Differences in Commercial Database Reported Earnings: Implications for Empirical Research

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First Version: November 1999
Current Version: June 2002

This paper is one of two excerpts from a paper entitled "Differences in Commercial Database Reported Earnings: Implications for Inferences Concerning Analyst Forecast Rationality, the Association between Prices and Earnings, and Firm Reporting Discretion." This paper addresses the question of how differences in the properties of reported earnings supplied by forecast data providers and Compustat affect inferences in a variety of research areas. The second excerpt from the original paper entitled "Ambiguity in Inferences and Limited Generalizability; the Cost of Disagreement among Providers of Forecast and Earnings Data," is concerned with inferential problems induced by differences across forecast data providers earnings and forecast distributions. We wish to thank Stan Levine and Joe Cooper of First Call, Don O'Hara, Jim Baker and Mitch Zacks at Zacks Investment Research and Joe Abbott and Joseph S. Kalinowski at I/B/E/S for their generous efforts in support of this study and many helpful insights. We appreciate the comments of Maureen McNichols, Maria Nondorf, Chris Petrovits and workshop seminar participants at the Advanced Seminar on Financial Accounting Research at Maastricht, the Joint Symposium of the Eleventh Annual Conference of Financial Economics and Accounting and the Seventh Mitsui Life Symposium on Global Financial Markets, and PhD seminar participants at University of Chicago and Columbia University.

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Abstract

Prominent properties of distributions of differences in earnings reported by forecast data providers (FDPs), i.e., I/B/E/S, Zacks, and First Call, and Compustat drive statistical inferences drawn in extant research concerning the relative information content and value relevance of alternative reported earnings numbers (e.g., "Street" or pro forma versus GAAP earnings). These properties include, 1) the existence of an extreme negative tail in such distributions (representing cases in which Compustat earnings is below FDPs' earnings by extreme amounts), 2) a higher frequency of cases in which Compustat earnings exceed FDP earnings by small amounts than cases in which FDP earnings exceed Compustat earnings by small amounts accompanied by a high concentration of zero earnings differences, 3) systematic changes in the shape of such distributions over time attributable to the application of stable formulae for excluding items from reported earnings by the FDPs while recognition of these items by firms in the cross-section changes. Relying on knowledge of these properties we show that many statistical inferences and interpretations concerning market reliance/fixation on FDP (Street or pro forma) earnings versus Compustat (GAAP) earnings in the cross section and over time are driven by a small number of extreme negative tail observations and a regime shift in the mean earnings differences in 1990, respectively. These properties have similar impacts on inferences in the value relevance literature. Our findings highlight the value of understanding the properties of distributions of earnings differences and the composition of earnings related to these properties for identifying potential factors that can confound inferences, and for uncovering evidence that generates new lines of investigation and improves test designs.

1. Introduction

This paper examines the properties of differences between reported earnings per forecast data providers (FDPs), including I/B/E/S, Zacks, and First Call, and reported earnings per Compustat, and demonstrates the effects of these properties on inferences in extant literature. Specifically, we investigate three relevant longitudinal and cross-sectional properties of the empirical distributions of these differences. The first property is an asymmetry in the tails of cross-sectional distributions of the earnings differences in the form of negative tails that are longer and fatter than positive tails. This property is attributable to the systematic exclusion of extreme, transitory items from FDP reported earnings, that are more frequently income-decreasing than income-increasing. The second property is a higher frequency of cases in which Compustat earnings slightly exceed FDP earnings than cases in which Compustat earnings fall slightly short of FDP earnings accompanied by a high concentration of exactly zero earnings differences. The third property of earnings differences distributions is systematic changes in their shape that arise because FDPs apply similar and reasonably stable formulae for excluding items from reported earnings, while the magnitude and frequency of firms' recognition of these excluded items in the cross-section change over time. We highlight a special case of this third property, which occurred in 1990, and coincided with procedural and definitional changes undertaken by the FDPs that permanently altered the relation between FDP forecast and reported earnings data.

We investigate the effects of these properties on inferences drawn in literatures concerned with cross-sectional and intertemporal informativeness and value-relevance of earnings. Studies we examine include those concerned with (1) identifying an *ex ante* "superior" source of reported earnings data, see, e.g., Philbrick and Ricks (1991), and Ramnath, Shane, and Rock (2001), (2) assessing the relative weight investors place on FDP (or Street) versus GAAP earnings, see, e.g., Brown and Sivakumar (2001) and Bradshaw and Sloan (2002), (3) determining whether investors efficiently process information in pro forma earnings, see, e.g., Johnson and Schwartz (2001), Lougee and Marquardt (2002), and Doyle, Lundholm and Soliman (2002), and (4) the relative value relevance of FDP versus GAAP earnings, see, e.g., Collins, Maydew, and Weiss (1997).

Our analysis of distributions of earnings differences reveals that the inference in prior literature that FDP (or Street) earnings (or earnings surprises composed of them) are more highly associated with market responses to earnings announcements than Compustat (GAAP) earnings is driven by a relatively small number of observations that lie in one extreme tail of these distributions. The GAAP earnings associated with observations in this tail include large, transitory income-decreasing items and are associated with very small market reactions to current earnings news. For the overwhelming majority of observations, in the entire distribution of differences, we find statistically similar market response to the two earnings measures.

Our analysis also shows that inferences consistent with the argument that investors have been placing increasing weight on Street earnings over the last decade is supported statistically only when samples straddle the year 1991. This year followed an apparent shift in regime of earnings difference distributions attributable to changes in firm recognition of items typically excluded from FDP reported earnings. In addition, we demonstrate that FDPs' application of proprietary definitions of reported earnings that systematically exclude non-operating items, special items, and other non-recurring items, can actually induce measurement error in market association tests for large sub samples of reported earnings observations. Finally, we present a number of new empirical findings relevant to the information content and value relevance literatures.

We choose to frame our analysis in terms of the distribution of differences in FDP and Compustat reported earnings for a number of reasons. First, the question of which earnings number investors rely upon when formulating beliefs has recently attracted the attention of the media, academicians, and standard setters. While investigations into the purported market reliance on so called Street earnings provided by FDPs are directly concerned with a variable defined as the difference between GAAP and FDP reported earnings, little attention has been paid to the statistical properties of the underlying empirical distribution of this variable. Second, accounting and finance studies have, over time, turned increasingly to FDP-defined reported earnings rather than earnings obtainable from Compustat or firms' filings for conducting empirical tests. Understanding relevant differences between competing reported earnings measures and the changes in their distributions over time is necessary to ensure that inferences from tests of market responses to earnings surprises,

earnings management, forecaster bias and efficiency, and value relevance of earnings are not attributed to factors not contemplated by the researcher. Third, if the researcher relies on a maintained assumption that a given measure, such as an analyst or statistical forecast, is an unbiased proxy for the market's *ex ante* earnings expectation, then analyses of earnings announcement effects or changes in the value relevance of earnings numbers are essentially analyses of whether the "correct" reported earnings benchmark for assessing the market's belief adjustment has been chosen. Important features of the distribution of differences in reported earnings and the composition of earnings associated with these features can play a role in determining the circumstances under which one measure is a better benchmark than another.

Our findings uncover many vexing issues that arise when using data provided by FDPs that suggest that the bar must be raised on hypothesis development, research design and sample selection criteria in order to generate compelling evidence on questions of relevance to standard setters, academicians, practitioners and investors. These findings also suggest that a detailed analysis of the distributions of earnings differences, which are the underlying variable of interest to the researcher, and of the composition and related characteristics of the observations that are associated with interesting features of these distributions can be a valuable tool in achieving this objective (see, Kothari, Sabino and Zach (1999) for an analogous investigation of stock returns distributions).

The next section describes the data used in this study. Section 3 describes the three properties of reported earnings difference distributions. Section 4 investigates the relation between these properties and conclusions drawn in prior literature. A summary and conclusion are provided in section 5.

2. Data Issues, Sample Description, and Variable Definition

2.1 Sources of differences in reported earnings between FDPs and Compustat

The tests performed in this paper rely on reported quarterly earnings numbers from three FDPs: I/B/E/S, Zacks Investment Research, and First Call, as well as earnings data supplied by Compustat (data item #19). Tests performed in section 4 of the paper employ consensus forecasts

provided by these FDPs. All numbers are converted to the same split-adjusted basis. I/B/E/S and Zacks have been tracking and compiling forecasted and reported earnings data for over two decades, while First Call began its coverage in 1992. Each FDP contains a large number of quarterly and annual consensus forecasted and actual earnings compiled according to each FDPs' proprietary procedures and definitions.

In general, FDP procedures are designed to exclude certain non-recurring items (e.g., one time charges or gains associated with acquisitions), other special items, and non-operating items from reported earnings. In principle, these procedures are intended to eliminate components of earnings that the majority of analysts argue they are not attempting to forecast.[1] According to officials at I/B/E/S and Zacks, the practice of excluding certain items from their definition of reported earnings has been in place since 1985. First Call implemented a similar practice from the inception of its forecast tracking service in 1992.

For purposes of this study, we define the amount excluded by FDPs from reported earnings as the difference between FDP reported earnings and a given definition of reported earnings, i.e., earnings per share before extraordinary items supplied by Compustat. While the sum of the items that comprise the difference can be calculated, it is not always possible to determine which specific items comprise the difference. General descriptions of items that are excluded are supplied by each FDP, but these basic formulae differ across FDPs and extensive conversations with FDP officials reveal that specific items can be dealt with idiosyncratically in individual cases by each FDP.

Thus, from the perspective of the researcher, some reported earnings numbers emerge from a black box and can never be traced back to raw data. This occurs because definitions of earnings cannot be reconciled by individual data items as is generally the case with data provided by Compustat. The problem is compounded by the loss in institutional memory associated with the extensive turnover in personnel responsible for maintaining data at each FDP and missing

[1] For example, I/B/E/S adjusts actual reported earnings to "match analysts' forecasts [made] after discontinued operations, extraordinary charges, and other non-operating items have been backed out" ("The I/B/E/S Glossary", 1999, I/B/E/S International Inc). Zacks adjusts actual reported earnings and forecasted earnings "in conformance with a proprietary definition of operating earnings per share before extra-ordinaries and non-recurring items" ("Zacks History Files with Updates", 1999, Zacks Investment Research). Similarly, First Call reports that both the forecasted and actual earnings "have been adjusted to exclude any unusual items that a majority of the contributing analysts deem non-operating and/or non-recurring" ("First Call Historical Database User Guide", 2000, First Call Corporation).

documentation from earlier years. Nevertheless, there is sufficient consistency across FDP definitions and stability over time in each FDPs' definitions to allow for the identification of properties of distributions of earnings differences common to all FDPs.[2]

2.2 Sample selection and variable definition

Our sample consists of 8,651 firms and 163,703 observations for I/B/E/S for the period covering 1985-1998, 7,685 firms and 137,748 observations for Zacks for the 1985-1998 period, and 6,783 firms and 90,792 observations for First Call for the 1992-1998 period. We compute reported earnings difference metrics for each FDP. An earnings difference is defined as the Compustat reported earnings for a given firm/quarter minus the FDP reported earnings of that firm/quarter. Accordingly, a negative difference implies lower earnings reported by Compustat compared to the FDP. Distributions of earnings differences pertaining to specific years or sample periods are denoted ED_{IBES}, ED_{ZACKS}, and ED_{FC} for I/B/E/S, Zacks and First Call, respectively.

Table 1 presents summary statistics for undeflated and deflated (by beginning of the quarter stock price) distributions of reported earnings differences for I/B/E/S, Zacks, and First Call. We note that mean differences in reported earnings over the entire period are always negative and reliably less than zero in all periods across all FDPs and that the median differences are always zero. Figure 1 depicts mean I/B/E/S earnings differences, special items, and non-operating items for the I/B/E/S sample over time. Consistent with the notion that special items comprise a large portion of some firm earnings differences, it can be seem that these two lines track each other closely. We also note the precipitous increase in the magnitude of the negative mean special items in 1990, an increase that was sustained if not magnified in subsequent years. A large decline in the mean non-operating items also occurred in 1990, however, it did not appear to be sustained in subsequent years.[3]

[2] Abarbanell and Lehavy (2002) examine ambiguities in inferences that can arise because of definitional and procedural differences *across* FDPs.

[3] Compustat definitions of non-operating items include, dividend income, equity in earnings of unconsolidated subs, gain/loss on sale of marketable securities, capitalized interest and other income/expense items. Note that it has been argued on empirical and logical grounds that some of these items should be classified as operating items, see, e.g., Penman (2001). Compustat definitions of special items include, restructuring charges, inventory write downs non-recurring profits and losses on sales of assets, and write downs or write offs of receivables and intangibles. The primary distinction for classifying these items is their transitory nature.

3. Properties of distributions of differences in reported earnings

3.1 The tail asymmetry in the distribution of earnings differences

The first property common to each ED_{FDP} that we examine is an asymmetry in the form of negative tails that are longer and fatter than positive tails. Observations in the negative tail represent cases in which FDP earnings exceed Compustat earnings by extreme amounts. Table 2 presents statistics relevant for the first property for the three distributions for the sample period 1992-1998. The mean difference in all cases is significantly negative while the median is zero. Skewness and kurtosis (i.e., benchmarking against a normal distribution) are both significant. Figure 2, which graphs the 1st through the 100th percentiles of the three earnings difference distributions, provides visual evidence of longer, fatter negative than positive tail for all three distributions.

Selected percentiles of each ED_{FDP} are also presented in table 2. Comparison of the 1st percentile (most negative) to the 99th percentile within each ED_{FDP} reveals that the most extreme negative observations are (by order of magnitude) larger than extreme positive observations. Evidence from cluster analyses (results unreported) strongly suggests that each ED_{FDP} is a mixture of at least two distributions, one of which forms the extreme negative tail. Employing standard robustness checks, see, e.g., Andrews, Bickel and Huber (1972), we find that after truncating between 3 and 5 percent of the observations in the extreme negative tails of the ED_{IBES}, ED_{ZACKS}, and ED_{FC}, respectively, skewness and kurtosis measures become insignificant, suggesting an approximately normal distribution of earnings differences characterizes the remaining observations.[4]

We next examine whether extreme negative earnings difference observations are associated with particular types of earnings components. Panel A of figure 3 presents results of ranking positive and negative I/B/E/S reported earnings differences, partitioning each group into quintiles and then

[4] While it is beyond the scope of this paper to perform a formal analysis of mixed distributions, one intuitive explanation for why the process that generates observations in the tail differs from that which produces the majority of observations in the cross-section involves the conservative nature of accounting recognition and reporting discretion exercised by management. Specifically, accounting rules give managers more flexibility and discretion to recognize extreme income decreasing than extreme income-increasing items. If firms engage in "earnings baths" (or extreme cookie jar reserving), there will be discontinuities present in a representative firm's observable distribution of reported earnings that would not be expected to be present in their unobservable distribution of "pre-managed" earnings. Because FDP formulae for excluding items from income are likely to remove one-time items associated with earnings baths, such reporting manipulations in the cross-section would be expected to contribute to asymmetry in the form of long, fat negative tails in ED_{FDP}. See Abarbanell and Lehavy (2001) for an analogous argument in connection with the shape of cross-sectional distributions of FDP forecast errors.

calculating mean earnings differences, special items, and non-operating items in each quintile. Observations with zero earnings differences comprise a separate group. The figure presents visual evidence consistent with the argument that observations that fall into the extreme negative tails of ED_{IBES} are associated with firm recognition of extremely negative special items (but not non-operating charges). Panel B presents the mean Compustat and I/B/E/S reported earnings for the portfolios described in panel A. It is evident that firms in the lowest portfolio also have the worst earnings performance, whether measured with Compustat or I/B/E/S earnings. We also note the poor earnings performance of firms with zero earnings differences, a characteristic of these observations that we return to in subsequent sections. Similar findings were obtained for the Zacks and First Call distributions of earnings differences.

