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Assessing the relative informativeness and permanence of pro forma earnings and GAAP operating earnings[☆]

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Abstract

This study investigates whether market participants perceive pro forma earnings to be more informative and more persistent than GAAP operating income by analyzing a sample of 1,149 actual pro forma press releases. We find that pro forma announcers report frequent GAAP losses and are mostly concentrated in the service and high-tech industries. Our analyses of short-window abnormal returns and revisions in analysts' one-quarter-ahead earnings forecasts indicate that pro forma earnings are more informative and more permanent than

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GAAP operating earnings. Our evidence suggests that market participants believe pro forma earnings are more representative of “core earnings” than GAAP operating income.

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1. Introduction

In response to the recent debate about the proliferation of “pro forma” earnings reports, this study investigates the relative informativeness and permanence of pro forma earnings compared to earnings calculated according to generally accepted accounting principles (GAAP). Pro forma earnings, often called “street” earnings in the financial press, are GAAP earnings adjusted for items that management deems to be “unusual” or “non-recurring.” Increasingly, companies are reporting this non-standard profitability measure in the same press release with their standard GAAP earnings figure (Bradshaw and Sloan, 2002).

Critics allege that pro forma earnings are ad hoc, self-serving to managers, and misleading to investors (e.g., Derby, 2001; Dreman, 2001; Elstein, 2001; Liesman and Weil, 2001a, b). They also argue that pro forma numbers are not comparable across firms or even for the same firm over time (Grant and Parker, 2001). The former chief accountant of the Securities and Exchange Commission (SEC), Lynn Turner, suggests that pro forma earnings are reported by some companies to deliberately “spin investors” by reporting “everything but bad stuff” (Dow Jones, 2001a). Recently, the SEC has issued cautionary advice about pro forma earnings: “We believe it is appropriate to...caution public companies on their use of ‘pro forma’ financial information and to alert investors to potential dangers of such information” (SEC 2001a, b). Furthermore, the SEC has warned that “‘Pro forma’ financials...might create a confusing or misleading impression and should be viewed with appropriate and healthy skepticism” (SEC, 2001c). The Financial Accounting Standards Board (FASB, 2002) has also expressed concern that the proliferation of pro forma earnings information is undermining the quality of financial reporting (FASB, 2002).

Managers, on the other hand, contend that they report pro forma earnings to provide a clearer picture of “core earnings” that they believe will continue in future periods (Weil, 2001a). Supporters of this view argue that removing transitory and non-cash components (such as unusual items, one-time charges, and gains) from earnings reduces noise in the earnings measure (Bray, 2001). Surprisingly, even the former SEC chairman, Harvey Pitt, has suggested that the impetus behind pro forma disclosure is often “a legitimate desire by companies to demystify mandated financial statement disclosures”. He goes on to say that “investors anxious for current, simplified and comprehensible financial reporting are today more likely to rely on a company’s ‘pro forma’ disclosures than the same company’s meticulously prepared,

mandated GAAP financial disclosures” (Pitt, 2001). Given this debate about the usefulness and impact of pro forma information, empirical evidence regarding the market’s perception of pro forma earnings is particularly timely and relevant. In this study, we analyze a sample of 1,149 actual pro forma earnings press releases gathered from LexisNexis from January 1998 through December 2000 to assess the relative informativeness and permanence of pro forma earnings vis-à-vis GAAP operating earnings.

Most prior studies exploring market reactions to “street” earnings have used earnings per share (EPS) figures reported by analyst estimate tracking services (e.g., I/B/E/S, First Call, Zacks) as proxies for pro forma earnings (e.g., Abarbanell and Lehavy, 2000; Bagnoli et al., 2001; Brown and Sivakumar, 2003; Bradshaw and Sloan, 2002; Doyle et al., 2003). Although these studies provide valuable evidence regarding investors’ perceptions of non-GAAP earnings figures reported by major forecast tracking services, the extent to which the actual earnings figures reported by these forecast data providers approximate pro forma earnings numbers managers report in press releases is an open question. This is especially relevant since we estimate (as explained in detail in Section 3) that the majority of firms that are covered by these forecast tracking services do not report pro forma numbers. Further, these studies do not provide any information on (1) the characteristics of firms that elect to voluntarily report pro forma earnings, (2) the industries where pro forma announcements are concentrated, and (3) the types of adjustments and exclusions companies frequently use to arrive at their pro forma numbers. Such information is valuable in understanding the motivations behind pro forma reporting. Consequently, we analyze a large sample of actual pro forma press releases to assess the relative informativeness and persistence of pro forma earnings vis-à-vis GAAP operating earnings and actual EPS figures published by I/B/E/S.¹ We also provide various descriptive details on common types of pro forma adjustments and on the characteristics of firms that report pro forma earnings.

Our analyses reveal that firms reporting pro forma earnings figures tend to be from service and high-tech industries, and that routine expenses, which should be included in operating income under GAAP, are the most common types of pro forma adjustments (resulting in higher income figures). We find that pro forma numbers may not be comparable across firms because firms use numerous different adjustments to arrive at their pro forma earnings figures. Matched-pair *t*-tests reveal that pro forma earnings numbers are significantly greater than both GAAP and I/B/E/S earnings figures. We also find that pro forma numbers result in a profit more often than (audited) GAAP operating income figures. Finally, our results indicate that most pro forma announcements (80.1%) meet or beat analysts’ mean forecasts, while only 38.7% of the GAAP operating earnings figures meet or beat analysts’

¹Two recent working papers (Lougee and Marquardt, 2002; Johnson and Schwartz, 2001) also examine actual pro forma announcements collected from press releases. We compare and contrast our results with these two studies later in the paper. In addition, Hirshleifer and Teoh (2003) demonstrate analytically that pro forma disclosures bias investors’ perceptions upward, yet can make stock prices more accurately reflect fundamental value.

mean forecasts. This evidence is consistent with the criticism leveled by many skeptics that pro forma announcements may often be motivated by managers' desires to meet or beat analysts' expectations.

Our investigation of short-window abnormal returns around earnings announcement dates reveals that pro forma earnings are significantly more informative to investors than GAAP operating earnings. Consistent with prior research (e.g., [Brown and Sivakumar, 2003](#); [Bradshaw and Sloan, 2002](#)), the results also indicate that I/B/E/S EPS figures are also more informative than GAAP operating earnings. Furthermore, we find evidence that analysts view pro forma earnings to be a more permanent measure of firm profitability than GAAP operating earnings. Again, our evidence suggests that operating earnings reported by I/B/E/S are also more persistent than GAAP operating income. In sum, our results indicate that market participants view pro forma earnings to be more representative of "core earnings" than GAAP operating earnings. Prior research arrives at a similar conclusion regarding investors' perceptions of non-GAAP earnings reported by forecast data providers. These studies find that EPS values published by forecast data providers have greater information content than GAAP earnings (e.g., [Brown and Sivakumar, 2003](#); [Bradshaw and Sloan, 2002](#)). Additional analysis reveals that investors find pro forma announcements to be less informative when they meet analysts' expectations while the corresponding GAAP operating earnings figures fall below analysts' expectations. Investors, however, do not discount pro forma announcements that report a profit while the corresponding GAAP operating earnings number reports a loss. Analysts, on the other hand, appear to be more skeptical of (and attach less weight to) these types of announcements, as well as those where managers manipulate the number of shares used in the EPS calculation.

