How Much New Information is there in Earnings?

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First version: 4 November 2007
This version: 19 February 2008

Acknowledgments

We are grateful for the comments of John Core, Richard Frankel, Thomas Lys, Darren Roulstone, Douglas Skinner, Andy Van Buskirk, Joe Weber, and participants at the 2007 Nicholas Dopuch Conference at Washington University, a seminar at University of Pennsylvania, and a brownbag workshop at University of Chicago. Ball gratefully acknowledges financial support from the University of Chicago, Graduate School of Business.

Abstract

We quantify the relative importance of earnings announcements in providing new information to the share market, using the r-squared in a regression of securities' calendar year returns on their four quarterly earnings announcement "window" returns. The r-squared, which averages approximately five to nine percent, measures the proportion of total information incorporated in share prices over a year that is associated with earnings announcements. We conclude that the average quarterly announcement is associated with approximately one to two percent of total annual information and one quarter of one percent of annual trading volume, thus providing only a modest amount of incremental information to the market. The results are consistent with the view that the primary economic role of accounting earnings is not to provide timely new information to the share market, but lies elsewhere, for example in settling contracts (Watts and Zimmerman, 1986) and in disciplining prior expectational information (Gigler and Hemmer, 1998; Ball, 2001). We also report increased information during earnings announcement windows in recent years, and a convex relation between the informativeness of earnings event windows and size, which could be due in part to increased concurrent release of management forecasts, particularly for larger firms. Substantial information is released in analyst forecast revisions prior to earnings announcements, but not after.

1. Introduction

We propose a simple but robust method of quantifying the relative importance of earnings announcements in providing new information to the share market.[1] The method provides a measure of the proportion of the total information incorporated in share prices over a year that is associated with its four quarterly earnings announcements. The measure is the r-squared obtained from a regression of securities' calendar year returns on their four earnings announcement "window" returns.

Our principal result is that the four earnings announcement collectively are associated with five to nine percent approximately of the total information incorporated in share prices over the year, with the lower end of the range occurring when influential outliers are excluded. The average quarterly earnings announcement thus is associated with about one or two percent of total annual information. We also report abnormal share trading volume at quarterly announcements of one quarter of one percent approximately of annual trading volume. These results imply that earnings announcements provide only a modest amount of incremental information to the market. The comparatively low "surprise" content of earnings announcements is to be expected, because accounting earnings is low-frequency (quarterly and annual) and primarily backward-looking, whereas other information (and hence share price) is high-frequency (i.e., plentiful) and both forward-looking and backward-looking.

While an inkling of the relatively low informativeness of earnings announcements can be gleaned from a close reading of prior studies – including Ball and Brown (1968), Beaver (1968), Foster, Olsen and Shevlin (1984) and Bernard and Thomas (1990) – the literature does not provide a robust and precise measure of how important earnings are as a source of new information to the share market. Perhaps as a consequence, in our experience there are widely divergent beliefs on this

[1] We employ deliberate redundancy in the term *new* information to stress our focus on the "surprise" content of earnings at the time of its announcement – and to differentiate our focus from longer-horizon views of the earnings-returns relation. We therefore do not widen the event window to capture the price reaction to prior information, such as analysts' and managers' earnings forecasts. If incorporating more timely information into the price reaction to earnings is taken to the limit (i.e., incorporating all information sources), then the earnings-returns r-square converges on 100% (over the life of the firm, it is 100%, assuming clean surplus accounting), and the research question no longer is the amount of earnings "surprise."

important issue. Thus, our primary objective is to provide a more precise and robust measure of the amount of new information in earnings than has hitherto been available.

The research design has several desirable properties. First, it does not require estimates of an earnings "surprise" variable. The only earnings-related data required are announcement dates, not quantities. Consequently, the design does not require the estimation of an earnings expectation variable, such as lagged earnings or analysts' consensus forecasts, and thus is not affected by errors in measuring earnings expectations.

A second attractive feature of this design is that, by allowing the regression slopes to differ from unity, the event-window price reaction is allowed to spill over into correlated price changes outside the window.[2] In comparison with simply studying return volatility within the earnings announcement window, as in Bamber et al. (2000), the research design therefore does not assume market "efficiency." Indeed, the method provides a test of efficiency, since slopes greater (less) than unity imply initial market under- (over-) reaction to earnings-related information, and slopes equal to unity are consistent with market "efficiency." The research design therefore provides a new measure of the extent of earnings mispricing. It also is less susceptible to under-estimating the informational role of earnings arising from any initial market under-reaction to earnings.[3]

We report that all four slope coefficients from the regression of annual returns on the quarterly event window returns exceed unity, consistent with "post earnings announcement drift" (Ball and Brown, 1968; Foster, Olsen and Shevlin, 1984; Bernard and Thomas, 1989) and with price momentum generally (Jegadeesh and Titman, 1993), though not all are significantly different from unity. The average of the four slopes is approximately 1.007 – 1.125, depending on the return specification and outlier exclusion, implying that 0.7% – 12.5% of the price adjustment during the earnings

[2] However, our approach does not incorporate revisions in stock prices after the end of the calendar year.

[3] If the market initially under-reacts to earnings information, volatility inside the event-window decreases and volatility outside the window increases. Both effects bias downward the estimated relative importance of earnings information in research designs that address only the event-window abnormal price reaction.

announcement window spills over into the remainder of the calendar year. This is a considerably lower estimate than obtained under conventional research designs.

Recent years exhibit a sharp increase in the proportion of annual information released during the earnings event windows. The increase occurs perhaps as far back as 2000, and is particularly acute in the last two years of our sample, 2004 and 2005. It could be due to increased financial reporting quality subsequent to Enron/Sarbanes-Oxley, a reduction in analyst forecast activity, Regulation FD, chance, macroeconomic conditions, or a combination of factors. It does not appear to be caused by a change in sample composition. An increase in management forecasts released concurrently with earnings (Anilowski, Feng and Skinner, 2007) explains only a small amount of the change.

The analysis can be extended to measure the relative amount of information that is produced during periods adjacent to the earnings event windows. The results suggest that information arrival is slightly lower than normal both before and after earnings announcements, which is somewhat surprising. In the weeks prior to earnings announcements, one might expect information production by managers, analysts and investors (e.g., Kim and Verrecchia, 1997), but we find no evidence of unusual price activity. In the weeks following earnings announcements, one might expect analysts to revise their forecasts of future earnings, but the data suggest that revision consists of incorporating the new information in the announcement into the forecasts, rather than producing new information.

Our regression design also can be used to quantify the relative informativeness of some other variables, such as dividends and analysts' forecasts. To further investigate our result that the post-announcement period is not one of unusual price volatility, we study the earliest forecast revision by an analyst after each of the four quarterly earnings announcements. The average abnormal adjusted r-square from annual regressions of calendar year returns on returns at the four forecast revisions is approximately zero. In contrast, the average abnormal adjusted r-square for the four latest forecast revisions before the earnings announcements is 4.4%, and increases substantially in recent years.

This research design is simple, but we believe it sheds much light on the issue of the amount of new information conveyed in earnings and thus – indirectly – on the economic role of accounting earnings. If the primary economic role of accounting earnings is not to provide new information to the share market in a timely fashion, then it might lie elsewhere, for example in the settlement of contracts (Watts and Zimmerman, 1986) and in the confirmation (and hence disciplining) of prior expectational information (Gigler and Hemmer, 1998; Ball, 2001).

Section 2 reviews the literature and ideas that form the background to this study. Section 3 describes the sample, and section 4 outlines the event-window return volatility results. Sections 5 and 6 expand the analysis to measure the extent of information produced during adjacent non-announcement windows and by analysts' earnings forecast revisions. Section 7 outlines the trading volume results. Section 8 offers conclusions and some thoughts concerning future research.

2. Background

There are valid reasons not to expect earnings to be a source of substantial new information, even though earnings announcements undoubtedly contain an element of "surprise." One reason is the myriad sources of more timely information available to investors, including aggregate or macro-economic level information, industry-level information and firm-specific information. Examples of aggregate level information are statistical releases by the Federal Reserve and Government agencies, prices from capital, foreign exchange and derivatives markets, and releases of survey data on macroeconomic expectations, consumer confidence and sentiment. Industry-level information includes industry association surveys and reports, sales data, hotel occupancy rates, airline capacity utilization, etc. Firm-specific information includes changes in management, changes in strategies, mergers and acquisitions, restructurings, new products, product sales figures and forecasts, factor and product prices, labor negotiations, security analyst reports and forecasts, rating agency reports and

decisions, management forecasts, etc. Market participants combine this information with their knowledge of the business to form expectations about company performance. Given this plethora of more timely information, it is not surprising that the majority of firms report earnings that are closely in line with investors' and analysts' expectations. Indeed, managers have incentives to minimize earnings surprises, and hence to release information on factor and product prices, product sales etc. in a more timely fashion than by awaiting its incorporation in the formal earnings release.

A second reason to expect earnings to be untimely is the nature of accounting "recognition" principles and practices, which are geared toward reporting actual outcomes rather than toward incorporating the latest revisions in expectations of future outcomes. While accruals introduce an element of forward-looking expectations, and while accounting earnings follows a random-walk-like process and hence contains information about future earnings, it is largely a backward-looking variable. In contrast, share prices are based on expectations. A third reason to expect lack of timeliness is that earnings is a low frequency variable in comparison with share prices, in the sense that earnings is reported discretely in time (i.e., quarterly), whereas new information flows to the market – and prices are revised – almost continually. These reasons lead us to the expectation that earnings announcements are unlikely to be a major source of timely new information.

Nevertheless, it could be easy to gain the impression from the financial press that earnings announcements are a very important source of new information for the stock market. The financial press devotes substantial coverage to earnings announcements and the price changes on and around the day they are made. While some of the price changes can appear substantial, it is important to note that there is no "baseline" adjustment here for the underlying volatility of share prices, that is for the typical magnitude of the price changes that occur in the absence of earnings announcements. Further, no adjustment is being made for selection effects, that is for the press focusing its reporting on the larger

earnings and price changes. The fact that earnings announcements contain an element of surprise does not in itself attest to their relative importance as a source of new information.

A similar impression could be garnered from much of the academic literature, which has a checkered history on this issue. Ball and Brown (1968, p. 176) drew two contrasting conclusions:

> "The initial objective was to assess the usefulness of existing accounting income numbers by examining their information content and timeliness. … Its content is … considerable. However, the annual income report does not rate highly as a timely medium."

Despite the clear conclusion that earnings are lacking in timeliness, Bamber, Christensen and Gaver (2000) document subsequent literature that favored the opposite conclusion, frequently leaving the impression that earnings announcements are periods when substantial new information is released to the market. Those authors attribute this in large part to a misinterpretation of the results in Beaver (1968). They conclude that subsequent evidence of low timeliness – reported for example in Oppong (1980), Atiase (1985) and Bamber (1986, 1987) – did not substantially influence the literature's interpretation of Beaver's (1968) results. They claim (Bamber, Christensen and Gaver, 2000, p. 111) that the literature ignored the effect on Beaver's results of an unrepresentative sample, consisting of 143 small non-12/31 firms with less than 20 annual *Wall Street Journal* news items. [4]

We believe an additional problem in interpreting many prior studies arises from the way those studies have explicitly or implicitly implemented "baseline" adjustments. It can be misleading to compare event-window price behavior with equivalent behavior over non-event weeks or days, or especially on a trade-by-trade basis, without placing these short windows in a longer-term perspective. For example, Bernard and Thomas (1989) graphically depict daily price movements against a baseline of zero change. While these analyses give an indication of how earnings announcement price behavior compares with behavior in non-announcement days, they can give a misleading impression of how

[4] As they take care to point out, the misinterpretation occurs in subsequent literature. Beaver (1968, p.72) clearly outlines his sample selection criteria, and even cautions the reader as follows: "As long as the criteria are visible ex ante, the population for which the study's findings are relevant can be easily identified. Also, the sample criteria can be relaxed in future studies to discover the generality of the findings presented here for other populations."

significant the event-window price behavior is in the overall information environment. Thus, if price volatility on quarterly earnings announcement days is double its typical daily level, a graphical representation of volatility around event days will reveal a substantial "spike" at the event – yet the increase in volatility is only in the order of one-sixtieth of a quarter's total volatility (assuming for illustrative purposes that non-announcement daily returns are i.i.d. and sixty trading days per quarter).

Similarly, Beaver (1968) reports that squared unexpected price changes are on average 67% higher in the earnings announcement week than in non-announcement weeks, and that trading volume on average is abnormally higher in announcement weeks by approximately 33%. Yet these increases are in the order of only 5% and 2% respectively of total quarterly price behavior (assuming Beaver's results for annual earnings apply to every quarter, assuming that non-announcement weekly returns are i.i.d., and ignoring any upward bias due to sample selection or skew).

Comparing event-window price or trading behavior with normal non-event behavior over short intervals such as days or weeks can create an exaggerated impression of informativeness, relative to comparisons with behavior over longer intervals. We propose that a more appropriate baseline for comparison is total price volatility over the fiscal-period of the earnings report, or an interval of equal length to that of earnings. An equal-length baseline seems much more relevant to assessing the relative importance of earnings announcements in providing new information to investors, relative to other sources during the same interval as that covered by the earnings report.

To be sure, a careful reading of Ball and Brown (1968), Beaver (1968), Foster, Olsen and Shevlin (1984), Bernard and Thomas (1990), Nichols and Wahlen (2004) and other studies could support the conclusion that earnings announcements are not a timely source of information, even though only Ball and Brown (1968) explicitly state that conclusion. In addition, the results of Oppong (1980) and Atiase (1985) could cause strong doubts as to the extent of earnings informativeness. Similarly, to highlight the effects of small firms in Beaver (1968), Bamber et al. (2000) show that the

magnitude of the market reaction at earnings announcements by Fortune 200 firms, which constitute two-thirds of the NSYE's total market value, is statistically indistinguishable from price movements in several of the weeks surrounding the earnings announcements. Recently, Beekes and Brown (2006a,b) reformulate the Ball and Brown (1968) analysis of annual earnings timeliness. Further, Butler, Kraft and Weiss (2007) report that, prior to the introduction of mandatory quarterly reporting, there was little difference between the price behavior of firms reporting quarterly and those reporting only semi-annually, suggesting that a higher frequency of reporting does not add substantial new information. There thus is available evidence to doubt that earnings are a source of substantial new information. However, no study to our knowledge has quantified the relative importance of earnings as a timely source of information in the total information environment and, perhaps as a consequence, in our experience there are widely divergent opinions on this issue.

The method we use to estimate the relative importance of earnings announcements as a timely source of information measures the proportion of the total information incorporated in share prices over a year that is associated with the four quarterly earnings announcements during the year. The measure is the r-squared from a regression of securities' calendar year returns on their four earnings announcement window returns. This measure of timeliness focuses on the use of accounting earnings in the share market, in which prices are revised with a high frequency and in which earnings announcements are part of a substantial flow of information, so timeliness is measured in terms of price behavior over short intervals. It is to be distinguished from measures of timeliness such as the slope coefficients in Basu (1997) regressions of annual earnings on annual returns.[5] The latter are relevant to contractual settings, such as debt and management compensation, in which settlement is made – and hence outcomes are determined – with only an annual frequency, and in which settlement is based on financial statement information alone.

[5] Butler, Kraft and Weiss (2007, p.183) draw a distinction between "intraperiod" and "long-horizon" timeliness.

3. Sample

Our sample consists of all firm-years with data available on the quarterly COMPUSTAT and daily CRSP return files from January 1972 to December 2005. The sample period is driven by the availability of earnings announcement dates on COMPUSTAT. The earnings announcement window is defined as day -1 to day +1, where day 0 is the COMPUSTAT announcement date, though our research design is relatively insensitive to the length of the window chosen. We include only firm-years that have exactly four earnings announcements in the calendar year and whose four entire event windows lie within the calendar year. We also require firm-year observations to have returns data on the CRSP daily file for at least 240 trading days (out of approximately 252 trading days on average). We report results for all firms, and separately for firms with and without December fiscal year-ends.