3.2 The frequency of zero earnings differences and systematic patterns in small differences

Table 3 presents statistics relevant for the second property of earnings differences distributions. This table reports the mean, median, percentage positive, negative, and zero earnings difference by year for all three FDPs. It can be seen in table 3 that the median and modal earnings differences in all three FDPs is zero. For the 1992-1998 period, for example, earnings differences equal to zero represent 47%, 52% and 60% of the First Call, I/B/E/S and Zacks distributions, respectively. Thus, in a vast number of cases FDP earnings are identical to Compustat earnings, suggesting that these observations will have no direct value in tests of hypotheses that attempt to distinguish whether there is a differential bias in or market reactions to FDP and GAAP earnings. Furthermore, to the extent that zero earnings difference observations are associated with market reactions and forecast errors that are different in degree and nature from non-zero earnings difference observations, these observations have the potential to confound inferences if they are not randomly distributed across partitions of data examined by the researcher. We return to this point in section 4.

Further evidence concerning observations that fall near zero in ED_{FDP} is provided in figure 4. This figure presents histograms for the (undeflated) ED_{IBES} for the 1992-1998, where frequencies are calculated for a fixed interval of one cent. There are two interesting features of the data that are evident in the figure. First, as seen in panel A of figure 4, as earnings differences approach the value

of zero there is a greater likelihood that Compustat earnings will *exceed* FDP earnings. This asymmetry in the frequency of excluded items when their magnitude is small is obscured when considering both parametric and non-parametric summary statistics pertaining to the distributions that were presented in table 1.

Results not tabled indicate that firms with small positive (negative) earnings differences in the range of 1 to 2 cents (–2 to –1 cents) recognize special items 10% (7%) of the time. Both of these frequencies are lower than the general population which recognizes special items 15% of the time. Furthermore firms with positive (negative) small earnings differences recognize a *negative* special item 4% (8%) of the time. That is, firms associated with small earnings differences are less likely to recognize a special item than other firms, and firms with small positive earnings differences are less likely to recognize a negative special item than firms with small negative earnings differences. In contrast, firms with small earnings differences recognize positive (negative) non-operating items with approximately the same frequency as other firms 64% (20%), and these frequencies are similar for firms with small positive and small negative earnings differences. Thus, once again the composition of earnings appears to be associated with an notable asymmetry in $ED_{FDP,}$ in this case near the value of zero. This suggests the possibility of differential market reactions to earnings that fall on opposite sides of zero if the market weighs special items differently from non-operating items.[5]

A second interesting feature is evident in panel B of figure 4 (which reduces the scale of the vertical axis to 1%). The likelihood that differences will be negative (i.e., FDP earnings exceeds Compustat earnings) increases in the absolute magnitude of differences. This is especially evident among the largest earnings differences. This feature contributes to the negative skewness and kurtosis in the ED_{FDP} documented earlier, and is associated with the conservative nature of accounting recognition for items excluded from FDP reported earnings. The greater frequency and magnitude of extreme negative versus positive special items accounts for this aspect of the distribution.

[5] As expected, the magnitudes of non-operating and special items in the regions of small earnings differences are very small relative to their average magnitudes in the overall distribution.

3.3 Effects of fixed definitions and changing firm reporting over time: the 1990 "regime shift"

The third property common to all three ED_{FDP} is induced by the use of idiosyncratic, but nevertheless, similar formulae employed by FDPs for excluding items from reported earnings. As discussed earlier, the general descriptions of items to be excluded from FDP reported earnings include special items (generally characterized as non-recurring), and non-operating items (which are frequently recurring). While each FDP has refined its definitions of reported earnings over time and adjusted some numbers retroactively for changes in accounting standards, conversations with officials at all three FDPs indicate the definitions are very stable with respect to the treatment of most non-recurring items and non-operating items. Thus, variation in distributions of differences in reported earnings through time will be in large part a result of restricting the composition of one component of the difference (i.e., the FDP reported earnings) while firms make reporting choices that cause the other component of the difference (i.e., Compustat earnings) to vary.

To illustrate the impact of fixed formulae for reported earnings on year-to-year changes in the characteristics of ED_{FDP} we return to the evidence in table 3. Consider the years 1996 and 1997 for the First Call sample described in panel A. The change in the mean earnings difference between these two years is small and statistically insignificant. In contrast, there is a large and statistically significant drop in the percentage of zero earnings differences in 1997, and a smaller but statistically significant decline in the percentage of negative earnings differences. These percentage declines are offset by a large and statistically significant increase in the number of positive earnings differences (i.e., cases in which Compustat earnings exceed FDP earnings). The evidence in panels B and C of table 3 indicates that the pattern of large increase in the incidence of positive differences in earnings along with a drop in the percentage of zero differences and a small change in the mean difference also holds for the ED_{IBES} and ED_{Zacks}.[6] Thus, even though each FDP uses a proprietary definition of earnings, their formulae are sufficiently similar to produce similar patterns in the data over time.

[6] Interestingly, the increased incidence of positive differences is not associated with increases (decreases) in the rates that firms recognized positive (negative) special items and non-operating items between 1996 and 1997 as one might reasonably expect. We do find, however, a large decline in the mean negative non-operating items from 1996 to 1997. This raises the possibility that for firms that recognized negative non-operating items in 1997, the reduction in their magnitude was sufficiently large to offset the effects of other items so that their reported earnings according to Compustat were higher than earnings according to the FDPs more frequently than was true of firms in the cross section that recognized negative non-operating items in 1996.

Of particular interest in table 3 is the impact of fixed FDP earnings definitions observed in 1990 I/B/E/S and Zacks data. It can be seen in panels B and C of table 3 that there is a precipitous increase in the mean difference in reported earnings in 1990 for both the Zacks and I/B/E/S metrics without a related decline in the frequency of negative reported earnings differences. It appears that this year marked a "regime shift" in mean earnings differences as the magnitude and sign of these differences has remained negative and relatively large in subsequent years for both Zacks and I/B/E/S.[7]

The change in mean earnings differences in 1990 could be due entirely to the application of fixed definitions for reported earnings by FDPs while firms significantly changed their accounting recognition practices, or may reflect changes in FDP definitions in response to events of that year. Consistent with the first possibility, it was noted earlier with reference to figure 1 that in 1990 the magnitude (but not frequency) of negative special items and non-operating items recognized by firms increased. This change in level has persisted or become larger in magnitude for special items in subsequent years but the same is not true for non-operating expenses.[8]

The possibility of a fundamental change in reported earnings definitions is supported by I/B/E/S officials who indicate that 1989-1991 marked a period in which concerted efforts were made to systematically redefine reported earnings and to "cleanup" historical data. Efforts were also undertaken to align earnings forecast made by analysts with the definition of I/B/E/S earnings. The argument is also supported by comments from officials at First Call, indicating that since the inception of their database, they have engaged in efforts to ensure that all analysts contribute forecasts based on the same definition of earnings. However, according to company officials at Zacks, they have made no major changes in defining what items are to be excluded from earnings since the mid 1980s, apart from those related to mandated accounting changes such as SFAS 128. Nevertheless,

[7] We stress that our use of the term "regime shift" is merely a convenient way of differentiating one possible pattern in the data (a large, discontinuous change in a level of a variable) from another possible pattern (a monotonic trend). The length of the time-series of data used in this study is longer than those examined in the vast majority of previous studies that employ FDP data. Nevertheless, without supplemental analysis beyond the scope of the current study it would be difficult to conclude that patterns observed in the data represent permanent structural changes in the information environments from which firms' reported earnings rather than natural variation in broader macroeconomic factors that produce variation in the level of variables that emerge from a fixed information environment.

[8] The contribution of mandated accounting changes to these findings is the subject of ongoing research.

similar to the case of I/B/E/S, a significant change in mean earnings differences is observed in 1990 even for Zacks.[9]

While the question of the exact sources of the change in earnings differences distributions has not and may never be sorted out completely, what is clear from conversations with officials at both Zacks and I/B/E/S is that the events of 1990 did cause procedural changes over the next year that were designed to align more closely the definition of earnings to be forecasted by analysts to the definition of reported earnings employed by the FDPs. As demonstrated in section 4, these procedural changes are associated with an apparent regime shift in the magnitude of FDP forecast errors that began to appear in 1991. We show that this apparent regime shift can have a profound effect on longitudinal inferences concerning trends in bias in analysts' forecasts, market reliance on FDP earnings surprises, and the value relevance of earnings.

4. Implications of properties of Distributions of Earnings Differences on Inferences

In this section we attempt to draw a link between the common empirical properties of earnings differences distributions identified in section 3 and the development and testing of hypotheses in the information content and value relevance literatures.

4.1 The debate on GAAP versus Street earnings

The goal of FDPs to provide a measure of earnings surprises that corresponds best to market expectations is the most important reason given for why they exercise discretion over which reported earnings number to publish and why they monitor analysts' forecasts for large deviations from the consensus. Implicit in this exercise of discretion is the idea that such adjustments to reported earnings will result in a better reflection of the benchmark that investors compare to their *ex ante* earnings expectations when adjusting their beliefs, and hence prices at announcement dates. That is, earnings

[9] Zacks officials also indicate that efforts were undertaken in this time period to better align analysts' forecasts with their definition of reported earnings. The lack of detailed institutional memory and documentation at both Zacks and I/B/E/S made it impossible to determine with any level of confidence whether there were significant changes in general definitions of reported earnings and if so, whether they were in response to firm performance and/or reporting choices in 1990.

surprises based on earnings that exclude certain non-operating and non-recurring items should, in principle, have greater information content and higher value relevance.[10]

The question of the information content of earnings surprises based on FDP versus Compustat reported earnings was first explored in Philbrick and Ricks (1991). They find that cross-sectional earnings response coefficients (ERCs) are, on average, higher for earnings surprises comprised of FDP forecasts and FDP reported earnings than earnings surprises based on FDP forecasts and Compustat earnings. The result has been replicated in a number of other studies, e.g., Brown and Sivakumar (2001), and Bradshaw and Sloan (2002). In recent years the higher association of earnings surprises based on FDP reported earnings with stock returns has set off alarms in the financial press and among government officials concerned about the welfare of investors and the credibility of financial reporting (see e.g., Levitt 1998, MacDonald 1999, and Tergesen 1999). The emerging view is that firms, perhaps with the proactive or tacit support of analysts and FDPs, are manipulating investor expectations in a manner that leads to stock prices being inflated relative to fundamentals. For example, common forms of purported manipulation include "numbers and guidance games" (see, e.g., Schonfeld 1998) in which firms manage earnings and market expectations of earnings in a manner that leads to unusual frequencies of good news earnings surprises relative to analysts' forecasts and to inflated stock prices.

The notion that investors are misled by reported earnings has also gained currency in academic circles. Bradshaw and Sloan (2002), for example, argue that firms have been able to shift investor attention to Street earnings which have been cleaned by firm manipulations that move operating items to below the line. They suggest the possibility that this reporting technique has contributed to driving stock prices up in recent years without a corresponding increase in fundamentals. To establish their argument, Bradshaw and Sloan (2002) first show that mean earnings

[10] The terms value relevance and information content have been used interchangeably at times in the literature. It is common to draw a distinction between the two based on the length of the return window examined or whether returns or prices serve as the dependent variable. The association between long window returns or prices on the one hand and earnings on the other, examined in value relevance tests, suggests the weak condition that accounting earnings at least track information in prices. The term information content suggests the stronger condition that earnings news actually moves prices. Such is the logic underlying event study methodologies and the calculation of ERCs at earnings announcement dates. In this paper, we examine the association between a three-day return window around the announcement earnings to get at the question of how the market responds to earnings news, i.e., to gauge the information content of earnings. Value relevance is measured by associating prices with book values and earnings.

as reported by I/B/E/S are higher than mean earnings reported by Compustat (data item #8 after adjustment for stock splits), and show that ERCs based on I/B/E/S reported earnings have improved significantly in recent years. Using a longitudinal research design they also conclude that investors are showing an increasing preference for the I/B/E/S earnings over the Compustat reported earnings. Brown and Sivakumar (2001) draw similar conclusions. We examine these conclusions with data from the three FDPs.[11]

For each FDP we compute two forecast error measures. The first is based on the FDP reported earnings, denoted FE_{FDP}^{FDP}. The second is based on Compustat reported earnings, denoted FE_{FDP}^{CSTAT}. Forecast errors equal quarterly earnings per share minus quarterly forecasted earnings per share outstanding prior to the earnings announcement, deflated by price at the beginning of the period.

Table 4 presents descriptive statistics for yearly distributions of forecast errors. Mean forecast errors are negative in every year for all three databases. This feature of the data is attributable to the presence of a relatively small number of extreme negative forecast errors in quarterly cross-sections (see Degeorge, Patel and Zeckhauser 1999 and Abarbanell and Lehavy 2001). Median forecast errors after 1991 are typically equal to zero for all three databases, with the exception of a small pessimistic positive median in Zacks errors that emerges in the late 1990's. Note also that the percentage of positive (i.e., *ex post* pessimistic) forecast errors exceeds the number of negative errors in the 1992-1998 period for all three FDPs, indicating no evidence of pervasive optimism in analysts' forecasts. Finally, we note the substantial decline the magnitude of mean forecast errors for Zacks and I/B/E/S in the years 1991 and 1992. This apparent regime shift in mean forecast errors that begins in 1991 and is sustained in subsequent years follows an analogous shift in mean earnings differences that occurred in 1990. These patterns are consistent with statements by officials at I/B/E/S indicating a major cleanup of the database and procedural changes to ensure greater alignment between the forecasts of analysts their proprietary definition of reported earnings following the changes in firms' recognition of excluded items in the 1990.

[11] We present results for only the I/B/E/S sample and characterize results for Zacks and First Call data as necessary. Results obtained from these databases mirror those observed for I/B/E/S data

Table 5 presents the results of regressing announcement date market-adjusted returns on quarterly forecast errors calculated with the I/B/E/S earnings-based and Compustat earnings-based forecast error metrics. The last two rows of this table present the ERCs for the overall sample and for the sample of firms with *non-zero* earnings differences in the period 1992-1998. Like Brown and Sivakumar (2001), Bradshaw and Sloan (2002), and Doyle, Lundholm and Soliman (2002) who also employ I/B/E/S data, we find that ERCs (reported in columns 7 and 8) are significantly higher for earnings surprises that are calculated with I/B/E/S earnings (1.041) than with Compustat earnings (.386).[12] This result is consistent with the increasingly prevalent view among researchers, policy makers, and the business press that analysts, firms, and FDPs collude to inflate earnings and mislead unsophisticated investors.

To gain insight into the impact of the first property of ED_{FDP} (the negative tail asymmetry) on the finding of differential market responses to earnings, we estimate ERCs within portfolios ranked by the magnitude of the earnings difference. To that end, we first separate all non zero earnings differences into positive and negative groups. Within each group we rank the earnings differences and partition them into quintiles. Portfolio 1 contains the most extreme negative differences (i.e., the cases in which FDP reported earnings exceed Compustat reported earnings by extreme amounts) and portfolio 5 contains the least negative differences. Similarly, portfolio 6 contains the smallest positive differences and portfolio 10 contains the most extreme positive differences. We calculate ERCs for both I/B/E/S earnings-based and Compustat earnings-based forecast error metrics for each of the 10 portfolios. Notably, among the 10 portfolios, the only statistically reliable difference between Street and GAAP earnings-based ERCs is found in the first portfolio. Differences between ERCs in the other 9 portfolios are statistically insignificant.[13]

[12] Brown and Sivakumar (2001) and Bradshaw and Sloan (2002) include zero earnings difference observations in their main regressions. In principle, these observations, which comprise over half of their samples should play no role addressing the question at hand. The second to the last row in table 5 reports coefficients for the two earnings surprise metrics after excluding these observations. ERCs are slightly higher when FDP earnings are used to calculate surprises and slightly lower when Compustat earnings are used, however, the basic finding of a larger ERC for FDP earnings-based surprises still holds.