The remainder of the paper is organized as follows: Section 2 provides a brief overview of pro forma reporting, reviews relevant literature, and develops our research questions. Section 3 describes our sample and discusses various descriptive details. Section 4 compares market reactions to pro forma earnings with market reactions to GAAP and I/B/E/S EPS figures. Section 5 describes additional factors influencing the informativeness and permanence of pro forma numbers. Finally, Section 6 provides concluding remarks.

2. Background and research questions

The debate about the usefulness and likely effects of pro forma earnings reports has become intense in recent months. Managers generally claim that they arrive at the pro forma number by excluding transitory and non-cash items from GAAP earnings. They therefore claim that the pro forma figure represents an improved metric for assessing future cash flows and firm value (e.g., [Bray, 2001](#); [Weil, 2001a](#)). Even former SEC Chairman Harvey Pitt has commented that the proliferation of pro forma earnings is evidence of inadequacy in our current financial reporting system. He said, "The recent phenomenon of 'pro forma' financials is indicative of the need to rethink our current system" ([Pitt, 2001](#)).

In contrast, standard setters, regulators, and other critics of pro forma reporting are concerned that the alleged incomplete and selective information conveyed by pro forma earnings reports is likely to be misleading to investors (e.g., Rapoport, 2001; SEC, 2001b; Weil, 2001b). These critics allege that managers selectively exclude items from GAAP earnings to arrive at the pro forma number in order to portray the company in the best light possible (Weil, 2001a). For example, JDS Uniphase, a maker of fiber optics equipment, turned a \$50.6 billion GAAP loss into a \$67 million pro forma profit, but hid the adjustment details deep inside the press release that began by highlighting the company's increased sales (Dow Jones, 2001b). Similarly, Waste Management Inc. went from missing analysts' expectations by two cents per share based on GAAP numbers to beating analysts' expectations by a penny on a pro forma basis through the exclusion of costs associated with the painting of trucks (Elstein, 2001). Thus, critics of pro forma reporting caution investors to be wary of pro forma numbers disclosed in press releases and urge investors to focus on audited GAAP earnings instead (Dreman, 2001). Some academics also share this concern. D'Avolio et al. (2001) argue that even though GAAP numbers may not always provide economically superior information, failure to follow accounting standards is likely to lead to inefficient overall outcomes as the ability of regulators to enforce disclosure standards deteriorates. Moreover, Grant and Parker (2001) contend that many firms make different adjustments to arrive at pro forma earnings each time they report on a pro forma basis, reducing the comparability of their earnings figures from one period to the next. Academic research, however, is yet to provide conclusive empirical evidence to support or refute the claims of either camp.

Several recent studies attempt to examine market reactions to pro forma earnings vis-à-vis GAAP earnings. These studies use actual EPS figures published by major analyst tracking services as proxies for pro forma or "street" earnings. For example, Brown and Sivakumar (2003) assess the quality of three earnings measures: (1) Compustat quarterly EPS before extraordinary items, (2) Compustat quarterly EPS from operations, and (3) the actual EPS figure published by I/B/E/S, which they label as "street" earnings. They find that I/B/E/S actual EPS figures are of higher quality than the other two measures in terms of predictive ability, value relevance, and information content. Bradshaw and Sloan (2002) also find that the market's response is more closely associated with I/B/E/S actual earnings than with Compustat earnings before extraordinary items. Abarbanell and Lehavy (2000) find that although earnings surprises based on earnings figures reported by major forecast data providers (namely First Call, Zacks, and I/B/E/S) are more highly associated with contemporaneous stock returns than earnings surprises based on Compustat operating earnings, the result is attributable to a small subset of firms where analysts exclude (from both forecasts and actual earnings) extreme income-decreasing special items that are otherwise included in GAAP operating income. Finally, Bagnoli et al. (2001) explore cross-sectional variations in the market's response to pro forma earnings, while Doyle et al. (2003) examine the relation between future cash flows and expenses excluded from pro forma earnings, again using the earnings reported by forecast data providers as proxies for pro forma numbers. Collectively, these studies suggest that (1) there is a growing divergence between pro forma and GAAP

earnings numbers and (2) pro forma earnings figures are generally more highly associated with abnormal stock returns than GAAP operating income. However, as mentioned previously, it is difficult to assess to what extent the results reported by these prior studies apply to actual pro forma numbers reported by managers.

We contend that this study extends prior research in three important ways. First, only a small subset of firms covered by major forecast tracking services actually report pro forma earnings numbers.² Further, we find that even for the small subset of all firms covered by I/B/E/S that report pro forma numbers, there is a significant difference, on average, between pro forma earnings and actual EPS figures provided by I/B/E/S. This underscores the importance of examining actual pro forma press releases to assess investors' perceptions of these disclosures. Second, studies using actual EPS figures reported by forecast data providers are unable to capture the unique characteristics of firms that voluntarily elect to report pro forma numbers. For example, we find (as explained in detail in Section 3) that the companies that report pro forma earnings tend to be high-tech firms that frequently report GAAP losses. Third, examining actual pro forma earnings enables us to provide information on the types and nature of adjustments and exclusions commonly used by companies to arrive at the pro forma figures. Such information provides valuable insights into our understanding of the motivations and incentives associated with pro forma reporting.

We analyze a sample of 1,149 actual pro forma earnings press releases issued between January 1998 and December 2000 to assess how the market perceives pro forma numbers vis-à-vis GAAP operating earnings and actual EPS figures published by I/B/E/S. Specifically, we investigate the following three research questions:

- (1) How do pro forma earnings numbers differ from GAAP operating earnings and I/B/E/S actual EPS figures?
- (2) Do market participants perceive pro forma earnings to be more informative than GAAP operating earnings or I/B/E/S actual EPS figures?
- (3) Do market participants view pro forma earnings to be a more permanent measure of firm profitability than GAAP operating earnings or I/B/E/S actual EPS figures?

In addition, we provide descriptive evidence regarding the characteristics of firms that report pro forma earnings, the industries where pro forma announcements are concentrated, and the types of adjustments and exclusions that appear frequently in the pro forma press releases.

Two recent working papers also analyze actual pro forma press releases. [Lougee and Marquardt \(2002\)](#) examine a sample of 249 pro forma press releases made between 1997 and 1999. [Johnson et al. \(2001\)](#) employ a market-multiples approach to investigate whether there is evidence of stock return premiums around pro forma announcement dates using a sample of 253 pro forma press releases during the

²We estimate (as explained in detail in Section 3) that only about 11% of companies covered by I/B/E/S actually report pro forma (or non-GAAP) earnings figures.

second quarter (June–August) of 2000.³ While the Lougee and Marquardt paper reaches a conclusion similar to our study, the Johnson and Schwartz paper finds that investors do not perceive pro forma earnings to be informative. We compare and contrast our results with those reported in the Johnson and Schwartz study in Section 4.