4. Event-window Contribution to Annual Return Volatility

To provide a more precise and more readily interpretable measure of how much value-relevant information is provided at earnings releases, we regress calendar-year returns on returns in each of the four 3-day "event windows" surrounding the four earnings announcements during the year. The adjusted r-square from this regression provides a measure of the proportion of total return volatility in a year that is associated with earnings announcements.

Calendar-year buy and hold returns are computed from daily CRSP returns. Earnings announcement returns are buy and hold returns over days -1 to +1, relative to the COMPUSTAT earnings announcement date, day 0. It is conventional to calculate arithmetic returns, but our results are somewhat sensitive to whether returns are calculated in arithmetic or logarithmic terms, so both are presented. Log returns can be meaningfully aggregated across time, and hence are more consistent with a linear regression of annual returns on short-window earnings announcement returns. However,

averaging logarithmic returns across a portfolio of stocks is problematic, and log returns exhibit some left skew. Conversely, arithmetic returns can be logically aggregated across securities, but not time, and exhibit considerable right skew. The appropriate choice is unclear, so we present both.

To check the influence of outliers on our conclusions, in untabulated results we repeat the analyses after trimming of all variables by deleting both 1% extremes. Earnings announcement returns explain an even lower proportion of calendar-year returns when extreme observations are deleted, though the tenor of the conclusions is largely unaffected.

4.1 Summary Statistics for Arithmetic and Logarithmic Returns

Table 1 reports annual summary statistics for calendar year returns and for returns in each of the four quarterly earnings announcement windows. The convention followed is that the quarter designates the calendar quarter in which the earnings *announcement* occurs, which typically is in the quarter following the fiscal period over which earnings are calculated. For example, "Quarter 1" is January through March, which for a December 31 firm is the calendar quarter in which the prior fiscal year's and fourth-quarter's earnings typically are released. Panels A and B report statistics for arithmetic and logarithmic returns, calculated from identical firm-year samples.

The different distributional properties of arithmetic and logarithmic returns are apparent. In the average calendar year over 1972-2005, the median arithmetic and logarithmic returns are similar (8.9% and 6.7% respectively), but the means (20.1% and 3.3%) and the skew statistics (+4.125 and -0.447) differ substantially. The mean 1972-2005 logarithmic return (3.3%) is not even significant (Fama-MacBeth t-statistic of 0.83). Analogous differences are observed in each of the four 3-day event window return distributions, and in the both the 1972-1989 and 1990-2005 sub-periods.

The first two quarterly earnings announcement windows in the calendar year experience significant positive mean and median arithmetic and logarithmic returns. The arithmetic (logarithmic) mean announcement window return for both quarters is 0.6% (0.3%) over three days, which is

approximately 50% (25%) on an annualized basis. This is consistent with an expected risk premium during earnings announcement periods.[6] However, the medians during the announcement windows are only 0.1%. Both the mean and median earnings announcement returns in the third and fourth quarters are not significantly different from zero. We cannot rule out the possibility that the differences in earnings announcement returns across quarters are merely sampling error.

More than 2% of all firms experience zero returns in each of the four quarterly three-day earnings announcement windows over the 1972-2005 period, consistent with the absence of material new information for these firms. The frequency falls substantially over time, from approximately 3.2% in the first sub-period to 1.6% in the second.

4.2 Abnormal R-squares: New Information in Earnings

Tables 2 and 3 report results from annual regressions of calendar-year returns on the four quarterly earnings announcement returns during the calendar year. The tables present statistics for arithmetic and logarithmic returns, respectively, calculated from identical firm-year samples. Sample sizes rise from 1308 firms in 1972 to 6014 in 2000, and falls to 4834 in 2005. Panel A presents full-sample results. Panels B and C break the results down for December year-end and other firms.

Abnormal r-square is calculated relative to the expected value of the adjusted r-square under the null hypothesis that daily returns, including earnings announcement window returns, are identically and independently distributed (i.i.d.) across time. The four 3-day windows then would contain 4.8% (12/252) of total annual information in an average year with 252 trading days. Assuming i.i.d. daily returns, the expected r-square under the null then is approximately 4.8% in an average year.[7]

For the full sample in Panel A and for all years 1972-2005, the adjusted r-squares from the annual regressions average 10.6% for arithmetic returns and 13.9% for logarithmic returns. Allowing

[6] See Chari, Jagannathan and Ofer (1988), Ball and Kothari (1991), Lamont (1998), Cohen, Dey, Lys and Sunder (2007), and Lamont and Frazzini (2007).

[7] The number of trading days varies between 248 in 2001 and 254 in 1992 and 1996. The expected r-square is computed annually, based on the number of trading days in that year. It varies only slightly, between 4.7% and 4.8%.

for the 4.8% expected value under the null, the estimated average abnormal price volatility associated with the four earnings announcement periods in a year is 5.8% of total annual volatility for arithmetic returns, and 9.1% for logarithmic returns. Each quarterly earnings announcement period therefore is associated on average with approximately 1.5% to 2.3% of all the value-relevant information affecting stock prices in a year. The abnormal r-square is positive in 33 of the 34 years (arithmetic) and all years (logarithmic), and hence is statistically significant under a binomial sign test at a p-value < 0.0001.

Economic significance is another matter. Being associated with 1.5% to 2.3% of total annual price volatility does not seem consistent with quarterly earnings announcements being a major source of new information. Two points suggest even this is an upward biased estimate. First, it reflects the price response to all information that is released during the earnings announcement window, not only earnings. Concurrent information includes management commentary on the financials, management earnings forecasts (we report evidence on concurrent management forecasts below), press commentary, dividend announcements, restructuring plan announcements, and analyst forecast revisions. The 1.5% to 2.3% estimate therefore reflects both earnings and other information. Second, the average regression slope coefficients exceed unity, the effect being that these estimates incorporate some correlated price response that occurs outside the 3-day announcement period.

4.3 Slope Coefficients: Mispricing Earnings

For the full sample in Panel A and for all years 1972-2005, and for both arithmetic and logarithmic returns, each of the four slope coefficients from the regression of annual returns on the quarterly event window returns exceeds unity. The coefficients are statistically significantly different from one at the conventional 5% level for event windows in the first through third calendar quarters for arithmetic returns, and in the third calendar quarter for logarithmic returns. This result is consistent with the seemingly delayed reaction to earnings known as “post earnings announcement drift” (e.g., Ball and Brown, 1968; Bernard and Thomas, 1989, 1990). It also is consistent with delayed reaction to

information in periods prior to the earnings announcement that is corrected at the time of the announcement, and with price momentum generally (Jegadeesh and Titman, 1993).

Economically, the slopes are close to unity, the expected coefficient if the market correctly prices earnings and earnings-related information (specifically, if there is no systematic under- or over-reaction that is corrected within the same calendar year). The average of the four slopes is approximately 1.16 for arithmetic returns (Table 2, Panel A) and 1.07 for logarithmic returns (Table 3, Panel A), implying that 7% to 16% of the price adjustment during the 3-day earnings announcement window spills over into the remainder of the calendar year. This is a considerably lower estimate of the proportion of delayed market reaction to earnings than is obtained by correlating post-announcement returns with earnings, as distinct from earnings announcement returns (Ball and Brown, 1968; Foster, Olsen and Shevlin, 1984; Bernard and Thomas, 1989). We suspect that this occurs in part because our measure is relatively free of the bias that arises from earnings being correlated with expected returns and changes in expected returns (Ball, 1978). It also could be due to post-announcement returns in this research design being truncated at the end of the calendar year, which could particularly affect earnings announcements in the fourth quarter. Against this, we note that the design incorporates what could be labeled "pre earnings announcement drift" – under-reaction to earnings-related information prior to the earnings announcement that is corrected at the time of the announcement.

4.4 Individual Years and Sub-period Results

Figure 1 depicts the time series of abnormal r-squares from the annual regressions. The most noticeable result is a sharp increase during recent years in the proportion of annual price revision that occurs in the four earnings event windows. In Panel A of Tables 2 and 3, the annual abnormal r-square

increases sharply somewhere in the 2000-2005 period. The last two years with data, 2004 and 2005, exhibit the highest and third-highest abnormal r-squares in the entire 34 year period.[8]

One explanation for the sharp increase is an increase in the relative informativeness of earnings in recent years. This explanation is consistent with the evidence in Francis, Schipper and Vincent (2002), and also with the Landsman and Maydew (2002) finding that return volatility at earnings announcements has increased over time. An increase in relative informativeness of earnings could arise from an exogenous increase in earnings shocks, due for example to macroeconomic conditions, or from changes in financial reporting due to increased "fair value" accounting or in response to the Enron/Sarbanes-Oxley events. Alternatively, it could arise from an increase in the surprise content of earnings due to a reduction in analyst forecast activity, due in turn to Regulation FD or to restrictions imposed on analysts subsequent to the biased-research scandals in 2000-2003, though results reported in section 6.2 appear to rule this explanation out.[9] Of course, the increase could be due to chance.

One feasible explanation, a change in sample composition, is made plausible by the fall in sample size from 6014 to 4834 firms between 2000 and 2005. We investigate this by studying a constant sample of 1713 firms with data in every year over 1996-2005. Results for arithmetic and logarithmic returns are presented in Panels A and B of Table 3A, respectively. In both panels, the annual abnormal r-square increases sharply in the 2000-2005 period.[10] The observed increase in abnormal r-square over 2000-2005 thus does not appear to be due to a change in sample composition.

Preliminary evidence suggests the apparent increase in information released in the announcement window is due only in small part to an increase in concurrently released management forecasts (e.g., Waymire, 1985; Hoskin, Hughes and Ricks, 1986; Anilowski, Feng and Skinner, 2007;

[8] While this result is consistent with the evidence in Francis, Schipper and Vincent (2002) and the Landsman and Maydew (2002) finding that announcement period return volatility has increased over time, it largely post-dates their sample periods.
[9] Allegations of biased analyst reports surfaced in 2000. In early 2001 New York's attorney general, Eliot L. Spitzer, commenced an investigation that culminated in an April 2003 settlement involving $1.4bn in fines and fraud charges.
[10] The abnormal r-squares in Table 3A generally are larger than for their full-sample counterparts in Tables 2 and 3, especially in the later years, possibly due to the ten-year sample selection bias.

Rogers, Skinner and Van Buskirk, 2008). Anilowski, Feng and Skinner (2007, Table 2) report a substantial increase in concurrent management forecasts commencing in 2001. Table 3B presents the annual frequency of management forecasts as a function of event time. It reports, for each calendar year, the percentage of earnings announcement where a management forecast was issued on the day of the earnings announcement (day 0), on the day before the earnings announcement (day -1), on the day after the earnings announcement (day +1), and outside earnings announcement windows (i.e., between day +1 of the previous quarter and day -1 of the current quarter). Management forecasts are obtained from the First Call database for all firms with earnings announcements on the CRSP-COMPUSTAT merged database, and are available from 1994 onwards. All management forecasts in First Call are considered, irrespective of their periodicity (quarterly or annual) and whether the forecast was a number, a range or a qualitative statement. Consistent with the evidence in Anilowski, Feng and Skinner (2007, Table 2), after approximately 2001 a larger fraction of firms release forecasts concurrently with earnings announcements. By 2005, one in six earnings announcements is accompanied by a concurrent management forecast.[11] This result suggests two things. First, the increased frequency of concurrent management forecasts could explain at least part of the sharp increase in the apparent informativeness of earnings announcements after 2000. Second, the abnormal r-squares reported in Tables 2 and 3 could overstate the informativeness of earnings announcements.

To better understand this issue, Table 3C reports results for a sample that excludes all firm-years in which a management forecast was issued in any of the four earnings announcement windows. From 1994 (when the First Call data commence) to 2002, there are only minor differences between these results and the full-sample results in Tables 2 and 3. In the last three years 2003-2005, the

[11] The effect of increased coverage of management forecasts by First Call is unclear. Anilowski, Feng and Skinner (2007, p.60) conclude: "First Call is not likely to include all management earnings forecasts for all firms (its coverage is likely to be more complete for firms with greater analyst following) and that its coverage is likely to have expanded over time, most notably in 1998." This does not explain the observed post-2001 increase in management forecasts between earnings windows, unless First Call has increased its coverage of forecasts only if concurrent with earnings announcements.

average abnormal r-square falls by a little over 1%. Results are not sensitive to the choice of arithmetic versus logarithmic returns. This evidence implies concurrent management forecasts explain only a small amount of the informativeness of earnings announcements as reported in Tables 2 and 3 its sharp increase in recent years.

4.5 December Fiscal Year-end Firms

The abnormal r-squares on average are approximately one fifth larger for non-December fiscal year-end firms than December-end firms. For arithmetic returns in Table 2, the averages are 5.5% for December firms and 6.7% for non-December firms. For logarithmic returns in Table 3, the respective averages are 8.5% and 10.2%. These results are consistent with prior evidence that the earnings of December-end firms are less incrementally informative (Bamber, Christensen and Gaver, 2000).

4.6 Deleting Extreme Observations

To assess whether results are sensitive to extreme outliers, we re-estimate them for a sample that excludes, in each calendar year, the extreme 1% on either side of calendar-year returns, earnings announcement returns and forecast event-window returns. Deletion of an individual quarter requires deletion of the entire firm/year from the regression. The average annual abnormal r-squares fall substantially, for the entire period and the two sub-periods. The full-period estimate falls from 5.8% to 4.7% (arithmetic) and from 9.1% to 5.9% (logarithmic). The regression slopes now are closer to, and not significantly different from, the null prediction of unity.

4.7 Good and Bad News

We next examine how the average r-square varies in years with predominantly good news versus those with predominantly bad news, defined as years with positive and negative aggregate sample mean returns. In untabulated results, the eleven calendar years where mean returns are negative exhibit average abnormal adjusted r-squares of 9.9% using logarithmic returns, while the average is only 8.8% in the twenty three years with positive mean returns. All slope coefficients are

higher on average in bad-news years (1.15, 1.14, 1.26 and 1.05 in quarters 1 to 4 respectively) than in good-news years (1.01, 1.02, 1.05 and 1.03). Extreme observations are not deleted.

4.8 Effect of Size

Conventional wisdom has it that the timeliness and informativeness of earnings is greater among smaller firms because they have a sparser "information environment." Smaller firms attract lower media coverage and analyst following, resulting in lower information production outside their earnings announcement windows (Atiase, 1985; Collins, Kothari and Rayburn, 1987). The problem with this thesis is that it addresses only the supply of information to the market, and ignores the likelihood that the demand for information increases in size. Simply put, large firms have more information requiring analysis than do small firms: they tend to have a wider range of products, greater geographical dispersion in operations, and more customers. If all the activities of a firm were independent, there would be no scale economies in information production and we would expect firm size to be proportional to the amount of observed information produced, and hence proportional to proxies for information production such as the number of analysts following its stock. We then would expect both the unconditional variance of returns and the conditional (on earnings announcements) variance of returns to decline with size at the same rate, leaving the relative informativeness of earnings independent of size. Because activities likely are positively correlated (e.g., reaction to a new product is similar across consumers), following standard asset-pricing logic we would expect information production and the relative informativeness of earnings to convex functions of size.

To examine how the relative importance of information conveyed at earnings announcements varies with size, each year we sort firms into quintiles based on size and then estimate separate calendar-year regressions for each size quintile. The results from these size-sorted regressions are presented in Panels A through C of Table 4 for three proxies for size: market capitalization, book value of assets and book value of equity. Returns are arithmetic (similar results apply to logarithmic returns).

Extreme observations are not deleted. For each of the three size proxies, the abnormal adjusted r-square averaged across all years is best described as a convex function of size. In each case, the smallest size quintile exhibits the *lowest* abnormal r-square: 5.7%, 5.1% and 5.2%. The largest size quintile exhibits the second-lowest abnormal r-square for two proxies and the third-lowest for the other. Panel D of Table 4 reports similar results for market-to-book quintiles.