[13] ERCs estimated in the cross section for surprises based on FDP (GAAP) earnings are 1.04 (.39), 1.58 (.46), and 0.84 (0.37) for I/B/E/S, Zacks and First Call samples, respectively. To highlight the effect of extreme observations on inferences concerning market reliance on Street earnings we re-estimated ERCs after removing portfolio 1 in each ED_{FDP}. This procedure yielded ERCs for FDP (GAAP) earnings-based surprises of 1.10 (1.04), 1.58 (1.38), and 0.87 (0.90) for I/B/E/S, Zacks and First Call, respectively.

The results in table 5 provide a new perspective on the higher association between earnings surprises based on FDP versus Compustat reported earnings. First, it would appear that investors' reliance on Street over GAAP earnings is not a pervasive phenomenon. This is supported by the evidence that there is no difference between reported earnings between Compustat and I/B/E/S (as well as the other FDPs) in over half the cases in the sample, and that after applying a rough cut to the remaining sample, we find that only 5% (4,950 out of 96,808) of the observations located in the tail of non zero ED_{IBES} distribution are associated with reliably different ERCs.[14] Year-by-year comparisons by portfolio lead to the same conclusion (unreported in tables). Second, ERCs associated with observations in the extreme tails of earnings differences distributions are substantially smaller in magnitude than in other portfolios regardless of the forecast error metric used. That is, even after excluding obvious, explicitly reported items, I/B/E/S earnings-based ERCs remain extremely low. Thus, at a minimum, it would appear that the market is quite aware of the difference between the persistence of earnings applicable to observations in portfolio 1, suggesting investors do not give very much weight to "news" contained in the earnings reported by these firms.

Taken together, the evidence in table 5 strongly suggests that the debate over the reliance on Street versus GAAP earnings has high relevance in a limited number of cases of firms whose earnings performance is poor by any measure, and whose stock prices are relatively insensitive to earnings news in any event. At a minimum the results for the partitioned sample call into question the pervasiveness and economic impact of possible mispricing as a result of investors fixation on "inflated" FDP reported earnings numbers. They also suggest a very intuitive and less sinister reason for prior statistical evidence that appears to support investor preferences for Street versus GAAP earnings. Specifically, the blanket exclusion of certain income items by FDPs provides a benefit in that it attenuates the effect of a small number of cases in which GAAP earnings are particularly

[14] Note also that in prior studies concerned with differential bias or market responses for Street versus GAAP reported earnings, empirical tests are routinely carried out with samples that include a large number of observations where the two numbers are identical. The evidence in table 5 indicates that ERCs associated with zero earnings differences tend to be substantially smaller than those associated with non-zero earnings differences. Although the effect of including these observations on the ERC calculated for the overall sample is small, depending on the specific hypothesis under investigation and test design adopted by the researcher, the inclusion of these observations has the potential to confound inferences. We provide additional evidence on the information content and value relevance of zero earnings differences below.

ineffective at conveying value relevant information. By removing most non-operating and non-recurring items as a rule, FDPs coincidently remove the most extreme (especially transitory income decreasing) cases that investors appear to ignore. Thus, a portion of the measurement error (with respect to the true earnings benchmark used by the market) is removed in exactly the cases where the measurement error is the greatest and has the largest impact on differences in cross-sectional response coefficients.

As shown below, statistical improvements provided by the blanket exclusion of certain income items do not come without a cost. Specifically, we show that the exclusion of certain items leads to increases in measurement error and lower market associations for large subsets of observations in the cross-section, suggesting that FDPs are often "throwing the baby out with the bath water."

4.2 Did investors become increasingly reliant on Street versus GAAP earnings in the 1990's?

Bradshaw and Sloan (2002) provide evidence consistent with an increasing reliance by investors on Street rather than GAAP earnings. The conclusion is based on statistical tests that indicate a significant relation between ERCs and time over their 1985-1997 sample period. In this section we reexamine the conclusion of an increasing reliance by investors in recent years with both the tail asymmetry and regime shift properties of earnings differences in mind.

Panel A of figure 5 presents a graph of mean quarterly ERCs by year for the I/B/E/S earnings-based and Compustat earnings-based forecast error measures. There are two points of interest we highlight. First, there is a clear divergence between the ERCs calculated with the competing forecast error measures that begins in 1991 and is sustained thereafter. Second, there appears to be an upward trend in the ERCs calculated with the I/B/E/S forecast and I/B/E/S earnings surprise metric in the years after 1990.

Panel B of figure 5 demonstrates the important role of the tail asymmetry in explaining this divergence over time. This panel presents ERCs similar to those in panel A after observations in portfolio 1 of reported earnings differences are removed from the sample. It can be seen that the divergence in ERCs is eliminated in most years, reinforcing the cross sectional evidence presented in

footnote 13. Nevertheless, even after eliminating tail observations in the ED_{IBES} distributions – thereby removing evidence of systematic differences in ERCs based on competing earnings surprise measures – there is still an appearance of an upward trend in ERCs after 1990.

Additional evidence on the longitudinal properties of forecast error measures and their associated ERCs is provided in Table 6. This table presents mean forecast errors and ERCs by year for the two I/B/E/S forecast-based earnings surprise measures. Visual inspection of the data indicates that ERCs in the post 1990 period are considerably higher than in the earlier period. The difference in sub-period ERCs is highly significant. Note that there is shift in the magnitude of ERCs that coincides with the mean shift in forecast errors that begins in 1991, the year following the apparent shift in the mean earnings differences, and the implementation of procedures to ensure analysts' were forecasting earnings that were aligned with FDP definitions.

The question at hand, however, is whether there has been an *increasing* trend in the reliance of the market on FDP earnings in the 1990s. The bottom panel in table 6 reports selected correlations of yearly ERCs and time. The first correlation includes the entire sample period from 1985-1998. It can be seen that there is a statistically significant positive correlation between ERCs and time for both I/B/E/S forecast-based earnings surprise measures, with the higher of the two belonging to the FE_{IBES}^{IBES} metric (.88 versus .67). The correlations are then recalculated using data from the 1992-1998 period covered by all three FDPs. Correlations between ERCs based on both earnings surprise metrics are considerably smaller and statistically insignificant. Next, we recalculate the correlations after dropping the year 1998 and adding the year 1991 to the sample. This ensures that results are not affected by the number of years used to calculate the correlation. It can be seen that once the sample period straddles 1991, inferences change dramatically. Now the correlation between ERCs based on the FE_{IBES}^{IBES} metric (i.e., the one based on Street earnings) is highly significant and almost identical in magnitude to that calculated for the entire sample period (.89). The correlation between ERCs based on the FE_{CSTAT}^{IBES} metric remains insignificant.[15]

[15] We note from table 5 that a similar test of correlation between mean forecast errors for both earnings surprise metrics and time produced a similar result as that observed for ERCs. That is, if the sample period does not straddle 1991, there is no evidence of a negative correlation between mean earnings surprises and time. Evidence of a negative correlation has been used to support the argument that there has been a decreasing trend in analysts' optimism during the 1990s (see e.g., Brown 1999). No such correlation is evident without including at least one year from the pre-1991 period.

The preceding results hold with or without the inclusion of observations in the extreme negative tail of the ED_{IBES} distribution, suggesting the robustness of findings to shifts in the size and magnitude of tails observations over time. Finally, tests employing First Call data covering only the post-regime shift period display no evidence of an increasing correlation between ERCs and time for either the FE_{FC}^{FC} or FE_{FC}^{CSTAT} earnings surprise metric.

4.3 The search for ex ante superior source of forecast and reported earnings data

The properties of ED_{FDP} are also relevant for the literature that attempts to identify *ex ante* superior sources of forecasts and earnings for the purpose of conducting research on issues such as bias in analysts' forecast bias and market associations to earnings surprises, see, e.g., Philbrick and Ricks (1991) and Ramnath, Rock, and Shane (2001). One persistent finding in this literature is that earnings surprises based on Compustat reported earnings display lower associations with returns in the cross section than earnings surprises that are based on FDP reported earnings, regardless of the source of the forecast. It should be apparent that, holding the forecast component of the earnings surprise constant, the basic question addressed in this case is essentially the same question asked in the last section, i.e., do investors rely more on FDP (Street) earnings than Compustat (GAAP) earnings.[16] It should also be apparent from the results in table 5 that the tail asymmetry in ED_{FDP} has a disproportional impact on the perceived superiority of FDP earnings relative to Compustat earnings-based surprises in the cross-section.

Because the apparent cross-sectional superiority of FDP reported earnings-based surprise derives from the large influence of a limited number of cases of firms in unusual circumstances, it is possible that this effect can obscure cases in which Compustat reported earnings are systematically more highly associated with returns than FDP earnings. That is, the potential exists for inducing measurement error in a large number of earnings surprises in given research settings by choosing FDP earnings that mechanically exclude items from earnings benchmarks to which the market

[16] The stated motivation for conducting market association tests in this literature is to find earnings surprises with the least amount of measurement error (with respect to market expectations, whether these expectations are rational or not) and does not refer to the issue of whether a higher association represents market fixation on inflated earnings, which is the issue of concern in the Street or pro forma versus GAAP earnings literature.

generally does react. One way to demonstrate that the superiority of one source of reported earnings data relative to another depends on the research question at hand is to run a "horse race" in conditional ED_{FDP}, where the conditioning variables are determined by the empirical hypothesis under examination. We explore this approach in the context of the Street versus GAAP discussed above.

Lougee and Marquardt (2002) and Doyle, Lundholm and Soliman (2002) are examples of studies that perform tests that are based on conditional (on the sign of the earnings surprise) ED_{FDP}. For example, both studies examine cases in which Street or Pro-forma earnings exceed analysts' expectations but Compustat earnings do not. We expand on these analyses to examine the effects of the sign and magnitude of earnings differences. Specifically, we first sort the three FDP samples into four categories, 1) cases in which both FDP and Compustat exceed that FDP's consensus forecast, 2) cases in which both FDP and Compustat earnings fall below that FDP's consensus forecast, 3) cases in which FDP earnings exceed that FDPs consensus forecast but Compustat earnings fall below it, and 4) cases in which Compustat earnings exceed that FDPs consensus forecast but the FDP earnings fall below it. Within each category, we rank observations by the reported earnings differences and form quartiles, where the first quartile represents the most negative differences. Finally, within each quartile we compute ERCs for the earnings surprises based on FDP reported earnings and ERCs based on Compustat earnings (i.e., the forecast is held constant). Results for the I/B/E/S sample are reported in table 7.

Panel A of table 7 presents results for the case in which both Compustat and I/B/E/S earnings exceed the I/B/E/S forecast. The reported earnings differences at the 1^{st} and 99^{th} percentiles are -0.37 and 1.32, respectively, suggesting that the tail asymmetry observed in unconditional ED_{FDP} is reversed in the case of this particular conditional distribution. Note also that observations in this distribution fall on both sides of the value of zero earnings difference. It can be seen that ERCs in every quartile of the ED_{IBES} are relatively large positive values and statistically significant for both earnings surprise metrics. Thus, when there is no ambiguity over whether a forecast has been *beaten*, the market reaction to the surprise is quite strong.

Notably in panel A of table 7, the ERC for the Compustat earnings-based surprises is reliably larger than the ERC for I/B/E/S earnings-based surprises in the first quartile. The mean earnings difference in this quartile is –0.16 (column 5), which, because the forecast is fixed, implies that Compustat earnings beat I/B/E/S forecasts by a much smaller amount than FDP earnings, on average. The opposite result holds in the most positive quartile where I/B/E/S earnings-based surprises are associated with a larger market reaction. The mean earnings difference in this quartile is .57, indicating that I/B/E/S earnings beat forecasts by an amount less than Compustat earnings, on average. Differences in ERCs are insignificant in the remaining quartiles.

The results in panel A indicate that Compustat earnings are, in fact, the superior benchmark to forecasts when both earnings numbers exceed the forecast but when Compustat earnings fall well below FDP earnings. In contrast, FDP earnings are the superior benchmark to forecasts when both earnings numbers exceed the forecast but when FDP earnings fall well below Compustat earnings. One intuitive explanation for this result is that items that create extreme differences are likely to be transitory in nature and given little weight by investors. Thus, when both earnings measures exceed the forecast, the earnings number that excludes such transitory items (i.e., the lower earnings numbers), falls closer to the investors' true benchmark.[17]

Panel B of table 7 presents results for the case in which both Compustat and I/B/E/S earnings fall below the I/B/E/S forecast. The reported earnings differences at the 1st and 99th percentiles are -9.65 and 0.77, respectively, suggesting a tail asymmetry similar to the one found in the unconditional distribution is present in the conditional distribution. Again, differences between FDP and Compustat earnings in this conditional distribution straddle the value of zero. ERCs in every quartile of the reported earnings distribution are relatively small positive values for both earnings surprise metrics. It appears that when there is no ambiguity over whether a forecast has been *missed*, the market reaction is most often significantly related to the surprise but always small. The only significant difference between ERCs in this category is found in the first quartile, where the ERC for I/B/E/S earnings-

[17] Note that when firms beat earnings expectations the market appears to respond to the lower (i.e., least inflated) earnings benchmark regardless of whether it is the Street or the GAAP number. This result suggests, at the very least, that for studies concerned with the question of whether earnings are being inflated to fool the market, it will be necessary for the researcher to identify the specific circumstances under which they believe Street earnings are the actual benchmark that the market relies on *and* these earnings are actually higher than GAAP earnings.

based surprises is statistically larger than that associated with the Compustat earnings-based surprises. The mean earnings difference (and by construction forecast error difference) in this quartile is –4.593, indicating that I/B/E/S earnings fell short of the forecast on average by a large amount less than Compustat earnings did. The reader will recognize these as cases that fall into the negative tail of the unconditional ED_{IBES} distribution, i.e., observations for which current GAAP earnings do a particularly poor job of conveying value relevant information and for which FDP reported earnings provide a relatively large attenuation of the measurement error problem. We re-emphasize the very small ERCs associated with these observations regardless of the earnings surprise metrics.

Panel C of table 7 presents results for the case when I/B/E/S reported earnings beat the I/B/E/S forecast but Compustat earnings do not. The reported earnings differences at the 1st and 99th percentiles are –15.1 and –0.06, respectively. In this case the conditional distribution of reported earnings differences by construction includes only negative values (Compustat earnings are always less than FDP earnings). ERCs for both earnings surprise metrics are insignificant and statistically indistinguishable in the first 2 quartiles and both significant but statistically indistinguishable in the next quartile. Only in the last quartile, where FDP earnings *exceed* Compustat earnings by the *smallest* average amount, does the I/B/E/S reported earnings appear to be superior. Notably, this quartile includes cases of small FDP adjustments to GAAP earnings of income-decreasing items that lead to small good news earnings surprises according to the FDP (while Compustat reports a small bad news surprise). Such cases lead to especially strong market responses by a market that appears to rely on the FDP's version of the reported earnings benchmark (alternatively low reliance on the Compustat earnings benchmark).

