returns and concurrent earnings. Thus, we provide consistent evidence in relation to the dual aspects of the asymmetric timeliness hypothesis.

5. Concluding remarks

In this paper, we test whether bad news is incorporated in accounting earnings on a more timely basis than good news. We use extreme returns to identify good/bad news and find that negative extreme returns have a significantly higher explanatory power for concurrent earnings changes than positive extreme returns. On the other hand, positive extreme
TABLE 8
Incremental explanatory power of extreme event returns for seasonal earnings changes of subsequent quarters: Positive versus negative news

**Panel A:** Dependent variable is seasonal change in earnings of subsequent quarter \( (\Delta E_{it+1}) \)

<table>
<thead>
<tr>
<th>Regression</th>
<th>Positive News</th>
<th>Negative News</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(4a)</td>
<td>(3a)</td>
</tr>
<tr>
<td>( N )</td>
<td>58,207</td>
<td>58,207</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.004</td>
<td>0.000</td>
</tr>
<tr>
<td>( (5.15)^{***} )</td>
<td>( (-0.24) )</td>
<td>( (-3.32)^{***} )</td>
</tr>
<tr>
<td>( ERI_{it} )</td>
<td>0.016</td>
<td>0.009</td>
</tr>
<tr>
<td>( (6.51)^{***} )</td>
<td>( (2.88)^{***} )</td>
<td>( (6.51)^{***} )</td>
</tr>
<tr>
<td>( R_{it+1} )</td>
<td>0.030</td>
<td>0.030</td>
</tr>
<tr>
<td>( (13.06)^{***} )</td>
<td>( (12.91)^{***} )</td>
<td>( (9.40)^{***} )</td>
</tr>
<tr>
<td>Adj ( R^2 )</td>
<td>1.45%</td>
<td>1.77%</td>
</tr>
<tr>
<td>Incremental ( R^2 )</td>
<td>0.32%</td>
<td>0.19%</td>
</tr>
<tr>
<td>( F )-test (( p )-value)(^a)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Ratio of Incremental ( R^2 ) (( p )-value)(^b)</td>
<td>( (0.0001) )</td>
<td>( (0.0001) )</td>
</tr>
</tbody>
</table>

**Panel B:** Dependent variable is seasonal change in earnings of subsequent 2 quarters \( (\Delta E_{it+1,t+2}) \)

<table>
<thead>
<tr>
<th>Regression</th>
<th>Positive News</th>
<th>Negative News</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(4a)</td>
<td>(3a)</td>
</tr>
<tr>
<td>( N )</td>
<td>56,432</td>
<td>56,432</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.008</td>
<td>-0.002</td>
</tr>
<tr>
<td>( (5.30)^{***} )</td>
<td>( (-0.89) )</td>
<td>( (-3.11)^{***} )</td>
</tr>
<tr>
<td>( ERI_{it} )</td>
<td>0.041</td>
<td></td>
</tr>
<tr>
<td>( (6.93)^{***} )</td>
<td>( (5.15)^{***} )</td>
<td>( (5.15)^{***} )</td>
</tr>
<tr>
<td>( R_{it+1,t+2} )</td>
<td>0.055</td>
<td>0.054</td>
</tr>
<tr>
<td>( (11.62)^{***} )</td>
<td>( (11.38)^{***} )</td>
<td>( (11.71)^{***} )</td>
</tr>
<tr>
<td>Adj ( R^2 )</td>
<td>3.09%</td>
<td>3.75%</td>
</tr>
<tr>
<td>Incremental ( R^2 )</td>
<td>0.66%</td>
<td>0.33%</td>
</tr>
<tr>
<td>( F )-test (( p )-value)(^a)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Ratio of Incremental ( R^2 ) (( p )-value)(^b)</td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
</tbody>
</table>