3. Sample selection and descriptive evidence

3.1. Sample selection

We collected our sample of pro forma press releases from LexisNexis—specifically, the *PR Newswire* and *Business Wire*—for the years 1998–2000. We examine all pro forma announcements in which the company discloses a pro forma diluted EPS figure that differs from disclosed GAAP diluted EPS. Our initial search (using the keywords “pro forma”, “pro-forma”, and “proforma”) retrieved 6,471 press releases.⁴ However, after analyzing each press release, we find that only 1,808 announcements contain actual quarterly pro forma earnings announcements for companies listed on major US stock exchanges. The other 4,663 press releases from the initial search refer to such things as current period pro forma revenues, forward-looking pro forma forecasts, earnings after adding in results from firms acquired or merged in the current period, or statements referring to prior period pro forma earnings. Finally, we require that firm-quarter observations have data available in Compustat, CRSP, and I/B/E/S. This yields a final sample of 1,149 quarterly pro forma press releases between January 1998 and December 2000, with full data available on these three databases.

Some companies use nomenclatures other than “pro forma”, “pro-forma”, or “proforma” to describe their non-GAAP earnings metrics. In order to estimate what proportion of non-GAAP earnings press releases our search string captures, we perform a detailed examination of other non-GAAP nomenclatures used in press releases from June through August 2000.⁵ Wallace (2002) performs a detailed categorization of non-GAAP earnings nomenclatures used by companies during her sample period. Based on Wallace’s (2002) list of non-GAAP earnings nomenclatures, we search LexisNexis using the following search string: “earnings excluding, net

³While they examine 433 pro forma press releases for generating descriptive statistics, it appears that their examination of the informativeness of pro forma earnings to investors is limited to 253 observations (according to the December 2001 version of their working paper).

⁴D’Avolio et al. (2001) perform a similar search and find 2,384 hits on the *PR Newswire* for these years. The fact that we have more hits could be attributable to the search string we use and/or to the fact that we search both the *PR Newswire* and the *Business Wire*.

⁵The reason we examine this time period is because it coincides with the Johnson and Schwartz (2001) sample period (and benchmarks their sample with ours and with all available non-GAAP announcements available on the *PR Newswire* and *Business Wire*). In addition, the frequency of pro forma reporting is much higher in 2000 than in 1998 and 1999. Thus, the estimate we obtain during this time period is likely to be closer to the upper bound of all non-GAAP nomenclatures used by companies in any quarter during our sample period.

income excluding, adjusted net income, adjusted loss, cash earnings, earnings before, free cash flow, normalized EPS, normalized earnings, recurring earnings, distributable cash flow, GAAP one-time adjusted, GAAP adjusted, Cash loss, AND NOT pro forma, pro-forma, or proforma". Note that we do not include EBITDA since this was a commonly reported figure long before the pro forma reporting trend began in the mid-1990s. We find that while our original search string and subsequent data screens result in 189 pro forma earnings announcements during the June–August 2000 sub-period, this new search string identifies an additional 193 (bringing the total to 382) non-GAAP earnings press releases reported on a per-share basis and meeting all data requirements. Thus, our search string captures about half of all non-GAAP EPS numbers released by companies during this period. Based on this broader search string, we estimate that only a small proportion of public companies covered by I/B/E/S (about 10.7%)⁶ reports any form of pro forma or non-GAAP EPS figure.

3.2. Classification of pro forma adjustments and characteristics and evolution of pro forma announcements

We begin our analysis by classifying each pro forma adjustment disclosed in a press release into one of the following nine categories (a single press release often contains more than one adjustment category): (1) depreciation and amortization costs (DEPRAMORT), (2) stock based compensation costs (STOCKCOMP), (3) merger and acquisition costs (MERGE), (4) acquired in-process research and development costs written-off (R&D), (5) gains or losses on asset dispositions (GAINLOSS), (6) “below the line” items (EXTRADISC),⁷ (7) adjustments to the number of shares outstanding used in the denominator of the EPS calculation (SHARES), (8) other specific adjustments (OTHER), and (9) no adjustment details given in the press release (NOADJUST). We provide descriptive evidence on the broad characteristics of firms that make pro forma announcements, the types of adjustments companies frequently make to arrive at the pro forma number, and how pro forma reporting has evolved over the three years of our sample period.

Panel A of [Table 1](#) classifies our final sample of 1,149 pro forma press releases by the one-digit SIC industry code of the announcing firms. Panel A reports that about 50% of these announcements are made by firms in the service industries (SIC codes 7000–8999), while approximately 31% of the pro forma announcements are made by firms in the manufacturing industries (SIC codes 2000–3999). The proportion of our sample firms classified in service industries is extremely high relative to the percentage of service companies in the universe of Compustat firms (only about 20% of Compustat firms are classified in these industries). However, the percentage of

⁶We find a total of 3556 firms in the I/B/E/S database that meet all of our data requirements during the June–August 2000 period. Thus, the proportion of firms with complete data that announce non-GAAP EPS figures is only 10.7% (382/3,556) of the I/B/E/S population.

⁷“Below the line” items include extraordinary items, discontinued operations, and the cumulative effect of changes in accounting principles.

sample firms in manufacturing industries is similar to the proportion in the Compustat population (about 38%). Further analysis (not tabulated) reveals that based on the classification scheme used by I/B/E/S, 44% of our sample firms are categorized in high-tech industries compared to only 19% of companies in the I/B/E/S population.⁸ Thus, this evidence indicates that pro forma announcers are heavily concentrated in the service and high-tech industries.

Many of these press releases include multiple adjustments from GAAP to arrive at pro forma earnings. Therefore, Panel B of Table 1 classifies a total of 1,956 adjustments from 1,149 pro forma press releases.⁹ Panel B shows that depreciation and amortization and stock compensation costs are the two most common types of pro forma adjustments (21% and 17%, respectively). We also find that a large proportion of pro forma adjustments simply change the number of shares used in the denominator of the EPS calculation (16%). We find that managers manipulate the number of shares outstanding in the denominator of the pro forma EPS calculation to decrease the magnitude of a GAAP loss per share.¹⁰

Panel B of Table 1 also illustrates that pro forma reporting has increased significantly over our three-year sample period. The number of pro forma press releases has increased from 181 in 1998 to 695 in 2000. Similarly, the number of adjustments in these press releases increased from 273 in 1998 to 1,373 in 2000. This panel also reveals that certain types of adjustments or exclusions have become more common over time, while others have become less frequent over our sample period. For example, the exclusion of depreciation and amortization accounted for only 4% of total adjustments made in 1998 but increased to 26% of adjustments made in 2000. Similarly, the exclusion of stock-based compensation costs increased from 3% in 1998 to 22% in 2000. Conversely, firms simply adjusting the number of shares used in the denominator of the EPS calculation decreased from 37% in 1998 to 11% in 2000.

⁸I/B/E/S classifies Sector/Industry/Group (SIG) codes 080101–089901 as “technology” industries. We also include SIG codes 110301–110303 (telecommunications) in our “high-tech” classification.

⁹We find that in approximately 10% of our pro forma announcements companies make no disclosure about specific adjustments they use to arrive at the pro forma number. The SEC has expressed particular concern about such announcements since they may be misleading to investors (SEC, 2001b).

