Letting the 'Tail Wag the Dog':
The Debate over GAAP versus Street Earnings Revisited

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Abstract

This paper identifies salient cross-sectional and intertemporal properties of the distribution of differences between earnings numbers supplied by I/B/E/S ("Street" earnings) and those provided by Compustat. Our analyses indicate that cross-sectional evidence relied on to support the hypotheses that Street earnings are systematically inflated, and that investors fixate or have a preference for the more informative Street earnings is strongly influenced by the relatively small number of cases in which I/B/E/S earnings exceed Compustat earnings by extreme amounts. Notably, these observations are associated with poorly performing firms with low stock price sensitivity to earnings news regardless of how an earnings surprise is measured. We also find that evidence interpreted in prior research as supporting the hypothesis of an increasing fixation on/preference for Street versus GAAP earnings over time is sensitive to whether data from years prior to 1991 are included in intertemporal tests. In addition to raising questions about the descriptiveness of hypotheses concerning investor reliance on Street earnings, the evidence cast doubts on the usefulness of attempts to identify a single, *ex ante* superior source for benchmarking investors' earnings expectations.

1. Introduction

A variety of alternative definitions and sources of actual earnings realizations are available to investors. In addition to "traditional" earnings numbers produced in conformity with GAAP and filed with the SEC, these alternative measures include the so-called "Street" earnings numbers that are based on proprietary definitions employed by commercial forecast data providers (FDPs). Increasing market focus on Street earnings in recent years has raised the concern among the financial press, government agencies, and standard setters that firms, perhaps with the proactive or tacit support of FDPs, are manipulating investor beliefs in a manner that leads to inflated stock prices (see e.g., Levitt [1998], MacDonald [1999], and Tergesen [1999]). The notion that Street earnings are inflated has also gained currency from academic studies that conclude that investors fixate on inflated Street earnings, leading to stock mispricing (e.g., Bradshaw and Sloan [2002], and Doyle, Lundholm, and Soliman [2003], and Bagnoli, Eskew, and Watts [2001]). In contrast, Brown and Sivakumar (2003) interpret evidence on market reactions to Street earnings surprises as consistent with investor preferences for Street earnings that are more informative than GAAP earnings.

In this study we take a step back and reexamine the robustness, consistency, and generalizability of some of the statistical evidence on which competing inferences in the academic literature on alternative sources of reported earnings have been drawn. We begin our analysis by identifying three specific properties of the distribution of differences between Compustat (GAAP) and I/B/E/S (Street) reported earnings.[1] The first property is a higher frequency of cases in which I/B/E/S earnings exceed Compustat earnings by *extreme* amounts than cases in which Compustat earnings exceed I/B/E/S earnings by extreme amounts. This property is linked to systematic exclusion of extreme items from I/B/E/S earnings that are more frequently income-decreasing than income-increasing. The second property is an apparent permanent shift in the mean difference between Compustat and I/B/E/S reported earnings in 1990 and the similar shift in mean earnings surprises in

[1] In the interest of brevity, most of the results presented in the paper are based on I/B/E/S data. To ensure that all of our conclusions hold across competing FDPs we replicated, where applicable, all of our results using the Zacks and First Call data. Our basic results also hold when we employ a sample consisting of firm/quarters that completely overlap between I/B/E/S and Zacks. Both of these controls are suggested by the evidence in Abarbanell and Lehavy (2002) which examines how inferences from a given test can differ with the choice of FDP and for sample data as well as firm coverage. In addition, results were replicated for various definitions of reported earnings according to Compustat (see data description below).

1991. This property is associated with procedural and definitional changes undertaken by all FDPs and with mandated accounting changes that may have permanently altered the relation between FDP and Compustat reported earnings data. The third property is a high incidence of exactly zero earnings differences (over 50% in most years).

We then examine the impact of these three properties on conclusions reached in prior literature. Among other things, our results show that statistical support for the conclusion that Street earnings are systematically inflated is tenuous. The statistics relied on to draw this inference in prior work appear to be disproportionally influenced by a relatively small numbers of observations for which I/B/E/S earnings exceeds Compustat earnings by extreme amounts (items associated with the first property of earnings difference distributions). Evidence that supports either investor fixation on Street earnings (leading implicitly to mispricing) or investor preference for more informative Street earnings is also shown to be disproportionately influenced by a relatively small number of observations for which I/B/E/S earnings exceed Compustat earnings by extreme amounts. Notably, the GAAP earnings associated with these observations include large, transitory income-decreasing items recorded by firms whose share prices display low sensitivity to current earnings news, regardless of whether Street or GAAP earnings are used to calculate the earnings surprise. Long established results in the prior literature continue to confirm that market reactions to extreme, increasing-decreasing items are relatively small (see e.g., Lipe [1986], and Elliot and Shaw [1988]). Thus, a priori, researchers should not be surprised that when FDPs mechanically exclude the most extreme, income-decreasing items, their reported Street earnings produce, ceteris paribus, earnings surprises that are more highly correlated with contemporaneous returns in the overall cross-section. We find, however, that apart from observations in the extreme, negative tail of the earnings difference distribution, the conclusion of investor reliance/preference for Street earnings does not hold. Specifically, we document a statistically similar market response to earnings surprises based on GAAP and Street earnings for the vast majority of observations in the distribution of earnings differences, and furthermore, find that for certain sub samples GAAP earnings-based surprises are more highly correlated with returns than Street earnings-based surprises.

Our results also suggests that the conclusion drawn in the prior literature that investors have been *gradually increasing* the weight placed on Street earnings relative to GAAP earnings over the last decade is only supported when the sample straddles the year 1991 (the year associated with the second property of distributions of earnings differences). This year followed an apparent shift in mean earnings differences that contributed disproportionally to evidence of a gradually increasing market reliance on Street versus GAAP earnings. The cause of this apparent discontinuity is not completely understood, but likely is linked to either a change in firms' recognition of items typically excluded from FDP reported earnings or changes in FDPs' definition of reported earnings, rather than a gradual trend in market preference for Street earnings.

Finally, we examine the implications of the properties of earnings difference distributions for the literature concerned with identifying an *ex ante* "superior" source of reported earnings data (e.g., Philbrick and Ricks [1991], and Ramnath, Rock and Shane [2005]). Some of the questions examined in this literature boil down to an empirical analysis of distributions of differences in alternative earnings measures. Econometric techniques and research designs employed in this literature are similar to those used in the Street versus GAAP earnings literatures. These similarities raise concerns about the generalizability of conclusions drawn in this literature. We find, for example, that the I/B/E/S "blanket" application of a proprietary definition of reported earnings that systematically excludes non-operating, special, and other non-recurring items can, result in a *lower* association between stock prices and I/B/E/S earnings than between stock prices and Compustat earnings in partitions relevant to confirming or rejecting the market fixation hypothesis. That is, Compustat earnings appear to be the "superior" measure of earnings in certain cases.

Overall, our results raise doubts about the extent to which Street earnings are the sole focus of investors for most firms in most circumstances, and about the claim that investors are fixated on or have a preference for Street earnings. Further, the evidence suggests that the imposition of a mechanical FDP definition of earnings that excludes certain items will sometimes produce a number that is closer to investors' expectations than GAAP earnings, and will sometimes produce a number that is farther away from that benchmark. Thus, efforts to identify an *ex ante* superior measure of reported earnings to expedite or standardize test designs over a broad range of research topics may

not be a particularly fruitful exercise. It appears that the choice of earnings data will likely depend on the specific hypothesis and context under consideration.

While our analysis identifies complications faced by researchers that must be dealt with on a case-by-case basis, two general admonitions follow from our analysis: First, researchers should be aware of the ability of a relatively small number of observations in the negative tail of the distribution of earnings differences to "wag the dog", that is, to dominate statistics on which inferences concerning a hypothesis (such as investor fixation on earnings) are based, or to obscure a relation that is otherwise strong in particular circumstances. Second, when designing and interpreting evidence from intertemporal tests researchers should be aware of the unusual nature of changes in both the distribution of earnings differences and earnings surprises in the early 1990s.

The paper proceeds as follows. The next section describes the data used in this study. Section 3 describes properties of reported earnings difference distributions and identifies relevant characteristics of the firms associated with these properties. Section 4 investigates the relation between these properties and conclusions drawn in prior literature that rely on earnings differences. A summary and conclusions are provided in section 5.[2]

2. Sample Description, Variable Definitions, and Data Issues

2.1 Composition of differences in reported earnings between FDPs and Compustat

I/B/E/S has been marketing forecasted and reported earnings data since the early 1980s. These forecasted and reported earnings are compiled using proprietary procedures and definitions designed, in general, to exclude from the GAAP-based reported earnings certain non-recurring items (such as, one time charges or gains associated with acquisitions), other special items, and non-operating items. In principle, these procedures are intended to eliminate components of earnings the majority of analysts claim they exclude from their forecasts (The I/B/E/S Glossary, 1999). According to officials

[2] In appendix A.1 we examine the implications of the properties of earnings differences distributions on evidence in the literature on the value relevance of earnings and book values. We discuss our results in relation to the literature on firms' self-reported pro-forma earnings in appendix A.2.

at I/B/E/S, the practice of excluding certain items from their definition of reported earnings has been in place since 1985.

For purposes of this study, we define the amount added or subtracted by I/B/E/S from reported earnings as the difference between I/B/E/S reported earnings and various definitions of earnings per share before extraordinary items supplied by Compustat. These include quarterly data item 19 or 9 (primary or fully diluted earnings per share excluding extraordinary items, depending on the I/B/E/S designation of their reported earnings), and quarterly data item 8 (income before extraordinary items divided by average primary or fully diluted shares outstanding). Tabled results are reported only for the earnings difference definition that employs Compustat data items 19 and 9 but are qualitatively similar for other definitions.

While the sum of the items that comprises an earnings difference can be calculated it is not always possible to determine which specific items contribute to the difference. I/B/E/S offers a general description of items that are excluded, but conversations with officials of the company reveal that specific items can be dealt with idiosyncratically in individual cases. The problem is compounded by the loss in institutional memory associated with turnover in personnel responsible for maintaining data and missing documentation from earlier years. Thus, from a research perspective, some I/B/E/S reported earnings numbers essentially emerge from a "black box" and can never be traced back to the raw data. We note that similar historical conditions apply to First Call and Zacks data (see Abarbanell and Lehavy [2002]).

2.2 Sample selection and variable definition

The tests performed in this paper rely on quarterly earnings data from I/B/E/S and Compustat. Tests performed in section 4 of the paper employ consensus earnings forecasts provided by I/B/E/S.[3] We also employ an overlapping (with respect to firm/quarter) sample of consensus earnings forecasts and reported earnings from First Call for the intertemporal tests conducted in section 4.2. All numbers are converted to the same split-adjusted basis. To enhance comparability with the majority of studies

[3] Using Zacks data we confirmed that all of our results hold for a consensus forecast constructed using the most recent 3 individual forecasts outstanding before an earnings announcement as well as with the last forecast produced before an announcement.

cited in this paper, all test results reported in the paper are based on the data truncated at the 1st and 99th percentiles. We note that the truncated observations have no impact on the basic features of cross-sectional distributions and the empirical results that we describe, but they were nevertheless removed before carrying out the statistical tests reported in this paper.

Our sample consists of 8,651 firms and 159,220 observations for the period covering 1985-1998. We compute the earnings differences 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 for a given firm/quarter than the one reported by I/B/E/S.

Table 1 presents summary statistics for unscaled and scaled (by beginning-of-quarter stock price) distributions of the reported earnings differences. The mean difference over the entire period is significantly less than zero and the percentage of negative differences is significantly greater than the percentage of positive ones, consistent with the alleged inflation of earnings by FDPs. Median earnings differences, however, are always zero (reflecting the high incidence of exactly zero earnings differences), inconsistent with the purported earnings inflation.

While a complete decomposition of earnings differences is not possible, we rely on the definition of I/B/E/S reported earnings above to identify possible components of the difference. The first component is Compustat special items (quarterly data item 32). Compustat definition of special items includes 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, consistent with the I/B/E/S reasoning for excluding certain items from their reported earnings. The nature of conservative accounting, which is biased toward immediate recognition of losses to income, makes it more likely that special items will be income-decreasing than income-increasing. Table 1 reports summary statistics related to special items. The median special items is zero, reflecting the fact that 87.6% of the observations are equal zero. The mean special item is negative reflecting the fact that non-zero special items are more likely to be income-decreasing than income-increasing (9% versus 3.4%), and, as discernable from the

percentiles of the special item distribution reported in Table 1, are more likely to be large income-decreasing than large income-increasing.

While the I/B/E/S definition of reported earnings also refers to the exclusion of "non-operating" items, it does not describe what items fall under this definition. The Compustat definition of non-operating items (quarterly data item 31) includes dividend income, equity in earnings of unconsolidated subsidiaries, gain/loss on sale of marketable securities, and capitalized interest and other income/expense items. Many of these items are in principle operating (see Penman [2004]), suggesting that the Compustat definition may not overlap well with the I/B/E/S definition. Nevertheless, we examine this Compustat item for completeness. Descriptive statistics on non-operating items are presented Table 1. Not surprisingly given the nature of these items, the mean and median are positive and the percentage of positive values (65.1) is much higher than the percentage of negative ones (19.7).