Atiase (1985) is the standard reference for the hypothesis that the surprise content of earnings announcements decreases in firm size. But Atiase studied a tiny sample over only two quarters, the second fiscal quarters of 1971 and 1972. Following our nomenclature, these announcements occurred in the third calendar quarter. Because this could be an unrepresentative sample or the relation with size could have changed systematically over time, in Table 5 we report results by size quintile, calendar quarter, and time period. Panels A through C of Table 5 report the average (across 1972-2005) of the announcement window average return, return variance and variance ratio, by quarter, size quintile and time period. The variance ratio is the cross-sectional variance of quarterly earnings announcement window returns divided by the cross-sectional variance of calendar-year returns, and is expressed as a percentage. Firms are sorted into size quintiles based on prior year-end market capitalization. Returns are arithmetic (similar results are obtained for logarithmic returns). Results for the largest and smallest size quintiles in the third calendar quarter of 1972 are highlighted, for comparison with Atiase (1985), who studied third quarter 1971 and 1972 (we do not have 1971 data).

The substantial average returns for small stocks during earnings event windows reported in Panel A of Table 5 are consistent with prior evidence in Chari, Jagannathan and Ofer (1988), Ball and Kothari (1991), Lamont (1998), Cohen, Dey, Lys and Sunder (2007), and Lamont and Frazzini (2007). The smallest size quintile earns a total of 4.1% during the twelve days of the four quarterly event windows, at an approximate annual rate of 86%, well in excess of the average for any other size

quintile. Panel B helps explain why small stocks earn comparatively large returns in the event windows: they experience comparatively large risk (measured by volatility) during that period.

Panel C of Table 5 shows that the variance ratio, which measures event-window volatility relative to total annual volatility and hence the *relative* informativeness of earnings, generally is a convex function of size. In the full 1972-2005 period, the second or third size quintiles generally exhibit the lowest variance ratios in all calendar quarters. In the 1990-2005 subperiod, the smallest size quintile exhibits the *lowest* variance ratio in two of the four calendar quarters. In three of four calendar quarters of 1972, including the third quarter studied by Atiase, the smallest size quintile exhibits a larger variance ratio than the largest size quintile, consistent with Atiase's result, but this is an atypical period. [12] We find a generally convex pattern across size quintiles.

5. Information in Adjacent Non-event Windows

We next examine information flows in the periods surrounding the earnings announcement windows. We study various event-time windows that are distanced in event time from the earnings announcement windows by plus or minus 0, 5, 10, 15, 20, 25 or 30 trading days. For example, when the distance from the earnings-announcement window is +10 trading days, calendar-year return is regressed annually on returns in the four non-earnings announcement windows comprising days +9 to +11 relative to the four annual COMPUSTAT earnings announcement dates. When the distance from the earnings-announcement window is 0 trading days, calendar-year return is regressed annually on returns in the four earnings announcement windows themselves. The period studied is approximately the six weeks before, the week of, and the six weeks after the quarterly earnings announcement – a period of approximately one quarter in length, centered on the announcement day.

[12] Ironically in view of their own hypothesis – that the literature over-generalized Beaver's results from a small, unrepresentative sample – Bamber et al. report Atiase's results without emphasizing that his sample also is small and unrepresentative. Atiase studies just 200 firms in two quarters in two size groups (below $20 million and above $400 million in market capitalization), and his small sample results do not appear to generalize to the population.

As previously, only firms with exactly 4 earnings announcements in a calendar-year are included in the analysis. We also require the 3-day event windows to be in the same calendar year as the year for which annual return (the dependent variable) is measured. The regressions are estimated annually from arithmetic returns and the average of the slope coefficients and the average of the abnormal adjusted-r squares are plotted in Figure 2.

Not surprisingly, the abnormal adjusted r-square in Panel A of Figure 2 is highest when the 3-day event window corresponds to the earnings-announcement window. It is slightly negative in each of the six weeks before and six weeks after announcement.[13] It is lowest immediately prior to the earnings announcement window, i.e., during the 3-day window commencing five trading days before the earnings announcement window. This result holds in both the 1972-1989 and the 1990-2005 periods, and for logarithmic as well as arithmetic returns. The result is consistent with private information production being comparatively depressed immediately before earnings announcements, for example because an anticipated public announcement decreases investors' incentives to produce new information or because information production opportunities are reduced in that period. [14]

The implication that information arrival is slightly lower than normal both before and after earnings announcements is somewhat surprising. In the weeks prior to earnings announcements, managers and analysts might be expected to release above-normal amounts of information. In the weeks following earnings announcements, analysts commonly revise their forecasts of future earnings. The data suggest that much forecast revision immediately after earnings announcements consists of incorporating the new information in the announcement into the forecasts, rather than producing new information. We investigate this issue more closely in the following subsection.

[13] If returns were independent across time (and hence the regression slopes were equal to unity), the positive abnormal r-square in the event week would mechanically induce a small negative abnormal r-square in the average non-event week. The comparatively small abnormal r-squares in the adjacent non-event windows explains why the event-window abnormal r-square estimates are relatively insensitive to the chosen event window width – as the window widens, the contribution of the window to annual return volatility rises at approximately the same rate as its i.i.d. benchmark.

[14] Cf. Kim and Verrecchia (1997).

Panel B of Figure 2 reports the average slope coefficients from 3-day event windows around the earnings announcement dates. The coefficients for all the non-earnings-announcement-windows are substantially less than unity, implying systematic reversals, consistent with initial market over-reaction. The average quarter's slope coefficient is lowest for the 3-day event window in the week immediately before the earnings announcement window, which seems to be the period when returns are more driven by liquidity and other transitory shocks than price-relevant information.

6. Analyst Earnings Forecasts

Our regression design also can be used to quantify the relative informativeness of some other variables, such as dividends, 10-Q filings and earnings forecasts by managers and analysts. This section reports some results on analyst earnings forecasts.

6.1 Earliest post-announcement analyst forecast revision

We investigate abnormal price volatility at the earliest analyst forecast revision to take place after each of the four quarterly earnings announcements. The objective is to better understand the result that information arrival appears to be slightly lower than normal after earnings announcements, a period when analysts might be expected to revise their forecasts of future earnings in light of the earnings outcome and associated information. Analyst forecast data are obtained from the IBES detailed unadjusted data set. Data are available from 1985 onwards, and 2004 is the last year with sufficient data.

Table 6 Panel A presents results for forecast event window returns. For comparison, Panel B presents results for the earnings announcement windows of the same sample of firm/years. Forecast event window returns are arithmetic buy and hold returns for the 3 days surrounding the first analyst forecast revision after the previous quarter's earnings announcement. For a firm/year to be included in the sample, there must be at least one forecast revision in each calendar quarter.

Forecasts issued within two trading days after the earnings announcement are excluded, to avoid overlap between the 3-day earnings and 3-day forecast windows. Results are sensitive to a small number of extreme outliers, so we report results for a sample that also excludes, in each calendar year, the extreme 1% on either side of calendar-year returns, earnings announcement returns and forecast event-window returns. Deletion of an individual quarter requires deletion of the entire firm/year from the regression. The resulting sample size peaks at 1075 in 1992 and averages 538 firms per year.

The average abnormal adjusted r-square from annual regressions of calendar year returns on the four forecast revisions returns in Panel A is -0.2%. The window surrounding the earliest forecast revision after earnings announcements therefore is not a period of unusual price volatility, consistent with the evidence in Figure 2. This result suggests that forecast revisions made immediately after earnings announcements tend to incorporate the new information released in earnings, rather than to produce new information. Each of the four regression slopes is less than unity, though none is significantly less.

To include forecasts issued on the first trading day after the earnings announcement, in Table 7 we reduce both the forecast and earnings event windows to one day (i.e., to comprise their respective announcement days). Forecasts issued on the same trading day as the earnings announcement are excluded. In all other respects the analysis is as reported above for Table 6. The sample size increases slightly, from an average of 538 firms per year to 600. Results in Table 7 are similar to those for 3-day windows. The average abnormal adjusted r-square from annual regressions of calendar year returns on forecast revisions returns in Panel A is 0.1%, implying that the day of the earliest forecast revision made after an earnings announcement is not a period of unusual price volatility.

6.2 Latest pre-announcement analyst forecast revision

Forecast revisions made immediately prior to earnings announcements are another matter. Table 8 investigates abnormal price volatility at the latest analyst forecast revision to take before each

of the four quarterly earnings announcements. Apart from not trimming extreme observations (due to the small sample size), the procedure followed is the same as for post-announcement forecasts as reported in Table 6.

In contrast with the post-announcement forecasts, the four latest forecast revisions before the earnings announcements exhibit an average abnormal adjusted r-square of 4.4%. This increases substantially in recent years, indicating that reduced analyst activity is not an explanation for the increase in relative informativeness of earnings reported above.

7. Trading Volume Results

We also examine the abnormal trading volume during the earnings announcement windows, without taking a position on its interpretation.[15] For each firm-year, we first compute the trading volume at each of the four quarterly earnings announcements as a percent of total annual trading volume. We then subtract an estimated 4.8% "normal" volume, assuming that daily trading volume is i.i.d. across time.

Panel A of Table 9 reports annual summary statistics for this abnormal trading volume measure. The mean across all years of abnormal volume during the four 3-day event windows taken together is 1.77% of annual volume, or only 0.44% per individual quarterly announcement window.[16] Median abnormal volume during the four 3-day event windows taken together is even lower, at 1.08% (0.27% per quarter), consistent with right skew in volume (Bamber et al., 2000). The small average percentage increase in volume at earnings announcements could indicate that earning announcements are not a major source of new information to investors, but it also is consistent with other explanations

[15] See for example Beaver (1968), Karpoff (1987), Holthausen and Verrecchia (1990), Kim and Verrecchia (1991a, 1991b, 1994), Lee (1992), Harris and Raviv (1993), Kandel (1995), Bamber, Barron and Stober (1999), Odean (1999), Baker and Stein (2004) and Dey and Radhakrishna (2006).

[16] The 1.78% figure is calculated by subtracting its 4.8% expected value from the 6.5% figure for total volume at all earnings announcements during the year. All figures are expressed as a percent of annual volume.

– for example, that most trading during the year occurs for reasons unrelated to new information, such as liquidity, taxes and portfolio rebalancing.

The proportion of annual trading volume occurring at the four earnings announcements is slightly higher in the post 1990 years at 6.9%, compared to 6.2% in the pre 1990 years. Mean abnormal volume increases from 1.47% of annual volume to 2.12%; for the average quarterly announcement, this is an increase from 0.37% to 0.53% of annual volume. The years with the ten highest percentages all fall in the 1990-2005 period, while nine of the bottom ten years occur in the 1972-1989 period. These results could imply that earnings announcements have increased in importance as a source of information, although the increase arguably is small and could be due to increased skew in the size distribution of firms or to increased trading for reasons unrelated to new information.

Panel B of Table 8 repeats the analysis for firms with December fiscal year-ends, because Bamber et al. (2000) find that their abnormal volume at earnings announcements is lower than for non-December-end firms. Consistent with their results, the mean abnormal volume at the four earnings releases for this sample is 1.53% of annual volume, or 0.38% for the average quarterly announcement. Again, medians are lower.

8. Conclusions and Some Implications

Bamber, Christensen and Gaver (2000) show that the literature has favored the conclusion that earnings announcements provide substantial new information to the share market. They attribute this tendency to a misinterpretation of the results in Beaver (1968), and note that contrary evidence in sources such as Ball and Brown (1968), Oppong (1980) and Atiase (1985) tended to be downplayed. Perhaps accounting researchers *wanted* earnings to contain substantial new information.

While there is ample reason and evidence to doubt that earnings are a source of some but not substantial new information, no study to our knowledge has quantified the relative importance of earnings announcements in the total information environment. We introduce a measure of relative informativeness that allows the full reaction to earnings news to occur outside the announcement window, and hence that does not assume market efficiency. The measure is the r-square from a regression of securities' calendar year returns on their four earnings announcement window returns. Our principal result is that the average quarterly earnings announcement is associated with abnormal price volatility of only one to two percent approximately of total yearly volatility and abnormal trading volume of only approximately one quarter of one percent of annual volume.

We also report a sharp increase during recent years in the proportion of annual information released in the earnings event windows. The increase occurs perhaps as far back as 2000, and is particularly acute in the last two years of our sample, 2004 and 2005. It could be due to increased financial reporting quality subsequent to Enron/Sarbanes-Oxley, a reduction in analyst forecast activity, Regulation FD, chance, macroeconomic conditions, or a combination of factors. It does not appear to be caused by a change in sample composition. An increase in management forecasts released concurrently with earnings (Anilowski, Feng and Skinner, 2007) explains only a small amount of the change.

Information arrival is slightly lower than normal both before and after earnings announcements, which is somewhat surprising. In the weeks prior to earnings announcements, one might expect information production by managers, analysts and investors (e.g., Kim and Verrecchia, 1997), but we find no evidence of unusual price activity. In the weeks following earnings announcements, one might expect analysts to revise their forecasts of future earnings, but the evidence suggests that the earliest post-announcement revisions consist largely of incorporating the new information in the announcement into the forecasts, rather than producing new information. In contrast, the latest forecast

revisions before the earnings announcements is associated with abnormal volatility, which increases substantially in recent years.

The proportion of annual information associated with earnings event windows appears to be a convex function of firm size, in contrast with the evidence Atiase (1985) obtained from a small sample of firms and quarters. A similar result is obtained for the market-to-book ratio.

The results we report on the amount of *new* information released at earnings announcements have several interesting implications, including:

a. The results are consistent with the hypothesis that the primary economic role of accounting earnings is not to provide new information, but to be used in periodic contract settlements.[17] Earnings, and other financial statement variables affected by earnings, such as leverage and distributable capital, affect outcomes in debt and compensation contracts. These contracts do not provide for settlement on a continuous basis, but with annual or other discrete frequencies. The short term timeliness of earnings, in the sense of when changes in the value of equity are reflected in publicly-announced earnings, relative to when information about the changes becomes available during the year, is not of primary importance in these uses. [18]

b. A related issue is the role of earnings in the confirmation of prior information. Gigler and Hemmer (1998) and Ball (2001) argue that accurate reporting of actual earnings outcomes exerts an accountability discipline on managers' and analysts' more-timely expectational statements, such as growth prospects and earnings forecasts. To the extent that managers can be viewed as having an implicit contract with investors to be truthful in such statements, this also is a type of contract settlement role for earnings. Here too, the role of earnings is not to be timely. Its role is to increase the veracity of more timely sources of information.

c. The results help with interpreting calls to increase timeliness, such as Lev (1989), or to incorporate more "fair value" information based on managers' expectations into the financial statements.

d. The evidence that the timeliness of earnings announcements on average has increased in recent years could indicate that earnings has increased in importance as a source of new information. It appears to be due only in small part to increased management forecasting concurrent with earnings announcements

[17] This hypothesis due to Watts and Zimmerman (1986). Holthausen and Watts (2001) and Ball (2001) discuss the role of financial reporting in debt and compensation/governance contracting.

[18] Our research design focuses on timeliness on a daily basis, and hence is less in assessing earnings usefulness in contracting contexts where settlement is on an annual basis than annual-return studies such as Ball and Brown (1968) and Basu. However, one could argue that the lack of earnings timeliness is the reason these contracts are settled only annually.

e. Our findings that earnings are largely anticipated potentially explain the generally low magnitudes of analysts' forecast errors.

f. The evidence suggests that analyst forecasts issued before earnings announcements are associated with new information to the market, but immediate post-announcement forecasts are not. These results help with interpreting the economic role of analysts' forecasts. Is the primary economic role of analysts the production of new information, or is it to distill the implications for expected earnings of the information that is already incorporated in prices, or both?

g. Our method allows us to reconcile some results from short-interval and long-interval event windows.

h. Beaver, Lambert and Morse (1980) address the issue of bi-directional causality between earnings and returns, an issue that is central to the Dietrich, Muller and Riedl (2007) commentary on estimating the Basu (1997) model. Our results imply that earnings do not exert a substantial causal influence on annual returns.

i. The results we report on relative price volatility associated with earnings announcements help interpret the source and magnitude of the "earnings announcement premium" reported in Chari, Jagannathan and Ofer (1988), Ball and Kothari (1991), Lamont (1998), Cohen, Dey, Lys and Sunder (2007), and Lamont and Frazzini (2007).

j. While it does not assume efficiency, our research design provides a new test of market efficiency, conditional on earnings. This test is not very susceptible to bias arising from positive correlation between earnings and expected returns (Ball, 1978), and perhaps not coincidentally it produces lower estimates of market under-reaction to earnings (price "drift") than previously. We estimate that a low proportion of the total price reaction to a quarterly earnings announcement during its calendar year occurs outside the three-day announcement "window."