¹⁰Managers manipulate the number of shares outstanding in their pro forma EPS calculation to decrease a GAAP loss per share in two ways. First, SFAS 128 requires that companies include convertible securities in the diluted EPS calculation only if they have the effect of diluting the EPS figure (i.e., decreasing income per share or increasing loss per share). Otherwise, they are classified as antidilutive securities and should be excluded from the EPS calculation. We find that managers with negative GAAP EPS numbers manipulate pro forma EPS by including antidilutive convertible securities in the denominator of the loss per share calculation. Second, SFAS 128 specifies that if a security has been outstanding all year, it should be included in the weighted average number of shares outstanding as if it had been converted at the beginning of the year. However, if securities are issued during the year, they should only be included in the weighted average number of shares outstanding calculation based on the proportion of the year outstanding. Managers sometimes manipulate the pro forma EPS denominator by including convertible securities issued during the year in the weighted number of shares outstanding as if they had been converted at the beginning of the year. In either case, managers increase the number of shares outstanding used in the denominator of the EPS calculation in order to decrease the magnitude of a GAAP loss per share on a pro forma basis.

Table 1

Classification of 1,149 pro forma announcements by adjustment category and industry of 596 firms during the 1998–2000 period

Panel A: Classification of pro forma press releases by industry

	SIC Code								
	Total	0–1999	2000–2999	3000–3999	4000–4999	5000–5999	6000–6999	7000–7999	8000–8999
Frequency	1,149	22	76	277	63	93	44	508	66
Percentage (%)	100	1.9	6.6	24.1	5.5	8.1	3.8	44.2	5.7

Panel B: Classification of pro forma adjustments by year^a

Adjustment category	1998		1999		2000		1998–2000 Totals	
	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
DEPARTMENT	11	4	39	13	360	26	410	21
STOCKCOMP	8	3	28	9	306	22	342	17
MERGE	46	17	53	17	103	8	202	10
R&D	21	8	18	6	118	9	157	8
GAINLOSS	4	1	10	3	57	4	71	4
EXTRADISC	11	4	14	5	35	3	60	3
SHARES	101	37	58	19	155	11	314	16
OTHER	71	26	90	29	239	17	400	20
Total adjustments ^b	273	100	310	100	1,373	100	1,956	100
Total press releases	181		273		695		1,149	
Average adjustments per press release	1.5		1.1		2.0		1.7	

DEPRAMORT = Depreciation and amortization costs (excluding amortization of stock-based compensation); STOCKCOMP = Stock compensation costs; MERGE = Merger and acquisition costs; R&D = Research and development (R&D) costs, and write-offs of purchased in-process R&D costs; GAINLOSS = Gains and losses on sales of various assets; EXTRADISC = Extraordinary items and discontinued operations; SHARES = Alteration of the number of shares outstanding used in calculating earnings per share (EPS); OTHER = All other adjustments.

SIC codes 1–1999 = Mineral and construction industries; SIC codes 2000–2999 = Manufacturing: food, tobacco, textile, lumber, furniture, paper, printing, chemicals, and petroleum; SIC codes 3000–3999 = Manufacturing: rubber, leather, stone, metal, machinery, electronic equipment, transportation equipment, etc.; SIC codes 4000–4999 = Transportation, communications, and utilities; SIC codes 5000–5999 = Wholesale trade (durable and non-durable) and retail trade (building materials, general merchandise, food, automotive, apparel); SIC codes 6000–6999 = Financial services, insurance, and real estate industries; SIC codes 7000–7999 = Service Industries: hotels, personal services, business services, automotive repair, motion pictures, amusement and recreation services; SIC codes 8000–8999 = Service Industries: health, legal, educational, social, museums, engineering, accounting, management, etc.

^aThe “Adjustment category” section of this panel only includes pro forma announcement that disclose adjustment details (qualitative or quantitative).

^bEach pro forma press release contains one or more adjustments from GAAP income. In many cases, the number of adjustments is greater than one. Therefore, the “Total adjustments” row for Panel B contains the number of adjustments made each year, while the “Total press releases” row contains the number of press releases each year.

Fig. 1 illustrates how the level of detail about adjustments has changed over time. We find three levels of disclosure among our sample firms. Most firms disclose both the type and the magnitude of adjustments from GAAP earnings to arrive at the pro forma figure, while some firms only reveal the adjustments made, but fail to disclose the magnitude of the adjustments. Finally, some firms disclose neither. Fig. 1 shows that in 1998, 59% of pro forma press releases disclosed both the classification and the magnitude of the adjustment. The percentage of press releases with full details about amount and classification of adjustments increased to 68% in 1999, and finally to 74% in 2000. Conversely, the announcements with no information about specific adjustments decreased from 18% in 1998 to 6% in 2000. This suggests that vague and potentially misleading pro forma reports have decreased over time. Since the SEC has expressed particular concern about ambiguous and misleading pro forma adjustments and exclusions, this trend is encouraging.

While Table 1 presents evidence that pro forma reporting has become more prevalent in recent years, we find that individual firms tend to report pro forma numbers fairly infrequently. The 1,149 press releases in our sample were made by 596 firms. Thus, on average, a firm made less than two (1.93) quarterly pro forma earnings announcements during the entire three-year sample period. Fig. 2 reports the frequency with which firms reported quarterly pro forma press releases during our sample period. The majority of the sample firms (314 out of 596, or approximately 53%) reported pro forma earnings only once during the entire sample period. Only about 23% (139 out of 596) of our sample firms reported pro forma numbers two times during this three-year period.¹¹

It is possible that some of these firms may have reported earnings on a pro forma basis prior to 1998 or after 2000. Furthermore, it is possible that some of these firms may have reported a non-GAAP EPS metric using a nomenclature other than “pro forma”, “pro-forma”, or “proforma” during our sample period. Therefore, we examine a random sample of 100 of the 314 firms that report on a pro forma basis only once during our sample period in order to assess (1) to what extent managers use other nomenclatures in press releases and (2) the likelihood that sample firms report on a pro forma basis outside our sample window. We examine these firms’ quarter $q - 1$ and quarter $q + 1$ earnings announcements relative to the pro forma announcement quarter identified by our initial LexisNexis search (quarter q). In quarter $q - 1$, we find that 4% announce pro forma earnings (but quarter $q - 1$ occurs prior to our sample period in 1997), 38% report only GAAP EPS figures, 38% report a non-GAAP EPS figure using a different nomenclature, 11% do not have a public earnings press release because their IPO occurs in quarter q , and finally for the remaining 9%, we cannot find a quarter $q - 1$ press release on LexisNexis. Quarter $q + 1$ analysis reveals that 19% report pro forma earnings (but quarter $q + 1$ occurs in 2001), 49% report only GAAP EPS figures, 27% report a non-GAAP EPS

¹¹ Additional analysis (not reported in Fig. 2) reveals that only 11% of the firms reported pro forma press releases four or more times during our sample period, and very few of these reports occurred in consecutive quarters. Our sample includes only 34 firms that reported pro forma numbers in four or more consecutive quarters.