The remaining component of earnings differences we examine is "estimated other adjustments," which is equal to the earnings difference less Compustat special items adjusted for the effective tax rate. A reconciliation of this estimate and information in 10-Q reports for a sample of 30 firms revealed that it includes items such as "income from other operations to be disposed of" and "other non-recurring expenses, net." This suggests that many of the items excluded from the I/B/E/S definition of reported earnings appear to be of a nature similar to the items deemed to be special items by Compustat but, nevertheless, do not fall under Compustat's definition of special items. Mean estimated other adjustments is negative, and negative values slightly exceed positive ones (28% versus 24.4%), consistent with adjustments that tends to inflate earnings. However, as in the case of special items, median other adjustments is zero, reflecting the high frequency of zero values in the distribution (47.7%).[4]

[4] While we offer some evidence on the determinants of the reported earnings differences, we emphasize that investigating these determinants is not the primary focus of this study. Rather, we treat earnings differences as the primitive variable of interest, attempt to understand their distributional properties and, more importantly, test for the implications of these properties on conclusions drawn in the extant literature.

3. Properties of distributions of differences in reported earnings

3.1 The presence of extreme negative earnings differences

The first notable property of the earnings difference distribution is the greater frequency and the larger magnitude of extreme negative versus extreme positive earnings difference observations. These negative values represent cases in which I/B/E/S earnings exceed Compustat earnings by extreme amounts. This property is evident in Figure 1 which depicts the 1st through the 99th percentiles of the earnings difference distribution. The figure provides visual evidence of a longer negative than positive tail of the distribution. The presence of this property is also indicated by the significantly negative mean (in spite of the zero median) earnings difference reported in Table 1, and the fact that both the measures of skewness and kurtosis reject the hypothesis of a normal distribution. The comparisons of percentiles in Table 1 also reveal that the extreme negative observations are much larger than the extreme positive ones. For example, the 5th percentile of the undeflated earnings difference distribution for the period 1985-1998 is -22 cents compared to a value of +8 cents for the 95th percentile. This property, as we describe in section 4, critically affects interpretations of evidence concerning the question of whether FDPs systematically inflate Street earnings and whether the market fixates on or prefers such earnings.

3.2 The "regime shift" in mean earnings differences in the early 1990s

The second property we highlight is the apparent shift in the parameters of the earnings difference distribution in the early 1990s. Evidence of this shift is presented in Panel A of Table 2, which reports the mean, median, and percentage positive, negative, and zero of earnings differences by sample year. The precipitous increase in the negative mean difference in earnings in 1990 without a related increase in the frequency of negative earnings differences is evident. It appears that this year marked a "regime shift" in mean earnings differences as the magnitude and the sign of these differences has remained negative and relatively large in subsequent years. We use the term "regime

shift" descriptively to differentiate one possible pattern in the data (a large, discontinuous change in the location of a variable) from another possible pattern (a gradual monotonic trend).[5]

The change in the mean earnings differences in the early 1990s could be due entirely to I/B/E/S holding its definition for reported earnings fixed while firms changed their accounting recognition practices (for example, as a result of mandated accounting changes). It may also reflect changes in the I/B/E/S definition of reported earnings in response to events taking place that year. Evidence consistent with the first possibility is shown in Figure 2, which displays the annual means of earnings differences and Compustat special items. The two lines track each other closely. Note the precipitous increase in the magnitude of the negative mean Compustat special items in 1990, an increase that was sustained if not magnified in subsequent years. Consistent with the second possibility (changes in the I/B/E/S definition of reported earnings), conversations with I/B/E/S officials indicate that 1989-1991 marked a period in which concerted efforts were made to systematically redefine reported earnings and to "clean up" historical data. Greater effort was also undertaken to align earnings forecasts made by analysts with the definition of I/B/E/S reported earnings and to accommodate the impact of mandated accounting changes.

As is true of all the major FDPs, lack of detailed institutional memory and documentation makes it virtually impossible to determine whether there were significant changes in general definitions of reported earnings and, if so, whether these changes were in response to firm performance and/or reporting choices in the early 1990s. While the question of the exact sources of the change in earnings difference distributions may never be sorted out completely, it is clear from conversations with I/B/E/S officials that events in the early 1990s did cause procedural changes over the next year. These changes were designed to align more closely the definition of earnings that are forecasted by analysts to the definition of actual realized earnings. Below, we provide evidence on the association of these procedural changes with an apparent shift in the magnitude of earnings forecast errors that began to appear in 1991. This shift can significantly influence the validity of longitudinal

[5] Additional, although less dramatic, changes in earnings differences are evident for 1996 and 1997. While there is no change in the mean earnings difference between these two years, there are statistically significant declines in the percentage of zero and negative earnings differences in 1997. These percentage declines are offset by a large and statistically significant rise in the number of positive earnings differences.

inferences concerning trends in earnings inflation, purported bias in analysts' forecast errors, and market reliance /fixation on reported earnings.

3.3 The high frequency of zero earnings differences

Panel A of Table 2 also presents statistics relevant to documenting the third property of earnings difference distributions—the high frequency of a zero earnings difference. As evident from the table, the median and modal earnings differences are zero. For the 1985-1991 period earnings zero differences represented 45% of the sample. This percentage increased to 55% for the 1992-1998 period, reaching as high as 59% in 1996.

The fact that in a significant number of cases I/B/E/S earnings are *identical* to Compustat earnings has been given surprisingly little weight in the prior literature in assessing the pervasiveness of market reliance/fixation on Street versus GAAP earnings. At a minimum, it should be appreciated that zero earnings difference observations have no direct bearing on researchers' ability to distinguish whether there is a differential bias in or a differential market reaction to Street versus GAAP earnings. In fact, to the extent that zero earnings difference observations are associated with firms' characteristics that are *not* randomly distributed across partitions of the data examined by the researcher, their inclusion in samples can confound interpretation of evidence concerning earnings surprises and investors' reaction to them.[6]

4. Implications of the properties of distributions of earnings differences for inferences in the literature concerning the information content of alternative earnings measures

Prior studies compare Compustat and FDP definitions of reported earnings and test for differential market reactions to them. Using similar experimental designs and econometric techniques, these studies test hypotheses (or rely on assumptions) ranging from irrational investor fixation on Street earnings that leads to inflated stock prices, to rational investor reliance on FDP earnings that are presumed to be more informative than Compustat earnings. In this section we investigate the implications of the three empirical properties of earnings difference distributions

[6] In results unreported in tables we find that firms with zero earnings differences are associated with poor earnings, cash flows, and prior stock return performance compared to randomly selected firms in our sample.

identified above for the development and testing of hypotheses that concern the information content of and market responses to alternative earnings measures. As discussed below, these implications give rise to a differential measurement error interpretation of many of the findings in prior literature, where measurement error refers to an error in identifying the reported earnings number that investors consider to be the relevant one in a given context.

4.1 Alternative perspectives on Street versus GAAP earnings

As alluded to earlier, there is a growing concern in capital markets that firms, perhaps with the proactive or tacit support of analysts and FDPs, are manipulating investor expectations in a manner that leads to inflated stock prices. Recent academic studies have presented evidence that support this concern. For example, Bradshaw and Sloan (2002) argue that firms have been able to shift investor attention to an earnings measure that reclassifies operating items as non-operating or non-recurring ones. They suggest the possibility that this reporting technique has contributed to driving up stock prices in recent years without a corresponding increase in fundamentals. To establish their argument, they first show that mean earnings as reported by I/B/E/S is higher than mean earnings reported by Compustat (quarterly data item #8 after adjustment for stock splits), and then show that earnings response coefficients (ERCs) based on I/B/E/S reported earnings are greater than those based on Compustat earnings. Relying on similar methodologies, Brown and Sivakumar (2003) interpret their evidence as consistent with the argument that earnings reported by analysts are more value relevant to investors than GAAP-based operating earning. Bagnoli, Eskew, and Watts (2001) find that ERCs of firms whose First Call forecasted and reported earnings exclude both recurring (e.g., goodwill amortization) and non-recurring items are higher than ERCs of firms whose First Call forecasted and reported earnings only exclude non-recurring items. They interpret their evidence to suggest that such firms are more successful at managing reported and expected earnings by convincing analysts to permanently exclude a recurring expense from their forecasts.

Recent research has also examined the question of whether investors have shown a gradually increasing preference for the I/B/E/S over the Compustat reported earnings in recent years (Bradshaw and Sloan [2002]) and whether the proportion of FDP earnings that meet or exceed the analysts

expectations has been steadily increasing (Matsumoto [2002], and Brown [2001]). Below, we reexamine the robustness and generalizability of the conclusions reached in prior work.

4.1.1 Is the inflation of Street earnings a pervasive phenomenon?

If investors fixate on a single measure of earnings, then firms, FDPs, and analysts can profit from higher stock prices if they can induce investors to focus on inflated Street earnings. The negative mean difference between Compustat and I/B/E/S earnings and the greater percentage of negative than positive earnings differences in most years reported in Panel A of Table 2 appear to support the claim of pervasive firms/FDPs inflation of and potential for market mispricing. However, consideration of the properties of the distribution of earnings differences identified above raises questions about the pervasiveness of these purported phenomena.

First, recall that the incidence of zero earnings differences reported in Panel A of Table 2 is over 50% in most years (property 3). Cases in which earnings differences are exactly zero are inconsistent with the notion of bias in Street earnings and the prospect that such biases substantially affect stock prices. While the high incidence of exactly zero earnings differences does not, in and of itself, rule out some systematic inflation of Street earnings, it raises doubts the extent of it and the completeness of the arguments supporting the prediction of earnings inflation.

Next, consider the impact of the first property of earnings difference distributions (a greater incidence and magnitude of extreme negative than extreme positive values) on the inference of pervasive earnings inflation. In Panel B of Table 2 we sort all non-zero earnings difference observations into positive and negative groups. Within each group we rank the earnings differences and partition them into quintiles. Thus, portfolio 1 contains the most extreme negative earnings differences (i.e., the cases in which the I/B/E/S reported earnings exceed the Compustat reported earnings by extreme amounts), while portfolio 5 contains the least negative differences. Similarly, portfolio 6 contains the smallest positive differences and portfolio 10 contains the most extreme positive differences.

The evidence in this panel indicates that the mean negative earnings difference in portfolio 1 is large and that its absolute value is nearly two times the size of the positive mean associated with

portfolio 10. This finding clearly suggests that the impact of the most negative portfolio of earnings differences on the overall mean is disproportional. Moreover, in analysis not reported in the tables, we find that the long negative tail of the distribution that was seen in Figure 1 reflects the fact that over 5% (or about 8,000 observations) of the overall distribution is represented by negative values that are *greater* in absolute magnitude than the most extreme positive value. Such large extreme negative values account for about 72% of the 11,145 excess of negative relative to positive earnings differences in the entire distribution (11,145 is the difference between the number of positive and the number of negative earnings differences as reported in Table 1). In the absence of these 8,000 extreme observations, only about 3,145 (11,145 minus 8,000) out of 159,220 observations (approximately 2%) are responsible for producing a percentage of positive to negative earnings differences that is lower than 1 (i.e., observations consistent with an inflation of Street earnings).

The preceding analysis focused on the impact of observations in the tail of the earnings difference distribution in assessing the phenomenon of earnings inflation. It is also possible, however, to focus on other parts of the distribution to assess whether evidence of earnings inflation is pervasive. For example, we analyzed the observations falling in small symmetric intervals around a zero earnings difference. The analysis reveals that ratios of positive to negative earnings differences are sometimes greater than and sometimes less than 1, not consistently below 1 as one might expect if Street earnings are being systematically inflated. In results not reported in the tables, we find the ratios of positive differences of 1, 2, 3 and 4 cents to their respective negative counterparts are .84, 1.19, 1.02 and .88. Notably, for some earnings differences of relatively small magnitudes, Compustat earnings are actually more likely to exceed I/B/E/S earnings than vice versa. Once again, this evidence runs contrary to a pervasive tendency for Street earnings to be inflated unless the inflation is of extreme magnitude.