This research design is simple, but we believe it sheds much light on the issue of the amount of new information conveyed in earnings and thus – indirectly – on the role accounting earnings plays in the economy.

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Figure 1: Abnormal adjusted r-squares and slope coefficients from annual 1972-2005 cross-sectional regressions of calendar-year returns on returns at the four quarterly earnings announcements.

Calendar-year buy and hold returns are computed from daily CRSP returns. Earnings announcement returns are buy and hold returns for the 3 days surrounding the COMPUSTAT announcement date. The sample is all firm-years with available data on the quarterly COMPUSTAT and daily CRSP files. Firm-years with other than four earnings announcements or less than 240 trading days are excluded.

Panel A: Abnormal adjusted r-squares from annual 1972-2005 cross-sectional regressions of calendar-year arithmetic returns on arithmetic returns at the four quarterly earnings announcements in the calendar year

Figure 1 (contd)

Panel B: Slope coefficients from annual 1972-2005 cross-sectional regressions of calendar-year arithmetic returns on arithmetic returns at the four quarterly earnings announcements in the calendar year

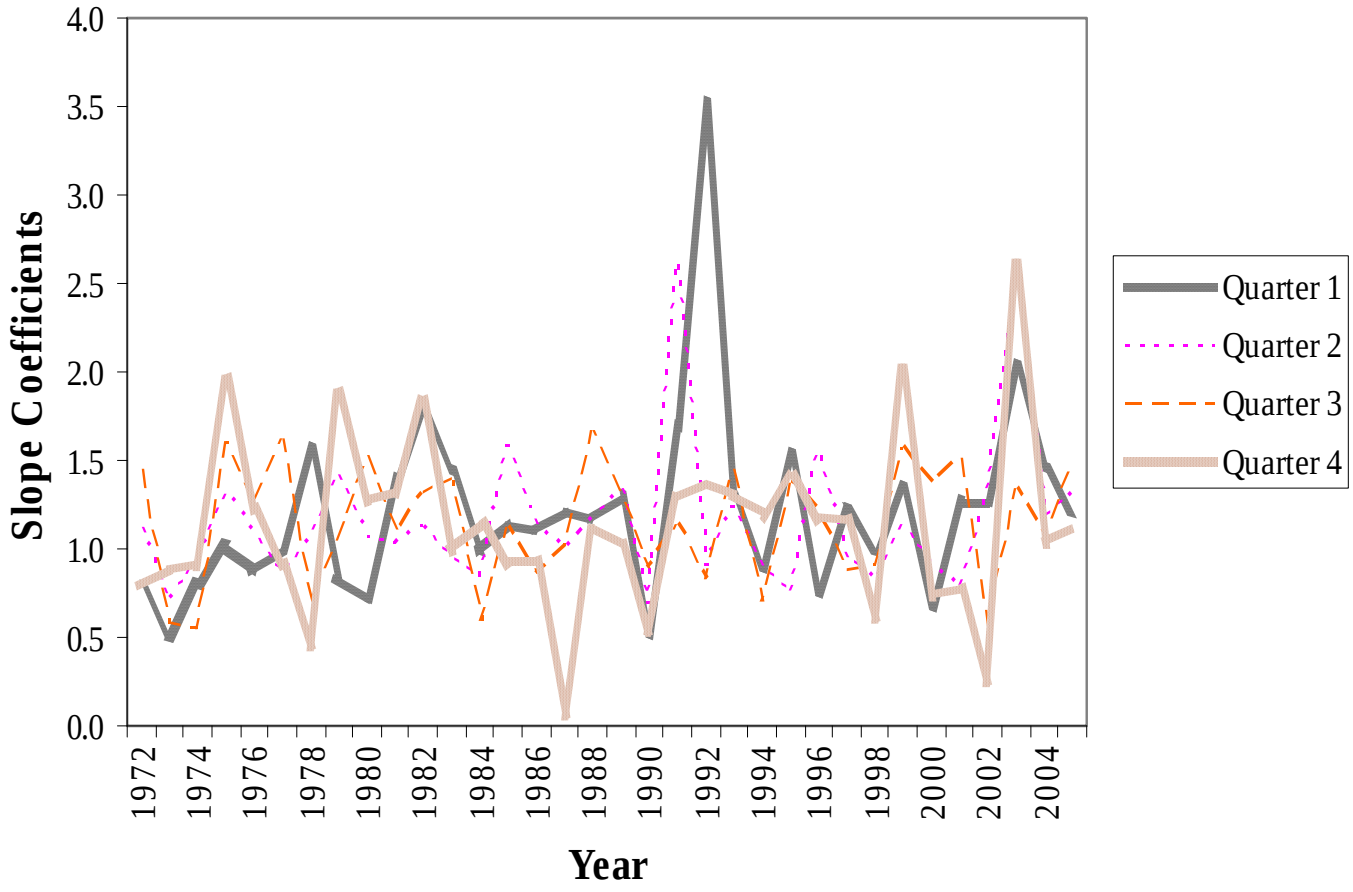

Figure 2

Average slope coefficients and adjusted abnormal r-squares from annual regressions of calendar year arithmetic returns on arithmetic returns in various four 3-day windows that vary in event time relative to the four quarterly earnings-announcement windows.

The event-time windows here are distanced in event time from the earnings announcement windows by plus or minus 0, 5, 10, 15, 20, 25 or 30 trading days. For example, when the distance from the earnings-announcement window is +10 trading days, calendar-year return is regressed annually on returns in the four non-earnings announcement windows comprising days +9 to +11 relative to the four annual COMPUSTAT earnings announcement dates. When the distance from the announcement window is 0 trading days, calendar-year return is regressed annually on returns in the four earnings announcement windows themselves. Statistics are averages of regression parameters across years.

Calendar-year arithmetic buy-and-hold returns are computed from daily CRSP returns. Earnings-announcement window returns and non-announcement window returns are arithmetic buy and hold returns over the 3 days. The sample is all firm-years with available data on the quarterly COMPUSTAT and daily CRSP files. Firm-years with other than four earnings announcements or less than 240 trading days are excluded. Abnormal adjusted r-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns.

Panel A: Average abnormal adjusted r-square in event time

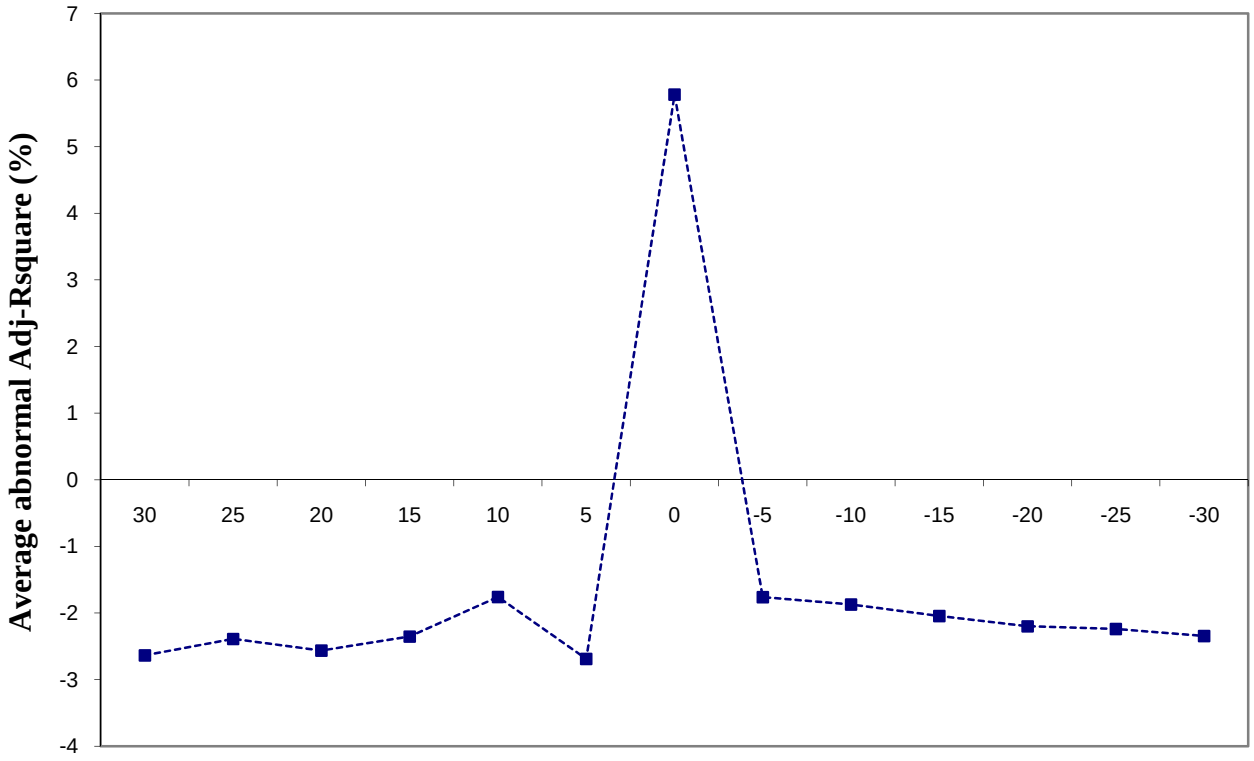

Figure 2 (contd)

Panel B: Average slope coefficients in event time

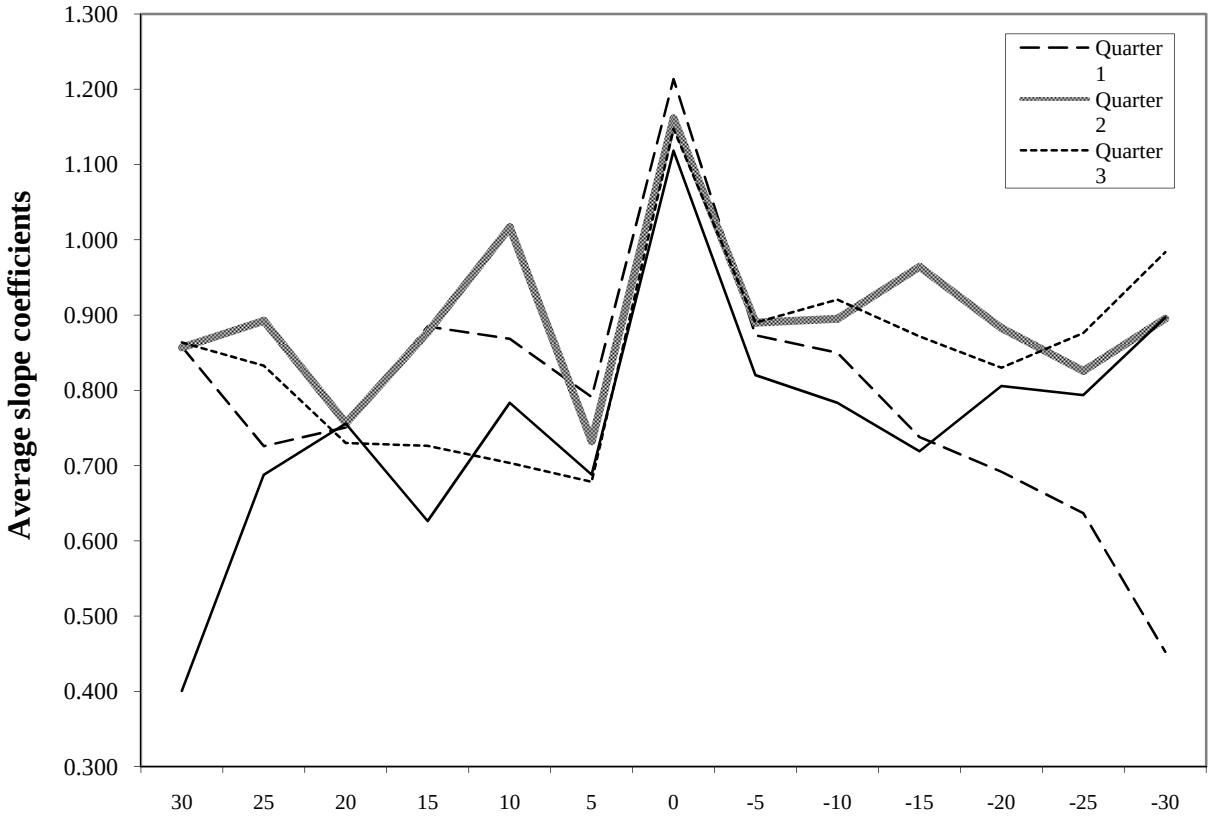

Table 1: Summary statistics for returns in calendar years and the four announcement windows

Calendar-year buy-and-hold returns are computed from daily CRSP returns. Earnings announcement returns are buy and hold returns for the 3 days surrounding the COMPUSTAT announcement date. Firm-years with other than four earnings announcements or less than 240 trading days are excluded. Annual statistics (mean, median, skew) from the distribution of return across stocks are computed for the calendar-year return and for the four earnings announcement window returns. The table presents means of these statistics across years, with associated Fama-Macbeth t-statistics. Panel A presents statistics for arithmetic returns, while Panel B presents results for logarithmic returns.

Panel A: Arithmetic returns

		No. of obs.	Mean	Median	Skew-ness	% obs. = 0	% obs. > 0
Calendar-year returns	**1972-2005 Mean**	3503	0.183	0.089	4.125	0.37	58.8
	t-statistic		4.35	2.61	5.74		
	1972-1989 Mean	2334	0.166	0.103	2.248	0.40	61.3
	1990-2005 Mean	4817	0.201	0.072	6.237	0.34	56.1
Earnings announcement window returns in quarter 1	**1972-2005 Mean**	3503	0.006	0.001	1.731	2.22	50.5
	t-statistic		4.87	1.98	7.32		
	1972-1989 Mean	2334	0.007	0.001	1.223	2.86	50.7
	1990-2005 Mean	4817	0.005	0.001	2.304	1.50	50.3
Earnings announcement window returns in quarter 2	**1972-2005 Mean**	3503	0.006	0.001	2.989	2.47	50.2
	t-statistic		4.43	2.09	3.14		
	1972-1989 Mean	2334	0.004	0.001	1.238	3.22	49.0
	1990-2005 Mean	4817	0.008	0.002	4.960	1.61	51.6
Earnings announcement window returns in quarter 3	**1972-2005 Mean**	3503	0.001	-0.000	1.220	2.47	48.3
	t-statistic		1.29	-0.05	5.23		
	1972-1989 Mean	2334	0.002	0.000	1.043	3.31	48.0
	1990-2005 Mean	4817	0.001	-0.001	1.419	1.52	48.7
Earnings announcement window returns in quarter 4	**1972-2005 Mean**	3503	0.003	-0.000	1.915	2.48	48.5
	t-statistic		1.77	-0.22	5.25		
	1972-1989 Mean	2334	0.000	-0.002	1.728	3.38	46.7
	1990-2005 Mean	4817	0.006	0.002	2.126	1.47	50.7

Table 1 (contd)

Panel B: Logarithmic returns

		No. of obs.	Mean	Median	Skew-ness	% obs. = 0	% obs. > 0
Calendar-year returns	**1972-2005 Mean**	3503	0.033	0.067	-0.447	0.37	58.8
	t-statistic		0.83	2.02	-3.91		
	1972-1989 Mean	2334	0.061	0.077	-0.325	0.40	61.3
	1990-2005 Mean	4817	0.001	0.057	-0.585	0.34	56.1
Earnings announcement window returns in quarter 1	**1972-2005 Mean**	3503	0.003	0.001	0.170	2.22	50.5
	t-statistic		2.41	1.98	1.59		
	1972-1989 Mean	2334	0.005	0.001	0.301	2.86	50.7
	1990-2005 Mean	4817	0.001	0.001	0.021	1.50	50.3
Earnings announcement window returns in quarter 2	**1972-2005 Mean**	3503	0.003	0.001	0.325	2.47	50.2
	t-statistic		2.47	2.08	2.16		
	1972-1989 Mean	2334	0.002	0.001	0.412	3.22	49.0
	1990-2005 Mean	4817	0.004	0.002	0.226	1.62	51.6
Earnings announcement window returns in quarter 3	**1972-2005 Mean**	3503	-0.002	-0.000	-0.242	2.47	48.3
	t-statistic		-1.24	-0.06	-1.51		
	1972-1989 Mean	2334	0.000	0.000	0.071	3.31	48.0
	1990-2005 Mean	4817	-0.004	-0.001	-0.594	1.52	48.7
Earnings announcement window returns in quarter 4	**1972-2005 Mean**	3503	-0.001	-0.000	-0.123	2.48	48.6
	t-statistic		-0.53	-0.23	-1.00	9.16	55.37
	1972-1989 Mean	2334	-0.003	-0.002	0.142	3.38	46.7
	1990-2005 Mean	4817	0.001	0.002	-0.420	1.48	50.7

Table 2: Annual regressions of calendar year returns on the four announcement window returns, based on arithmetic returns.