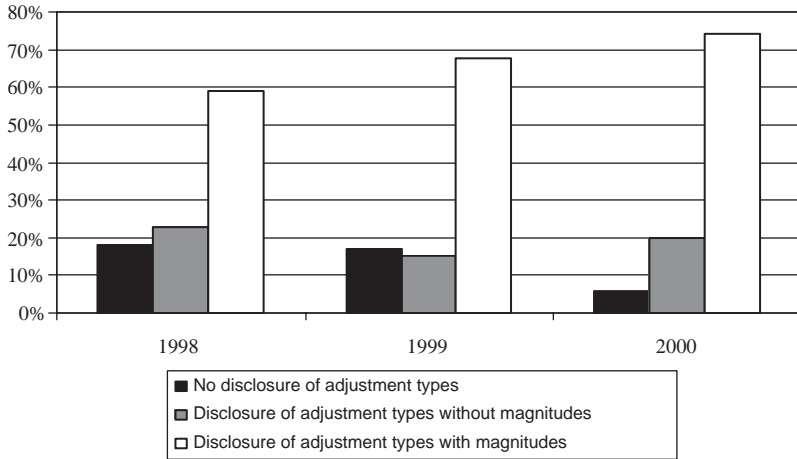


Fig. 1. Evidence on the level of detail disclosed in pro forma press releases each year during the sample period (1998–2000).

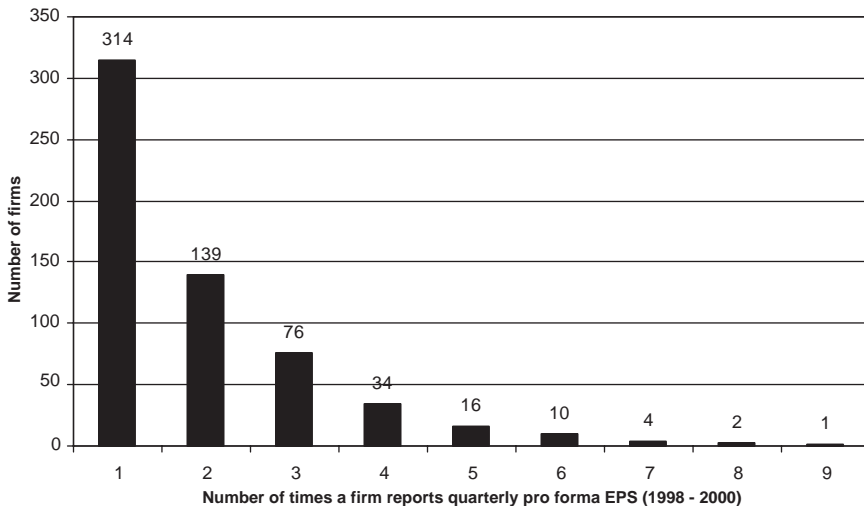


Fig. 2. Frequency of pro forma reporting during the sample period. This chart classifies sample firms based on the number of times they report quarterly EPS on a pro forma basis from 1998 to 2000.

metric using a different nomenclature, and we cannot find a quarter $q + 1$ press release for the remaining 5%. These results suggest that our search string captures approximately half of all possible non-GAAP EPS figures announced by sample firms during this period. This proportion is consistent with our search (reported earlier in the paper) for other non-GAAP EPS figures during the June–August 2000 sub-period.

3.3. Descriptive statistics and comparisons of pro forma, GAAP, and I/B/E/S earnings metrics

We examine three measures of operating earnings: (1) GAAP diluted operating EPS using Compustat data, EPS_{GAAP} ,¹² (2) actual EPS from the I/B/E/S database, EPS_{IBES} ,¹³ and (3) pro forma diluted EPS announced in actual press releases, $EPS_{PROFORMA}$. Panel A of Table 2 shows that while the mean GAAP operating EPS figure is significantly negative ($-\$0.147$) for our sample firms, the mean I/B/E/S and pro forma EPS numbers are both positive ($\$0.047$ and $\$0.085$, respectively).¹⁴ This suggests that GAAP operating income is generally more conservative than both pro forma and I/B/E/S earnings values.

We also calculate three measures of forecast error or earnings surprise: (1) FE_{GAAP} is calculated by subtracting the mean analysts' forecast from GAAP diluted operating EPS and scaling this difference by the closing price five days before the earnings announcement, day $t - 5$, (Christie, 1987), (2) FE_{IBES} is calculated by subtracting the mean analysts' forecast from EPS_{IBES} and scaling this difference by closing price on day $t - 5$, and (3) $FE_{PROFORMA}$ is calculated by subtracting the mean forecast from $EPS_{PROFORMA}$ and scaling the difference by closing price on day $t - 5$. The mean forecast is calculated for each firm using all forecasts from the I/B/E/S detail file made within 90 days prior to the quarterly earnings announcement date. The 90-day restriction ensures that forecasts are current. We also repeat all analyses using the median forecast, and the results are qualitatively similar. We find from Panel A of Table 2 that (1) both the mean and the median measures of FE_{GAAP} are negative, while the means and medians of the other two forecast error variables are not, suggesting again that EPS_{GAAP} is likely the most conservative earnings metric, and (2) GAAP operating earnings generally fall short of analysts' expectations in our sample.

We use market value of common equity (in millions) five days prior to the earnings announcement date as a measure of firm size (MKTVALUE). Panel A of Table 2 reveals that a few firms in our sample are much larger than most of the sample firms because the mean MKTVALUE ($\$6,246$ million) is substantially higher than even the 75th percentile of the distribution ($\$2,589$ million).¹⁵ The average size of our firms is also larger than the mean of active firms on Compustat ($\$2,258$ million).

We next examine the differences between the earnings metrics. Panel B of Table 2 reports the distributions of the pair-wise differences between the earnings metrics.

¹²We begin with GAAP basic earnings per share from operations (Compustat quarterly data item 177) and multiply this by the number of basic shares outstanding (Compustat quarterly data item 15) to get total operating earnings. We then divide operating earnings by the number of diluted shares outstanding (Compustat annual data item 171) to obtain diluted operating earnings per share.

¹³The I/B/E/S manual states that the actual earnings figures reported by I/B/E/S are usually operating earnings as opposed to net income.

¹⁴Additional analysis suggests that the mean EPS_{GAAP} for the Compustat population is also positive, $\$0.164$.

¹⁵We find similar distributional properties (not tabulated) for total assets and net sales of our sample firms.