4.1.2 An alternative interpretation of the appearance of earnings inflation

While the preceding evidence does not preclude the possibility of intentional and/or collusive inflation of earnings by FDPs, it suggests that extreme negative differences for which there are no extreme positive counterparts have a disproportional impact on summary statistics that have been

used to support this possibility. The evidence on the incidence, sign, and magnitude of special items in the cross-section documented in Table 1 suggests that these items alone may be sufficient to account for this result. To further explore this possibility, Panel B of Table 2 reports means of Compustat special items, non-operating items, and estimated other adjustments associated with the earnings difference deciles. The mean special item associated with this most negative earnings difference portfolio is by order of magnitude larger than that associated with any other decile. In results not reported in tables we find that portfolio 1 (which represents 5.5% of the sample observations) contains 32% of observations found in the lowest decile of special items. That is, there is a strong correspondence between extreme negative special items and membership in the extreme negative earnings difference portfolio. No other earnings difference portfolio accounts for a disproportional share of extreme, negative special items.[7]

The results presented thus far suggest a simple, mechanical explanation that is consistent with results found in the earnings inflation literature. The explanation leads to a new interpretation of prior evidence, or, at least, to an alternative way to frame the question of whether Street earnings are deliberately inflated. A long stream of capital market studies report that market reactions to non-recurring items are relatively weak (see, e.g., Lipe [1986], Elliot and Shaw [1988], and Hanna and Elliot [1996]). If investors have historically placed little weight on such items, then the adoption by FDPs and analysts of a definition of earnings that always excludes them would seem justified. This view is in fact expressed in the documentation of all FDPs, where it is argued that they define earnings in a manner which ensures a measure of earnings surprises that best corresponds to the number analysts are forecasting and investors view as most value-relevant. To the extent that special items reflect the combination of economic events and a faithful application of conservative GAAP, it should be expected that firms, especially the poorest performers in the cross-section, will recognize extreme income-decreasing special items that are larger than extreme income-increasing ones. This, in turn, is expected to produce a longer negative than positive tail in earnings difference distributions,

[7] In contrast to special items, observations from the lowest deciles of estimated other adjustments and Compustat non-operating items are proportionally represented in portfolio 1 (6% each). Notably, extreme other adjustments make a fairly symmetrical contribution to the most extreme positive and negative earnings differences, consistent with the notion that extreme negative values of estimated other adjustments are generally matched by positive values of equal value. Finally, there is no indication that Compustat non-operating items have a systematic relation to extreme earnings differences.

comprising observations that would have been located in the center or shoulders of the *a priori* distribution in the absence of such accounting rules.

One advantage of the preceding alternative explanation is that it is consistent with the general characteristics of the earnings difference distributions and not just with the summary statistics associated with them. We nevertheless acknowledge that this does not rule out the possibility that firms manipulate, hide, or draw attention to special items and other items in a manner that leads investors to believe earnings are higher than fundaments can support. However, given the fairly stable nature of these formulae over time, one has to grant that FDPs were adept enough to originally choose and then bold enough to retain their formulae over the years so that firms could exploit them to inflate earnings in a manner that continually and systematically fools investors.

Based on the stated reasons FDPs give for making adjustments to GAAP earnings and evidence from prior literature, it is left to the reader to judge the extent to which FDPs are motivated to define earnings in a manner that allows firms to inflate earnings numbers. In any event, a consideration of the disproportional impact of extreme negative observations on the summary statistics and the substantial proportion of zero earnings differences raises doubts about the strength of the statistical argument that supports a pervasive or even a moderate tendency for Street earnings to be inflated. This, in turn, suggests a need for researchers to develop more refined hypotheses and econometric techniques to parse out a compelling case for pervasive, misleading earnings inflation. For example, the evidence suggests that the most powerful setting for developing and testing hypothesis concerned with the incentives for and capabilities of firms to inflate earnings is among firms characterized by recent extreme poor performance.

4.1.3 Are investors fixated on Street earnings?

In this section we turn to a re-examination of evidence of differential market reactions to alternative earnings surprise measures and the conclusions reached in prior studies that investors fixate on or prefer these Street earnings. We begin our analysis by computing two competing earnings surprise measures. The first is based on the I/B/E/S forecasted and reported earnings, denoted FE_{IBES}. The second is based on the I/B/E/S forecasted and the Compustat reported earnings, denoted FE_{CSTAT}.

That is, I/B/E/S earnings forecasts are held constant while the reported earnings benchmark varies. Forecast errors equal quarterly earnings per share minus quarterly consensus forecasted earnings per share outstanding prior to the earnings announcement, deflated by price at the beginning of the quarter and multiplied by 100.

Descriptive statistics for annual distributions of the two forecast error measures are presented in Panel A of Table 3. Mean forecast errors are negative in every year for both surprise measures. Median errors are generally negative in the earlier sub-period but are zero in the later sub-period for both surprise measures. The percentage of positive, or good-news, surprises exceeds the percentage of negative, or bad-news, surprises in the later sub-period for the I/B/E/S earnings-based forecast error; we observe the opposite relation in the earlier period. The Compustat earnings-based measure produces more negative surprises in the early period and a similar number of positive and negative surprises in the later sub-period. Consistent with the evidence in Abarbanell and Lehavy (2003a), the incidence of exactly zero forecast errors for both surprise measures has increased over the years.

Panel B of Table 3 reports the mean forecast errors for the two earnings surprise metrics pertaining to the earnings difference portfolios formed as in Panel B of Table 2. The large negative FE_{CSTAT} associated with the most negative earnings differences in portfolio 1 suggests a substantial overlap between extreme negative forecast errors and the most extreme negative earnings differences. The overlap is confirmed by the finding that 41% of the observations found in the lowest negative decile of the distribution of FE_{CSTAT} are also found in portfolio 1 of the distribution of earnings differences (compared to the expected frequency of 8,994/159,220, or 5.6%). In contrast, no other non-zero earnings difference portfolio contributes a disproportional share of observations to the largest negative decile of FE_{CSTAT} and zero earnings differences contribute only 37% (compared to 52% that would be expected) to this decile.

The correspondence between extreme FE_{CSTAT} and extreme earnings differences is particularly important for interpreting evidence pertinent to the question of whether the market fixates on or prefers Street earnings. Table 4 presents the results of estimating regressions of market-adjusted returns around earnings announcement dates on the two alternative forecast error metrics. Returns are measured as the three-day buy-and-hold return centered on earnings announcement date minus the

return on a value-weighted NYSE/AMEX/NASDAQ index. The absence of earnings announcement returns reduced the sample size to 140,438 observations for the 1985-1998 period and 45,859 and 94,579 observations for the 1985-1991 and 1992-1998 periods, respectively.

The first two rows of Table 4 present the ERCs for the overall sample and for the sample that excludes zero earnings differences. Like Brown and Sivakumar (2003) and Bradshaw and Sloan (2002) who also employ I/B/E/S data, we find that the overall ERCs are significantly higher for earnings surprises that are calculated with I/B/E/S earnings (.448) than with Compustat earnings (.319). A similar relation is observed when zero earnings differences are removed from the sample.[8] These results are consistent with the view held by many researchers, policy makers, and the business press that analysts, firms, and FDPs collude to inflate earnings and mislead investors. It is also, however, consistent with the argument that Street earnings are simply more informative than GAAP earnings.

ERCs for the separate sub-periods 1985-1991 and 1992-1998 are reported in columns 6-7 and 10-11, respectively. There is no evidence of a market preference for or fixation on Street earnings in the early sub-period, with or without exclusion of zero earnings differences. For the later sub-period (the period during which the debate over Street versus GAAP earnings arose), the I/B/E/S earnings-based ERC is significantly higher than the Compustat earnings-based one (1.049 versus .398, respectively). Thus, is appears that the later time period is largely responsible for the overall appearance of a higher association between returns and the I/B/E/S earnings-based surprises than the GAAP earnings-based ones. This finding is weakly consistent with the view that investor fixation on inflated Street earnings or preference for more informative Street earnings is an increasing trend in recent periods, a question we return to in the next subsection.

To gain further insights into the impact of the first property of the earnings difference distribution— the larger frequency and magnitude of extreme, negative differences—on the finding of differential market responses to earnings surprises, we estimate ERCs within the portfolios of

[8] Brown and Sivakumar (2003) and Bradshaw and Sloan (2002) include zero earnings difference observations in their main regressions. In principle, these observations, which are likely to comprise over half of their samples, should play no role addressing the question at hand. While the inclusion of zero earnings differences does not appear alter the statistical inference in Table 4, including these observations in tests of the information content or the value-relevance of alternative earnings measures has the potential to confound inferences (see also discussion above in section 3.3).

ranked earnings differences as described in Panel B of Table 2. Results are reported in the lower portion of Table 4. Notably, among the 10 portfolios the only statistically reliable differences between Street and GAAP earnings-based ERCs for the full (columns 2 and 3) and the early (columns 6 and 7) samples are found in the 1st and 10th portfolios. For the other eight portfolios there is *no* statistical evidence of investors benchmarking their earnings expectations with Street rather than GAAP earnings. In fact, the evidence from portfolio 10 indicates that in some cases investors benchmark their earnings expectations with Compustat rather than I/B/E/S earnings.[9] Thus, it appears that the one persistent finding of larger ERCs when I/B/E/S earnings exceed Compustat earnings largely depends on a relatively small number of observations in portfolio 1, representing cases of the most extreme, income-increasing I/B/E/S adjustments to GAAP earnings. These observations also represent firms whose stock prices are relatively insensitive to earnings news and that, relative to other firms, are associated with the lowest earnings per share (by either alternative earnings measure), growth rate in sales, trailing-twelve-months cash flows from operations, and experienced the most negative prior 12 months size-adjusted return (not reported in tables).[10]

To further illustrate the disproportional effect of observations in portfolio 1 on the inference of investor fixation on or market preference for street earnings, we re-estimated the overall ERCs *excluding* observations in portfolio 1. This procedure yields statistically indistinguishable ERCs of 1.10 and 1.04 for the remaining sample for the I/B/E/S and Compustat earnings-based surprise, respectively in the 1992-1998 (unreported in tables), compared to the values of 1.049 and 0.398 as reported in the top row of Table 4. We note that the small magnitude of the ERCs associated with portfolio 1 in the 1992-1998 period (.625 and .088 for the I/B/E/S and Compustat earnings-based surprise measures, respectively) suggests on an overall "sluggishness" of market responses in cases

[9] The tests of difference in ERCs in columns 10 and 11 indicate that an apparent market preference for GAAP earnings in cases where Compustat earnings exceed I/B/E/S earnings (i.e., portfolio 10) does not hold for the 1992-1998 sub-period, suggesting that the early sub-period drives the overall sample result for portfolio 10 in column 4.

[10] It could be argued that when I/B/E/S earnings differ from Compustat earnings by small amounts there may be little power to detect differences in respective ERCs. However, small earnings surprises have been shown to create disproportionally high stock responses in the prior literature (e.g., Skinner and Sloan [2002]). This suggests that lack of power may not be a relevant consideration for small earnings differences. Note also that low power is unlikely to explain the lack of significant differences in ERCs for many of the portfolios where mean differences in reported earnings, and therefore, earnings surprises are still relatively large.

where Street earnings are much greater than GAAP earnings, regardless of which earnings measure is used.

The results in Table 4 provide a new perspective on the higher association between FDP-based measures of earnings surprises compared to Compustat-based ones. First, similar to our assessment of the robustness of evidence that supports the claim of inflated Street earnings presented earlier, it would appear that investors' preference for or fixation on Street earnings is, at the very least, not a pervasive phenomenon. This assessment is based on the facts that, by definition, there can be no preference for Street earnings in over half of the cases in the sample (the zero earnings difference observations), and that after isolating the most extreme negative earnings difference in the remaining sample, we find that only one partition, which contains 7,739 out of 140,438 or 5% of the sample observations, is associated with reliably larger I/B/E/S earnings-based ERCs. Second, ERCs associated with observations in the extreme tails of the earnings difference distributions (i.e., portfolios 1 and 10) are substantially smaller in magnitude than those associated with other portfolios regardless of the forecast error metric used. That is, even after adjusting out obvious, explicitly reported items, I/B/E/S earnings-based ERCs remain low in these extreme portfolios.

Thus, at a minimum, it appears that investors attribute a lower persistence to the earnings of companies in portfolios 1 and 10, and therefore gives less weight to news contained in the earnings reported by these firms. This finding also suggests that the development and testing of the hypothesis that earnings management is undertaken to fool investors could be focused more effectively on poorly performing firms.

The preceding evidence suggests that the same intuitive mechanical reason for prior statistical evidence that appears to support earnings inflation may account for much of the evidence that supports investor preference for and/or market fixation on Street earnings. Specifically, the blanket exclusion of certain income items by FDPs provides a benefit by attenuating the effect of a relatively small number of cases in which GAAP earnings are particularly ineffective at conveying value-relevant information for poorly performing firms. As noted earlier, long-standing evidence has demonstrated that the market response to earnings that contain large non-recurring items is low. Thus, it is not unreasonable to expect, a priori, that by mechanically removing non-operating and non-

recurring items, FDPs coincidently remove the most extreme, transitory income-decreasing cases that investors appear to ignore. That is, it is not surprising that a portion of the measurement error (with respect to the true earnings benchmark relied on by the market) is removed in exactly the cases where the measurement error is the greatest. Such cases are, in turn, largely responsible for an overall statistical difference in cross-sectional earnings response coefficients (see also appendix A.1 for an analogous interpretation of evidence in the literature on the value relevance of earnings and book values).

In the next subsection, we examine the implications of the second property of earnings difference distribution on the conclusion that there has been a gradual increase in the reliance of investors on Street earnings in recent years.