Calendar-year arithmetic buy and hold returns are computed from daily CRSP returns. Earnings announcement returns are arithmetic buy and hold returns for 3 days surrounding the COMPUSTAT announcement date. Firm-years with other than four earnings announcements or less than 240 trading days are excluded. Panels A, B and C present annual coefficients for all, December-end and non-December-end firms. The p-values are from F-tests that the coefficients equal 1. Abnormal R-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns.

Panel A: All Firms

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1972	0.066	0.777	1.130	1.453	0.786	7.5	1308
1973	-0.320	0.494	0.701	0.576	0.881	4.3	1667
1974	-0.264	0.798	0.944	0.541	0.906	7.1	2069
1975	0.592	1.018	1.332	1.606	1.958	7.6	2125
1976	0.415	0.877	1.100	1.245	1.215	5.7	2126
1977	0.138	1.004	0.857	1.624	0.908	5.3	2159
1978	0.143	1.569	1.067	0.684	0.447	4.0	2123
1979	0.371	0.850	1.445	1.050	1.874	2.1	2041
1980	0.295	0.715	1.058	1.536	1.261	2.9	2027
1981	0.049	1.385	1.027	1.099	1.311	12.0	1994
1982	0.286	1.779	1.127	1.317	1.826	8.5	1956
1983	0.335	1.431	0.961	1.395	0.987	6.6	2471
1984	-0.055	0.980	0.848	0.599	1.143	6.0	2840
1985	0.290	1.147	1.599	1.125	0.921	3.9	2900
1986	0.068	1.111	1.129	0.864	0.927	7.8	2829
1987	-0.087	1.219	0.993	1.022	0.063	5.4	3081
1988	0.223	1.168	1.172	1.678	1.113	7.6	3097
1989	0.166	1.302	1.346	1.304	1.011	6.6	3203
1990	-0.169	0.520	0.683	0.888	0.528	2.5	3220
1991	0.467	1.689	2.618	1.139	1.285	8.1	3335
1992	0.184	3.513	0.903	0.833	1.354	7.4	3592
1993	0.222	1.291	1.254	1.446	1.292	6.0	3906
1994	-0.022	0.884	0.899	0.707	1.184	5.1	4374
1995	0.339	1.530	0.756	1.377	1.406	2.0	4879
1996	0.165	0.757	1.562	1.212	1.174	4.5	5232
1997	0.224	1.216	0.952	0.873	1.151	4.7	5495
1998	-0.039	0.992	0.827	0.913	0.606	1.2	5709
1999	0.385	1.351	1.140	1.582	2.012	-1.1	5415
2000	-0.055	0.669	0.909	1.376	0.739	5.0	6014
2001	0.195	1.260	0.787	1.510	0.768	1.7	5753
2002	-0.118	1.269	1.309	0.543	0.253	8.8	5396
2003	0.741	2.032	2.538	1.339	2.604	6.6	5034
2004	0.221	1.455	1.184	1.056	1.024	9.6	4899
2005	0.060	1.209	1.318	1.500	1.106	13.6	4834
1972-2005 Mean	**0.162**	**1.213**	**1.161**	**1.147**	**1.118**	**5.8**	**3503**
p-value (H_0=1)		**0.03**	**0.04**	**0.02**	**0.19**		
1972-1989 Mean	**0.151**	**1.090**	**1.102**	**1.151**	**1.086**	**6.2**	**2334**
1990-2005 Mean	**0.175**	**1.352**	**1.227**	**1.143**	**1.155**	**5.4**	**4818**

Table 2 (contd)

Panel B: December fiscal year-end firms

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1972	0.080	0.717	0.874	1.543	0.939	7.2	788
1973	-0.259	0.522	0.924	0.413	1.161	4.2	968
1974	-0.255	0.728	1.143	0.743	0.545	9.0	1277
1975	0.517	0.725	1.590	0.859	1.918	5.6	1307
1976	0.430	0.713	1.079	1.797	1.403	5.2	1310
1977	0.127	0.731	0.772	1.659	0.983	3.1	1344
1978	0.114	1.501	1.301	1.101	0.281	5.7	1314
1979	0.376	1.283	1.239	1.132	2.588	3.2	1267
1980	0.278	0.567	1.245	1.781	1.323	3.8	1257
1981	0.058	1.290	0.839	1.203	1.253	7.9	1255
1982	0.242	1.478	1.262	0.648	1.992	7.5	1240
1983	0.315	1.012	0.978	1.535	0.503	5.1	1484
1984	-0.025	0.789	0.844	0.516	1.220	4.6	1628
1985	0.300	0.984	1.569	1.538	0.665	4.1	1635
1986	0.080	1.219	0.820	0.818	1.117	7.1	1616
1987	-0.060	1.224	1.017	0.952	0.064	4.1	1711
1988	0.221	1.502	1.105	1.852	1.295	9.4	1766
1989	0.192	1.413	1.647	1.421	1.061	7.5	1818
1990	-0.166	0.486	0.568	0.771	0.492	1.4	1843
1991	0.416	1.108	1.142	1.156	1.235	1.9	1942
1992	0.165	1.329	1.163	1.455	1.125	7.7	2094
1993	0.229	1.257	1.100	1.590	1.667	8.9	2320
1994	-0.025	1.047	0.832	0.500	1.155	3.9	2666
1995	0.339	1.592	1.640	1.445	1.789	4.7	3060
1996	0.169	1.018	1.454	0.818	1.114	3.7	3325
1997	0.235	1.249	0.913	0.931	1.334	5.6	3591
1998	-0.056	1.036	0.832	0.841	0.577	0.9	3823
1999	0.340	1.354	0.953	1.702	2.074	-0.5	3710
2000	-0.044	0.650	0.821	1.455	0.738	4.0	4176
2001	0.180	1.230	0.756	1.669	0.780	1.6	4057
2002	-0.109	1.305	1.394	0.551	0.247	9.4	3846
2003	0.742	2.096	3.161	1.334	2.569	7.8	3615
2004	0.236	1.420	0.960	1.133	0.957	7.4	3542
2005	0.072	1.225	1.351	1.544	1.281	13.0	3557
1972-2005 Mean	**0.160**	**1.112**	**1.155**	**1.188**	**1.160**	**5.5**	**2240**
p-value (H_0=1)		**0.08**	**0.05**	**0.02**	**0.13**		
1972-1989 Mean	**0.152**	**1.022**	**1.125**	**1.195**	**1.128**	**5.8**	**1388**
1990-2005 Mean	**0.170**	**1.212**	**1.190**	**1.181**	**1.196**	**5.1**	**3198**

Table 2 (contd)

Panel C: Non-December fiscal year-end firms

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1972	0.045	0.834	1.405	1.281	0.564	7.8	520
1973	-0.395	0.406	0.600	0.648	0.702	6.2	694
1974	-0.276	0.847	0.787	0.345	1.232	6.8	791
1975	0.694	1.351	1.086	1.919	1.964	9.2	816
1976	0.393	1.026	1.143	0.687	1.131	7.8	812
1977	0.157	1.230	0.946	1.564	0.774	7.4	814
1978	0.177	1.581	0.870	0.437	0.543	2.1	806
1979	0.367	0.595	1.777	0.986	1.062	1.5	773
1980	0.323	0.943	0.836	1.248	1.210	1.9	767
1981	0.032	1.472	1.235	1.011	1.346	17.5	735
1982	0.350	2.084	1.045	1.828	1.630	9.6	714
1983	0.359	1.840	0.948	1.283	1.477	9.1	981
1984	-0.094	1.185	0.774	0.719	1.020	7.1	1205
1985	0.278	1.270	1.611	0.715	1.216	4.0	1261
1986	0.051	0.946	1.457	0.922	0.738	9.2	1208
1987	-0.121	1.241	1.000	1.064	0.094	6.9	1366
1988	0.226	0.861	1.263	1.542	0.941	6.1	1326
1989	0.130	1.203	1.126	1.175	0.982	5.9	1382
1990	-0.172	0.532	0.778	0.988	0.584	3.1	1368
1991	0.542	2.149	3.410	1.112	1.391	14.0	1391
1992	0.198	5.199	0.566	0.163	1.650	10.6	1493
1993	0.214	1.288	1.438	1.266	0.764	3.4	1579
1994	-0.018	0.673	0.983	0.971	1.238	7.0	1700
1995	0.334	1.425	0.484	1.238	0.963	-0.1	1807
1996	0.156	0.521	1.688	1.749	1.238	6.0	1900
1997	0.205	1.179	1.027	0.791	0.847	3.6	1894
1998	-0.007	0.909	0.842	0.994	0.664	1.7	1874
1999	0.481	1.286	1.859	1.141	1.865	-2.0	1694
2000	-0.075	0.717	1.072	1.254	0.734	7.5	1824
2001	0.231	1.255	0.923	1.182	0.710	1.4	1678
2002	-0.141	1.158	0.989	0.528	0.273	6.6	1540
2003	0.728	1.913	1.258	1.433	2.667	5.2	1414
2004	0.177	1.545	1.673	1.016	1.169	16.8	1356
2005	0.030	1.165	1.210	1.378	0.786	17.4	1271
1972-2005 Mean	**0.164**	**1.289**	**1.180**	**1.076**	**1.064**	**6.7**	**1257**
p-value (H_0=1)		**0.05**	**0.05**	**0.28**	**0.47**		
1972-1989 Mean	**0.150**	**1.162**	**1.106**	**1.076**	**1.035**	**7.0**	**943**
1990-2005 Mean	**0.180**	**1.432**	**1.263**	**1.075**	**1.096**	**6.4**	**1611**

Table 3: Annual regressions of calendar year returns on the four announcement window returns, based on logarithmic returns.

Calendar-year logarithmic buy and hold returns are computed from daily CRSP returns. Earnings announcement returns are logarithmic buy and hold returns for 3 days surrounding the COMPUSTAT announcement date. Firm-years with other than four earnings announcements or less than 240 trading days are excluded. Panels A, B and C present annual coefficients for all, December-end and non-December-end firms. The p-values are from F-tests that the coefficients equal 1. Abnormal R-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns.

Panel A: All firms

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1972	0.015	0.865	1.178	1.429	0.970	12.0	1308
1973	-0.493	1.103	1.111	1.165	1.372	10.5	1667
1974	-0.385	0.951	1.281	0.955	1.080	11.8	2069
1975	0.411	0.582	0.831	0.894	1.167	8.5	2125
1976	0.311	0.659	0.873	0.906	0.902	9.1	2126
1977	0.089	0.871	0.825	1.354	0.747	7.2	2159
1978	0.094	1.143	0.901	0.711	0.382	5.5	2123
1979	0.252	0.782	1.048	0.719	1.221	4.8	2041
1980	0.203	0.684	0.799	1.153	0.929	5.1	2027
1981	-0.003	1.367	1.057	1.146	1.264	12.8	1994
1982	0.180	1.484	1.064	1.053	1.479	10.9	1956
1983	0.240	1.182	0.709	1.086	0.960	9.2	2471
1984	-0.120	1.346	1.164	0.789	1.618	9.4	2840
1985	0.189	0.995	1.347	0.995	0.950	6.6	2900
1986	0.003	1.120	1.243	0.975	1.077	8.9	2829
1987	-0.173	1.363	1.275	1.360	0.328	7.0	3081
1988	0.136	1.060	1.054	1.496	1.048	10.5	3097
1989	0.070	1.101	1.301	1.317	1.261	9.2	3203
1990	-0.307	0.624	1.047	1.414	1.030	7.7	3220
1991	0.260	0.950	1.076	0.967	1.071	8.2	3335
1992	0.070	1.229	0.940	0.986	0.923	10.3	3592
1993	0.102	1.103	0.990	1.177	0.916	9.7	3906
1994	-0.116	1.109	0.945	0.854	1.263	8.2	4374
1995	0.173	1.064	1.051	1.153	1.110	8.2	4879
1996	0.046	0.941	1.146	0.993	1.258	8.6	5232
1997	0.085	1.203	1.071	0.978	1.351	9.1	5495
1998	-0.209	1.071	1.013	1.071	0.900	5.5	5709
1999	0.047	0.814	0.839	1.102	1.001	3.1	5415
2000	-0.358	1.146	1.360	2.271	1.591	11.5	6014
2001	-0.023	0.994	0.751	1.388	0.811	6.8	5753
2002	-0.300	1.718	1.435	0.958	0.494	10.3	5396
2003	0.438	0.862	1.116	0.705	0.924	8.6	5034
2004	0.130	1.245	0.984	0.900	0.874	15.9	4899
2005	-0.016	1.278	1.154	1.591	1.066	20.3	4834
1972-2005 Mean	**0.031**	**1.059**	**1.058**	**1.118**	**1.039**	**9.1**	**3503**
p-value (H_0=1)		**0.18**	**0.07**	**0.03**	**0.44**		
1972-1989 Mean	**0.057**	**1.037**	**1.059**	**1.084**	**1.042**	**8.8**	**2334**
1990-2005 Mean	**0.001**	**1.084**	**1.057**	**1.157**	**1.036**	**9.5**	**4818**

Table 3 (Contd)