Table 2

Descriptive statistics based on 1,149 pro forma press releases of 596 firms (1998–2000)

Panel A: Descriptive statistics of key variables				
Variable	25th Percentile	Mean	Median	75th Percentile
MKTVALUE	277.834	6,246.384	752.374	2,588.578
EPS _{GAAP}	-0.350	-0.147	0.010	0.200
EPS _{IBES}	-0.120	0.047	0.060	0.200
EPS _{PROFORMA}	-0.120	0.085	0.080	0.220
FE _{GAAP} ^a	-0.012	-0.017	-0.002	0.001
FE _{IBES}	0.000	0.000	0.000	0.002
FE _{PROFORMA}	0.000	0.002	0.001	0.003

Panel B: Distribution of differences between earnings metrics

Variable	25th Percentile	Mean	Median	75th Percentile
EPS _{PROFORMA} - EPS _{GAAP}	0.000	0.232	0.050	0.190
EPS _{PROFORMA} - EPS _{IBES}	0.000	0.038	0.000	0.010
EPS _{IBES} - EPS _{GAAP}	-0.010	0.194	0.020	0.170

Panel C: Univariate comparisons of earnings metrics

Null hypothesis	<i>T</i> -statistic	<i>P</i> -value
H ₀ : EPS _{PROFORMA} = EPS _{GAAP}	10.36	0.0001
H ₀ : EPS _{PROFORMA} = EPS _{IBES}	4.99	0.0001
H ₀ : EPS _{IBES} = EPS _{GAAP}	8.83	0.0001

MKTVALUE = Market value of common equity in \$millions five days prior to the pro forma announcement date; EPS_{GAAP} = Compust dilute operating earnings per share; FE_{IBES} = I/B/E/S actual earnings per share; EPS_{PROFORMA} = Pro forma earnings per share; FE_{GAAP} = Forecast error calculated as Compustat diluted operating EPS minus the I/B/E/S mean forecast, scaled by price on day $t-5$; FE_{IBES} = Forecast error calculated as IBES actual EPS minus the I/B/E/S mean forecast, scaled by price on day $t-5$; FE_{PROFORMA} = Forecast error calculated as pro forma EPS minus the I/B/E/S mean forecast, scaled by price on day $t-5$.

^a We calculate forecast errors based on the GAAP, I/B/E/S, and pro forma earnings per share figures for each firm as the respective EPS metric minus the mean analysts' EPS forecast. The mean forecast is calculated for each firm using all forecasts from the I/B/E/S detail file made within 90 days prior to the quarterly earnings announcement date.

For each announcement, we calculate the pair-wise differences between EPS_{PROFORMA} and EPS_{GAAP}, EPS_{PROFORMA} and EPS_{IBES}, and EPS_{IBES} and EPS_{GAAP}. Panel B of Table 2 reports the distributions of these pair-wise differences and indicates that pro forma earnings are substantially higher than GAAP operating earnings (on average, about 23 cents per share higher). The *t*-statistic and two-tailed probability from this pair-wise comparison (reported in Panel C of this table) show that the difference between pro forma and GAAP earnings is highly significant

($p < 0.0001$). We also find that the mean difference between EPS_{PROFORMA} and EPS_{IBES} of approximately 4 cents is highly statistically significant ($p < 0.0001$). This suggests that even for the small subset of all firms covered by major forecast tracking services that report pro forma earnings, there is a significant difference between pro forma and I/B/E/S EPS figures. As a result, we conclude that using the latter as a proxy for the former may be problematic. Finally, we find that EPS_{IBES} is also significantly greater ($p < 0.0001$) than EPS_{GAAP} .

Fig. 3 further illustrates the differences among these three earnings metrics. Pro forma earnings are greater than GAAP operating earnings about 70% of the time, while about 30% of pro forma numbers are less than GAAP earnings.¹⁶ Similarly, pro forma numbers are greater than I/B/E/S actual EPS values in more than a quarter of our sample (26% of the time), while pro forma numbers are less than I/B/E/S EPS values in less than a tenth of the press releases (9% of the announcements). Pro forma earnings are equal to IBES actual EPS values in the majority of the announcements (about 65% of the time). In summary, we find that pro forma numbers are significantly greater than both GAAP operating earnings and earnings values reported by I/B/E/S. This indicates that pro forma earnings generally exclude expenses that should be recognized according to GAAP. Moreover, pro forma earnings exclude more expenses than analysts generally exclude from their forecasts.

Given the evidence that pro forma EPS figures exceed GAAP EPS numbers 70% of the time, we investigate whether managers strategically highlight their preferred earnings figure by reporting it first in the press release.¹⁷ Fig. 4 presents descriptive evidence on the frequency with which managers report pro forma and GAAP EPS figures first in the press release. Chart 1 of Fig. 4 reveals that while the pro forma earnings figure exceeds the GAAP number 70% of the time, the pro forma figure is reported first 87% of the time. This indicates that managers generally report the pro forma figure first, even if the GAAP number is higher. Chart 2 of Fig. 4 further explores this notion by illustrating the proportion of pro forma and GAAP earnings figures that are reported first given the relative magnitudes of the two numbers. The results indicate that when the pro forma number is higher, it is generally reported first. However, we find that in 25% of our sample press releases, the pro forma figure is reported first, even though the GAAP number is higher. This is consistent with the notion that at least some managers may report pro forma figures because they believe the pro forma figures better represent recurring earnings and not because they desire to report a higher earnings number.

¹⁶ We examine the adjustments in announcements where the GAAP EPS figure exceeds the pro forma EPS figure to determine whether there are systematic differences in the types of adjustments used by firms with GAAP earnings that exceed pro forma earnings. We find that firms with higher GAAP earnings are significantly more likely to make adjustments for gains and losses on asset disposals (GAINLOSS) and less likely to make adjustments for stock based compensation costs (STOCKCOMP), acquired in-process research and development costs (R&D), and depreciation and amortization expenses (DEPRAMORT).

¹⁷ Schrand and Walther (2000) find evidence that managers strategically highlight prior period gains and losses on asset disposals in order to portray current income in the most positive light possible.

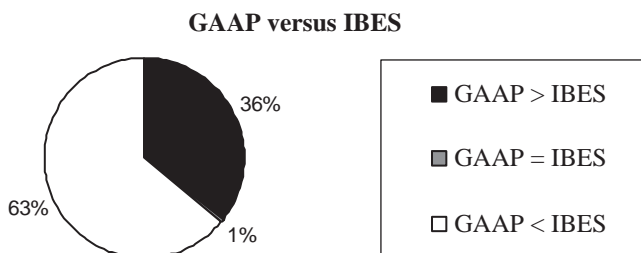
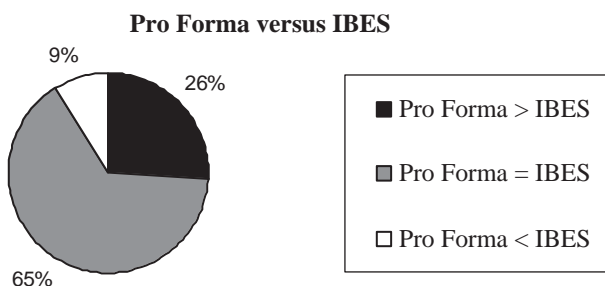
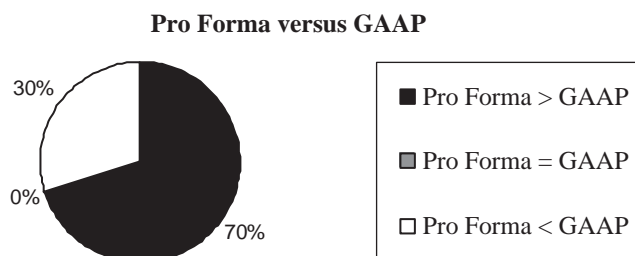


Fig. 3. Comparisons of operating earnings metrics.