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

Bradshaw and Sloan (2002) conclude that "…consistent with our first prediction, the difference between Street and GAAP earnings has been gradually growing over the last decade …" (p. 56). The conclusion is based on statistical tests that indicate a significant relation between ERCs and time over the sample period, 1985-1997. It should be noted that market exposure to FDP earnings as well as their use by researcher's for empirical testing did not become prevalent until the early 1990's. Furthermore, a search of the business press before 1991 revealed no evidence of a debate over Street versus GAAP earnings and no indications of systematic firm reporting of pro-forma earnings. These facts suggest that attention to the conjecture of an increasing reliance/fixation on Street earnings is a relatively recent phenomenon. Below, we reexamine the robustness of the statistical evidence supporting the conclusion of an increasing reliance by investors in recent years.

We begin by examining the role of the extreme, negative earnings differences on the two competing ERC measures over time. Panel A of Figure 3 provides a graph of the mean quarterly ERCs by year for the I/B/E/S earnings-based and Compustat earnings-based forecast error measures. There are two noteworthy points. 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 FE_{IBES} in the years after 1990 and

before 1997. Panel B of Figure 3 presents evidence of the influential role of extreme, negative earnings differences in explaining the divergence in ERCs over time. This panel presents ERCs similar to those in Panel A, estimated after removing observations in portfolio 1 (the extreme negative tail of the earnings difference distribution). The upward trend in ERCs for both measures of surprise after 1990 is still apparent even after removing these observations. However, the divergence in ERCs observed in Panel A is essentially eliminated in most years, reinforcing the cross-sectional evidence presented earlier on the role of the first property.[11]

Additional statistical evidence concerning the longitudinal properties of forecast error measures and their associated ERCs is provided in Table 5. This table presents mean forecast errors and ERCs by year for the two earnings surprise measures. Differences between the two subperiods are evident. For example, the largest annual mean forecast error after 1991 is significantly smaller than even the smallest mean forecast error before 1991 for both forecast error measures (with the exception of the Compustat mean earnings surprise in 1998). Similarly, the smallest ERC after 1991 is still larger than the largest ERCs prior to 1991 for both I/B/E/S and Compustat earnings-based surprises. The differences between the 1985-1991 and 1992-1998 sub-period mean forecast errors and ERCs are statistically significant, respectively (unreported in tables).

While statistical difference between the two subperiods is evident, the question at hand is whether there has been a *gradually* increasing trend in the market reliance on Street earnings in the 1990s, or whether the apparent trend represents a one-time shift or some other phenomenon. We examine this question by computing the correlations between yearly ERCs and time. The first set of correlations, reported at the bottom of Panel A of Table 5, pertains to the entire sample period from 1985-1998. It can be seen that there is a significant positive correlation between ERCs and time for both earnings surprise measures, with the higher of the two belonging to the FE_{IBES} metric (.88 versus .70). This result appears to confirm the conjectures in prior research that investors have become increasingly fixated or reliant on Street relative to GAAP earnings.

[11] Market responses to earnings news increases after 1990 even after tail observations are removed, regardless of what earnings benchmark is used. This suggests that a reliance or fixation on Street earnings is not the sole source of any apparent trend in how the market interprets earnings. It also highlights the importance of empirical designs that account for the cross sectional properties of earnings difference distributions to allow for an adequate discrimination of any longitudinal hypothesis under examination.

Our concern, however, is that the estimated correlation is largely an artifact of the shifts in earnings surprises and ERCs in 1991 as described above. Accordingly, we recalculated the correlation restricting the sample to the years 1992-1998, the period over which the debate over Street versus GAAP earnings arose. As seen in Table 5, the correlations between ERCs and time for both earnings surprise metrics are now considerably smaller (negative in the case of the Compustat based-ERC) and statistically insignificant for this period. To test for the effect of the apparent shift in mean earnings differences and in mean forecast errors and ERCs in the early 1990s, we recalculated the correlations after dropping the year 1998 and adding the year 1991 to this sample. This is done to ensure that the insignificant correlations between ERC and time for 1992-1998 are not simply the result of reducing the number of years used to calculate them. It can be seen that inferences change dramatically once the sample period straddles 1991. Now the correlation between ERCs based on the FE_{IBES} metric is highly significant (.89 with a *p*-value of .01) and is almost identical in magnitude to that calculated for the entire sample period 1985-1998. The correlation between ERCs based on the FE_{CSTAT} metric, however, remains insignificant.[12]

As a final sensitivity check on our intertemporal results, we repeated the correlation tests in Table 5 employing forecasts and earnings from First Call. The First Call service began providing data in 1992, after the apparent regime shift in earnings differences. Results for the First Call sample are reported in Panel B of Table 5. It can be seen that there is no evidence of an increasing correlation between ERCs and time for neither the First Call forecasts and reported earnings surprise metric nor for the First Call forecasts and Compustat-based earnings surprise metric. There is also no relation between ERCs and time when the sample is restricted to cases for which I/B/E/S and First Call data completely overlap with respect to firm and quarter.

[12] Note also that the findings for the correlations between mean forecast errors and time for both earnings surprise measures mirror those found for ERCs. That is, if the sample does not straddle 1991, there is no statistical evidence of a gradual decline in analyst forecast errors over time. Evidence of a negative correlation has been used to support the argument that there has been a decreasing trend in apparent analysts' optimism during the 1990s (see, e.g., Brown [2001]). No such correlation is evident without including at least one year from the pre-1991 period.

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

As indicated earlier, proprietary documentation indicates that FDPs exercise discretion over which reported earnings number to publish and closely monitor analysts' forecasts for large deviations from the consensus to ensure a measure of earnings surprise that "best" corresponds to market expectations. 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 and, hence, determine stock price responses to earnings surprises. That is, the implicit assertion is that earnings surprises based on reported earnings that exclude certain non-operating and non-recurring items will *always* have greater information content and higher value-relevance.

The question of the relative superiority of alternative earnings surprise measures based on FDP versus Compustat earnings was first explored in Philbrick and Ricks (1991). While both the research questions and the underlying assumptions about market efficiency in the superiority literature differ from those in the Street versus GAAP literature, the results in the two literatures are closely linked because they employ similar empirical test designs. That is, holding the forecast component of the earnings surprise constant, one of the basic question addressed in the superiority literature is essentially the same as asking whether investors rely more on FDP (Street) earnings than Compustat (GAAP) earnings.[13]

Philbrick and Ricks (1991) find that cross-sectional ERCs are, on average, higher for earnings surprises comprised of FDP forecasts and FDP reported earnings than for earnings surprises based on FDP forecasts and Compustat earnings. This general result is replicated in Ramnath, Rock, and Shane (2005). One concern for this literature raised by the evidence in Table 4 is that test designs that give disproportional weight to large negative earnings difference observations can either produce a distorted view of the pervasiveness and/or economic importance of the superiority of FDP over Compustat reported earnings, or, alternatively, obscure a relation that is otherwise strong in a

[13] The stated motivation for conducting market association tests in the superiority literature is to create earnings surprises with the least amount of slippage in representing market expectations and not to explicitly address the question 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.

particular circumstance. Another concern raised by the results pertaining to portfolio 10 reported in Table 4 is that there may be circumstances in which Compustat earnings-based surprises actually produce systematically *larger* ERCs and are, in fact, more value relevant than I/B/E/S earnings. This raises the possibility that routine FDP adjustments to earnings that presume some income items are of low informational value to investors could actually *induce* rather than reduce measurement error relative to Compustat earnings in certain circumstances. The results reported below support this possibility.

4.3.1 The case of good-news FE_{IBES} but bad-news FE_{CSTAT} surprises

The market fixation argument is often motivated in the context of firms inflating earnings to beat market expectations (see e.g., Schonfeld [1998], and Zacks [2003]). This suggests that a particularly relevant set of observations where FDPs would be expected to produce a superior measure of market earnings surprise (or, alternatively, that the market might fixate on Street earnings) are those cases in which FDP earnings produce a positive earnings surprise and GAAP earnings produce a negative surprise (for the same forecast). Panel A of Table 6 reports the two competing ERCs for the 6% (5,616 of the 94,579) of observations from 1992-1998 for which I/B/E/S adjustments to Compustat earnings led to a flip in the sign of the forecast error from a negative value to a positive one. The results in Panel A indicate that both earnings surprise metrics produce small ERCs that are statistically indistinguishable from zero, as well as from each other.

At first glance, the result in Panel A does not appear to support the superiority of I/B/E/S reported earnings or the market's fixation on Street earnings in this highly relevant partition. Further investigation, however, reveals that the presence of a small number of extreme, negative earnings differences associated with property 1 is responsible for this outcome. When observations from the lowest earnings difference portfolio (in Table 4) are removed from this subsample, the qualitative conclusion in Panel A is altered. The ERC reported for I/B/E/S earnings-based surprises rises from an insignificant value of .17 to a highly significant value of 2.46 while the Compustat earnings-based surprise remains small and insignificant. The difference between to the two coefficients is now highly significant.

The results reported in Panel A of Table 6 suggest that, controlling for the effect of extreme negative earnings differences, there is strong evidence that when I/B/E/S excludes negative items from reported earnings in a manner that results in a negative sign for FE_{CSTAT} but a positive sign for FE_{IBES}, the market response to FDP earnings-based surprise is larger than that associated with the Compustat earnings-based surprise. Recall that the results in Table 4 demonstrate how a small number of extreme observations can produce the appearance of systematic market reliance or fixation on inflated Street earnings even when the phenomenon is not pervasive. The evidence in Table 6 provides a contextual example of how portfolio 1 observations can *obscure* evidence consistent with apparent market reliance or fixation on FDP earnings in a subset of the data that is highly relevant to the question at hand. Combined, the findings suggest that researchers must be particularly conscious of the ability of a relatively small number of observations in the negative tail of the distribution of earnings differences to "wag the dog," that is, to sometimes support but other times obscure evidence and inferences drawn from this evidence.

4.3.2 Is the choice of one source of reported earnings data over another costless?

The evidence presented thus far concerning the properties of the earnings difference distribution and their impact on statistical inferences raise questions about the generality of conclusions drawn in the prior literature. Nevertheless, based on the evidence in Table 4 and Panel A of Table 6, one might be tempted to settle on the view that the market sometimes prefers FDP (Street) earnings to Compustat (GAAP) and at other times it is indifferent between the two. This, in turn, may lead a researcher to conclude that by *always* pairing FDP earnings with forecasts they can gain much in practical convenience and standardization across studies without sacrificing power or introducing bias. We explore the soundness of this view through an examination of the three other possible partitions of observations that are determined by the relative signs of the forecast errors produced by the Compustat and I/B/E/S earnings.

Panel B of Table 6 reports the ERCs for the sample of firms for which I/B/E/S earnings-based surprises are negative and Compustat earnings-based surprises are positive. I/B/E/S adjustments in these cases transformed a good-news surprise according to Compustat to a bad-news surprise

according to I/B/E/S. While there are no hypotheses in the literature that predict FDPs have incentives to deflate GAAP earnings below expectations, both the market fixation hypothesis as well as the conjecture that FDP earnings are the superior benchmark for market's earnings expectation would lead to the prediction of a larger ERC for the I/B/E/S earnings-based surprise. However, the evidence in Panel B does not support this prediction, as the ERCs for the alternative measures are statistically indistinguishable. This result holds even after removing the most positive earnings differences observations found in portfolio 10 (i.e., observations for which Compustat exceeds the I/B/E/S earnings by extreme amounts). Thus, the evidence in Panel B fails to support the notion of simple market fixation on Street earnings or a general superiority of FDP to Compustat earnings.[14]

Panel C of Table 6 reports further evidence on the relative magnitude of the ERCs for a subsample for which both forecast error metrics produce negative (or bad-news) earnings surprises. The two earnings surprise metrics yield small ERCs for the whole subsample, as well as in the negative and positive earnings difference partitions. Of course, the metrics produce identical ERCs when earnings differences are zero. When earnings differences are negative, I/B/E/S earnings-based surprises do produce a slightly larger ERC than Compustat earnings-based surprises, but again, ERCs in both cases are very small, raising questions about the economic relevance of the statistical difference. These results also hold after removing the most negative and the most positive earnings differences in portfolios 1 and 10 (unreported in tables).

While the overall evidence in Panel A-C of Table 6 does not appear to provide broad support for the market fixation/reliance hypotheses, the results could still be used to justify the argument that FDP earnings are weakly superior to Compustat earnings for the purpose of measuring market earnings surprises. That is, one could argue that there would be little empirical slippage if forecasts were *always* benchmarked against FDP reported earnings. However, evidence reported in Panel D of Table 6 raises doubts about whether even this conjecture holds in all circumstances.

[14] It is also noteworthy that in only 8% of cases in the full sample does an I/B/E/S adjustment to earnings lead to a sign flip in the surprise in either direction (observations in Panels A and B of table 6). Furthermore, only an excess of 4% (6%-2%) of such cases are in the direction that supports the purportedly pervasive phenomenon of inflating Street earnings to generate positive earnings surprises.