Finally, panel D of table 7 presents results for the cases in which Compustat reported earnings beat the I/B/E/S forecast but I/B/E/S earnings do not. The reported earnings differences at the 1st and 99th percentiles are 0.05 and 5.59, respectively. This conditional distribution of reported earnings differences by construction includes only positive values (i.e., Compustat earnings are always greater

than FDP earnings). ERCs for both earnings surprise metrics are insignificant and statistically indistinguishable in all quartiles.[18]

From the measurement error criteria adopted in the *ex ante* superior earnings literature the findings in table 7 can be summarized as follows. When both FDP and GAAP earnings exceed earnings expectations and there is a large discrepancy between the two, the lower earnings number appears to be the relevant benchmark used by the market. When both FDP and GAAP earnings fall short of earnings expectations and there is a large difference between the two numbers, the market appears to benchmark its expectations with the higher earnings number (which is almost always the FDP for reasons related to the conservative nature of accounting recognition rules and, perhaps, the exercise of reporting discretion by management, e.g., earnings baths). When the earnings surprise is small in magnitude, regardless of the reported earnings source used to calculate it, but there is ambiguity in the sign of the FDP and Compustat earnings-based surprise, the market behaves inconsistently, reacting strongly to upward adjustments by the FDP but not to downward adjustments.[19]

4.4 Using ED_{FDP} to refine hypotheses and to improve tests designs and sample selection criteria

In this section we lever off the findings in table 7 to provide an example of how analysis of ED_{FDP} distributions can be exploited to focus tests more precisely on the research question of interest, and to conduct tests that are powerful and control for factors that can confound inferences. Recall that the evidence in table 5 indicates that a particularly relevant setting for examining the debate over whether Street earnings are inflated to fool the market is cases in which GAAP earnings include extreme income-decreasing special items and Street earnings exclude them (portfolio 1 in table 5).

[18] The lack of significant difference in responses to small negative FDP earnings adjustments suggests that if investors do "fixate" on FDP earnings, they apparently do so selectively, responding to small upward in seen in panel C but not small negative adjustments reported in panel D.

[19] While these findings are new to the literature, we make no claim that they fit any theory or can be explained by a formal hypothesis. This is consistent with the neutral position taken by Philbrick and Ricks (1991) and Ramnath, Rock and Shane (2001) in adopting the simple criteria of highest market association for judging *ex ante* superiority. Our discussion also ignores the possibility that there are systematic differences in measurement error across the four categories associated with the use of forecasts to proxy for the market's pre-announcement earnings expectation. But if such differences do exist, this is just one more reason why the effort to identify an *ex ante* superior sources of forecasts and earnings for the entire cross-section may be of limited relevance to researchers.

The evidence in panel C of table 7 suggests another setting where the debate appears to be particularly relevant, i.e., the case in which Street earnings beat FDP forecasts but GAAP earnings do not. More specifically, the results indicate that the debate is most relevant when Street earnings are "adjusted" upward by small amounts sufficient to slightly beat forecasts.

Consider any sample selection criteria that isolates on a given part of a forecast error distribution. A concern that arises is that it is possible for observations from the tail of the ED_{FDP} to fall randomly into this part of the distribution. As seen in table 5, ERCs based on FDP earnings-based surprise are systematically larger than Compustat earnings-based ERCs because the FDP number attenuates the measurement error induced in cases where GAAP earnings are particularly uninformative. If such observations fall randomly in the part of the forecast error distribution identified by the research hypothesis they have the potential to disproportionally influence the outcome of a "horse race" between Street and GAAP earnings in that region. Doyle, Lundholm and Soliman (2002), for example, focus some of their tests on a sample of FDP reported earnings that meet or beat forecasts by an amount equal to or less than 2 cents. They also require that GAAP earnings miss the forecast, but they allow it to fall short of the forecast by any amount, including an extreme amount.

Panel A of table 8 provides evidence of this potential problem. The table presents results for both I/B/E/S forecast error metrics for a sample of firms for which Street earnings *fall short* of forecast by an amount no greater than 2 cents. The observations in this sub sample are partitioned into quartiles by the size of their earnings differences. It can be seen that the only case in which Street earnings-based surprises are more highly associated with returns than GAAP earnings surprises for this "irrelevant" slice of the forecast error distribution is in the largest (most negative) earnings difference portfolio. By analogy, if observations in the negative tail of ED_{FDP} are also responsible for the finding that Street earnings-based surprises are more highly associated with GAAP earnings-based surprises for firms whose Street earnings slightly *beat* expectations, it would be difficult to argue that such evidence supports the spirit of the market fixation argument.

Recall that the evidence in panel C of table 7 indicates that only small income-increasing adjustments that lead to small positive forecasts errors results in a larger FDP earnings-based ERC for

firms whose Street earnings beat forecasts but whose GAAP earnings do not. Similar to the discussion above, this evidence is also inconclusive with respect to question at hand. This is because the sign and size of the forecast error is not held constant across the ranks. It is possible that market reactions are systematically larger for Street earnings whenever adjustments are small positive amounts, regardless of whether or how much Street earnings beat forecasts. If so, then because, by construction, in panel C, the only cases in which small positive forecast errors can arise must also be the cases in which Street earnings reflect small positive adjustments to GAAP earnings, there is ambiguity over whether slightly beating forecasts is a relevant condition for explaining the result.

By combining the forecast error target (which motivated the original hypothesis) with information gleaned from the analysis of ED_{FDP}, it is possible to sort out the source of an observed higher association between Street earnings-based surprises than GAAP earnings-based surprises when Street earnings beat the forecasts and Compustat earnings do not. Panel B of table 8 presents results for both I/B/E/S forecast error metrics for a sample of firms for which Street earnings *beat* forecasts by an amount no greater than 2 cents and Compustat earnings *missed* forecasts by any amount (i.e., the sample criteria adopted by Doyle, Lundholm and Soliman 2002). Once again the observations in this sample are partitioned into quartiles by the size of their earnings differences. It can be seen that the only case in which Street earnings-based surprises are more highly associated with returns is in the two smallest earnings differences portfolios, where the mean differences represents relatively small positive adjustments. This evidence supports the initial conclusion in panel C of table 7 and provides some reassurance that the higher association of Street earnings with returns reported by Doyle, Lundholm, and Soliman (2002) is not solely attributable to a small number of observations for which GAAP earnings are particularly noisy.

The analysis in table 8 also suggests ways to refine tests on related questions in the prior literature. If Street earnings are more highly associated with returns than GAAP only in cases in which forecasts are beaten with relatively small positive FDP adjustments to GAAP earnings, then additional tests can be devised that isolate these observations and, perhaps, even allow for other observations in a sample for which forecasts are slightly beaten to be used as a control group. For example, the relatively small number of observations isolated in table 8 can be used in tests of

whether firms for which there are small positive FDP adjustments that slightly beat forecasts are more likely to report actual pro forma earnings than other firms, or, alternatively, other firms that slightly beat forecasts with larger adjustments to GAAP earnings.

The evidence in table 8 also highlights an important point for studies that look for price corrections to initial mispricing attributed to market fixation on a particular earnings number, see, e.g., Doyle, Lundholm and Soliman (2002). If only a subset of firms that beat expectations by small amounts is responsible for evidence consistent with market fixation, then it is these firms that should be isolated in subsequent returns tests to increase power, and more important, to avoid the possibility of confounding inferences attributable to systematic patterns in the returns of firms that meet the sample criteria but on whose Street earnings the market does not appear to fixate.[20]

4.5 The controversy over Pro forma earnings

In some studies researchers attempt to extrapolate findings from ED_{FDP} to other relevant earnings differences. An example of this is found in the literature on the growing controversy over the practice of firms announcing pro forma earnings along with GAAP earnings. The allegation is that investors may fixate on a misleading number, one that is typically higher than its GAAP counterpart. Based on findings from ED_{IBES}, Brown and Sivakumar (2001) and Bradshaw and Sloan (2002) conclude that investors place higher weight on pro forma earnings than GAAP earnings. Similarly, Doyle, Lundholm, and Soliman (2002) examine post-earnings announcement date returns to FDP earnings and conclude that investors subsequently correct initial mispricing. In contrast, studies that employ *actual* pro forma earnings find some evidence of a higher initial reliance by investors on pro forma earnings than GAAP earnings, but find either no or limited evidence of subsequent price corrections, see e.g., Johnson and Schwartz (2001) and Lougee and Marquardt (2002).

[20] An additional burden faced by the researcher investigating the question of whether investors are misled by reported earnings numbers is that tests must be designed to discriminate between mispricing that results from fixation on a given reported number (to the exclusion of other information), and market mis-reaction to the information in items that happen to be excluded from FDP reported items. In the absence of such a test design it is impossible to differentiate results from those of prior studies which find market underreactions to items typically excluded from FDP earnings, see, e.g.,Burgstahler, Jiambalvo, and Shevlin (2002).

The fact that summary statistical evidence indicates that FDP reported earnings and pro forma earnings are similar has been used to justify the use of the former as a proxy for the latter in empirical tests as well as to promote the argument that FDPs collude with firms to foist inflated earnings on investors.[21] However, these comparisons are made *conditional* on a firms having reported pro forma earnings, so there is no guarantee that observed similarities are generalizable.

One condition under which it would be appropriate to extrapolate findings from a horse race between FDP earnings and GAAP earnings to the issue of market reliance on pro forma versus GAAP earnings is if pro forma earnings are distributed approximately randomly across the ED_{FDP}. It can be inferred from studies that use actual pro forma data, however, that the assumption that pro forma earnings are randomly distributed across ED_{FDP} is not descriptive. For example, Johnson and Schwartz (2001) report that 39% of their pro forma observations fall into the lowest quintile of the Zacks or GAAP reported earnings populations (see panel C of their table 2). There is a strong correspondence between observations that fall into the tail of unconditional ED_{FDP} and those that fall into conditional (on the rank of FDP or GAAP earnings) ED_{FDP}. In unreported results we find that nearly 40% of observations that fall in the 1st quintile (most negative differences) of unconditional ED_{zacks} come from the 1st quintile of the ED_{Zacks} conditioned first on the rank of Zacks reported earnings.[22]

As shown previously in table 5, the fact that cross-sectional ERCs are larger when FDP earnings are used to calculate surprises than when GAAP earnings are used is attributable primarily to

[21] For example, Doyle, Lundholm and Soliman (2002) justify the use of FDP for pro forma earnings based on evidence in Johnson and Schwartz (2001), which report the equivalence of pro forma and FDP earnings for 58% of their sample. Their figure 1a also indicates that median Zacks earnings tracks median pro forma earnings closely in the 20 portfolios of firms ranked by GAAP earnings. Clearly it is possible for FDP earnings to be similar to pro forma earnings in many cases without the existence of collusion. The relevant distinction underlying the market fixation controversy in the literature is whether the market mis-reacts contemporaneously to *firm* announcements not whether FDPs have adjusted reported GAAP earnings after announcements in a manner that is consistent with how the market actually reacted. This is a separable issue from the question of whether FDPs collusively adjust reported GAAP earnings after announcements to match firm pro forma earnings reports and how matching these numbers well after their announcement reinforces mispricing. Research designs employed in the literature thus far have not adequately disentangled the two issues.

[22] Additional descriptive evidence supports the conclusion that pro forma firms are over represented in negative tail of ED_{FDP}, including a substantial larger median pro forma earnings difference than median Zacks earnings differences among the poorest GAAP earnings performers (see Johnson and Schwartz (2001) figure 1b), a substantially higher number of firms reporting GAAP losses among pro forma firms than observed for the overall Zacks population, and negative, non-recurring charges among pro forma firms that are extreme relative to the average GAAP firm (Lougee and Marquardt (2002) table 2).

observations in the extreme negative tails of ED_{FDP}. Given the high likelihood that pro forma will fall into the negative tail of ED_{FPD}, one could argue that it is reasonable to extrapolate findings from this part of the distributions to pro forma earnings. However, the evidence in Lougee and Marquardt (2002) suggests this logic may not hold up to empirical scrutiny. They report that while there is a statistical difference between R^2s of regressions of announcement returns on pro forma earnings-based surprises and those on GAAP earnings-based surprises for their sample, the respective ERCs are very similar in magnitude (.186 versus .191 as reported in panel A of their table 6). That is, even though a disproportional number of pro forma firms fall into ED_{FDP} tails where FDP reported earnings are associated with higher ERCs than GAAP earnings, the advantage does not appear to be present in the case of their sample of pro forma firms.[23] This suggest that extrapolation from the cross section, or even a specific part of an ED_{FDP} to infer something about market responses to pro forma earnings may be inappropriate.[24]

It would be interesting to determine if ranking by the difference between GAAP and actual pro forma earnings within the categories examined by Lougee and Marquardt (2002) reveals additional insights about variation in market responses to pro forma earnings like those gleaned from table 7 of this paper. Another example of where identifying properties of pro forma distributions of differences in earnings (relative to GAAP reported earnings) might be helpful for refining hypotheses and controlling for factors that can potentially confound inferences is in "bright line" tests. For example, like other studies cited in this paper, Lougee and Marquardt (2002) identify the bright line of loss versus profit as an *a priori* condition to predict differential market responses. While such a distinction does partially account for the fact that ED_{FDP} are mixtures, the distinction is not a

[23] Comparisons of the magnitudes of ERCs across studies are problematic because of differences in the variable used to scale earnings surprise (e.g., Johnson and Schwartz (2001) use the forecast) and the source of earnings forecasts used to calculate the surprise (e.g., Lougee and Marquardt (2002) use statistical forecasts rather than FDP forecasts).

[24] When Lougee and Marquardt (2002) partition their data in ways that indirectly isolate larger numbers of firms performing poorly, they do find cases in which ERCs are higher for pro forma earnings-based surprises than GAAP earnings-based surprises (see panel C1 of their table 6). Interestingly, they also report instances in which GAAP earnings-based surprises are more highly associated with market returns than pro forma earnings-based surprises (see panel B1 of table 6 pertaining to firms that reconcile GAAP and pro forma earnings and panel C2 of table 6 for firms that do not avoid a loss or a negative earnings surprise). This evidence suggest that the phenomenon of "information loss" associated with large sub samples of firms that occurs when researchers depends solely on FDP earnings will also occur if researchers were to concentrate on pro forma earnings when benchmarking market earnings expectations.

particularly precise one. For example, figure 1b of Johnson and Schwartz (2001) indicates that substantial differences between pro forma and FDP earnings are isolated in the tails of the distribution of observations ranked by the level of Zacks reported earnings. Specifically, firms in the lowest Zacks earnings portfolio are associated with the most extreme differences between pro forma and Zacks earnings. It is very likely that all firms in this portfolio are reporting losses for the quarter. Consistent with this conjecture we find that when we rank our Zacks data on reported earnings and partition into 20 portfolios, all firms in the first portfolio report losses under GAAP rules or Zacks definitions, suggesting that the distinction between profit and loss is irrelevant in exactly the part of the distribution where substantial differences are observed.[25]

4.6 Earnings differences distributions and inferences in value relevance studies

In this section we expand our analysis of the impact of the properties of ED_{FDP} on inferences to an example from the literature concerning cross-sectional factors that affect the value relevance of earnings and book values, see e.g., Francis and Schipper (1999), Collins, Maydew, and Weiss (1997) and Brown, Lo and Lys (1999). Specifically we examine the impact of observations in tails of the ED_{FDP} and the effects of fixed definitions for excluding items from FDP reported earnings on cross sectional inferences concerning the relative value relevance of earnings and book values. The effect of the regime shift described in section 3 on longitudinal inferences concerning the value relevance of earnings will be discussed in future versions.