**Panel C:** Dependent variable is seasonal change in earnings of subsequent 3 quarters \( (\Delta E_{it+1,t+3}) \)

<table>
<thead>
<tr>
<th>Regression</th>
<th>Positive News</th>
<th>Negative News</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(4a)</td>
<td>(3a)</td>
</tr>
<tr>
<td>( N )</td>
<td>55,130</td>
<td>55,130</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.010</td>
<td>-0.003</td>
</tr>
<tr>
<td>( (3.95)^{***} )</td>
<td>( (-1.11) )</td>
<td>( (-1.92)^{*} )</td>
</tr>
<tr>
<td>( ERI_{it} )</td>
<td>0.054</td>
<td></td>
</tr>
<tr>
<td>( (8.95)^{***} )</td>
<td>( (2.46)^{**} )</td>
<td>( (11.41)^{***} )</td>
</tr>
<tr>
<td>( R_{it+1,t+3} )</td>
<td>0.068</td>
<td>0.068</td>
</tr>
<tr>
<td>( (10.85)^{***} )</td>
<td>( (10.59)^{***} )</td>
<td>( (11.41)^{***} )</td>
</tr>
</tbody>
</table>

(The table is continued on the next page.)
returns have a higher correlation with earnings changes cumulated over the subsequent two and three quarters. The latter result is in contrast to prior studies that find that, contrary to expectation, negative returns continue to have a higher correlation with future earnings up to three years ahead. Our focus on extreme events is consistent with the argument in Beaver and Ryan 2005 that tests of asymmetric timeliness have more power in samples of large magnitude shocks, and enables us to document the dual aspects of asymmetric timeliness. Of course, this increase in power using a restricted sample comes at the cost of generalizability of results to a broader cross-section of firms.

If managers strategically disclose information to the market, it is possible that the pattern we observe is merely a result of their news dissemination strategy. Specifically, the pattern we observe may result from managers delaying the announcement of bad news to the market until its disclosure in earnings is imminent (Gigler and Hemmer 2001), but disclosing good news some periods prior to its recording. This seems a less likely scenario than our stated hypothesis. First, it is not clear why managers would preannounce good news and then not have their current earnings deliver. In fact, prior empirical evidence (Skinner 1994) suggests that managers announce bad news more promptly to avoid potential litigation. Second, not all news events that arrive in the market are announced by managers and, moreover, managers may not have the discretion to strategically disclose all news events (for example, acquisitions). Third, we identify events occurring during a fiscal quarter and not over the period from the previous quarter’s earnings announcement to the current quarter’s earnings announcement. Hence, the effect of preannouncements by managers that usually occur after the quarter-end but before the earnings announcement will not be included in our analysis of the current quarter.

\[
\begin{align*}
\Delta E_{it+1,t+j} &= \theta_0 + \theta_1 ER_{it} + \theta_2 R_{it+1,t+j} + u_{it+1,t+j} (j = 1, \ldots, 3) \quad (3a) \\
\Delta E_{it+1,t+j} &= \gamma_0 + \gamma_2 R_{it+1,t+j} + v_{it+1,t+j} (j = 1, \ldots, 3) \quad (4a)
\end{align*}
\]

We report means of coefficient estimates from cross-sectional regressions estimated for each quarter. Fama-MacBeth t-statistics with Newey-West autocorrelation adjustment are reported in parentheses.

Variable definitions: \(R_{it+1,t+j}\) = market-adjusted return of fiscal quarters \(t+1\) to \(t+j\) for firm \(i\). Other variables are as defined in Table 6. Incremental \(R^2\) refers to the difference in \(R^2\) of (3a) and (4a) for each sample estimated over the sample period.

\(a\)Significance based on F-test of incremental \(R^2\) of unrestricted (3a) relative to restricted (4a).

\(b\)Significance based on test of the ratio of incremental \(R^2\)'s of the positive news versus the negative news samples.

\(*\), **, *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.
As discussed earlier, research using contemporaneous positive/negative returns as proxies for good/bad news has encountered difficulties in interpreting results of quarterly analysis. We find consistent evidence of asymmetric timeliness in the reporting of quarterly earnings. Further, we find no evidence of asymmetric timeliness in operating as well as free cash flows, consistent with the prior observation that, unlike earnings, operating cash flows exhibit negligible skewness. Given that our event-based approach has the advantage of providing powerful tests of asymmetric timeliness for statistical, conceptual and theoretical reasons, it can be effectively used to address other issues related to accounting conservatism.

References


*CAR* Vol. 30 No. 1 (Spring 2013)


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