Panel D of Table 6 reports the ERCs for the subsample in which I/B/E/S and Compustat earnings are paired with a given forecast resulting in a positive (i.e., good-news) forecast error. ERCs for both earnings surprise metrics are large relative to those reported for the overall sample (in Table 4), as well as the other subsamples in Panels A-C of Table 6. The first row of Panel D reports that the overall ERC associated with FE_{IBES} is, once again, significantly larger than the one associated with the FE_{CSTAT}. As seen in the table, the result is driven by cases in which Compustat earnings exceed I/B/E/S earnings (i.e., differences are positive) that result in a larger ERC for FE_{IBES} than FE_{CSTAT} (2.45 vs. 0.69, respectively). However, when the I/B/E/S earnings exceed Compustat earnings for this subsample (i.e., negative earnings differences that are purported to reflect earnings inflation) Compustat earnings-based surprises actually produce a significantly *larger* ERC than I/B/E/S earnings-based surprises (2.77 vs. 1.60, respectively). That is, when both reported earnings numbers exceed the forecast, the *lower* of the two alternatives is closer to the actual earnings benchmark on which the market appears to rely or fixate.

One possible explanation for the result in Panel D is that when firms report GAAP earnings above the forecast, large negative transitory earnings items that are mechanically reversed out of the I/B/E/S earnings that nevertheless still beat the forecast, are seen by the market as highly informative. That is, the market may view the earnings of firms that have the ability to recognize large negative, transitory items while still beating market earnings expectations as more persistent. Anecdotally, such firms may be perceived as storing "cookie jar" reserves, which, in turn, could be construed by the market as a signal of financial strength. Regardless of the explanation of this finding, however, we note that the prospect of inflated I/B/E/S earnings numbers leading to a *reduction* in price-earnings association tests has not been considered in prior studies in the Street versus GAAP literature, studies that seek to identify *ex ante* superior sources of earnings data, or studies that use analyst forecast errors as measures of earnings management (e.g., Bagnoli et al., and Abarbanell and Lehavy [2003b]).

The results in Table 6 speak to the question of whether it is possible or even desirable to identify *ex ante* a superior earnings number to benchmark against forecasts. While it is true that I/B/E/S earnings-based surprises produce ERCs that are no smaller than Compustat earnings-based

surprises for the entire cross-section and for some partitions of the sample, one does not need to search very far to find a theoretically interesting context (i.e., a partition of the data) in which the opposite is true. This suggests that different tests of hypotheses, for example, the hypothesis that earnings are inflated to inflate stock prices, have the potential to produce results that are qualitatively at odds, depending on the particular sample and research design employed.

More generally, while some of the results in Table 4 and Panels A and C of Table 6 are weakly consistent with systematic market fixation/reliance on Street earnings, these results must be reconciled with the results in Panel B and D of Table 6, which indicate that Street earnings can produce ERCs that are equal to or lower than those based on GAAP earnings. Given the inability of Street earnings-based surprises to consistently produce ERCs that are larger than GAAP earnings-based surprises, our evidence could easily be interpreted as consistent with a very sophisticated market that weights the components of earnings adjustments in a manner more complicated than the formulae adopted by FDPs.

4.4 Implications for tests of market fixation on FDP earnings that rely on subsequent returns

The preceding analyses suggest that tests of stock price responses to contemporaneous earnings surprises performed in prior literature do not adequately discriminate between a market that fixates on unjustifiably inflated earnings and one that, depending on the circumstances, efficiently formulates an earnings benchmark closer to alternative competing definition of realized earnings.

One common approach in the literature for detecting whether inflation of earnings has misled investors relies on the assumption that the market eventually discovers its initial pricing mistake. These subsequent returns tests are typically motivated by one of two views of the world; either investors initially overreact or underreact to information that was not reported strategically by the firm (e.g., Burgstahler, Jiambalvo, and Shevlin [2002]), or investors react in an apparently appropriate manner to information that was later discovered to have been strategically manipulated (e.g., Doyle et al.).

Our analysis suggests that the most influential evidence in support of the claims that Street earnings are inflated and that the market fixates on them is associated with the most extreme negative

differences between FDP and Compustat definitions of earnings. The evidence presented in Doyle et al. is relevant to assessing whether these same observations reflect cases of earnings inflation that the market eventually discovers and corrects. They document that a trading strategy of short positions in stocks with the most extreme negative earnings difference (i.e., Street earnings exceed Compustat earnings) and long positions in stocks with the most extreme positive earnings differences (in which GAAP earnings exceed Street earnings), produces a hedge return of 11.3% three years after portfolio formation. However, none of this hedge return is accounted for by the short positions in the extreme negative earnings differences, which are the positions consistent with initial market fixation on inflated Street earnings. The return to the trading strategy derives entirely from taking long positions in stocks with earnings differences that are consistent with extreme FDP earnings *deflation*. We note that no extant hypothesis in the GAAP versus street literature identifies an incentive for firms in collusion with FDPs to deflate earnings by extreme amounts in an effort mislead investors (see also discussion in Easton [2003]).

Additional evidence reported in Doyle et al. suggests that larger abnormal returns can be earned by establishing trading positions based on the sign and magnitude of the special items and other exclusions that comprise earnings differences. Notably, however, all of the profit generated by the refined strategy derives from positions taken in extreme *positive* values of other exclusions, which, unlike special items are not disproportionally represented in the extreme negative earnings differences portfolio. These results suggests that to get a better understanding of the association between inflation of GAAP earnings by FDPs and subsequent price corrections, one would need to isolate the observations for which there is an inflation and then test for this association in this relevant partition of the data.

5. Summary and conclusions

In this paper we reexamine inferences in the literature on the information content of alternative sources of reported earnings through the lens of the properties of the distribution of differences in earnings reported by I/B/E/S and Compustat. Our analysis indicates that some interpretations of statistical evidence as supporting a general market fixation/reliance on Street (FDP)

earnings versus GAAP (Compustat) earnings both in the cross section and over time may be premature, or, at the very least, in need of further refinement. At a minimum, our findings raise doubts about how pervasive are the purported phenomena of intentional earnings inflation, investor fixation on Street earnings, as well as the extent to which FDP reported earnings are superior to Compustat earnings for benchmarking market earnings expectations.

Thus far, studies have set a fairly low hurdle for generating and interpreting the strength of statistical support for sweeping hypotheses whose construct validity remains open to challenge. Furthermore, some econometric techniques used in the literature are simply too blunt to produce evidence that discriminates between support for the stated hypotheses and a simple measurement error interpretation of the data. Accordingly, going forward, more challenging tests of hypotheses, more explicit assumptions about investors' behavior, and tighter linkages between the hypothesis tested and empirical test designs will be required to make a compelling case for earnings inflation and/or potential market fixation on Street earnings.

Several admonitions to researchers follow from the analysis of the properties of earnings differences. First, beware of the potential for the negative tail of the distribution "to wag the dog" when developing research designs, deciding on statistical tests, and choosing samples for testing specific hypotheses. Second, in any longitudinal study that employs FDP forecast and reported earnings data that straddles the year 1991 be aware of an apparent shift in mean earnings differences and forecasts errors that 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 inflated earnings followed by subsequent price corrections, it is important to isolate the observations for which there is an appearance of inflation (i.e., Street earnings should be greater than GAAP earnings), and then to establish a direct link to market fixation on a given earnings measure as the cause of purported mispricing.

Finally, our analysis offers an alternative perspective on evidence from prior literature on the relative information content and value-relevance of earnings (see appendix A.1). This perspective relies on the notion that investors process the information content and value-relevance of specific components of earnings in a manner that is more sophisticated than the rules that are applied to

exclude such items from I/B/E/S earnings. This process 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. To the extent that this contextual characterization applies, there may be limited benefits to conducting or relying on analyses that attempt to identify *ex ante* superior measures of reported earnings, as the superiority of one measure over another is likely to depend on the specific hypothesis or context under investigation.

Appendix

A.1 Measurement error and the relative value relevance of earnings and book values

In this appendix we extend our analysis of the properties of earnings difference distributions to the literature concerned with the cross-sectional determinants of the value relevance of earnings and book values (see, e.g., Francis and Schipper [1999], Collins, Maydew, and Weiss [1997] and Brown and Sivakumar [2003]). The evidence we present expands the measurement error interpretation of our findings by assessing the tradeoff between the value relevance of book values and earnings in price level regressions (see Abarbanell [2000]).

Table 7 presents the estimated coefficients and adjusted R^2s from regressions of prices on earnings and book values within the portfolios of ranked earnings differences identified in Table 4. Results are reported for the sample period covering the period 1992-1998. Columns 3-5 report the regression results for Compustat book values and earnings. The coefficient on Compustat 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. Recall that portfolio 1 represents observations with the largest, negative earnings differences between Compustat and I/B/E/S. Note also that the adjusted R^2 in this portfolio is very low. This suggests that measurement error in earnings (relative to the market's true earnings benchmark) is associated with the most extreme negative earnings difference observations in the distribution. These observations appear to bias downward the coefficient on earnings and inflate the coefficient on book value which must compensate for the measurement error in earnings.[15] Nevertheless, the amount of error in measuring the markets' true earnings benchmark is sufficiently large in portfolio 1 that book value cannot fully compensate for the information lost, as suggested by the low R^2.

The evidence of a tradeoff between book value and earnings and its impact on R^2 in portfolio 1 parallels the measurement error interpretation of the findings on ERCs in Table 4 discussed earlier.

[15] We acknowledge the possibility in a multiple regression of pathological cases in which measurement error will not attenuate the coefficient on earnings. The evidence in Table 7 indicates that even if these cases are present, they are not sufficiently influential to alter the regression results reported in this section.

That is, the market is well aware of the transitory nature of large, negative non-recurring items that decrease the informativeness of earnings for the set of observations in portfolio 1. The evidence in Table 7 further indicates that as earnings differences become more positive there is a diminution in the trade-off between the information in book value and Compustat earnings. That is, book value is not being called upon to compensate to as great an extent for concentrations of observations that include extreme negative transitory components of earnings.

Columns 6-8 of Table 7 present the results of the value relevance tests for I/B/E/S reported earnings.[16] There are three important effects to note when comparing these results to those based on Compustat earnings. First, after I/B/E/S exclusion of the most extreme negative items from reported earnings (observations in portfolio 1), there appears to be little tradeoff in the value relevance of book values and I/B/E/S earnings evident in the coefficients. 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 such items. Second, R^2 is greater in portfolio 1 observations as a result of excluding extreme items that make Compustat reported earnings relatively less informative. Third, I/B/E/S earnings begin to display decreasing value relevance as earnings differences take on large positive values and book value is once again called upon to compensate for information that is apparently lost when I/B/E/S adjusts Compustat earnings by extreme negative amounts. A comparison of R^2s for regressions in portfolio 10 (the largest positive earnings differences portfolio) indicates information loss is greatest when I/B/E/S excludes items that leave their reported earnings number well below Compustat reported earnings (R^2 is .50 for Compustat versus .38 for I/B/E/S). Recall a similar result was observed in the case of ERCs for portfolio 10 in the earlier sub period (see Table 4). These results reinforce our evidence that some FDP earnings adjustments actually produce lower associations between prices and earnings.

Table 7 also presents evidence on the large subsample of firms for which I/B/E/S earnings are identical to Compustat earnings. Column 3 and 4 (6 and 8) for Compustat (I/B/E/S) indicate that moving from the least negative differences found in portfolio 5 to the zero earnings difference

[16] To maintain the clean surplus relation, book values are adjusted for the difference between I/B/E/S and Compustat reported earnings. Results are qualitatively unaltered without this adjustment.

portfolio, there is a large decrease (increase) in the magnitude of the coefficient on earnings (book value). Conversely, moving from the portfolio containing zero differences to portfolio 6, which contains the least positive differences, we find the coefficient on earnings increases to the largest value among all of the portfolios. Thus, there is a significant difference in the value relevance of earnings relative to book values between cases in which no adjustment to Compustat earnings is undertaken by I/B/E/S and cases in which the smallest negative or smallest positive adjustment is undertaken. Recall in Table 4 that a similar dip in the information content of earnings (i.e., ERC) was observed when moving from the smallest positive to zero earnings difference and then from zero to the smallest negative earnings difference portfolios.

The findings for zero earnings differences in Table 7 appear to be counterintuitive in light of the fact that reported earnings for these cases are relatively free of the large negative transitory components of earnings that are associated with low ERCs and small earnings coefficients in price level regressions. A partial explanation for this finding is suggested by comparison of the earnings of firms in partitions formed on the sign of the earnings difference, i.e., zero, positive and negative earnings difference groups. The percentage of firms reporting a loss (according to I/B/ES) in the zero earnings difference group is 20%, a significantly higher proportion than the 13% and 8% of I/B/E/S loss firms found in the negative and positive difference groups, respectively. That is, the likelihood of a loss firm according to I/B/E/S falling into the zero earnings group is approximately equal to the combined likelihood of an I/B/E/S loss firm falling into the negative and positive earnings difference groups. In contrast, and as one would expect, a significantly higher proportion of loss firms according to Compustat are found among the negative earnings difference group (28%) than are found in either the positive (6%) or zero earnings difference groups (20%) (see also footnote 6). It is well known that loss firms are associated with severe non-linearities in regressions of short window returns on earnings surprises that result in attenuation of ERCs (e.g., Hayn [1995]). The results in Table 7 suggests that a "loss firm" effect is also present in regressions of prices on earnings and book values. If loss firms are dispersed (or removed) non-randomly over partitions of the data of interest to the researcher, they have the potential to confound inferences. This evidence suggests that in tests that predict differences in ERCs or the relative value relevance of earnings across alternative reported

earnings sources, researchers can avoid unnecessarily inducing non-linearity associated with loss firms by excluding zero earnings difference firms.