Table 9 presents the estimated coefficients from regressions of prices on earnings and book values, and adjusted R^2s from regressions within the portfolios ranked by earnings differences for the I/B/E/S data as described in table 5. Recall that the first portfolio represents observations with the largest, negative earnings differences. Columns 3-5 of table 9 report results for GAAP book value and

[25] The evidence in Johnson and Schwartz (2001) suggests there is also a tail asymmetry in pro forma distributions of earnings differences similar to that observed for ED_{FDP}, but perhaps even more extreme in degree. It is likely that the composition of earnings of firms located in the tails of pro forma distributions of earnings differences plays a role here. Specifically, the exclusion of items such as amortization of intangibles and stock compensation expense from pro forma but not FDP earnings may be a systematic factor associated with the most extreme pro forma earnings differences. This in turn may also play a role in explaining why ERCs based on pro forma earnings are not larger than those based on GAAP earnings even though large numbers of firms that report pro forma earnings fall into the most extreme tails of ED_{FDP} where meaningful differences between GAAP and FDP earnings based surprises are observed.

earnings. The coefficient on earnings is the lowest (actually negative) while the coefficient on book value is the highest in portfolio 1, indicating that the largest tradeoff between the value relevance of earnings and book value occurs in this decile. Note also that the adjusted R^2 in this portfolio is very low. This suggests that "measurement error" (relative to the market's actual earnings benchmark to price) is associated with the most extreme negative observations in the ED_{IBES}. These observations appear to bias downward the coefficient on earnings and inflate the coefficient on book value, which must compensate for this error. Nevertheless, the amount of error in earnings is sufficiently large in portfolio 1 that book value cannot fully compensate for the information lost, as suggested by the low R^2.

The preceding evidence is consistent with our earlier findings on ERCs, which suggest the market is well aware of the transitory nature of large, negative non-recurring items that decrease the informativeness of earnings for a relatively small set of observations in the 1st portfolio. The evidence in table 9 also indicates that as earnings differences become more positive there is a diminution in the trade-off between book value and earnings. That is, book value is not being called upon to compensate for extreme transitory components of earnings to as great an extent.

We next turn to an examination of the impact of the exclusion of items from FDP reported earnings on inferences concerning the relative value relevance of earnings and book values. Columns 6-8 of table 9 present the results of the value relevance tests for I/B/E/S reported earnings.[26] There are three important effects to note when comparing these results to those based on GAAP earnings. First, after FDP exclusion of most extreme negative items from reported earnings, the tradeoff in the value relevance of book values and earnings in portfolio 1 is almost eliminated. That is, book value is not being called upon to compensate for error in earnings to the extent it would have been if FDP reported earnings did not exclude items. Second, R^2 is considerably higher in portfolio 1 as a result of excluding extreme items that induce noise and force book values to compensate (albeit imperfectly) for relatively uninformative GAAP reported earnings. Third, FDP earnings begin to display decreasing value relevance as earnings differences take on large positive values and book value is

[26] To maintain the clean surplus relation, book values are adjusted for the difference between I/B/E/S and Compustat reported earnings.

once again called upon to compensate for information that is in GAAP earnings in these cases that is apparently being lost. A comparison of R^2 for I/B/E/S reported earnings-based regressions and GAAP earnings-based regressions in the larges positive earnings differences portfolio (.49 versus .39), indicates information loss is greatest when FDPs exclude items that leave their reported earnings number well below Compustat reported earnings.

Columns 9-11 of table 9 reproduce our results replacing reported earnings with forecast of earnings outstanding just prior to an announcement.[27] Results are similar in character to what is reported for I/B/E/S actual earnings in columns 6-8. This indicates that analysts' forecasts do not typically anticipate items ultimately excluded from reported earnings in their forecasts to which the market eventually gives little weight. Moreover, the implicit exclusion of such items from forecasts implies a higher correlation of forward looking earnings with market prices than with the actual realization of GAAP earnings that include extreme income-decreasing items in portfolio 1. Conversely, the implicit exclusion of income-increasing (alternatively reduction in magnitude of income-decreasing) items from forecasts implies a lower association of forward looking earnings with market prices than the actual realizations of GAAP earnings in portfolio 10, suggesting that FDP forecasts omit items that investors ultimately do value.

Finally, we consider the evidence in table 9 with reference to the large sub sample of firms for which I/B/E/S earnings are identical to GAAP earnings. To begin, note from column 8 of table 9 that coefficients on earnings tend to increase as the absolute earnings differences becomes smaller. The result is consistent with the findings of Collins Maydew and Weiss (1997) who report a decline in the value relevance of earnings in the absolute magnitude of special items. However, it is also seen from column 8 that, with the exception of the portfolio comprising the most positive earnings differences, R^2s from the portfolio regressions actually tend to decline in the absolute magnitude of earnings differences. That is, as earnings become more value relevant relative to book value, the *combined* explanatory power of earnings and book value declines. The result suggests that GAAP book values of firms with small absolute earnings differences tend to be "noisier" than those of other firms. If this

[27] The book value known prior to the earnings announcement is used in this regression to ensure clean surplus (which holds as long as analysts are not forecasting excluded items).

is so, then it is possible that when such firms are included in samples along with other firms, the ability of their earnings to compensate for *measurement error* in book values can create the appearance in the overall sample of increasing *value relevance* of earnings as the absolute magnitude of special items declines. The results suggest that another sort of the data may be required to reveal whether the conclusion that the value relevance of earnings declines in the absolute magnitude of special items contained in them increases applies to the majority of firms in the cross-section, see, e.g., Collins, Maydew and Weiss (1997). This issue will be further analyzed in future versions of the paper.

The results in column 8 of table 9 also reveal a puzzling discontinuity in R^2 when moving from the least negative difference portfolio (where earnings have high value relevance relative to book values and R^2 is low) to the zero difference portfolio. The discontinuous increase in R^2 is accompanied by a large decline (increase) in the magnitude of the coefficient earnings (book value). The finding suggests there are substantial differences in the value relevance of earnings and book values between firms for which no adjustment to reported earnings are undertaken by FDPs and firms for which even the smallest adjustment is undertaken. Recall from figure 3 panel B and table 5 that such firms are characterized by relatively low levels of reported earnings and relatively low ERCs even though there is an apparent absence of large negative transitory components of earnings that are typically excluded from FDP earnings.

We offer three possible explanations for these anomalous findings. First, the subset of firms for which there are no differences between GAAP and FDP may contain a large group of firms with low earnings growth prospects whose book values are relatively clean (perhaps even recently cleaned up by recognition of large excluded items recognized in previous earnings reports). The significantly larger (smaller) coefficients on book values (earnings) observed for these firms relative to firms with small non-zero earnings differences is consistent with this conjecture. Second, there may be large numbers of firms with zero earnings differences that actually recognized items for which FDPs are thought to "typically" adjust earnings, that were simply not adjusted. That is, these firms may be less closely scrutinized by analysts and FDPs than other firms. The fact that these firms are relatively poor current earnings performers as well as the fact that these firms apparently do recognize special items

and non-operating items (see table 5) that do not create an earnings difference is consistent with this conjecture.[28] Third, these firms recognize specific items that tend to be classified by Compustat under headings typically excluded by FDPs but not excluded under the actual earnings definitions used by FDPs. We note that First Call and Zacks reported earnings produce results qualitatively similar to those reported for I/B/E/S in this section. Future versions of the paper will explore some of the puzzling findings related to the zero earnings difference group.

The results in this subsection highlight the value of understanding the properties of distributions of earnings differences and the composition of earnings related to these properties for identifying potential factors that can confound inferences, and for uncovering evidence that generates new lines of investigation and improves test designs.

4.7 The costs and benefits of using FDP reported earnings in earnings management studies

One obvious drawback of employing FDP reported earnings in empirical studies designed to detect earnings management is that, to the extent that firms use excluded items to manage earnings, these amounts will be omitted from earnings surprises. As seen in tables 5 and 7, this is especially true in cases in which firms engage in extreme income-decreasing earnings management with excluded items. The term "earnings baths" refers to the exercise of managerial discretion over the recognition of large income-decreasing charges with respect to either amount or timing. Given the low response coefficients to large negative surprises, it is likely that firms take earnings baths when investors have already recognized the firm has suffered economic losses, i.e., the "news" is already impounded in stock price. This includes highly visible, one-time charges that will be excluded from FDP reported earnings and unavailable to the researcher attempting to detect earnings management.

The potential drawback is not, however, confined to cases of earnings baths. It may apply to firms using less extreme income-increasing and income-decreasing excluded items. For example, a firm may have incentives to create (exhaust) reserves by recognizing negative (positive) excluded items when pre-managed earnings exceed (are below) certain earnings targets such as analysts' forecasts. These actions potentially convey information to the market (see, e.g., Abarbanell 1999).

[28] It is also possible that these firms offset certain items excluded from FDP earnings with other items also excluded from FDP earnings thus leading to a zero earnings difference.

Irrespective of whether earnings management through the use of excluded items is informative or simply adds noise to earnings, the ability to detect earnings management in tests that employ FDP reported earnings will be hindered by their removal.

5. Summary and conclusions

In this paper we reexamine inferences drawn in the information content and value relevance of earnings literatures through the lens of distributions of differences in earnings reported by FDPs on the one hand and Compustat on the other. Our analysis indicates that many statistical inferences and interpretations concerning market reliance/fixation on FDP (Street) earnings versus Compustat (GAAP) earnings in the cross section and over time may be premature, or at the very least, in need of refinement. We also present new findings relevant to the debate over whether the market relies on and/or is mislead by "Street" or pro forma earnings, and the question of the relative value relevance of earnings and book values.

Several admonitions to researchers follow from the analysis of the properties of ED_{FDP} in section 3. First, do not allow the negative tail of ED_{FDP} "to wag the dog" when developing research designs, deciding on statistical tests, and choosing samples. Second, be aware in any longitudinal study that employs FDP forecast and reported earnings data that straddles the year 1991, that an apparent regime shift in mean earnings differences and forecasts errors that is in part attributable to institutional actions by FDPs has the potential to distort inferences concerning hypothesized economic trends or changes in the behavior of market participants over time. Third, in tests that hypothesize initial market fixation on earnings and subsequent price corrections it is important to isolate (for example using an analysis of earnings differences) the observations that actually account for evidence of initial fixation and then link these observations to subsequent returns. Finally, there may be little benefit to conducting or relying on analyses that attempt to identify ex ante, superior measures of forecasts or earnings, as the superiority of one measure over another is likely to depend on the specific hypothesis under investigation.

Our analysis also offers new perspectives on the evidence from the prior literature on Street or pro forma versus GAAP earnings and the relative value relevance of earnings and book value. For

example, an improved understanding of the properties of ED_{FDP} suggests a simple alternative explanation to investor fixation for the evidence in tables 5, 6 and 7. That is, investors view the information content of specific components of earnings reported by firms in a manner more sophisticated than they are excluded from FDP earnings. This gives rise to circumstances in which Compustat earnings-based surprises are more highly associated with market responses and other circumstances in which FDP earnings-based surprises are more highly associated with market responses.

While, on the surface, our findings may be discouraging to some researchers concerned that the intricacies of the FDP data are too numerous and vexing to overcome, we view our analysis as serving to raise the bar on the quality of hypothesis development, research design, and sample selection in empirical studies in the information content, forecast bias, value relevance, and earnings management literatures. We suggest that one tool at the disposal of researcher to achieve this goal is the analysis of the distributions of the reported earnings differences (and the composition of differences in strategic places of the distribution) that are often the implicit variable of interest to the research. We demonstrate the potential benefit of such an analysis for refining hypotheses, controlling for confounding factors, and pinpointing appropriate samples for empirical testing with an example from the GAAP versus Street debate in section 4.4, and an example of the relative value relevance of earnings in book values literatures in section 4.6.

Finally, we note that analogous benefits achieved by examining ED_{FDP} can, in principle, be achieved by comparing the distribution of differences between any pair of competing earnings numbers. One obvious example is an analysis of the distribution of differences generated by two definitions of Compustat earnings. The added benefit of this approach is that differences in the alternatively defined reported earnings numbers can usually be reconciled with data items also provided by Compustat. This allows the researcher to perform detailed analysis of observations that are associated with any properties of the distribution that may have disproportional impacts on traditional statistical tests, identify potentially confounding factors that must be controlled, and discover features of the data that lead to new testable hypotheses.

Figure 1
Earnings Difference, Special Items, and Nonoperating Items

Earnings difference equal Compustat earnings per share (data item #19) minus I/B/E/S earnings per share, deflated by beginning of period price. Special (nonoperating) items are Compustat data item #32 (#31), expressed on a per share basis deflated by beginning of period price.

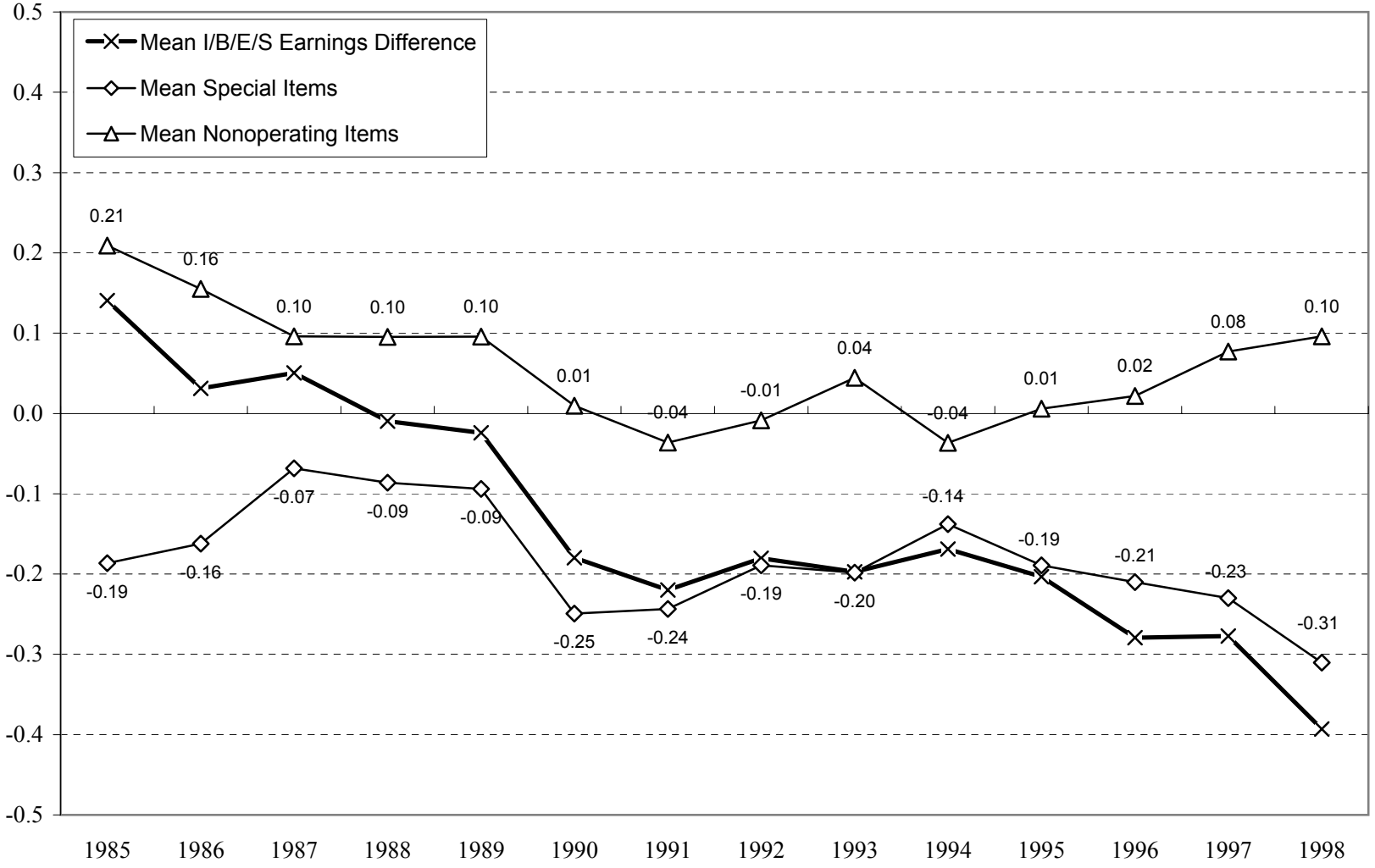


Figure 2

Percentiles of quarterly distributions of reported earnings difference per Compustat and forecast data providesrs (I/B/E/S, Zacks, and First Call), scaled by beginning of period price, 1992 to 1998