We also examine the frequencies with which these three earnings metrics (1) report a profit or (2) manage to meet or beat analysts' expectations. Fig. 5 presents some descriptive evidence. We find that both pro forma and I/B/E/S earnings figures report a profit about 65% of the time, while only 52% of GAAP operating earnings figures result in a profit. Finally, an extremely high proportion (about 80%) of pro forma announcements meet or exceed the mean analyst forecast, while only 39% of GAAP operating earnings are equal to or above the mean analyst forecast. This evidence is consistent with the notion that managers are often under extreme pressure to meet analysts' expectations (e.g., Burgstahler and Dichev, 1997; Skinner and Sloan, 2001), and pro forma reporting may often be motivated by managers' desires to meet these targets. Bhattacharya et al. (2003) report additional descriptive evidence about this sample.

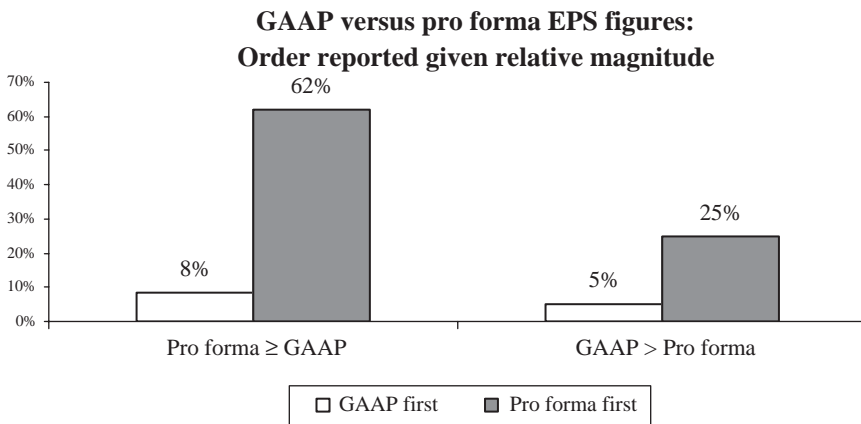
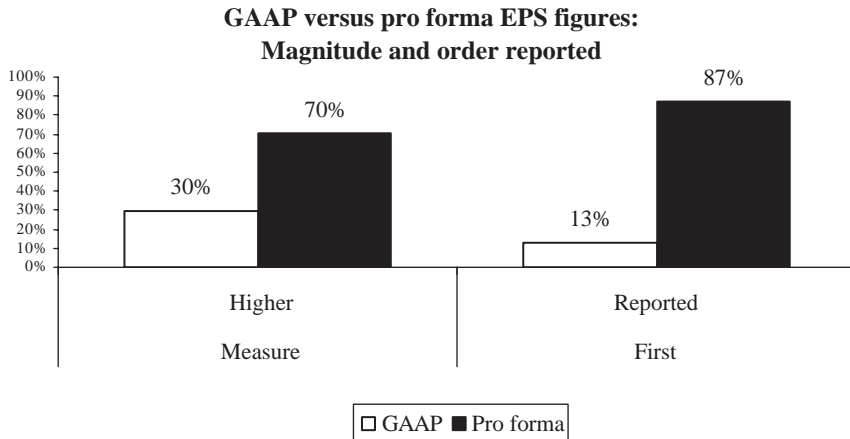


Fig. 4. Magnitude of earnings metrics and the order reported in press releases.

4. The informativeness and permanence of pro forma earnings

4.1. The informativeness of pro forma earnings relative to I/B/E/S and GAAP earnings

4.1.1. Methodology for examining the relative informativeness of the earnings metrics

We first examine whether pro forma earnings are relatively more informative than I/B/E/S earnings figures or GAAP operating earnings. In order to investigate this question, we regress short-window abnormal returns separately on earnings surprise (forecast error) measures based on each of the three earnings metrics

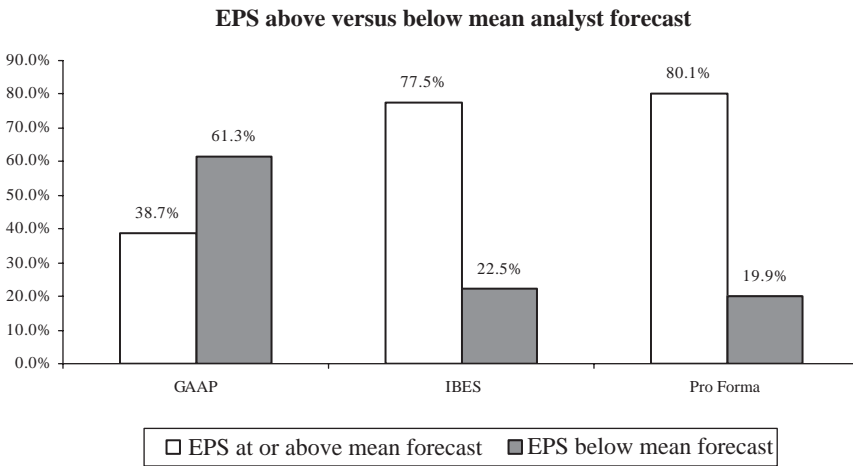
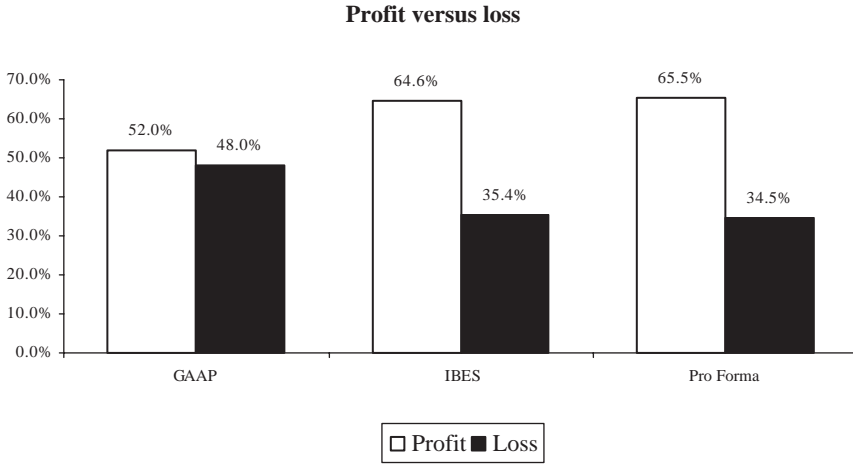


Fig. 5. Comparisons of earnings metrics in meeting specific earnings targets.

(FE_{GAAP} , $FE_{PROFORMA}$ and FE_{IBES}):

$$CAR = \alpha_0 + \alpha_1 FE_{GAAP} + \varepsilon_1 \quad (1)$$

$$CAR = \alpha_0 + \alpha_2 FE_{PROFORMA} + \varepsilon_2 \quad (2)$$

$$CAR = \alpha_0 + \alpha_3 FE_{IBES} + \varepsilon_3 \quad (3)$$

where CAR is the cumulative size-adjusted abnormal returns over the three-day window centered on the pro forma earnings announcement date.¹⁸ Size-adjusted

¹⁸We find qualitatively similar results using value-weighted market-adjusted abnormal returns.

daily returns are calculated as the firm-specific daily return minus the average return on that day of the size-decile portfolio to which the firm belongs.