A.2 A comment on the use of FDP earnings to proxy for firms' self-reported pro forma earnings

In some studies researchers attempt to extrapolate findings from FDP-based earnings differences to other relevant earnings differences. An example of this is found in the literature that examines the controversy over the practice of firms announcing pro forma earnings along with their GAAP earnings. A common allegation is that investors fixate on a misleading pro forma number, one that is typically higher than its GAAP counterpart.

Based on findings from analyses of differences between I/B/E/S and Compustat earnings, Brown and Sivakumar (2001) and Bradshaw and Sloan (2002) conclude that investors place higher weight on pro forma than GAAP earnings. In contrast, studies that employ actual, hand-collected samples of pro forma earnings find mixed evidence on the question of the relative informativeness of pro forma versus GAAP earnings. For example, Johnson and Schwartz (2005) find no evidence that pro forma firms benefit from a stock return premium at the quarterly earnings announcement date, while Bhattacharya, Black, Christensen, and Larson (2003) conclude that pro forma earnings are more informative and more permanent than GAAP operating earnings. Lougee and Marquardt (2004) find that investors place more weight on pro forma earnings than on GAAP earnings when the latter has low historical informativeness or when it exceeds the outstanding forecast, but appear to ignore pro forma numbers when GAAP earnings has high historical informativeness or when it falls below the analyst forecast. They also find limited evidence of subsequent price corrections. Their evidence, they conclude, leaves the debate over whether pro forma disclosures are used to inform or mislead investors unresolved, or at best "context-dependent."

The fact that summary statistical evidence indicates that FDP and pro forma reported earnings are similar has been used to justify the use of the former as a proxy for the latter in empirical tests.[17]

[17] For example, Doyle et al. justify the use of FDP for pro forma earnings based on evidence in Johnson and Schwartz (2005) which report the equivalence of pro forma and FDP earnings for 58% of their sample and show that the median Zacks earnings tracks median pro forma earnings closely in the 20 portfolios of firms ranked by GAAP earnings.

However, comparisons of these statistics are made *conditional* on a firm having reported pro forma earnings, and therefore does not guarantee that observed similarities are generalizable. For example Bhattacharya et al. estimates that only about 11% of the companies covered by I/B/E/S actually report pro forma earnings (footnote 2). Johnson and Schwartz (2005) argue that the fact that differences in the frequency of management issued pro forma earnings compared to the frequency of non-zero earnings difference between Zacks and Compustat and the fact that, for their sample, pro forma earnings equal Zacks' Street earnings in only about 59% of the cases *"underscores why so-called "street" earnings is often not a reliable proxy for the company constructed pro forma earnings figures reported by management"* (footnote 15).[18]

One condition under which it would be appropriate to extrapolate findings from the FDP versus GAAP earnings literature to the issue of market reliance on pro forma earnings is if firms that report pro forma earnings are distributed approximately randomly across distributions of FDP versus GAAP earnings differences. Evidence in studies that use actual pro forma data, however, suggests that this condition may not hold. For example, Johnson and Schwartz (2005) report that 39% of their pro forma observations fall into the lowest quintile of the GAAP reported earnings populations (see Panel C of their Table 2). While they do not report this percentage for quintiles based on differences in reported earnings, we find in our own analysis that nearly 40% of the observations that fall into the most negative quintile of Zacks (the FDP used in their paper) versus GAAP earnings differences also fall in the lowest quintile of observations ranked on Zacks reported earnings.[19]

The collection of these descriptive statistics suggests that there is a high likelihood that pro forma earnings will fall into the negative tail of distributions of differences between FDP and Compustat earnings. The evidence presented in Table 4 of this paper indicates that this is the only

[18] 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 is whether the market mis-reacts contemporaneously to *firms'* announcements not whether FDPs have collusively adjusted reported GAAP earnings after announcements in a manner that is consistent with how the market actually reacted. Moreover the question of how such subsequent matching might alter or reinforce mispricing that results from pro forma numbers is also separable. Research designs employed in the literature thus far have not adequately disentangled these issues.

[19] Furthermore, Johnson and Schwartz (2005) find a substantially higher number of firms reporting GAAP losses among pro forma firms than observed for the overall Zacks population. Lougee and Marquardt (2004) report in their Table 3 that negative, non-recurring charges among pro forma firms that are more extreme relative to such items reported by a control sample.

partition in which ERCs are larger when FDP earnings are used to calculate earnings surprises rather than GAAP earnings. One could argue that since a disproportional number of pro forma firms falls into this tail where the advantage of using the FDP earnings is the greatest, this advantage could be extrapolated to the rest of the pro forma earnings observations. However, the evidence in Lougee and Marquardt (2004) suggest that might not be the case. In Panel B of their Table 6, they report that the difference between R^2s of regressions of announcement returns on pro forma and GAAP earnings-based surprises is only marginally significant at the 10%. Johnson and Schwartz (2005) find no advantage of using pro forma earnings over GAAP reported earnings.

The discussion above suggests that extrapolation from the cross section, or even a specific part of an FDP versus GAAP earnings difference distribution to infer something about market responses to firms' self-reported pro forma earnings may not be appropriate. It further suggests that FDP reported earnings may be a noisy proxy for pro forma earnings constructed and reported by management. Finally, our analysis above suggests that it might be of interest to determine if ranking by the difference between GAAP and pro forma earnings reveals additional insights about variations in market responses to pro forma earnings like those gleaned from Tables 4 and 6 of this paper.

Figure 1

Percentiles of Quarterly Distributions of Reported Earnings Differences

This figure depicts percentiles of quarterly distributions of reported earnings differences. The earnings difference is computed as the difference between quarterly earnings per share as reported by Compustat and quarterly earnings per share as reported by I/B/E/S (thus, a negative earnings difference implies lower earnings reported by Compustat compared to I/B/E/S). Earnings difference is deflated by beginning-of-quarter price and is multiplied by 100.

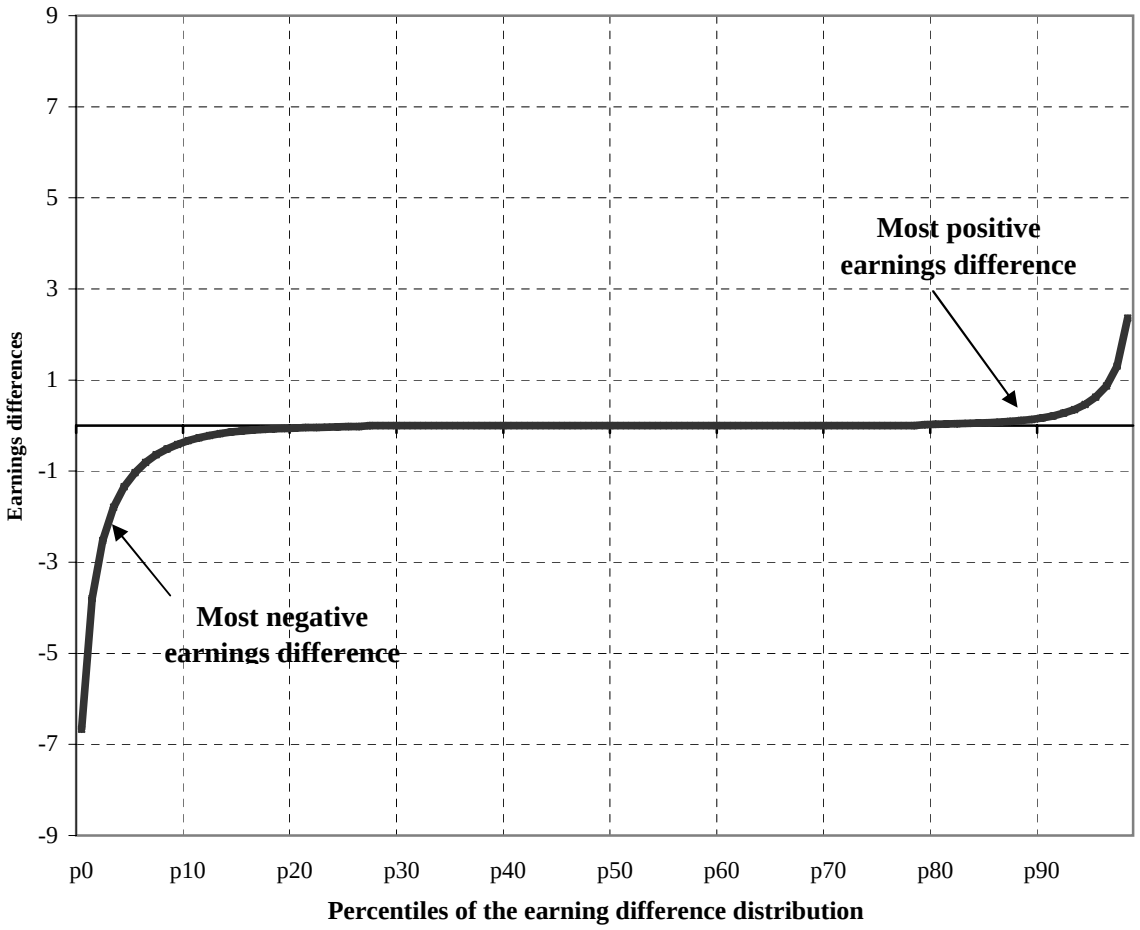


Figure 2
Annual Cross-Sectional Mean Earnings Difference and Special Items

This figure depicts annual means of reported earnings differences and special items. The earnings difference is computed as the difference between quarterly earnings per share as reported by Compustat and quarterly earnings per share as reported by I/B/E/S (thus, a negative earnings difference implies lower earnings reported by Compustat compared to I/B/E/S). Earnings difference is deflated by beginning-of-quarter price and is multiplied by 100. Special items are Compustat data item #32, expressed on a per share basis, deflated by beginning-of-quarter price, and multiplied by 100.

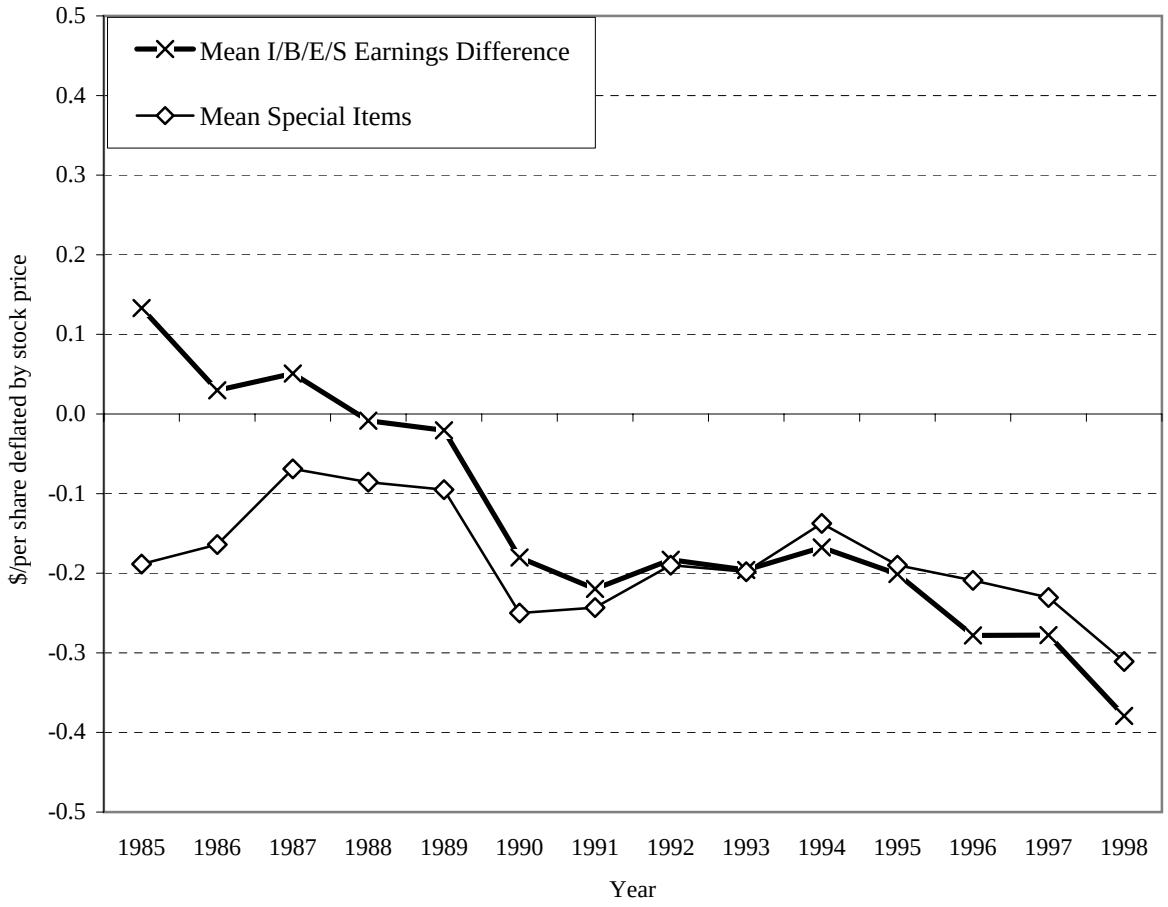
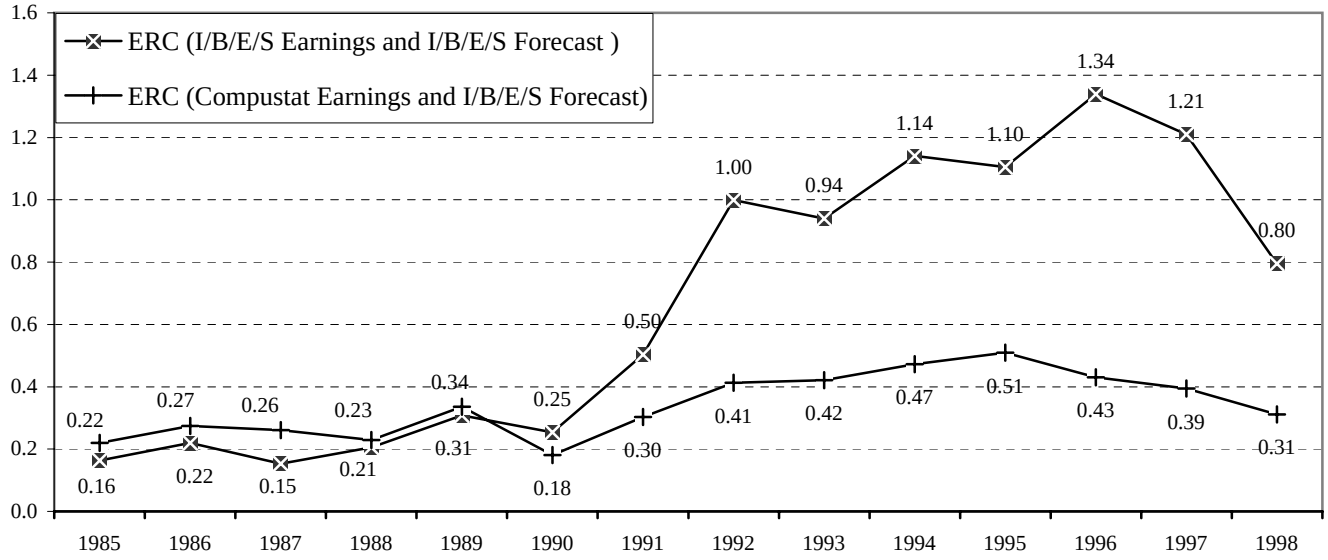