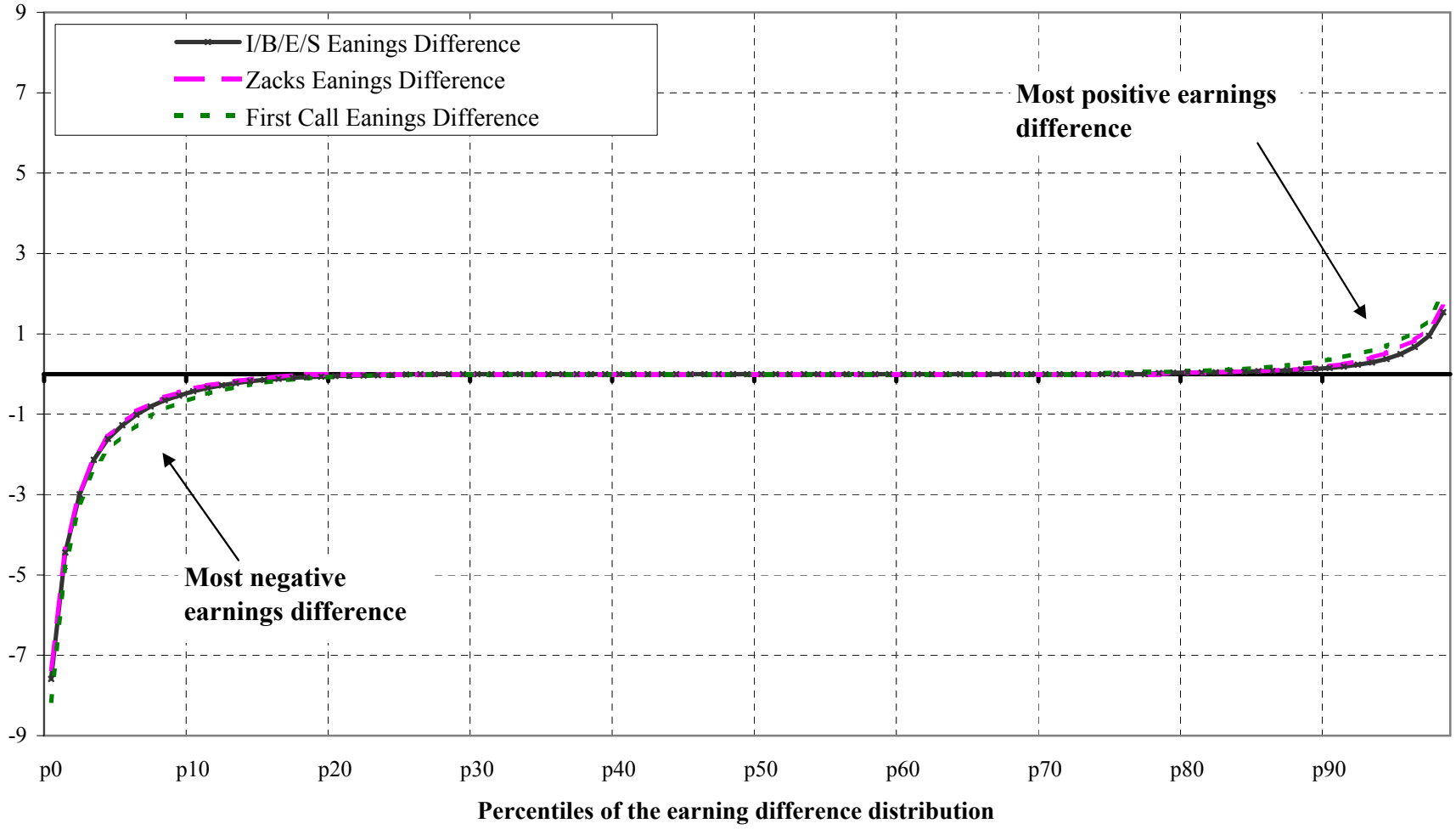
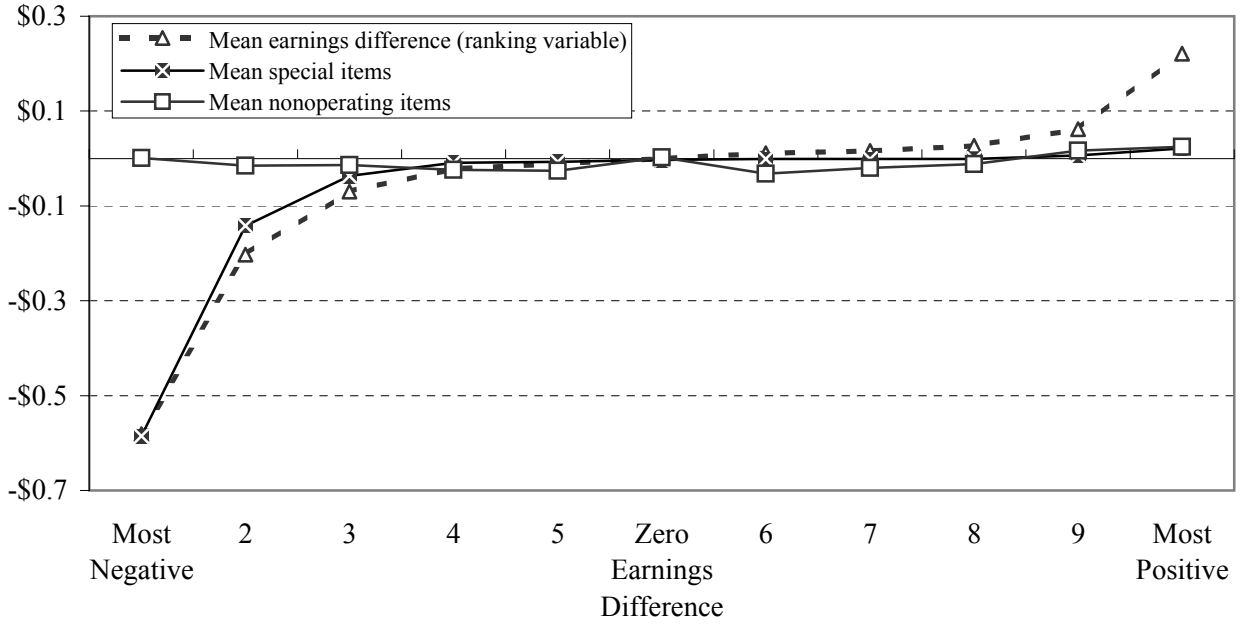


Figure 3 Panel A

Average earnings difference, special items, and nonoperating items, in groups ranked by the magnitude of I/B/E/S earnings difference (in dollars per share)



Groups formed on the basis of I/B/E/S Earnings Difference

Figure 3 Panel B

Average I/B/E/S and Compustat reported earnings (in dollars per share)

Groups formed on the basis of I/B/E/S Earnings Difference

Figure 4 Panel A

Percent of earnings difference values in histogram intervals of 1 cent (excluding zero earnings differences)

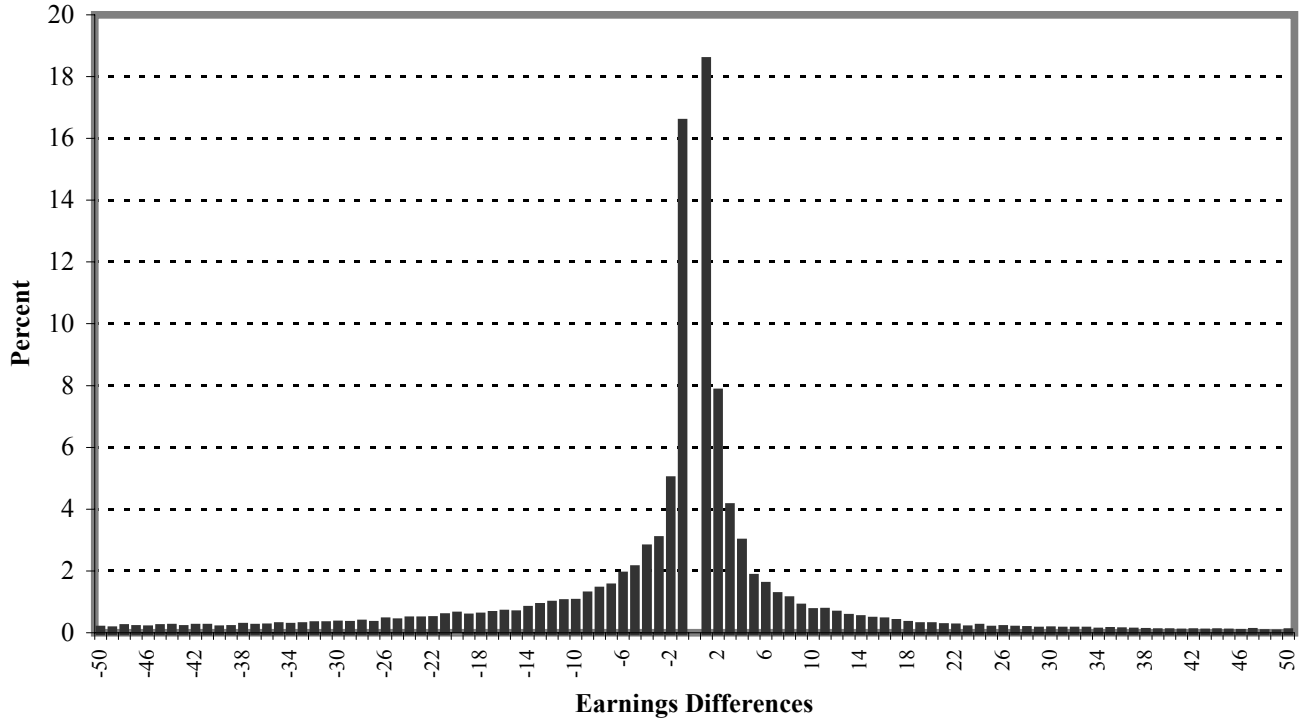


Figure 4 Panel B

Percent of earnings difference values in histogram intervals of 1 cent (excluding zero earnings differences)

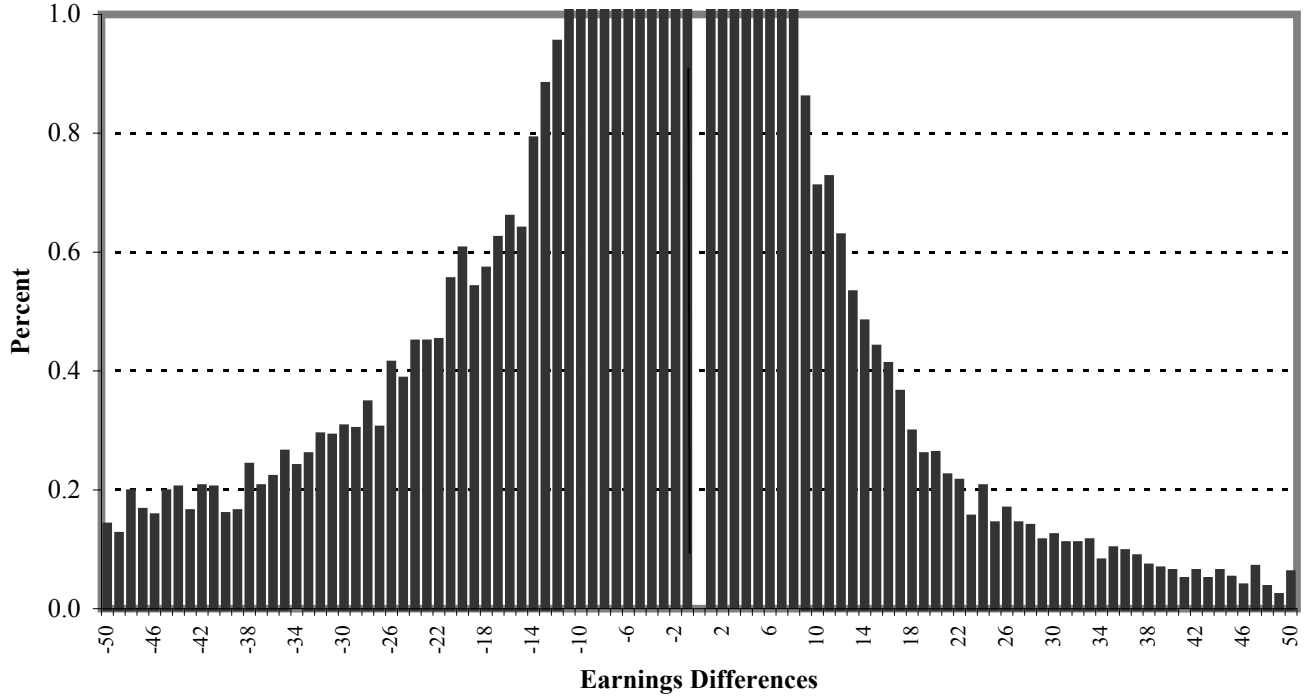


Figure 5 Panel A

I/B/E/S-based and Compustat-based earning response coefficients

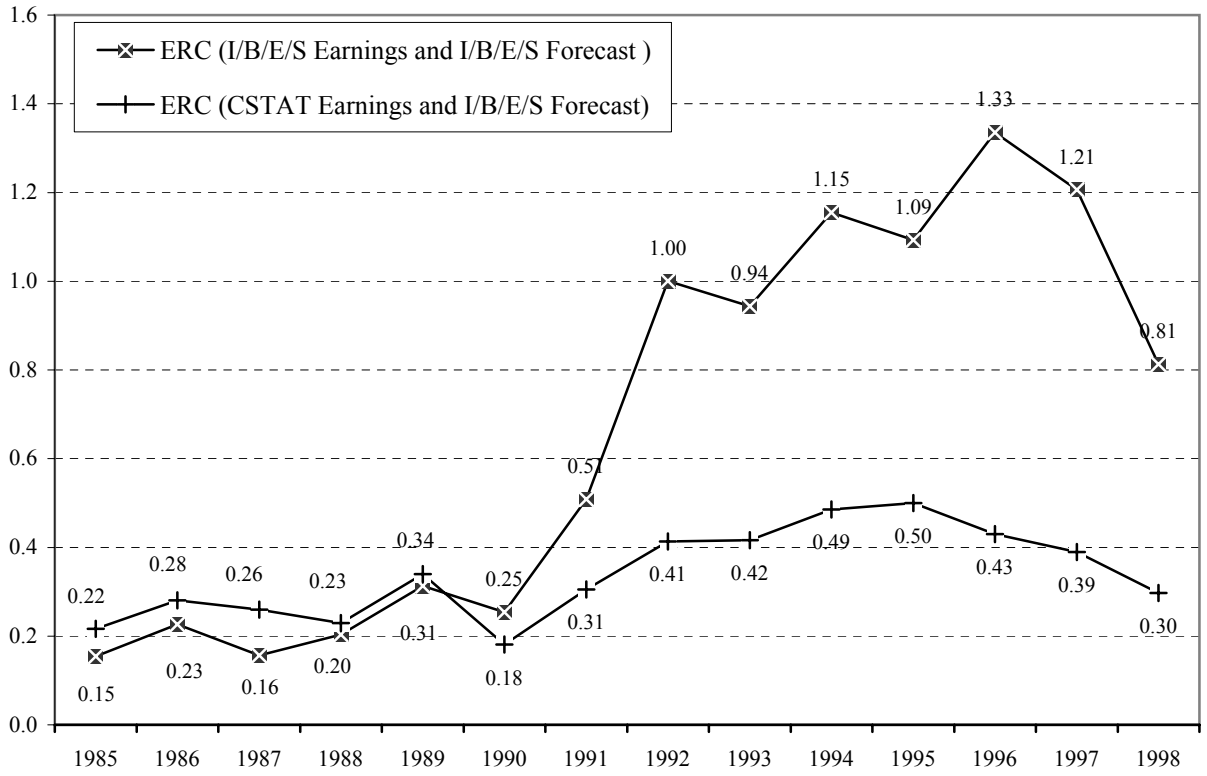


Figure 5 Panel B

I/B/E/S-based and Compustat-based earning response coefficients after excluding the most negative portfolio (5% of total number of observations) of Compustat-I/B/E/S earnings difference