Panel B: Firms with December fiscal year-ends

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1972	0.032	0.757	0.854	1.405	1.119	10.2	788
1973	-0.405	1.046	1.305	0.922	1.753	10.9	968
1974	-0.362	0.888	1.338	0.992	0.955	10.3	1277
1975	0.368	0.469	1.061	0.540	1.233	7.4	1307
1976	0.324	0.514	0.774	1.234	0.975	8.0	1310
1977	0.083	0.626	0.808	1.300	0.793	3.9	1344
1978	0.077	1.023	1.054	1.020	0.285	6.5	1314
1979	0.258	0.943	0.821	0.777	1.542	4.8	1267
1980	0.198	0.574	0.925	1.232	0.970	5.1	1257
1981	0.009	1.180	0.925	1.246	1.248	8.2	1255
1982	0.154	1.381	1.172	0.616	1.749	10.1	1240
1983	0.232	0.979	0.726	1.198	0.498	6.6	1484
1984	-0.083	1.141	1.039	0.652	1.677	7.1	1628
1985	0.205	0.963	1.206	1.297	0.708	5.6	1635
1986	0.018	1.319	0.987	0.905	1.289	9.0	1616
1987	-0.134	1.234	1.254	1.117	0.174	4.1	1711
1988	0.143	1.259	0.941	1.649	1.173	12.0	1766
1989	0.104	1.132	1.171	1.415	1.409	9.4	1818
1990	-0.292	0.514	0.981	1.462	1.057	6.4	1843
1991	0.233	0.823	1.137	1.023	1.159	7.8	1942
1992	0.065	1.223	1.101	1.279	0.806	11.3	2094
1993	0.116	1.090	0.827	1.303	1.104	10.7	2320
1994	-0.114	1.282	0.807	0.760	1.205	6.7	2666
1995	0.192	1.114	1.020	1.270	1.247	9.9	3060
1996	0.062	1.129	1.040	0.820	1.387	7.6	3325
1997	0.096	1.252	1.000	1.060	1.472	9.8	3591
1998	-0.226	1.090	1.059	1.063	0.920	5.2	3823
1999	0.036	0.785	0.838	1.179	0.986	3.2	3710
2000	-0.356	1.210	1.314	2.462	1.588	10.7	4176
2001	-0.037	0.975	0.782	1.494	0.924	8.0	4057
2002	-0.296	1.738	1.516	0.916	0.467	10.0	3846
2003	0.439	0.888	1.317	0.668	0.878	9.1	3615
2004	0.144	1.230	0.934	0.960	0.802	15.0	3542
2005	-0.010	1.311	1.122	1.668	1.156	19.7	3557
1972-2005 Mean	**0.037**	**1.032**	**1.034**	**1.144**	**1.080**	**8.5**	**2240**
p-value (H_0=1)		**0.52**	**0.31**	**0.03**	**0.24**		
1972-1989 Mean	**0.068**	**0.968**	**1.020**	**1.084**	**1.086**	**7.7**	**1388**
1990-2005 Mean	**0.003**	**1.103**	**1.050**	**1.212**	**1.072**	**9.4**	**3198**

Table 3 (Contd)

Panel C: Firms with non-December fiscal year-ends

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1972	-0.010	0.957	1.513	1.416	0.759	14.2	520
1973	-0.605	1.068	1.066	1.251	1.096	11.3	694
1974	-0.421	1.013	1.276	0.877	1.171	13.0	791
1975	0.470	0.706	0.614	1.029	1.072	9.7	816
1976	0.292	0.804	0.982	0.571	0.888	11.7	812
1977	0.098	1.088	0.834	1.394	0.655	10.9	814
1978	0.113	1.251	0.768	0.508	0.446	4.6	806
1979	0.245	0.698	1.356	0.658	0.843	5.5	773
1980	0.211	0.842	0.644	1.055	0.917	5.0	767
1981	-0.025	1.553	1.233	1.045	1.252	19.7	735
1982	0.215	1.585	0.996	1.450	1.162	12.4	714
1983	0.246	1.399	0.696	0.982	1.459	13.3	981
1984	-0.170	1.546	1.199	0.971	1.485	11.3	1205
1985	0.171	1.017	1.441	0.693	1.205	7.8	1261
1986	-0.018	0.871	1.538	1.040	0.855	9.5	1208
1987	-0.227	1.516	1.343	1.521	0.577	11.0	1366
1988	0.127	0.875	1.173	1.380	0.942	9.3	1326
1989	0.026	1.110	1.371	1.190	1.148	9.1	1382
1990	-0.328	0.695	1.071	1.348	0.996	8.7	1368
1991	0.299	1.035	1.034	0.881	0.970	8.4	1391
1992	0.079	1.236	0.808	0.671	1.044	9.6	1493
1993	0.083	1.088	1.210	1.039	0.663	8.9	1579
1994	-0.117	0.888	1.118	0.961	1.341	10.4	1700
1995	0.144	1.043	1.069	0.999	0.944	6.5	1807
1996	0.021	0.719	1.242	1.254	1.104	10.7	1900
1997	0.065	1.145	1.197	0.857	1.130	8.0	1894
1998	-0.176	1.042	0.953	1.066	0.872	6.2	1874
1999	0.072	0.856	0.916	0.876	1.005	2.7	1694
2000	-0.354	1.026	1.447	1.952	1.603	13.7	1824
2001	0.011	0.994	0.720	1.098	0.523	3.7	1678
2002	-0.311	1.629	1.198	1.063	0.550	11.1	1540
2003	0.432	0.809	0.736	0.784	1.029	8.3	1414
2004	0.091	1.296	1.118	0.835	1.036	19.1	1356
2005	-0.033	1.199	1.187	1.418	0.890	23.2	1271
1972-2005 Mean	**0.021**	**1.076**	**1.090**	**1.063**	**0.989**	**10.2**	**1257**
p-value (H_0=1)		**0.11**	**0.05**	**0.24**	**0.82**		
1972-1989 Mean	**0.041**	**1.106**	**1.113**	**1.057**	**0.996**	**10.5**	**943**
1990-2005 Mean	**-0.001**	**1.044**	**1.064**	**1.069**	**0.981**	**10.0**	**1611**

Table 3A: Annual regressions of calendar year returns on the four announcement window returns, for a constant sample of 1713 firms over 1996-2005.

Calendar-year logarithmic buy and hold returns are computed from daily CRSP returns. Earnings announcement returns are logarithmic buy and hold returns for 3 days surrounding the COMPUSTAT announcement date. Firm-years with other than four earnings announcements or less than 240 trading days are excluded. Panels A and B present estimates using arithmetic and logarithmic returns respectively. The p-values are from F-tests that the coefficients equal 1. Abnormal R-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns. Only firms that have data to estimate the regressions in each of years 1996 to 2005 are included in the analysis.

Panel A: Arithmetic returns

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1996	0.196	0.748	1.602	1.142	1.306	6.7	1713
1997	0.288	1.437	0.879	1.208	1.036	6.9	1713
1998	0.027	0.757	0.881	1.413	0.554	3.0	1713
1999	0.259	1.076	1.932	1.442	2.128	-0.2	1713
2000	0.100	0.746	1.170	1.611	0.702	7.0	1713
2001	0.213	1.012	0.573	1.912	0.874	3.5	1713
2002	-0.080	1.464	2.335	0.659	0.510	15.9	1713
2003	0.583	1.842	1.805	1.166	1.802	4.6	1713
2004	0.215	1.161	1.394	1.414	1.379	14.0	1713
2005	0.050	1.244	1.283	1.257	1.038	18.1	1713
1996-2005 Mean	**0.185**	**1.149**	**1.385**	**1.322**	**1.133**	**0.127**	**1713**
p-value (H_0=1)		**0.22**	**0.05**	**0.01**	**0.45**		

Panel B: Logarithmic returns

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1996	0.114	0.857	1.203	0.874	0.983	8.4	1713
1997	0.190	1.254	0.816	1.003	0.799	8.5	1713
1998	-0.077	0.837	1.112	1.221	0.578	4.9	1713
1999	0.053	0.702	0.949	0.843	1.137	2.6	1713
2000	-0.042	0.741	1.168	1.622	0.977	10.0	1713
2001	0.093	0.905	0.319	1.328	0.688	5.9	1713
2002	-0.165	1.392	1.479	0.847	0.377	11.3	1713
2003	0.387	0.776	0.860	0.751	0.809	6.6	1713
2004	0.151	0.936	1.130	1.059	0.950	19.0	1713
2005	0.002	1.259	1.175	1.395	0.970	22.7	1713
1996-2005 Mean	**0.071**	**0.966**	**1.021**	**1.094**	**0.827**	**0.147**	**1713**
p-value (H_0=1)		**0.67**	**0.84**	**0.33**	**0.04**		

Table 3B: Percentage of firm/quarters with management forecasts issued in and between earnings announcement windows.

This table presents the annual frequency of management forecasts as a function of event time. It reports, for each calendar year, the percentage of earnings announcement where a management forecast was issued on the day of the earnings announcement (day 0), on the day before the earnings announcement (day -1), on the day after the earnings announcement (day +1), and outside earnings announcement windows (i.e., between day +1 of the previous quarter and day -1 of the current quarter). Management forecasts are obtained from the First Call database for all firms with earnings announcements on the CRSP-COMPUSTAT merged database, and are available from 1994 onwards. . All management forecasts in First Call are considered, irrespective of their periodicity (quarterly or annual) and whether the forecast was a number, a range or a qualitative statement.

Percent of Earnings Announcements with Management Forecasts Released				
Year	**In the Earnings Announcement Window**			**Between Earnings Announcement Windows**
	Day 0	**Day -1**	**Day +1**	
1994	0.02	0.02	0.00	0.56
1995	0.14	0.13	0.08	2.01
1996	0.26	0.19	0.04	3.26
1997	0.56	0.25	0.08	4.11
1998	1.21	0.22	0.20	6.41
1999	2.25	0.18	0.32	6.76
2000	2.19	0.10	0.17	5.23
2001	8.23	0.12	0.30	8.75
2002	10.67	0.17	0.26	7.15
2003	12.63	0.17	0.23	6.54
2004	14.82	0.21	0.29	6.49
2005	15.71	0.16	0.25	5.67

Table 3C: Regressions of calendar year returns on the four announcement window returns, after excluding firm-years in which a management forecast was issued in any of the four earnings announcement windows.

This table replicates Tables 2 and 3 after excluding firm-years in which a management forecast is issued during any of the four 3-day earnings announcement windows that year. Management forecasts are obtained from the First Call database for all firms with earnings announcements on the CRSP-COMPUSTAT merged database, and are available from 1994 onwards. All management forecasts in First Call are considered, irrespective of their periodicity (quarterly or annual) and whether the forecast was a number, a range or a qualitative statement.

Panel A: Arithmetic Returns

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1994	-0.023	0.877	0.902	0.696	1.182	5.04	4364
1995	0.339	1.520	0.746	1.372	1.427	1.93	4810
1996	0.166	0.746	1.533	1.227	1.155	4.23	5120
1997	0.225	1.237	0.946	0.839	1.133	4.48	5299
1998	-0.044	0.956	0.832	0.859	0.614	0.92	5356
1999	0.410	1.474	0.970	1.501	2.018	-1.35	4886
2000	-0.066	0.694	0.912	1.419	0.760	5.37	5374
2001	0.188	1.373	0.864	1.329	0.867	1.83	4383
2002	-0.112	1.346	1.494	0.516	0.198	9.54	3903
2003	0.806	2.045	2.027	1.270	2.763	4.31	3494
2004	0.238	1.543	1.253	1.045	1.064	9.08	3240
2005	0.055	1.198	1.276	1.456	1.084	12.32	3274
1994-2005 Mean	**0.182**	**1.251**	**1.146**	**1.127**	**1.189**	**4.81**	**4459**
p-value (H_0=1)		**0.05**	**0.21**	**0.21**	**0.35**		
1994-2001 Mean	**0.149**	**1.110**	**0.963**	**1.155**	**1.144**	**2.80**	**4949**
2002-2005 Mean	**0.247**	**1.533**	**1.512**	**1.072**	**1.277**	**8.81**	**3478**

Panel B: Logarithmic Returns

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1994	-0.116	1.110	0.945	0.850	1.268	8.18	4364
1995	0.173	1.064	1.045	1.146	1.122	8.13	4810
1996	0.046	0.932	1.127	1.000	1.225	8.15	5120
1997	0.084	1.206	1.056	0.956	1.335	8.65	5299
1998	-0.215	1.012	1.013	1.046	0.915	4.97	5356
1999	0.059	0.825	0.798	1.058	0.975	2.28	4886
2000	-0.382	1.205	1.390	2.365	1.593	11.82	5374
2001	-0.042	1.066	0.876	1.312	0.857	7.20	4383
2002	-0.315	1.897	1.554	0.976	0.438	10.53	3903
2003	0.455	0.919	1.088	0.688	0.965	8.04	3494
2004	0.131	1.239	0.974	0.901	0.904	14.62	3240
2005	-0.035	1.315	1.146	1.687	1.097	19.05	3274
1994-2005 Mean	**-0.013**	**1.149**	**1.084**	**1.165**	**1.058**	**9.30**	**4459**
p-value (H_0=1)		**0.09**	**0.19**	**0.23**	**0.50**		
1994-2001 Mean	**-0.049**	**1.053**	**1.031**	**1.217**	**1.161**	**7.42**	**4949**
2002-2005 Mean	**0.059**	**1.342**	**1.191**	**1.063**	**0.851**	**13.06**	**3478**

Table 4: Average abnormal r-squares and slope coefficients from annual regressions of calendar year returns on the four announcement window returns, for firms sorted on size and market/book

Regressions are as described in Tables 2 and 3, but are estimated separately for stocks sorted annually into size quintiles. Panels A, B and C present results for size measured by prior year-end market capitalization, book value of total assets, and book value of equity, respectively. Panel D presents results for quintiles based on the year-end market to book ratio. The table reports the averages of estimates across the yearly regressions. Returns are arithmetic.

Panel A: Market Capitalization Quintiles

Size Quintile		Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average Abnormal R-square %	No. of obs.
Quintile 1 (Small)	**1972-2005 Mean**	0.207	1.177	1.132	1.055	1.153	5.7	638
	p-value (H_0=1)		0.35	0.30	0.50	0.26		
	1972-1989 Mean	0.151	0.929	1.144	1.131	1.048	5.9	423
	1990-2005 Mean	0.270	1.455	1.119	0.969	1.272	5.5	880
Quintile 2	**1972-2005 Mean**	0.196	1.096	1.180	1.169	1.049	5.9	638
	p-value (H_0=1)		0.30	0.11	0.12	0.58		
	1972-1989 Mean	0.176	0.927	0.998	1.206	1.084	7.1	423
	1990-2005 Mean	0.218	1.286	1.384	1.128	1.009	4.6	880
Quintile 3	**1972-2005 Mean**	0.163	1.225	1.209	1.274	1.166	7.3	638
	p-value (H_0=1)		0.01	0.00	0.01	0.09		
	1972-1989 Mean	0.161	1.195	1.259	1.213	1.135	7.3	423
	1990-2005 Mean	0.165	1.259	1.152	1.342	1.202	7.4	880
Quintile 4	**1972-2005 Mean**	0.140	1.295	1.107	1.267	1.159	8.8	638
	p-value (H_0=1)		0.00	0.37	0.01	0.16		
	1972-1989 Mean	0.149	1.330	0.843	1.220	1.261	7.4	423
	1990-2005 Mean	0.130	1.256	1.403	1.319	1.044	10.4	880
Quintile 5 (Large)	**1972-2005 Mean**	0.125	1.167	1.011	1.109	1.062	6.8	638
	p-value (H_0=1)		0.08	0.90	0.28	0.58		
	1972-1989 Mean	0.133	1.231	1.014	1.098	1.170	5.9	423
	1990-2005 Mean	0.116	1.096	1.007	1.121	0.940	7.8	880

Table 4 (contd)

Panel B: Book Value of Total Assets Quintiles

Size Quintile		Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average Abnormal R-square %	No. of obs.
Quintile 1 (Small)	**1972-2005 Mean**	0.217	1.230	1.024	1.212	0.935	5.1	608
	p-value (H_0=1)		0.26	0.87	0.04	0.60		
	1972-1989 Mean	0.175	0.917	0.973	1.327	0.778	4.8	368
	1990-2005 Mean	0.264	1.582	1.081	1.082	1.110	5.3	879
Quintile 2	**1972-2005 Mean**	0.167	1.257	1.194	0.994	1.078	6.4	609
	p-value (H_0=1)		0.00	0.08	0.96	0.58		
	1972-1989 Mean	0.147	1.289	1.133	0.897	0.861	6.3	368
	1990-2005 Mean	0.189	1.221	1.263	1.104	1.322	6.6	880
Quintile 3	**1972-2005 Mean**	0.151	1.255	1.235	1.250	1.093	8.3	609
	p-value (H_0=1)		0.05	0.02	0.04	0.33		
	1972-1989 Mean	0.149	1.224	1.110	1.240	1.126	9.1	368
	1990-2005 Mean	0.154	1.291	1.375	1.262	1.057	7.4	880
Quintile 4	**1972-2005 Mean**	0.143	1.251	1.180	1.137	1.081	6.8	609
	p-value (H_0=1)		0.01	0.09	0.14	0.49		
	1972-1989 Mean	0.142	1.289	0.973	0.976	1.149	5.2	368
	1990-2005 Mean	0.145	1.207	1.413	1.319	1.004	8.6	880
Quintile 5 (Large)	**1972-2005 Mean**	0.140	1.075	1.169	1.222	1.092	6.2	609
	p-value (H_0=1)		0.60	0.17	0.07	0.54		
	1972-1989 Mean	0.136	1.028	1.093	1.229	1.151	6.4	368
	1990-2005 Mean	0.144	1.129	1.254	1.214	1.026	6.1	880