Figure 3

Earning Response Coefficients for I/B/E/S-based and Compustat-based Forecast Error Measures

This figure depicts means of earnings response coefficients (ERCs) from two regressions of market-adjusted return around quarterly earnings announcements on two alternative earnings surprise measures. The first measure is a Compustat-based forecast error (equals quarterly Compustat earnings per share less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of the quarter, and multiplied by 100). The second measure is the I/B/E/S-based forecast error (equals quarterly I/B/E/S earnings per share less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of the quarter and multiplied by 100). The ERCs are presented for the overall sample (Panel A), and for the subsample that comprise observations after excluding the most extreme, negative earnings difference portfolios (5% of the total number of observations in portfolio 1 in Table 2). The earnings difference is computed as the difference between quarterly earnings per share as reported by Compustat and quarterly earnings per share as reported by I/B/E/S. Earnings difference is deflated by beginning-of-quarter price and is multiplied by 100. 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.

Panel A: Earnings response coefficients for I/B/E/S and Compustat-based forecast surprise measures, entire sample



Panel B: Earnings response coefficients for I/B/E/S and Compustat-based forecast surprise measures, excluding the most extreme negative earnings difference observations

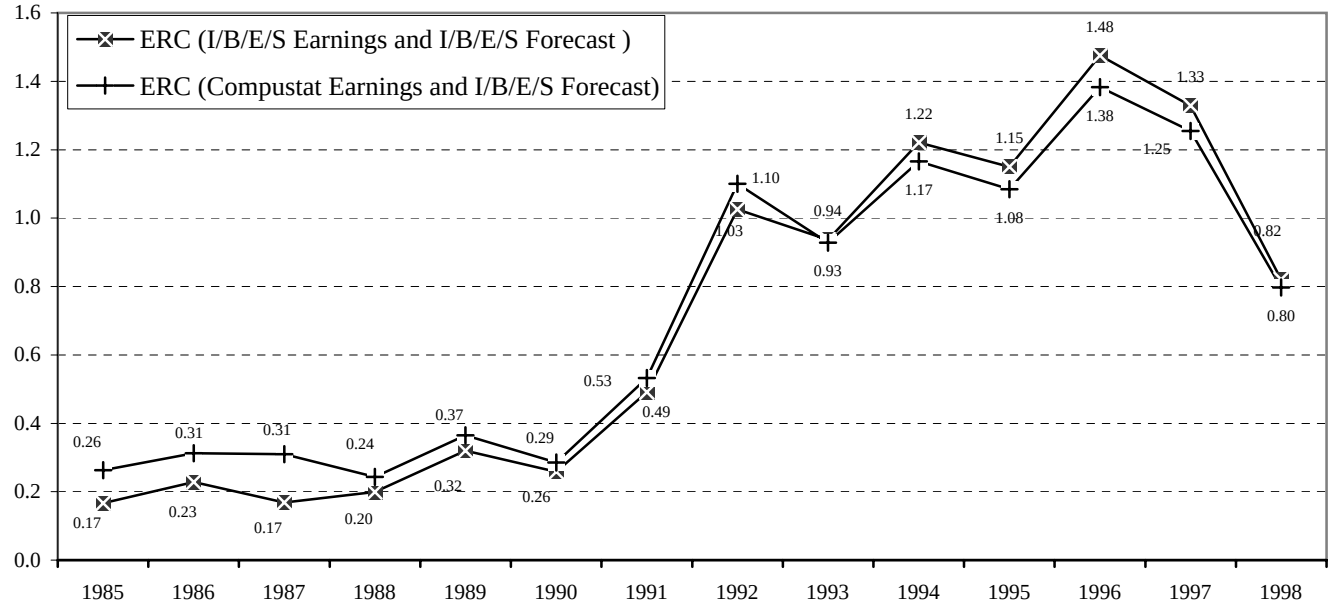


Table 1
Descriptive Statistics

This table presents descriptive statistics on the quarterly distributions of earnings differences, special items, nonoperating items, and computed other adjustments. The earnings difference equals the difference between quarterly earnings per share as reported by Compustat and quarterly earnings per share as reported by I/B/E/S (thus, a negative earnings difference implies lower earnings reported by Compustat compared to I/B/E/S). Earnings difference is expressed both on a deflated (by beginning-of-quarter price and multiplied by 100) basis (column 1) as well as undeflated (in cents) basis (column 2). Special items and nonoperating items equal Compustat quarterly data item number 32 and 31, respectively and are expressed on a per share basis deflated by beginning-of-quarter price and multiplied by 100. Computed other adjustments equal earnings difference minus after-tax special items. The statistics are presented for the 1985-1998 sample period.

Statistic	Earnings Difference (deflated) (1)	Earnings Difference (undeflated) (2)	Special Items (3)	Nonoperating Items (4)	Other Adjustments (5)
N	159,220	159,220	159,220	159,220	159,220
Mean	-0.171	-2.125	-0.173	0.053	-0.058
Median	0	0	0	0.08	0
Std Dev	1.68	20.24	1.08	0.91	1.56
Skewness	-3.27	-2.15	-8.00	-3.24	-2.40
Kurtosis	116.85	65.36	80.54	25.76	151.30
% Positive	20.7	20.7	3.4	65.1	24.44
% Negative	27.7	27.7	9.0	19.7	27.86
% Zero	51.7	51.7	87.6	15.2	47.7
P1	-6.667	-85	-5.755	-3.818	-4.260
P5	-1.344	-22	-0.732	-1.261	-0.879
P10	-0.412	-7	0	-0.303	-0.312
P25	-0.029	-1	0	0	-0.028
P75	0	0	0	0.290	0
P90	0.136	3	0	0.656	0.209
P95	0.463	8	0	1.034	0.650
P99	2.364	41	0.688	2.133	3.180

Table 2
Summary Statistics on Earnings Differences and Nonrecurring Items by Year and by Ranks of Earnings Differences

Panel A reports summary statistics, by year, on the difference between earnings per share as reported by Compustat and earnings per share as reported by I/B/E/S. A negative earnings difference 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 and multiplied by 100. Panel B reports averages, by ranks of earnings differences, of the earnings difference (the ranking variable), special items and nonoperating items (Compustat data item number 32 and 31, respectively), and other adjustments (equals earnings difference minus after-tax special items), expressed on a per share basis, deflated by beginning-of-quarter price and multiplied by 100. The rankings in Panel B are determined by first sorting all non-zero earnings difference observations into positive and negative groups, and then ranking the earnings differences within each group into quintiles.

Panel A: Summary statistics on earnings differences, by year

Year	N	Earnings Difference				
		Mean	Median	% negative	% positive	% zero
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1985	7,621	0.133	0	37	35	29
1986	7,935	0.030	0	33	30	36
1987	8,258	0.051	0	32	27	41
1988	8,214	-0.008	0	30	24	45
1989	8,592	-0.021	0	28	22	50
1990	8,771	-0.180	0	25	18	57
1991	9,034	-0.220	0	27	18	55
1992	10,244	-0.183	0	29	18	53
1993	11,668	-0.196	0	26	16	58
1994	13,972	-0.168	0	25	17	58
1995	14,684	-0.201	0	28	15	57
1996	16,539	-0.278	0	27	14	59
1997	17,670	-0.278	0	23	29	48
1998	16,018	-0.379	0	26	18	56
1985-91	58,425	-0.037	0	30	25	45
1992-98	100,795	-0.248	0	26	18	55
All Years	159,220	-0.171	0	28	21	52

Panel B: Mean earnings difference, special items, nonoperating items, and other adjustments, by ranks of earnings differences

	N	Earnings Difference	Special Items	Nonoperating Items	Other Adjustments
Overall	159,220	-0.171	-0.173	0.053	-0.058
Overall (excluding zero earnings difference)	76,956	-0.353	-0.310	0.020	-0.149
Rank of Earnings Difference:					
1 (Most Negative)	8,994	-4.322	-2.177	0.047	-2.884
2	8,995	-0.658	-0.280	0.025	-0.473
3	8,995	-0.200	-0.089	-0.014	-0.142
4	8,995	-0.072	-0.033	-0.053	-0.050
5 (Least Negative)	8,994	-0.030	-0.018	-0.045	-0.017
Zero Earnings Difference	82,264	0	-0.044	0.083	0.029
6 (Least Positive)	6,397	0.029	-0.019	-0.045	0.041
7	6,397	0.063	-0.017	-0.003	0.074
8	6,397	0.135	-0.033	0.040	0.156
9	6,397	0.361	-0.017	0.106	0.372
10 (Most Positive)	6,397	2.385	-0.049	0.202	2.417

Table 3
Summary statistics on I/B/E/S-based and Compustat-based Forecast Errors by Year and by Ranks of Earnings Differences

Panel A reports summary statistics, by year, on two 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 the beginning-of-quarter stock price and multiplied by 100. Subscripts on *FE* denote the source of reported earnings: Compustat (CSTAT) or I/B/E/S. The source of the consensus earnings forecast is I/B/E/S. Panel B reports the averages, by rank of earnings difference, of the earnings difference (ranking variable), I/B/E/S earnings-based forecast errors, and Compustat earnings-based forecast errors. The rankings in Panel B are determined by first sorting all non-zero earnings difference observations into positive and negative groups, and then ranking the earnings differences within each group into quintiles.