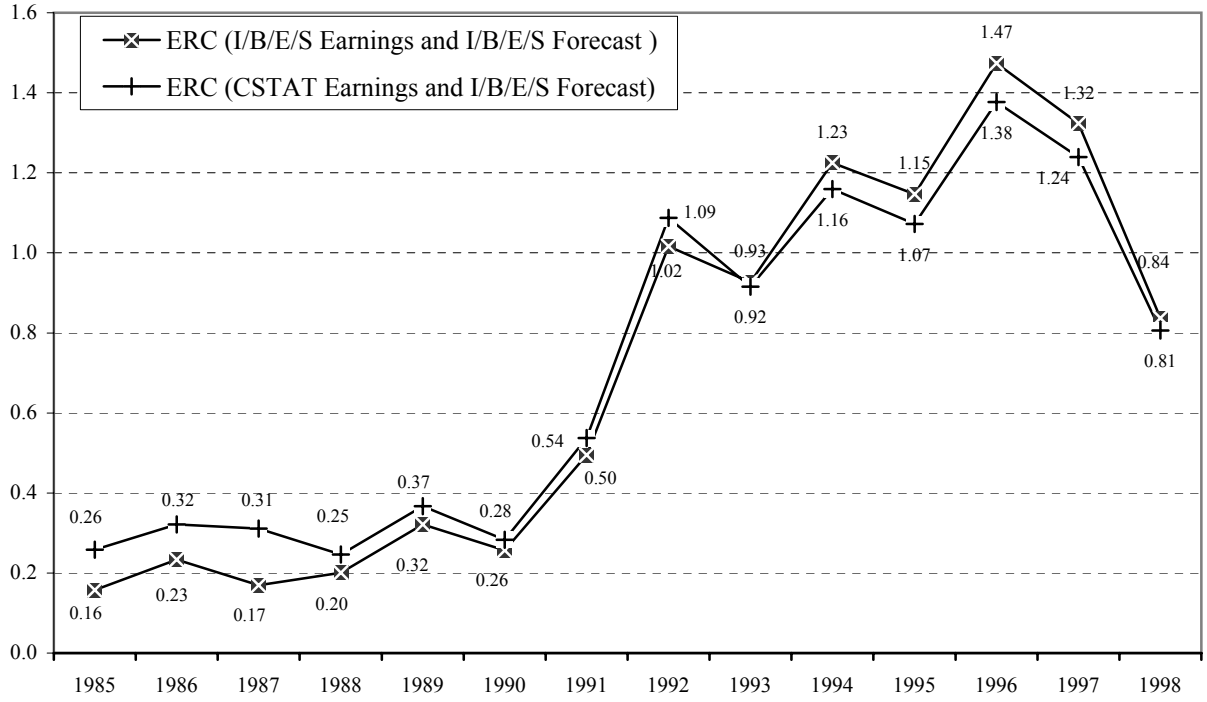


Table 1

Descriptive Statistics on Differences between Compustat and Forecast Data Provider Reported Earnings

This table presents descriptive statistics on distributions of the difference between earnings per share as reported by Compustat (data item #19) and earnings per share as reported by forecast data providers (FDPs): I/B/E/S, Zacks, and First Call. A negative earnings difference implies lower earnings reported by Compustat compared to a given FDP. The statistics on the earnings difference are presented for the entire time period (1985-1998), and for two subperiods (1985-1991 and 1992-1998). Earnings difference is expressed both on a deflated (by beginning of period price) as well as undeflated (in cents) basis.

	I/B/E/S Earnings Difference (E_{CSTAT} - E_{IBES})						Zacks Earnings Difference (E_{CSTAT} - E_{Zacks})						First Call Earnings Difference (E_{CSTAT} - E_{FC})	
	1985-1998		1985-1991		1992-1998		1985-1998		1985-1991		1992-1998		1992-1998	
Statistic	Deflated (1)	Undeflated (2)	Deflated (3)	Undeflated (4)	Deflated (5)	Undeflated (6)	Deflated (7)	Undeflated (8)	Deflated (9)	Undeflated (10)	Deflated (11)	Undeflated (12)	Deflated (13)	Undeflated (14)
N	163,703	163,703	59,563	59,563	104,140	104,140	137,748	137,748	40,456	40,456	97,292	97,292	90,792	90,792
Mean	-0.174	-2.099	-0.036	-0.500	-0.253	-3.017	-0.183	-0.765	-0.087	2.561	-0.223	-2.150	-0.265	-2.457
Median	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Std Dev	1.71	20.52	2.03	23.73	1.50	18.36	1.63	21.81	2.03	27.51	1.43	18.77	1.83	19.10
% Positive	23.3		25.5		22.0		21.4		22.5		20.9		25.9	
% Negative	27.8		30.7		26.1		17.8		15.3		18.8		26.7	
% Zero	48.9		43.9		51.9		60.8		62.1		60.3		47.4	

Table 2

Asymmetry in Distributions of Differences between Compustat and Forecast Data Provider Reported Earnings, 1992-1998

This table provides statistics on percentiles of distributions of the difference between earnings per share as reported by Compustat and earnings per share as reported by forecast data providers (FDPs): I/B/E/S, Zacks, and First Call. A negative earnings difference, for example, implies higher earnings reported by an FDP compared to Compustat. Earnings difference is expressed on a deflated (by beginning of period price) as well as undeflated (in cents) basis.

Statistic	I/B/E/S Earnings Difference ($E_{CSTAT} - E_{IBES}$)		Zacks Earnings Difference ($E_{CSTAT} - E_{Zacks}$)		First Call Earnings Difference ($E_{CSTAT} - E_{FC}$)	
	Deflated (5)	Undeflated (6)	Deflated (11)	Undeflated (12)	Deflated (13)	Undeflated (14)
N	104,140	104,140	97,292	97,292	90,792	90,792
Mean	-0.253	-3.017	-0.223	-2.150	-0.265	-2.457
Median	0	0	0	0	0	0
Skewness	-7.08	-4.76	-6.59	-3.84	-8.40	-3.60
Kurtosis	72.73	41.26	60.22	36.28	116.31	26.71
P1	-7.586	-90	-7.345	-89	-8.132	-91
P5	-1.611	-26	-1.569	-24	-1.891	-29
P10	-0.535	-9	-0.457	-8	-0.722	-12
P25	-0.022	-1	0	0	-0.028	-1
P75	0	0	0	0	0.023	1
P90	0.127	3	0.156	3	0.300	6
P95	0.374	7	0.526	11	0.694	14
P99	1.540	30	1.667	42	2.041	42

Table 3

Statistics on Differences between Compustat and Forecast Data Providers Reported Earnings, by Year

This table reports statistics, by year, on the difference between earnings per share as reported by Compustat and earnings per share as reported by forecast data providers (FDPs): I/B/E/S, Zacks, and First Call. A negative earnings difference implies higher earnings reported by an FDP compared to Compustat. Earnings difference is expressed on a per share basis, deflated by beginning of period price.

Panel A: First Call earnings difference

Year	N	Earnings Difference				
		Mean	Median	% negative	% positive	% zero
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1992	7,323	-0.197	0	33	22	45
1993	9,021	-0.211	0	29	21	50
1994	11,389	-0.166	0	27	21	52
1995	12,717	-0.163	0	28	21	52
1996	15,507	-0.234	0	28	19	53
1997	16,975	-0.250	0	23	33	44
1998	17,860	-0.498	0	25	36	39
All Years	90,792	-0.265	0	27	26	47

Panel B: I/B/E/S earnings difference

Year	N	Earnings Difference				
		Mean	Median	% negative	% positive	% zero
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1985	7,846	0.141	0	37	35	28
1986	8,119	0.031	0	33	31	36
1987	8,457	0.050	0	32	28	41
1988	8,326	-0.010	0	30	24	45
1989	8,728	-0.024	0	28	22	49
1990	8,900	-0.180	0	25	18	57
1991	9,187	-0.220	0	27	19	54
1992	10,389	-0.180	0	29	19	53
1993	11,826	-0.197	0	26	16	57
1994	14,137	-0.169	0	26	17	57
1995	14,936	-0.203	0	28	16	56
1996	16,842	-0.279	0	28	15	57
1997	17,979	-0.277	0	23	30	47
1998	18,031	-0.393	0	24	35	41
1985-91	59,563	-0.036	0	30	25	45
1992-98	104,140	-0.254	0	26	22	52
All Years	163,703	-0.174	0	28	23	49

Panel C: Zacks earnings difference

Year	N	Earnings Difference				
		Mean	Median	% negative	% positive	% zero
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1985	3,792	-0.051	0	18	29	53
1986	4,109	-0.058	0	17	26	58
1987	5,144	0.028	0	16	25	59
1988	5,788	-0.040	0	15	23	62
1989	6,353	-0.046	0	14	21	65
1990	7,316	-0.183	0	13	20	68
1991	7,954	-0.174	0	17	19	64
1992	9,112	-0.148	0	18	18	63
1993	10,170	-0.140	0	17	19	65
1994	13,123	-0.163	0	16	13	71
1995	14,234	-0.184	0	19	11	70
1996	16,728	-0.253	0	20	12	68
1997	17,060	-0.235	0	20	31	49
1998	16,865	-0.352	0	20	37	42
1985-91	40,456	-0.087	0	15	23	62
1992-98	97,292	-0.223	0	19	21	60
All Years	137,748	-0.183	0	18	21	61

Table 4

Statistics on Alternative Forecast Error Measures by First Call, I/B/E/S, and Zacks

This table reports statistics, by year, on alternative forecast error measures. Forecast errors (FE) equal quarterly earnings per share minus quarterly forecasted earnings per share outstanding prior to earnings announcement, deflated by price at the beginning of period. Superscripts on FE denote the source of reported earnings: Compustat (Cstat), I/B/E/S, Zacks, or First Call (FC). Subscripts on FE denote the source of consensus earnings forecast: I/B/E/S, Zacks, or First Call.

Panel A: First Call-based and Compustat-based forecast errors

Year	N	Mean		Median		% negative		% positive		% zero	
		FE^{FC}_{FC}	FE^{Cstat}_{FC}	FE^{FC}_{FC}	FE^{Cstat}_{FC}	FE^{FC}_{FC}	FE^{Cstat}_{FC}	FE^{FC}_{FC}	FE^{Cstat}_{FC}	FE^{FC}_{FC}	FE^{Cstat}_{FC}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1992	7,323	-0.203	-0.400	0	-0.030	45	51	39	40	16	9
1993	9,021	-0.160	-0.372	0	-0.012	45	50	40	41	15	9
1994	11,389	-0.179	-0.345	0	0	43	46	43	44	15	10
1995	12,717	-0.235	-0.398	0	0	43	48	42	43	15	10
1996	15,507	-0.197	-0.431	0	0	38	44	46	45	16	11
1997	16,975	-0.263	-0.513	0	0	37	41	47	49	16	10
1998	17,860	-0.363	-0.861	0	0	37	42	45	48	18	10
All Years	90,792	-0.242	-0.507	0	0	40	45	44	45	16	10

Panel B: I/B/E/S-based and Compustat-based forecast errors

Year	N	Mean		Median		% negative		% positive		% zero	
		FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1985	7,846	-0.933	-0.792	-0.099	-0.133	55	60	33	35	13	5
1986	8,119	-0.770	-0.739	-0.067	-0.094	53	58	34	37	13	5
1987	8,457	-0.648	-0.598	0	-0.044	49	53	38	41	13	6
1988	8,326	-0.519	-0.529	0	0	45	50	40	43	14	7
1989	8,728	-0.574	-0.598	-0.042	-0.068	51	55	35	37	14	7
1990	8,900	-0.781	-0.961	-0.044	-0.078	51	56	33	36	16	8
1991	9,187	-0.395	-0.615	0	-0.042	47	53	37	39	17	8
1992	10,389	-0.190	-0.371	0	0	42	49	40	42	18	10
1993	11,826	-0.181	-0.378	0	0	42	48	41	42	18	10
1994	14,137	-0.143	-0.311	0	0	38	44	44	45	18	11
1995	14,936	-0.185	-0.388	0	0	38	46	44	43	18	11
1996	16,842	-0.149	-0.428	0	0	34	43	47	45	19	12
1997	17,979	-0.129	-0.406	0	0	33	40	49	50	19	10
1998	18,031	-0.247	-0.640	0	0	35	43	46	47	19	10
1985-91	59,563	-0.654	-0.690	-0.025	-0.067	50	55	36	38	14	7
1992-98	104,140	-0.175	-0.428	0	0	37	44	45	45	18	11
All Years	163,703	-0.349	-0.523	0	0	42	48	42	43	17	9

Panel C: Zacks-based and Compustat-based forecast errors

Year	N	Mean		Median		% negative		% positive		% zero	
		FE^{Zacks}_{Zacks}	FE^{Cstat}_{Zacks}	FE^{Zacks}_{Zacks}	FE^{Cstat}_{Zacks}	FE^{Zacks}_{Zacks}	FE^{Cstat}_{Zacks}	FE^{Zacks}_{Zacks}	FE^{Cstat}_{Zacks}	FE^{Zacks}_{Zacks}	FE^{Cstat}_{Zacks}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1985	3,792	-0.395	-0.446	-0.069	-0.050	58	52	33	43	9	5
1986	4,109	-0.466	-0.524	-0.045	-0.027	55	51	37	44	9	5
1987	5,144	-0.379	-0.351	-0.023	0	51	48	40	46	9	6
1988	5,788	-0.393	-0.433	0	0	48	47	43	47	9	6
1989	6,353	-0.540	-0.586	-0.051	-0.036	55	52	36	42	9	6
1990	7,316	-0.999	-1.182	-0.073	-0.063	56	54	34	40	10	7
1991	7,954	-0.477	-0.651	-0.018	-0.029	50	51	38	42	11	8
1992	9,112	-0.254	-0.402	0	0	45	47	42	44	13	9
1993	10,170	-0.190	-0.329	0	0	44	45	42	44	14	11
1994	13,123	-0.096	-0.259	0	0	37	41	49	48	14	11
1995	14,234	-0.100	-0.284	0	0	37	43	48	45	15	12
1996	16,728	-0.061	-0.314	0.023	0	32	40	52	48	16	13
1997	17,060	-0.057	-0.292	0.028	0.033	29	36	53	53	18	11
1998	16,865	-0.101	-0.453	0.016	0.032	29	36	51	53	20	11
1985-91	40,456	-0.548	-0.635	-0.041	-0.027	53	51	37	43	10	6
1992-98	97,292	-0.109	-0.332	0	0	35	40	49	48	16	11
All Years	137,748	-0.238	-0.421	0	0	40	43	46	47	14	10

Table 5

Earnings Response Coefficient by Rank of Earnings Difference, 1992-1998

This table reports earnings response coefficients from two regressions of market-adjusted return around quarterly earnings announcements on alternative earnings surprise measures by the rank of the magnitude of the difference between Compustat and I/B/E/S reported earnings. A negative earnings difference, for example, implies higher earnings reported by I/B/E/S compared to Compustat. Earnings difference is expressed on a per share basis deflated by beginning of period price. Returns are measured as the three-day buy and hold return centered on earnings announcement date less the return on a value-weighted NYSE/AMEX/NASDAQ index. The first earnings surprise measure is Compustat-based forecast error (equals quarterly earnings per Compustat less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period), and the second is the I/B/E/S-based forecast error (equals quarterly earnings per I/B/E/S less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period). Probability values for test of differences in the coefficient estimates are in column 6. In addition, column 2 reports average earnings difference (the ranking variable) and column 3 and 4 report average of special items and nonoperating items, within each ranking. Special (nonoperating) items are Compustat data item number 32 (31), expressed on a per share basis deflated by beginning of period price.