Table 4 (contd)

Panel C: Book Value of Equity Quintiles

Size Quintile		Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average Abnormal R-square %	No. of obs.
Quintile 1 (Small)	**1972-2005 Mean**	0.218	1.208	1.067	1.091	0.954	5.2	636
	p-value (H_0=1)		0.27	0.55	0.31	0.69		
	1972-1989 Mean	0.171	0.918	1.042	1.117	0.803	5.4	423
	1990-2005 Mean	0.270	1.533	1.096	1.062	1.124	4.9	875
Quintile 2	**1972-2005 Mean**	0.173	1.187	1.261	1.116	1.275	7.6	637
	p-value (H_0=1)		0.08	0.01	0.17	0.01		
	1972-1989 Mean	0.154	1.031	1.183	1.123	1.285	8.0	424
	1990-2005 Mean	0.195	1.364	1.349	1.109	1.264	7.2	876
Quintile 3	**1972-2005 Mean**	0.157	1.286	1.153	1.201	1.118	7.1	637
	p-value (H_0=1)		0.00	0.03	0.02	0.26		
	1972-1989 Mean	0.149	1.259	1.027	1.180	1.076	7.0	424
	1990-2005 Mean	0.166	1.316	1.294	1.225	1.166	7.1	876
Quintile 4	**1972-2005 Mean**	0.146	1.151	1.297	1.248	1.164	8.5	637
	p-value (H_0=1)		0.06	0.00	0.02	0.16		
	1972-1989 Mean	0.150	1.272	1.279	1.135	1.226	7.9	424
	1990-2005 Mean	0.140	1.015	1.318	1.375	1.094	9.1	876
Quintile 5 (Large)	**1972-2005 Mean**	0.133	1.124	1.083	1.113	1.098	6.7	636
	p-value (H_0=1)		0.10	0.38	0.23	0.37		
	1972-1989 Mean	0.138	1.164	0.991	1.108	1.181	6.2	423
	1990-2005 Mean	0.127	1.079	1.187	1.118	1.004	7.3	875

Table 4 (contd)

Panel D: Market to Book Ratio Quintiles

Market-to-book Quintile		Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average Abnormal R-square %	No. of obs.
Quintile 1 (Small)	**1972-2005 Mean**	0.236	1.086	1.185	1.138	1.072	5.9	625
	p-value (H_0=1)		0.43	0.13	0.10	0.59		
	1972-1989 Mean	0.203	0.951	1.129	1.112	0.987	6.3	416
	1990-2005 Mean	0.273	1.237	1.249	1.168	1.168	5.4	861
Quintile 2	**1972-2005 Mean**	0.175	1.381	1.316	1.043	1.065	7.8	626
	p-value (H_0=1)		0.21	0.07	0.66	0.52		
	1972-1989 Mean	0.167	1.151	1.229	1.078	1.033	7.6	416
	1990-2005 Mean	0.185	1.640	1.413	1.003	1.100	8.1	861
Quintile 3	**1972-2005 Mean**	0.162	1.177	1.155	1.263	1.214	7.3	626
	p-value (H_0=1)		0.01	0.11	0.01	0.06		
	1972-1989 Mean	0.157	1.115	1.158	1.297	1.141	7.5	416
	1990-2005 Mean	0.167	1.247	1.151	1.226	1.296	7.0	861
Quintile 4	**1972-2005 Mean**	0.133	1.202	1.035	1.080	1.140	5.9	626
	p-value (H_0=1)		0.01	0.58	0.38	0.32		
	1972-1989 Mean	0.131	1.119	1.013	0.921	1.018	4.9	416
	1990-2005 Mean	0.135	1.296	1.060	1.259	1.278	7.1	861
Quintile 5 (Large)	**1972-2005 Mean**	0.124	1.078	1.052	1.171	1.031	4.8	625
	p-value (H_0=1)		0.42	0.60	0.15	0.80		
	1972-1989 Mean	0.112	0.935	1.013	1.097	1.078	4.3	416
	1990-2005 Mean	0.138	1.238	1.097	1.254	0.979	5.4	861

Table 5: Event window mean returns, variances and variance ratios, by calendar quarter and size quintile

The table presents the average (across the years 1972-2005) of the average return, the return variance and the variance ratio for each quarter's announcement window, by size quintile. The variance ratio for a calendar quarter is computed as the cross-sectional variance of earnings announcement window returns divided by the cross-sectional variance of calendar-year returns, and is expressed as a percentage. Firms are sorted into size quintiles based on prior year-end market capitalization. The sample is as in Tables 3 and 4. Returns are arithmetic. Panels A reports event-window variances and Panel B reports event-window variance ratios.

The average yearly variance ratios are presented for a variety of sub-periods. Results for the largest and smallest size quintiles in the third calendar quarter of 1972 are highlighted, for comparison with Atiase (1985). Atiase studied announcements of earnings for second fiscal quarter earnings in 1971 and 1972 (we do not have 1971 data). These announcements occurred in the third calendar quarter. Atiase essentially compared the variance ratios of small and large stocks during that short sample period.

Panel A: Average Event-window Returns

Calendar Quarter of Announcement	Quintile 1 (Smallest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Largest)
1	0.014	0.006	0.003	0.004	0.004
2	0.012	0.005	0.004	0.005	0.006
3	0.007	0.002	-0.001	0.001	0.001
4	0.008	0.003	0.001	0.001	0.001

Panel B: Event-window Return Variances

Calendar Quarter of Announcement	Quintile 1 (Smallest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Largest)
1	0.012	0.008	0.005	0.004	0.003
2	0.014	0.007	0.005	0.004	0.003
3	0.010	0.007	0.005	0.004	0.003
4	0.014	0.009	0.006	0.005	0.004

Table 5 (contd)

Panel C: Event-window Variance Ratios (%)

Period	Calendar Quarter of Announcement	Quintile 1 (Smallest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (Largest)
1972- 2005	**1**	2.31	2.17	1.97	2.31	2.47
	2	2.22	1.91	1.92	2.22	2.53
	3	1.94	1.91	2.03	2.53	3.00
	4	2.92	2.58	2.55	2.99	3.40
1972	**1**	3.56	2.69	2.10	2.45	2.02
	2	2.48	2.61	1.85	1.41	1.55
	3	**2.57**	1.64	2.35	2.60	**1.99**
	4	2.49	3.25	3.15	3.22	3.00
1972-1989	**1**	2.53	2.44	2.05	2.07	2.07
	2	2.38	2.10	1.88	1.87	2.03
	3	2.18	1.99	2.01	2.06	2.16
	4	3.61	2.73	2.65	2.72	3.14
1990-2005	**1**	2.07	1.87	1.89	2.57	2.93
	2	2.03	1.70	1.97	2.62	3.10
	3	1.66	1.82	2.06	3.05	3.94
	4	2.15	2.42	2.44	3.29	3.68

Table 6: Annual regressions of arithmetic calendar year returns on arithmetic returns in the window surrounding the earliest earnings analyst forecast revision each quarter and on earnings announcement window returns for the same sample (three-day windows).

Forecast event window returns are arithmetic buy and hold returns for the 3 days surrounding the first analyst earnings forecast revision after the previous quarter's earnings announcement. Earnings announcement returns are similarly estimated for the 3-day window around the COMPUSTAT earnings announcement date. Analyst forecast data are obtained from the IBES detailed unadjusted data set. Forecasts whose window overlaps the earnings window are excluded, as are firm-years with other than four earnings announcements, four forecast event windows, and 240 or more trading days. The sample also excludes, in each calendar year, the extreme 1% on either side of calendar-year returns, earnings announcement returns and forecast event-window returns. Deletion of an individual quarter requires deletion of the entire firm/year from the regression.

Panel A presents results for forecast event window returns, while Panel B presents results for earnings announcement returns with the same sample. The table presents means across years, Fama-MacBeth t-statistics, and p-values from F-tests that the coefficients equal 1. Abnormal R-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns.

Panel A: Calendar-year returns regressed on returns in the earliest analyst forecast revision window each quarter

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1985	0.283	0.929	0.429	-0.966	0.877	-3.6	374
1986	0.102	1.170	1.996	0.740	1.611	5.0	515
1987	-0.016	0.584	0.561	0.803	0.146	-3.8	501
1988	0.200	0.682	0.900	1.841	0.721	-0.2	722
1989	0.235	-0.801	1.406	0.696	1.444	-1.8	812
1990	-0.143	0.217	0.825	0.658	0.067	-3.3	918
1991	0.460	1.201	1.504	1.586	2.200	0.5	969
1992	0.153	1.245	0.629	0.265	1.036	-2.0	1075
1993	0.127	-0.025	0.335	0.441	0.450	-4.9	584
1994	-0.023	0.357	1.180	1.303	0.726	1.5	441
1995	0.248	1.433	1.012	1.205	0.747	-0.4	433
1996	0.191	1.653	1.366	0.282	-0.095	0.4	376
1997	0.212	0.687	0.599	1.540	1.213	0.2	380
1998	-0.047	0.607	1.692	0.667	1.353	2.0	325
1999	0.272	1.606	1.876	2.694	0.157	-1.3	283
2000	0.018	0.736	0.966	0.861	1.257	1.8	341
2001	0.104	1.283	0.637	1.299	0.257	3.9	671
2002	-0.149	0.932	0.711	0.465	0.403	0.3	665
2003	0.684	0.379	-0.999	-0.894	0.745	-5.3	200
2004	0.233	0.762	0.718	-0.138	3.749	6.4	180
1985-2004 Mean	**0.157**	**0.782**	**0.917**	**0.767**	**0.953**	**-0.2**	**538**
p-value (H_0=1)		**0.11**	**0.58**	**0.24**	**0.81**		
Pre-1995 Mean	**0.138**	**0.556**	**0.976**	**0.736**	**0.928**	**-1.3**	**691**
Post-1995 Mean	**0.177**	**1.008**	**0.858**	**0.798**	**0.979**	**0.8**	**385**

Table 6 (Contd)

Panel B: Calendar-year returns regressed on earnings announcement window returns, analyst earnings forecast sample

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1985	0.280	1.345	1.932	1.143	1.518	9.1	374
1986	0.130	1.077	1.361	1.246	0.178	5.9	515
1987	-0.026	1.548	1.161	0.851	0.232	6.5	501
1988	0.203	0.857	1.139	1.402	1.730	7.9	722
1989	0.222	1.442	1.485	1.292	1.416	7.2	812
1990	-0.131	0.773	0.872	0.858	0.628	5.5	918
1991	0.417	1.005	1.642	1.540	1.681	6.2	969
1992	0.131	0.931	1.055	0.676	0.957	3.9	1075
1993	0.118	1.213	-0.027	1.073	1.019	2.9	584
1994	-0.042	1.036	0.656	0.735	0.932	3.8	441
1995	0.252	0.422	0.633	1.445	1.272	1.3	433
1996	0.162	0.508	1.549	0.996	0.901	4.1	376
1997	0.203	1.594	1.165	0.245	1.075	2.8	380
1998	-0.090	-0.028	1.440	1.006	0.476	1.0	325
1999	0.248	2.006	1.176	1.190	0.458	-1.3	283
2000	-0.008	1.022	1.110	0.991	0.714	4.0	341
2001	0.054	0.304	0.958	0.908	0.323	0.9	671
2002	-0.164	0.907	1.146	0.445	0.246	4.7	665
2003	0.586	1.375	3.229	-0.139	1.252	6.8	200
2004	0.254	1.298	0.632	1.369	2.251	11.2	180
1985-2004 Mean	**0.140**	**1.032**	**1.216**	**0.964**	**0.963**	**4.7**	**538**
p-value (H_0=1)		**0.77**	**0.15**	**0.70**	**0.78**		
Pre-1995 Mean	**0.130**	**1.123**	**1.128**	**1.082**	**1.029**	**5.9**	**691**
Post-1995 Mean	**0.150**	**0.941**	**1.304**	**0.846**	**0.897**	**3.6**	**385**

Table 7: Annual regressions of arithmetic calendar year returns on arithmetic returns in the window surrounding the earliest earnings analyst forecast revision each quarter and on earnings announcement window returns for the same sample (one-day windows).

Forecast event window returns are arithmetic buy and hold returns on the day of the first analyst earnings forecast revision after the previous quarter's earnings announcement. Earnings announcement returns are similarly estimated for the day of the COMPUSTAT earnings announcement. Analyst forecast data are obtained from the IBES detailed unadjusted data set. Forecasts released on the earnings announcement day are excluded, as are firm-years with other than four earnings announcements, four forecast event windows, and 240 or more trading days. The sample also excludes, in each calendar year, the extreme 1% on either side of calendar-year returns, earnings announcement returns and forecast event-window returns. Deletion of an individual quarter requires deletion of the entire firm/year from the regression.

Panel A presents results for the forecast date, while Panel B presents results for earnings announcement day returns with the same sample. The table presents means across years, Fama-MacBeth t-statistics, and p-values from F-tests that the coefficients equal 1. Abnormal R-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns.

Panel A: Calendar-year returns regressed on returns in the day of the earliest analyst forecast revision window each quarter

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1985	0.306	-0.022	-2.521	-1.424	1.836	0.5	383
1986	0.128	1.061	1.796	1.663	1.703	1.7	513
1987	-0.007	0.097	0.170	0.191	0.564	-2.0	523
1988	0.207	0.355	1.275	0.796	0.966	-0.8	738
1989	0.235	-0.022	1.499	0.779	1.742	-0.7	839
1990	-0.143	-0.620	1.053	0.954	0.551	-0.5	938
1991	0.465	0.861	0.458	2.945	1.732	0.2	1008
1992	0.156	1.501	-0.415	0.843	0.940	-0.4	1104
1993	0.136	0.416	0.804	0.677	-0.572	-1.7	617
1994	-0.025	0.222	1.765	0.672	1.866	1.4	464
1995	0.249	1.087	0.761	2.480	1.139	0.4	466
1996	0.200	1.621	2.267	1.816	0.514	1.9	410
1997	0.220	-0.039	1.519	-0.722	0.639	-1.3	419
1998	-0.018	-0.044	1.039	0.995	2.331	0.7	395
1999	0.358	-0.948	2.419	4.001	-0.586	-0.7	357
2000	0.000	0.829	1.075	0.601	1.390	-0.2	421
2001	0.071	0.745	0.576	1.934	0.254	1.3	806
2002	-0.169	1.452	-0.119	0.185	1.368	0.9	775
2003	0.684	0.409	-0.578	-1.291	1.756	-1.9	420
2004	0.222	1.732	-0.371	1.096	2.868	3.9	400
1985-2004 Mean	**0.164**	**0.535**	**0.724**	**0.960**	**1.150**	**0.1**	**600**
p-value (H_0=1)		**0.01**	**0.30**	**0.89**	**0.46**		
Pre-1995 Mean	**0.146**	**0.385**	**0.588**	**0.809**	**1.133**	**-0.2**	**713**
Post-1995 Mean	**0.182**	**0.684**	**0.859**	**1.110**	**1.167**	**0.5**	**487**

Table 7 (Contd)

Panel B: Calendar-year returns regressed on earnings announcement day returns, analyst earnings forecast sample

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1985	0.299	1.135	2.429	2.159	1.404	4.7	383
1986	0.131	1.413	1.853	1.257	-0.004	2.3	513
1987	-0.018	1.987	1.706	1.281	0.104	5.3	523
1988	0.205	1.152	1.311	1.344	1.948	4.6	738
1989	0.237	2.073	1.115	1.939	1.145	4.1	839
1990	-0.142	0.626	1.427	0.976	0.799	4.6	938
1991	0.440	2.132	2.129	2.175	1.366	5.3	1008
1992	0.146	0.987	1.081	0.788	1.138	2.4	1104
1993	0.128	1.677	0.344	0.349	0.989	1.0	617
1994	-0.032	1.264	1.074	0.621	0.639	2.2	464
1995	0.248	1.183	0.581	0.720	1.524	0.8	466
1996	0.171	0.775	2.115	1.671	1.460	5.5	410
1997	0.213	1.364	2.272	0.741	1.368	4.4	419
1998	-0.033	1.056	0.961	1.391	1.427	2.0	395
1999	0.348	0.961	0.503	0.196	1.666	-2.0	357
2000	-0.011	0.190	0.841	0.969	0.820	-0.2	421
2001	0.057	0.130	0.593	0.862	0.866	0.0	806
2002	-0.166	0.892	1.777	0.525	-0.224	3.7	775
2003	0.653	1.700	2.733	0.425	1.646	1.2	420
2004	0.233	1.163	0.023	0.280	1.764	0.5	400
1985-2004 Mean	**0.155**	**1.193**	**1.343**	**1.033**	**1.092**	**2.6**	**600**
p-value (H_0=1)		**0.13**	**0.06**	**0.81**	**0.50**		
Pre-1995 Mean	**0.139**	**1.445**	**1.447**	**1.289**	**0.953**	**3.7**	**713**
Post-1995 Mean	**0.171**	**0.941**	**1.240**	**0.778**	**1.232**	**1.6**	**487**

Table 8: Annual regressions of arithmetic calendar year returns on arithmetic returns in the window surrounding the latest analyst earnings forecast revision each quarter and on earnings announcement window returns for the same sample (three-day windows).