Panel A: Summary statistics on forecast errors, by year

Year	N	Mean		Median		% negative		% positive		% zero	
		FE_{IBES}	FE_{CSTAT}	FE_{IBES}	FE_{CSTAT}	FE_{IBES}	FE_{CSTAT}	FE_{IBES}	FE_{CSTAT}	FE_{IBES}	FE_{CSTAT}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1985	7,621	-0.936	-0.789	-0.099	-0.131	55	60	33	35	13	5
1986	7,935	-0.777	-0.741	-0.067	-0.093	53	58	34	37	13	5
1987	8,258	-0.651	-0.595	0	-0.043	49	53	38	41	13	6
1988	8,214	-0.520	-0.529	0	0	45	50	40	43	14	7
1989	8,592	-0.572	-0.596	-0.041	-0.068	51	56	35	37	14	7
1990	8,771	-0.782	-0.961	-0.044	-0.078	51	56	33	36	16	8
1991	9,034	-0.394	-0.612	0	-0.040	47	53	37	39	17	8
1992	10,244	-0.189	-0.372	0	0	42	49	40	42	18	10
1993	11,668	-0.181	-0.377	0	0	42	48	41	42	18	10
1994	13,972	-0.141	-0.308	0	0	38	44	44	45	18	11
1995	14,684	-0.184	-0.387	0	0	38	46	44	43	18	11
1996	16,539	-0.148	-0.427	0	0	34	43	47	45	19	12
1997	17,670	-0.129	-0.409	0	0	33	40	49	49	18	11
1998	16,018	-0.246	-0.616	0	0	35	45	46	43	19	12
1985-91	58,425	-0.656	-0.689	-0.021	-0.066	50	55	36	38	14	7
1992-98	100,795	-0.174	-0.420	0	0	37	45	45	44	18	11
All Years	159,220	-0.349	-0.519	0	0	42	48	42	42	17	9

Panel B: Mean earnings difference and forecast errors by ranks of earnings differences

Rank of Earnings Difference	N	Earnings Difference	Mean FE_{IBES}	Mean FE_{CSTAT}
Overall	159,220	-0.172	-0.348	-0.520
Overall (excluding zero earnings difference)	76,956	-0.353	-0.367	-0.721
Ranks of Earnings Difference:				
1 (Most Negative)	8,994	-4.322	-0.353	-4.674
2	8,995	-0.658	-0.199	-0.857
3	8,995	-0.200	-0.220	-0.420
4	8,995	-0.072	-0.040	-0.112
5 (Least Negative)	8,994	-0.030	0.021	-0.009
Zero Earnings Difference	82,264	0	-0.329	-0.329
6 (Least Positive)	6,397	0.029	-0.045	-0.016
7	6,397	0.063	-0.118	-0.054
8	6,397	0.135	-0.265	-0.130
9	6,397	0.361	-0.486	-0.124
10 (Most Positive)	6,397	2.385	-2.334	0.051

Table 4

Earnings Response Coefficients Associated with Alternative Earnings Surprise Measures

This table reports earnings response coefficients (ERCs) from two regressions of market-adjusted return around quarterly earnings announcements on two alternative earnings surprise measures, for three time periods. The first earnings surprise measure is a Compustat-based forecast error (equals quarterly earnings per share per Compustat less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of the quarter and multiplied by 100). The second measure is the I/B/E/S-based forecast error (equals quarterly earnings per share per I/B/E/S less I/B/E/S earnings forecast outstanding prior to earnings announcement, deflated by price at the beginning of the quarter and multiplied by 100). The ERCs are presented for the overall sample (first row), the overall sample excluding observations with zero earnings difference (second row), the sub-sample of zero earnings difference (third row), and for portfolios formed by ranks of the signed 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 the beginning of quarter price and multiplied by 100. 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. Probability values for tests of differences in the coefficient estimates are reported for each set of regressions.

	1985-1998				**1985-1991**				**1992-1998**			
	N	ERC_{IBES}	ERC_{CSTAT}	p-values of tests of differences	N	ERC_{IBES}	ERC_{CSTAT}	p-value of test of differences	N	ERC_{IBES}	ERC_{CSTAT}	p-values of tests of differences
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Overall	140,438	0.448 40.0	0.319 36.2	0.00	45,859	0.248 22.2	0.242 22.8	0.66	94,579	1.049 44.1	0.398 29.7	0.00
Overall (excluding zero earnings difference)	66,906	0.350 24.2	0.235 23.6	0.00	24,952	0.198 14.5	0.198 15.9	0.98	41,954	1.095 28.9	0.266 18.2	0.00
Rank of Earnings Difference:												
1 (Most Negative)	7,739	0.365 9.3	0.092 5.2	0.00	2,792	0.178 5.0	0.081 4.0	0.02	4,945	0.625 8.4	0.088 3.3	0.00
2	7,739	0.438 8.3	0.435 8.4	0.98	2,792	0.285 5.7	0.284 5.7	0.99	4,949	1.404 12.4	1.274 11.8	0.40
3	7,741	0.547 10.3	0.547 10.3	0.98	2,798	0.516 7.4	0.515 7.4	0.99	4,947	1.293 9.9	1.283 9.9	0.95
4	7,741	1.373 13.9	1.373 13.9	0.99	2,789	0.841 7.8	0.840 7.8	0.99	4,946	2.531 13.2	2.530 13.2	0.96
5 (Least Negative)	7,739	0.774 8.2	0.772 8.2	0.99	2,793	0.362 4.0	0.360 4.0	0.98	4,948	2.658 10.3	2.659 10.3	0.99
Zero Earnings Difference	73,532	0.569 32.8	0.569 32.8	1.00	20,907	0.328 17.4	0.328 17.4	1.00	52,625	1.015 33.0	1.015 33.0	1.00
6 (Least Positive)	5,631	0.727 7.5	0.727 7.5	0.99	2,202	0.511 6.0	0.512 6.0	0.99	3,445	1.699 6.4	1.692 6.4	0.98
7	5,690	0.610 7.4	0.609 7.4	0.99	2,213	0.322 4.2	0.321 4.2	0.99	3,429	3.004 10.7	3.008 10.7	0.99
8	5,609	0.647 8.2	0.647 8.2	0.98	2,178	0.343 4.6	0.347 4.6	0.98	3,457	2.067 9.4	2.049 9.3	0.95
9	5,637	0.519 8.8	0.511 8.6	0.92	2,197	0.277 5.1	0.274 5.1	0.96	3,444	1.573 10.7	1.544 10.5	0.88
10 (Most Positive)	5,640	0.168 7.4	0.323 9.1	0.00	2,198	0.118 5.0	0.270 7.0	0.00	3,444	0.662 8.2	0.611 6.8	0.67

Table 5

Intertemporal Trends in Forecast Errors and Earnings Response Coefficients

Panel A of this table reports, by year, means of two alternative earnings surprise measures and earnings response coefficients estimated from two regressions of market-adjusted return around earnings announcements on the two alternative earnings surprise measures. The bottom part of the panel reports rank correlation coefficients and probability values of the statistics with time. 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 the quarter and multiplied by 100). 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 the quarter and multiplied by 100). 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. Panel B present results of analysis similar to that in Panel A by replacing I/B/E/S reported earnings and forecasts with measures reported by First Call.

Panel A: I/B/E/S-based and Compustat-based measures

Year	Mean		ERC	
	FE_{IBES}	FE_{CSTAT}	ERC_{IBES}	ERC_{CSTAT}
(1)	(2)	(3)	(4)	(5)
1985	-0.936	-0.789	0.163	0.220
1986	-0.777	-0.741	0.220	0.274
1987	-0.651	-0.595	0.153	0.261
1988	-0.520	-0.529	0.206	0.229
1989	-0.572	-0.596	0.308	0.336
1990	-0.782	-0.961	0.253	0.181
1991	-0.394	-0.612	0.503	0.303
1992	-0.189	-0.372	0.999	0.413
1993	-0.181	-0.377	0.940	0.421
1994	-0.141	-0.308	1.141	0.472
1995	-0.184	-0.387	1.105	0.509
1996	-0.148	-0.427	1.339	0.431
1997	-0.129	-0.409	1.210	0.395
1998	-0.246	-0.616	0.795	0.312
1985-91	-0.656	-0.689	0.248	0.242
1992-98	-0.174	-0.420	1.049	0.398
All Years	-0.349	-0.519	0.448	0.319
Correlation of mean forecast error with year:				
Rank Correlation (All years)	0.84	0.49	0.88	0.70
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 5 - *Continued*

Panel B: First Call-based and Compustat-based measures

Year	Mean		ERC	
	$FE_{First\ Call}$	FE_{CSTAT}	$ERC_{First\ Call}$	ERC_{CSTAT}
(1)	(2)	(3)	(4)	(5)
1992	-0.203	-0.400	0.805	0.368
1993	-0.160	-0.372	0.731	0.345
1994	-0.179	-0.345	0.782	0.391
1995	-0.235	-0.398	0.882	0.519
1996	-0.197	-0.431	1.078	0.449
1997	-0.263	-0.513	0.867	0.416
1998	-0.363	-0.861	0.711	0.275
All Years	-0.242	-0.507	0.838	0.370
Correlation of mean forecast error with year:				
Rank Correlation (All years)	-0.71	-0.75	0.04	0.07
p-value	0.93	0.95	0.94	0.88

Table 6

Relative Informativeness of Forecast Error Measures in Conditional Distributions

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 sign of the difference between Compustat and I/B/E/S reported earnings for the 1992-1998 sample period. 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. Panel A and B also report results of estimations after removing observations included in the negative tail of earnings difference distributions (portfolio 1 observations as defined in Table 4). Panels C and D present results by sign of earnings difference and for observations with earnings difference equal zero. Earnings difference is expressed on a per share basis deflated by the beginning-of-quarter price and multiplied by 100. 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 the quarter and multiplied by 100). 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 the quarter and multiplied by 100).

Panel A: Positive I/B/E/S-based and negative Compustat-based forecast errors ($FE_{IBES}>0$ and $FE_{CSTAT}<0$)

					Mean		
	N	ERC_{IBES}	ERC_{CSTAT}	p-values of tests of differences	Earnings Difference	FE_{IBES}	FE_{CSTAT}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Overall	5,616	0.17	0.01	0.52	-1.804	0.262	-1.542
Overall after removing negative tail observations	3,776	2.46 *	-0.02	**0.00**	-0.521	0.153	-0.368

Panel B: Negative I/B/E/S-based and positive Compustat-based forecast errors ($FE_{IBES}<0$ and $FE_{CSTAT}>0$)

					Mean		
	N	ERC_{IBES}	ERC_{CSTAT}	p-values of tests of differences	Earnings Difference	FE_{IBES}	FE_{CSTAT}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Overall	2,192	0.28	0.00	0.32	0.958	-0.414	0.544
Overall after removing positive tail observations	956	-0.51	3.26	0.22	0.242	-0.112	0.130

Panel C: Both forecast error measures are negative ($FE_{IBES}<0$ and $FE_{CSTAT}<0$)

					Mean		
Sign of Earnings Difference	N	ERC_{IBES}	ERC_{CSTAT}	p-values of tests of differences	Earnings Difference	FE_{IBES}	FE_{CSTAT}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Overall	31,504	0.28 *	0.11 *	**0.00**	-0.412	-0.855	-1.267
Positive Earnings Difference	3,166	0.20 *	0.29 *	0.50	0.318	-0.969	-0.650
Negative Earnings Difference	7,735	0.39 *	0.06 *	**0.00**	-1.810	-0.827	-2.637
Zero Earnings Difference	20,603	0.26 *	0.26 *	1.00	0	-0.849	-0.849

Panel D: Both forecasts error measures are positive ($FE_{IBES}>0$ and $FE_{CSTAT}>0$)

					Mean		
Sign of Earnings Difference	N	ERC_{IBES}	ERC_{CSTAT}	p-values of tests of differences	Earnings Difference	FE_{IBES}	FE_{CSTAT}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Overall	36,355	1.64 *	1.22 *	**0.00**	0.041	0.311	0.352
Positive Earnings Difference	7,510	2.45 *	0.69 *	**0.00**	0.288	0.250	0.538
Negative Earnings Difference	6,061	1.60 *	2.77 *	**0.00**	-0.113	0.341	0.228
Zero Earnings Difference	22,784	1.51 *	1.51 *	1.00	0	0.332	0.332

* Statistically significant at a 5% level or better.

Table 7

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

This table reports coefficients from two regressions of stock price on book value of equity and earnings, by ranks of the difference between Compustat and I/B/E/S reported earnings. Columns 3-5 report the coefficient estimates and adjusted R^2s 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^2s 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).

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		
			BPS_{Cstat}	EPS_{Cstat}	Adj. R^2	BPS_{IBES}	EPS_{IBES}	Adj. R^2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1 (Most Negative)	4,641	-3.632	1.039 45.4	-0.39 -1.0	0.31	0.657 30.0	16.94 37.9	0.49
2	4,642	-0.749	0.939 36.5	9.98 14.6	0.34	0.638 25.9	20.34 36.0	0.46
3	4,639	-0.247	0.797 29.9	16.85 25.0	0.40	0.681 26.1	20.13 32.3	0.45
4	4,644	-0.082	0.739 24.5	19.51 24.1	0.39	0.676 22.6	21.42 27.4	0.41
5 (Least Negative)	4,641	-0.031	0.428 13.7	22.22 25.9	0.34	0.410 13.1	22.75 26.7	0.35
Zero Earnings Difference	51,195	0	0.699 91.7	15.72 96.0	0.43	0.699 91.7	15.72 96.0	0.43
6 (Least Positive)	3,251	0.029	0.668 17.0	23.20 23.5	0.44	0.688 17.5	22.73 22.9	0.44
7	3,254	0.055	0.542 15.7	25.16 27.9	0.46	0.583 16.7	24.16 26.1	0.45
8	3,251	0.102	0.600 18.7	23.76 30.6	0.56	0.671 20.7	22.45 27.5	0.53
9	3,256	0.234	0.591 21.8	18.49 27.4	0.52	0.716 26.2	15.59 21.2	0.48
10 (Most Positive)	3,252	1.066	0.523 21.6	16.54 31.6	0.50	0.754 29.9	10.55 16.3	0.38
Overall	90,666	-0.172	0.804 140.5	12.63 107.1	0.40	0.675 116.7	17.59 134.8	0.44

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