Rank of Earnings Difference	N	Mean Earnings Difference	Mean Special Items	Mean Nonoperating Items	Mean FE^{IBES}_{IBES}	Mean FE^{Cstat}_{IBES}	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	p-value of test of differences
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 (Most Negative)	4,950	-4.908	-3.264	0.044	-0.474	-5.382	0.608 8.2	0.080 3.0	0.00
2	4,951	-0.866	-0.555	-0.023	-0.127	-0.993	1.320 11.9	1.205 11.5	0.44
3	4,952	-0.271	-0.127	-0.022	-0.080	-0.350	1.349 10.3	1.337 10.3	0.95
4	4,943	-0.087	-0.039	-0.067	0.018	-0.069	2.029 11.9	2.039 12.0	0.96
5 (Least Negative)	4,954	-0.032	-0.018	-0.092	0.069	0.037	2.590 10.4	2.592 10.4	0.99
6 (Least Positive)	4,247	0.028	-0.003	-0.063	0.019	0.048	1.917 7.0	1.910 7.0	0.98
7	4,249	0.056	-0.003	-0.045	0.020	0.076	3.212 11.2	3.215 11.2	0.99
8	4,243	0.106	-0.010	-0.001	-0.002	0.104	2.492 10.8	2.486 10.8	0.98
9	4,264	0.252	0.008	0.063	-0.063	0.188	1.632 11.4	1.626 11.4	0.97
10 (Most Positive)	4,250	1.195	0.038	0.097	-0.466	0.729	0.763 9.8	0.715 8.5	0.67
Zero Earnings Difference	50,805	0	-0.031	0.066	-0.210	-0.210	0.982 32.5	0.982 32.5	1.00
Overall (Exc. zero earnings difference)	46,003	-0.512	-0.413	-0.014	-0.109	-0.621	1.121 30.0	0.266 18.7	0.00
Overall	96,808	-0.243	-0.210	0.028	-0.162	-0.405	1.041 44.5	0.386 29.7	0.00

Table 6

Forecast Errors and Earnings Response Coefficient (ERC), 1985-1998

This table reports, by year, means of two alternative earnings surprise measures, and earnings response coefficients from two regressions of market-adjusted return around earnings announcements on two alternative earnings surprise measures. Returns are measured as the three-day buy and hold return centered on earnings announcement date less the return on a value-weighted NYSE/AMEX/NASDAQ index. The first earnings surprise measure is Compustat-based forecast error (equals quarterly earnings per Compustat less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period), and the second is the I/B/E/S-based forecast error (equals quarterly earnings per I/B/E/S less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period). The bottom panel reports rank correlation coefficients and probability values of the statistics with time.

Year	N	Mean		ERC	
		FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}
(1)	(2)	(3)	(4)	(7)	(8)
1985	7,846	-0.933	-0.792	0.154	0.216
1986	8,119	-0.770	-0.739	0.226	0.281
1987	8,457	-0.648	-0.598	0.156	0.260
1988	8,326	-0.519	-0.529	0.204	0.230
1989	8,728	-0.574	-0.598	0.313	0.340
1990	8,900	-0.781	-0.961	0.254	0.181
1991	9,187	-0.395	-0.615	0.508	0.305
1992	10,389	-0.190	-0.371	1.001	0.414
1993	11,826	-0.181	-0.378	0.944	0.416
1994	14,137	-0.143	-0.311	1.155	0.486
1995	14,936	-0.185	-0.388	1.093	0.500
1996	16,842	-0.149	-0.428	1.335	0.430
1997	17,979	-0.129	-0.406	1.206	0.389
1998	18,031	-0.247	-0.640	0.813	0.297
1985-91	59,563	-0.654	-0.690	0.248	0.243
1992-98	104,140	-0.175	-0.428	1.043	0.388
All Years	163,703	-0.349	-0.523	0.451	0.317
Correlation of forecast error with year:					
Rank Correlation (All years)		0.84	0.49	0.88	0.67
p-value		0.00	0.08	0.00	0.01
Rank Correlation (1992-98)		0.07	-0.86	0.14	-0.39
p-value		0.88	1.00	0.76	1.00
Rank Correlation (1991-97)		0.82	-0.11	0.89	0.36
p-value		0.02	1.00	0.01	0.43

Table 7
Relative Informativeness of Forecast Error Measures

This table reports earnings response coefficients from two regressions of market-adjusted return around earnings announcements on two alternative earnings surprise measures by the respective sign of the two earnings surprise measures and by the rank of the magnitude of the difference between Compustat and I/B/E/S reported earnings. A negative earnings difference, for example, implies higher earnings reported by I/B/E/S compared to Compustat. Column 4 reports p-values of test of differences in the earnings response coefficients, and columns 5, 6, and 7, provide mean earnings difference between Compustat and I/B/E/S reported earnings, I/B/E/S-based forecast errors, and Compustat-based forecast errors, respectively. All estimates are presented for quintiles of (all nonzero) reported earnings difference and for observations with earnings difference equal zero. Earnings difference is expressed on a per share basis deflated by beginning of period price. Returns are measured as the three-day buy and hold return centered on earnings announcement date less the return on a value-weighted NYSE/AMEX/NASDAQ index. The first earnings surprise measure is Compustat-based forecast error (equals quarterly earnings per Compustat less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period), and the second is the I/B/E/S-based forecast error (equals quarterly earnings per I/B/E/S less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period).

Panel A: Both Forecasts error measures are positive ($FE^{IBES}_{IBES} > 0$ and $FE^{Cstat}_{IBES} > 0$)

Rank of Earnings Difference	N	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	p-values of tests of differences	Mean		
					Earnings Difference	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Most Negative	3,907	1.21 *	2.41 *	**0.01**	-0.160	0.432	0.272
2	3,902	2.29 *	2.22 *	0.92	0.003	0.166	0.168
3	3,912	3.07 *	2.99 *	0.89	0.076	0.210	0.286
Most Positive	3,906	2.59 *	0.59 *	**0.00**	0.572	0.323	0.894
Zero Earnings Difference	21,654	1.47 *	1.47 *	1.00	0.000	0.332	0.332
Overall	37,281	1.64 *	1.19 *	0.00	0.051	0.311	0.362

Panel B: Both borecast errors are negative ($FE^{IBES}_{IBES} < 0$ and $FE^{Cstat}_{IBES} < 0$)

Rank of Earnings Difference	N	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	p-values of tests of differences	Mean		
					Earnings Difference	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Most Negative	2,885	0.34 *	0.05	**0.00**	-4.593	-1.305	-5.898
2	2,885	0.52 *	0.48 *	0.81	-0.503	-0.699	-1.202
3	2,881	0.26	0.24	0.91	-0.045	-0.372	-0.416
Most Positive	2,888	0.22 *	0.31 *	0.54	0.367	-1.081	-0.714
Zero Earnings Difference	20,339	0.26 *	0.26 *	1.00	0.000	-0.876	-0.876
Overall	31,878	0.28 *	0.10 *	0.00	0.432	-0.872	-1.304

Panel C: Positive I/B/E/S-based and negative Compustat-based forecast errors ($FE^{IBES}_{IBES} > 0$ and $FE^{Cstat}_{IBES} < 0$)

Rank of Earnings Difference	N	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	p-values of tests of differences	Mean		
					Earnings Difference	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Most Negative	1,439	0.09	0.01	0.81	-5.474	0.530	-4.944
2	1,448	-0.01	0.69	0.37	-1.278	0.296	-0.982
3	1,444	3.77 *	2.28 *	0.44	-0.525	0.154	-0.370
Least Negative	1,443	12.31 *	1.15	**0.01**	-0.189	0.078	-0.111
Overall	5,774	0.24	0.01	0.34	-1.863	0.265	-1.598

Panel D: Negative I/B/E/S-based and positive Compustat-based forecast errors ($FE^{IBES}_{IBES} < 0$ and $FE^{Cstat}_{IBES} > 0$)

Rank of Earnings Difference	N	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	p-values of tests of differences	Mean		
					Earnings Difference	FE^{IBES}_{IBES}	FE^{Cstat}_{IBES}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Least Positive	613	2.27	-5.67	0.34	0.134	-0.064	0.069
2	614	-0.12	1.72	0.57	0.367	-0.159	0.208
3	614	0.89	-0.61	0.31	0.794	-0.357	0.436
Most Positive	614	0.50	0.01	0.23	2.401	-0.983	1.419
Overall	2,455	0.31	0.06	0.34	0.924	-0.391	0.533

* Statistically significant at a 5% level or better.

Table 8
Relative Informativeness of Small FDP-based Forecast Errors

This table reports earnings response coefficients from two regressions of market-adjusted return around earnings announcements on two alternative earnings surprise measures by the respective sign of the two earnings surprise measures and by the rank of the magnitude of the difference between Compustat and I/B/E/S reported earnings. A negative earnings difference, for example, implies higher earnings reported by I/B/E/S compared to Compustat. Column 4 reports p-values of test of differences in the earnings response coefficients, and columns 5, 6, and 7, provide mean earnings difference between Compustat and I/B/E/S reported earnings, I/B/E/S-based forecast errors, and Compustat-based forecast errors, respectively. All estimates are presented for quintiles of (all nonzero) reported earnings difference and for observations with earnings difference equal zero. Earnings difference is expressed on a per share basis deflated by beginning of period price. Returns are measured as the three -day buy and hold return centered on earnings announcement date less the return on a value-weighted NYSE/AMEX/NASDAQ index. The first earnings surprise measure is Compustat-based forecast error (equals quarterly earnings per Compustat less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period), and the second is the I/B/E/S -based forecast error (equals quarterly earnings per I/B/E/S less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of period).

Panel A: Small Negative I/B/E/S-based forecast errors ($-2\text{cents} \le FE^{IBES}_{IBES} < 0$)

Rank of Earnings Difference	N	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	$ERC^{IBES}_{IBES} > ERC^{Cstat}_{IBES}$ (p-values)	Mean Earnings Difference	Mean FE^{IBES}_{IBES}	Mean FE^{Cstat}_{IBES}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Most Negative	734	3.45 *	0.13	**0.00**	-2.876	-0.164	-3.040
2	734	2.43	0.36	0.28	-0.199	-0.092	-0.291
3	736	7.32	4.72	0.39	0.038	-0.053	-0.014
Most Positive	734	-0.92	0.17	0.28	0.477	-0.124	0.354

Panel B: Small positive I/B/E/S-based and negative Compustat-based forecast errors ($0 < FE^{IBES}_{IBES} \le 2\text{cents}$ and $FE^{Cstat}_{IBES} < 0$)

Rank of Earnings Difference	N	ERC^{IBES}_{IBES}	ERC^{Cstat}_{IBES}	$ERC^{IBES}_{IBES} > ERC^{Cstat}_{IBES}$ (p-values)	Mean Earnings Difference	Mean FE^{IBES}_{IBES}	Mean FE^{Cstat}_{IBES}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Most Negative	461	-0.63	0.00	0.40	-5.336	0.145	-5.191
2	462	-5.86	-0.92	0.17	-0.961	0.089	-0.872
3	462	21.46 *	4.51	**0.02**	-0.374	0.074	-0.300
Least Negative	461	28.16	1.04	**0.04**	-0.135	0.044	-0.091

* Statistically significant at a 5% level or better.

Table 9
Comparison of "Value Relevance" Regressions by Rank of Earnings Difference, 1992-1998

This table reports coefficients from three regressions of stock price on book value of equity and earnings, conditional on the rank of the magnitude of the difference between Compustat and I/B/E/S reported earnings. Columns 3-5 report the coefficient estimates and adjusted R^2 from a regression of stock prices on book values and earnings per Compustat (BPS_{Cstat} and EPS_{Cstat}, respectively). Columns 6-8 report coefficient estimates and adjusted R^2 from a regression of stock prices on I/B/E/S-adjusted book values (equals book value per Compustat plus the difference between Compustat and I/B/E/S reported earnings) and I/B/E/S earnings (BPS_{IBES} and EPS_{IBES}, respectively). Columns 9-11 report coefficient estimates and adjusted R^2 from a regression of price on prior quarter book value and forecasted earnings on that day ($LBPS_{Cstat}$ and F_{EPS}, respectively).

Rank of Earnings Difference	N	Mean earnings difference (ranking variable)	Coefficient estimates of Compustat-based "value relevance" regressions			Coefficient estimates of I/B/E/S-based "value relevance" regressions			Coefficient estimates of Forecast-based "value relevance" regressions		
			BPS_{Cstat}	EPS_{Cstat}	Adj.R^2	BPS_{IBES}	EPS_{IBES}	Adj.R^2	$LBPS_{Cstat}$	F_{IBES}	Adj.R^2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 (Most Negative)	4,612	-3.632	1.039 45.5	-0.63 -1.6	0.31	0.653 29.8	16.79 37.7	0.49	0.536 22.5	21.30 39.3	0.47
2	4,609	-0.749	0.968 37.4	9.81 14.4	0.34	0.652 26.4	20.53 36.9	0.47	0.533 19.5	24.47 37.7	0.45
3	4,611	-0.247	0.813 30.7	16.70 24.8	0.40	0.687 26.5	20.27 32.8	0.45	0.612 20.8	23.37 31.5	0.44
4	4,617	-0.082	0.789 26.6	18.62 23.5	0.40	0.725 24.6	20.55 26.9	0.42	0.606 18.2	25.22 28.2	0.43
5 (Least Negative)	4,612	-0.031	0.431 14.3	22.07 26.8	0.36	0.413 13.7	22.61 27.6	0.36	0.369 11.6	25.43 28.8	0.38
6 (Least Positive)	3,996	0.029	0.536 14.3	27.91 29.4	0.43	0.557 14.8	27.42 28.6	0.43	0.528 13.1	29.09 27.9	0.43
7	3,979	0.055	0.467 14.6	26.29 31.2	0.44	0.507 15.6	25.30 29.2	0.42	0.415 11.9	28.75 29.8	0.42
8	4,011	0.102	0.491 16.3	27.42 37.7	0.55	0.560 18.3	26.26 34.3	0.53	0.482 14.4	30.01 34.7	0.53
9	4,001	0.234	0.601 23.8	19.25 31.4	0.53	0.715 28.0	16.73 25.3	0.49	0.652 23.2	19.81 25.9	0.49
10 (Most Positive)	3,996	1.066	0.526 23.5	15.98 33.1	0.49	0.758 32.7	9.96 17.2	0.39	0.720 28.3	13.83 19.8	0.41
Zero Earnings Difference	49,317	0	0.716 95.2	14.59 90.3	0.43	0.716 95.2	14.59 90.3	0.43	0.64 78.9	17.76 93.4	0.43
Overall	92,361	-0.172	0.809 142.4	12.58 108.3	0.40	0.678 118.0	17.64 136.6	0.44	0.595 94.5	21.33 140.2	0.44

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