Forecast event window returns are arithmetic buy and hold returns for the 3 days surrounding the latest analyst earnings forecast revision after the previous quarter's earnings announcement. Earnings announcement returns are similarly estimated for the 3-day window around the COMPUSTAT earnings announcement date. Analyst forecast data are obtained from the IBES detailed unadjusted data set. Forecasts whose window overlaps the earnings window are excluded, as are firm-years with other than four earnings announcements, four forecast event windows, and 240 or more trading days. There are fewer than 12 observations in 2000, 2001 and 2002, so these years are not included.

Panel A presents results for forecast event window returns, while Panel B presents results for earnings announcement returns with the same sample. The table presents means across years, Fama-MacBeth t-statistics, and p-values from F-tests that the coefficients equal 1. Abnormal r-square is the regression adjusted r-square minus its expectation assuming i.i.d. daily returns.

Panel A: Calendar-year returns regressed on the latest analyst quarterly forecast revision window returns

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1985	0.248	1.212	1.854	-1.313	0.767	1.5	278
1986	0.097	0.099	0.578	2.719	0.656	5.7	384
1987	-0.042	0.726	1.729	1.868	0.450	6.4	394
1988	0.181	1.065	1.497	1.736	1.230	2.8	637
1989	0.196	0.824	1.091	0.969	1.792	-0.9	729
1990	-0.119	1.570	1.559	0.506	-0.204	1.4	1095
1991	0.455	0.869	0.511	0.598	2.106	-1.9	1212
1992	0.135	1.414	0.428	0.410	0.808	0.5	1239
1993	0.134	1.592	0.855	0.380	1.728	2.3	536
1994	-0.012	0.575	0.368	2.752	2.162	7.2	256
1995	0.248	2.622	1.787	1.610	0.952	6.9	227
1996	0.184	3.108	0.858	0.577	1.444	9.5	227
1997	0.218	-0.637	1.330	1.826	-0.383	0.9	226
1998	0.013	1.578	1.691	1.463	0.878	4.3	222
1999	0.350	3.761	1.828	1.899	1.618	4.2	262
2000							
2001							
2002							
2003	0.506	-0.592	8.585	-0.226	4.220	13.7	376
2004	0.169	0.838	0.785	2.255	0.951	9.9	387
1985-2004 Mean	**0.174**	**1.213**	**1.608**	**1.178**	**1.246**	**4.4**	**511**
p-value (H_0=1)		**0.46**	**0.20**	**0.51**	**0.35**		
1985-1994 Mean	**0.143**	**1.041**	**1.122**	**0.875**	**1.037**	**2.0**	**723**
1995-2004 Mean	**0.210**	**1.407**	**2.154**	**1.519**	**1.480**	**7.1**	**273**

Table 8 (Contd)

Panel B: Calendar-year returns regressed on earnings announcement returns, analyst earnings forecast sample

Year	Inter-cept	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Abnormal R-square %	No. of obs.
1985	0.266	0.399	2.256	1.331	1.880	12.6	278
1986	0.131	0.848	1.042	1.059	0.264	3.0	384
1987	-0.051	1.548	1.113	0.893	0.134	7.4	394
1988	0.217	1.088	0.991	2.385	1.188	11.1	637
1989	0.199	1.391	1.620	2.288	1.738	15.3	729
1990	-0.121	0.789	1.463	1.372	0.844	15.8	1095
1991	0.451	1.239	2.113	1.473	2.238	7.5	1212
1992	0.145	1.189	1.151	1.405	0.972	8.0	1239
1993	0.136	1.568	1.028	2.257	1.206	14.3	536
1994	-0.012	1.291	1.294	0.931	2.235	11.2	256
1995	0.249	0.671	1.297	2.559	2.249	20.2	227
1996	0.103	0.273	2.563	1.036	0.473	6.9	227
1997	0.212	1.865	1.763	0.335	1.117	7.9	226
1998	-0.034	1.236	-0.372	2.842	1.015	9.0	222
1999	0.272	2.082	3.246	2.888	0.271	2.1	262
2000							
2001							
2002							
2003	0.619	0.761	1.965	-0.772	3.792	-1.0	376
2004	0.157	1.199	0.263	0.676	0.969	5.0	387
1985-2004 Mean	**0.173**	**1.143**	**1.459**	**1.468**	**1.328**	**9.2**	**511**
p-value (H_0=1)		**0.24**	**0.04**	**0.06**	**0.17**		
1885-1994 Mean	**0.153**	**1.118**	**1.420**	**1.607**	**1.163**	**10.6**	**723**
1995-2004 Mean	**0.196**	**1.172**	**1.502**	**1.312**	**1.515**	**7.7**	**273**

Table 9: Summary statistics for abnormal volume at earnings announcements

"Abnormal volume" is total volume in the four earnings announcement windows as a percent of annual volume, minus its expectation assuming daily volume is i.i.d. Announcement windows are days -1 to +1, where 0 is the COMPUSTAT announcement date. Firm-years with other than four earnings announcements or less than 240 trading days are excluded. Panel A presents results for the full sample, while Panels B and C presents the results for firms with December and Non-December fiscal year-ends respectively.

Panel A: All firms

YEAR	Mean (%)	10th Percentile (%)	25th Percentile (%)	50th Percentile (%)	75th Percentile (%)	90th Percentile (%)
1972	1.81	-1.10	-0.20	1.15	2.96	5.34
1973	1.31	-1.38	-0.47	0.71	2.44	4.76
1974	1.14	-1.70	-0.78	0.44	2.17	4.35
1975	1.71	-1.36	-0.31	1.09	2.85	5.34
1976	1.66	-1.22	-0.32	0.96	2.71	5.18
1977	1.69	-1.26	-0.25	1.00	2.94	5.21
1978	1.58	-1.25	-0.20	0.94	2.54	5.00
1979	1.08	-1.62	-0.69	0.46	2.06	4.35
1980	0.98	-1.55	-0.70	0.44	1.98	4.04
1981	1.28	-1.49	-0.65	0.49	2.31	4.76
1982	1.29	-1.62	-0.65	0.61	2.46	4.75
1983	1.60	-1.32	-0.30	0.98	2.82	5.29
1984	1.50	-1.53	-0.54	0.84	2.73	5.14
1985	1.65	-1.36	-0.40	0.96	2.91	5.47
1986	1.39	-1.60	-0.65	0.74	2.60	5.08
1987	1.62	-1.42	-0.37	1.08	2.78	5.01
1988	1.40	-1.89	-0.74	0.76	2.71	5.26
1989	1.70	-1.62	-0.49	0.97	2.90	5.68
1990	1.68	-1.80	-0.53	0.95	3.06	5.71
1991	2.20	-1.57	-0.24	1.48	3.62	6.45
1992	2.26	-1.46	-0.25	1.42	3.70	6.77
1993	2.41	-1.31	-0.02	1.59	3.87	6.80
1994	2.32	-1.42	-0.21	1.42	3.71	6.79
1995	2.30	-1.45	-0.19	1.50	3.72	6.86
1996	2.23	-1.37	-0.13	1.50	3.64	6.41
1997	2.21	-1.25	-0.13	1.40	3.65	6.39
1998	2.04	-1.33	-0.24	1.22	3.40	6.15
1999	1.64	-1.72	-0.52	0.96	2.95	5.47
2000	1.24	-1.84	-0.70	0.68	2.46	4.83
2001	1.56	-1.82	-0.62	0.96	2.89	5.31
2002	1.97	-1.42	-0.14	1.30	3.17	5.86
2003	2.25	-1.27	-0.04	1.58	3.65	6.35
2004	2.68	-1.05	0.26	1.95	4.26	6.98
2005	2.95	-0.97	0.39	2.15	4.48	7.41
1972-2005 Mean	**1.77**	**-1.45**	**-0.35**	**1.08**	**3.03**	**5.60**
1972-1989 Mean	**1.47**	**-1.46**	**-0.48**	**0.81**	**2.60**	**5.00**
1990-2005 Mean	**2.12**	**-1.44**	**-0.21**	**1.38**	**3.51**	**6.28**

Table 9 (contd)

Panel B: Firms with December fiscal year-end

YEAR	MEAN (%)	10th Percentile (%)	25th Percentile (%)	50th Percentile (%)	75th Percentile (%)	90th Percentile (%)
1972	1.51	-1.20	-0.35	0.78	2.62	4.73
1973	1.14	-1.33	-0.50	0.59	2.07	4.42
1974	0.97	-1.75	-0.84	0.34	1.94	3.98
1975	1.70	-1.23	-0.25	1.16	2.78	4.98
1976	1.49	-1.21	-0.43	0.75	2.32	4.91
1977	1.42	-1.27	-0.33	0.79	2.56	4.76
1978	1.50	-1.15	-0.16	0.89	2.27	4.73
1979	0.73	-1.72	-0.80	0.10	1.69	3.71
1980	0.68	-1.61	-0.85	0.20	1.57	3.47
1981	0.91	-1.64	-0.79	0.24	1.71	4.11
1982	1.02	-1.63	-0.78	0.35	1.98	4.06
1983	1.45	-1.41	-0.37	0.86	2.56	5.13
1984	1.22	-1.64	-0.67	0.60	2.33	4.78
1985	1.47	-1.39	-0.54	0.79	2.67	5.12
1986	1.16	-1.64	-0.77	0.51	2.25	4.67
1987	1.53	-1.42	-0.42	1.03	2.68	4.89
1988	1.21	-1.91	-0.86	0.59	2.39	4.85
1989	1.44	-1.76	-0.60	0.73	2.61	5.12
1990	1.53	-1.80	-0.59	0.73	2.80	5.35
1991	2.02	-1.49	-0.29	1.29	3.40	6.15
1992	1.93	-1.52	-0.40	1.09	3.25	5.98
1993	2.01	-1.46	-0.26	1.31	3.36	6.00
1994	1.89	-1.53	-0.40	1.13	3.30	6.13
1995	2.04	-1.55	-0.35	1.20	3.41	6.32
1996	1.92	-1.49	-0.32	1.19	3.16	5.95
1997	1.87	-1.33	-0.34	1.10	3.22	5.79
1998	1.84	-1.36	-0.33	1.04	3.11	5.82
1999	1.35	-1.79	-0.67	0.71	2.52	4.95
2000	1.03	-1.92	-0.80	0.49	2.16	4.50
2001	1.31	-1.89	-0.75	0.74	2.61	4.88
2002	1.80	-1.48	-0.29	1.14	2.96	5.51
2003	1.98	-1.31	-0.16	1.30	3.28	5.77
2004	2.33	-1.08	0.10	1.63	3.72	6.43
2005	2.51	-1.15	0.20	1.74	3.92	6.67
1972-2005 Mean	**1.53**	**-1.50**	**-0.47**	**0.86**	**2.68**	**5.14**
1972-1989 Mean	**1.25**	**-1.49**	**-0.57**	**0.63**	**2.28**	**4.58**
1990-2005 Mean	**1.83**	**-1.51**	**-0.35**	**1.12**	**3.14**	**5.76**

Table 9 (contd)

Panel C: Firms with Non-December fiscal year-end

YEAR	MEAN (%)	10th Percentile (%)	25th Percentile (%)	50th Percentile (%)	75th Percentile (%)	90th Percentile (%)
1972	2.28	-0.95	0.12	1.75	3.56	5.80
1973	1.56	-1.51	-0.42	0.96	2.79	5.48
1974	1.41	-1.61	-0.72	0.66	2.57	5.16
1975	1.72	-1.56	-0.39	1.01	2.89	5.64
1976	1.95	-1.23	-0.11	1.44	3.39	5.52
1977	2.10	-1.21	-0.06	1.39	3.46	6.05
1978	1.72	-1.41	-0.27	1.11	3.07	5.40
1979	1.62	-1.41	-0.40	0.97	2.80	5.28
1980	1.44	-1.48	-0.48	0.76	2.65	4.75
1981	1.87	-1.24	-0.22	1.12	3.12	5.64
1982	1.75	-1.53	-0.44	1.16	3.22	5.78
1983	1.83	-1.15	-0.19	1.25	3.10	5.52
1984	1.87	-1.34	-0.34	1.23	3.14	5.73
1985	1.89	-1.27	-0.19	1.24	3.17	5.90
1986	1.69	-1.52	-0.44	1.04	3.04	5.35
1987	1.72	-1.42	-0.31	1.13	2.92	5.25
1988	1.65	-1.85	-0.53	1.00	3.08	5.78
1989	2.03	-1.45	-0.28	1.38	3.31	6.36
1990	1.90	-1.74	-0.43	1.24	3.46	6.01
1991	2.46	-1.66	-0.12	1.73	3.93	6.84
1992	2.73	-1.38	0.05	2.01	4.39	7.42
1993	3.00	-1.04	0.38	2.05	4.61	7.80
1994	3.00	-1.13	0.13	2.00	4.51	7.49
1995	2.71	-1.14	0.09	1.95	4.20	7.35
1996	2.77	-1.15	0.39	2.06	4.37	7.33
1997	2.85	-0.97	0.36	2.05	4.31	7.33
1998	2.45	-1.25	0.02	1.63	3.87	6.83
1999	2.24	-1.42	-0.12	1.54	3.64	6.77
2000	1.72	-1.71	-0.38	1.15	3.04	5.58
2001	2.15	-1.65	-0.19	1.55	3.57	6.33
2002	2.41	-1.32	0.21	1.78	3.79	6.63
2003	2.96	-1.11	0.49	2.36	4.49	7.46
2004	3.57	-0.93	0.88	2.84	5.35	7.85
2005	4.18	-0.32	1.41	3.34	5.77	9.24
1972-2005 Mean	**2.21**	**-1.33**	**-0.07**	**1.53**	**3.60**	**6.31**
1972-1989 Mean	**1.78**	**-1.40**	**-0.32**	**1.14**	**3.07**	**5.58**
1990-2005 Mean	**2.69**	**-1.25**	**0.20**	**1.96**	**4.21**	**7.14**