The earnings response coefficient (i.e., the mapping of earnings surprise into prices) and the adjusted- R^2 value (i.e., the overall explanatory power of the earnings surprise measure) from each regression provide measures of the informativeness of the respective earnings metrics (e.g., Brown et al., 1987; Brown and Sivakumar, 2003).¹⁹

We use Vuong's (1989) likelihood ratio test (e.g., Dechow, 1994; Ayers, 1998; Bhattacharya, 2001) and a test developed by Biddle et al. (1995) to compare the relative explanatory power (adjusted- R^2 values) of Models 1 and 2, and Models 2 and 3.²⁰ Similarly, we estimate the following models with standardized variables (i.e., variables for which the distribution of each variable has been transformed so that the mean is zero and the standard deviation is one) in order to directly compare the respective earnings response coefficients, α_1 versus α_2 and α_2 versus α_3 .²¹

$$\text{CAR} = \alpha_0 + \alpha_1 \text{FE}_{\text{GAAP}} + \alpha_2 \text{FE}_{\text{PROFORMA}} + \varepsilon_4 \quad (4)$$

$$\text{CAR} = \alpha_0 + \alpha_2 \text{FE}_{\text{PROFORMA}} + \alpha_3 \text{FE}_{\text{IBES}} + \varepsilon_5 \quad (5)$$

After estimating the above models, we employ an F -test to examine the following null hypotheses: $\alpha_1 = \alpha_2$, and $\alpha_2 = \alpha_3$. These models provide direct empirical evidence about whether pro forma numbers are significantly more informative than GAAP operating earnings or I/B/E/S EPS figures.

4.1.2. Testing the informativeness of pro forma earnings relative to GAAP and I/B/E/S earnings

Table 3 presents results regarding the relative informativeness of pro forma, GAAP, and I/B/E/S earnings figures. Panel A estimates Models 1–3 described above. The results indicate that the coefficient on FE_{GAAP} (α_1) is not statistically significant, while the coefficients on both $\text{FE}_{\text{PROFORMA}}$ (α_2) and FE_{IBES} (α_3) are significantly

¹⁹We winsorize each of the variables used in the regression models at the 1st and 99th percentiles to reduce the influence of extreme observations on the results.

²⁰In examining two non-nested models, Vuong's (1989) Z -statistic (from a likelihood ratio test) can be used to determine the model with a better statistical fit. Biddle et al. (1995) develop a Wald-type test that examines whether one set of independent variables explains the variations in the dependent variable significantly better than another set of independent variables. Their test statistic is asymptotically valid with a χ^2 distribution even when disturbances are heteroskedastic.

²¹In a regular OLS estimation, examining the magnitudes of the estimated coefficients does not allow the researcher to conclude that the explanatory variable with the largest coefficient has the greatest explanatory power for the dependent variable because the magnitudes of the coefficients are sensitive to the units used to measure the respective variables. Standardization makes the scale of the regressors irrelevant and therefore places the explanatory variables on "equal footing" in terms of explanatory power. Therefore, the standardized coefficients can be interpreted as the number of standard error changes in the dependent variable resulting from a standard error change in the independent variable. Thus, the coefficients measure the effects of each variable in standard deviation units as opposed to the original units of the explanatory variables. As a result, OLS estimation with standardized variables is a more desirable technique when the primary objective is to measure the relative strengths of the regressors in explaining the variations in the dependent variable (e.g., Kennedy, 1992; Wooldridge, 2000).

Table 3

Relative informativeness of GAAP, IBES, and Pro forma earnings measures ($N = 1,149$)

Panel A: ^a Comparing the relative fit of Models 1–3				
Variable	Coefficient	Model 1	Model 2	Model 3
Intercept	α_{0i}	0.005 (1.19)	-0.000 (-0.02)	0.002 (0.60)
FE _{GAAP}	α_1	0.111 (1.27)	2.068 (5.48) ^{***}	
FE _{PROFORMA}	α_2			3.710 (6.94) ^{***}
FE _{IBES}	α_3			
Adjusted- R^2		0.10%	2.50%	4.00%
		Comparing Models 1 and 2	Comparing Models 2 and 3	
Vuong's Z-statistic ^b		2.38 ^{**}	1.90 [*]	
Biddle, Seow, and Siegel's χ^2 -statistic ^c		3.53 ^{**}	2.94 [*]	

Panel B: ^d Comparing the incremental informativeness of pro forma earnings relative to GAAP and I/B/E/S earnings			
Variable	Coefficient	Model 4	Model 5
Intercept	α_{0i}	-0.000 (-0.01)	-0.001 (-0.02)
FE _{GAAP}	α_1	0.027 (0.91)	
FE _{PROFORMA}	α_2	0.162 (5.41) ^{***}	-0.051 (1.30)
FE _{IBES}	α_3		0.169 (4.41) ^{***}
Adjusted- R^2		2.50%	4.01%
F-Statistic: $H_0 : \alpha_1 = \alpha_2$		9.76 ^{***}	
F-Statistic: $H_0 : \alpha_2 = \alpha_3$			2.80 [*]

*Significant at the 0.10 level (two-tailed).

**Significant at the 0.05 level (two-tailed).

***Significant at the 0.01 level (two-tailed).

CAR = Cumulative size-adjusted abnormal returns over the three-day window surrounding pro forma earnings announcements; FE_{GAAP} = Forecast error relative to Compustat operating earnings per share, scaled by price on day $t-5$; FE_{PROFORMA} = Forecast error relative to I/B/E/S actual earnings per share, scaled by price on day $t-5$; FE_{IBES} = Forecast error relative to I/B/E/S actual earnings per share, scaled by price on day $t-5$.

^aThis panel compares the relative explanatory power of forecast errors based on each earnings measure for cumulative abnormal returns around the pro forma earnings announcement date.

^bVuong's (1989) likelihood ratio test compares two models in terms of fit or explanatory power. A significant Z-statistic indicates that one model has significantly better fit than the other.

^cBiddle et al. (1995) develop a Wald χ^2 test to compare the relative explanatory power of two non-nested models. A significant χ^2 -statistic indicates that one model fits the data significantly better than the other.

^dThis panel reports results of regressions using standardized (mean 0 and standard deviation 1) variables (Kennedy, 1992) to allow the direct comparison of coefficients as an indication of the informativeness of pro forma earnings relative to GAAP and I/B/E/S earnings measures in explaining variations in cumulative abnormal returns around earnings announcement.

positive.²² This panel also reports that Model 2 has significantly more explanatory power than Model 1 (since Vuong's Z -statistic and Biddle, Seow, and Siegel's χ^2 statistic are both significant) suggesting that pro forma earnings are more informative to investors than GAAP operating income. We also find evidence suggesting that I/B/E/S earnings (Model 3) has more explanatory power for abnormal returns than pro forma earnings (Model 2) as evidenced by the fact that Vuong's Z -statistic and Biddle, Seow, and Siegel's χ^2 statistic are significant at the 10% level.²³

Panel B of Table 3 reports results for Models 4 and 5. As explained above, these models enable us to directly compare the coefficient on FE_{PROFORMA} (α_2) with the coefficient on FE_{GAAP} (α_1) and the coefficient on FE_{IBES} (α_3). Consistent with the results from the previous panel, we find that α_2 is significantly greater than α_1 ($p < 0.01$) suggesting that pro forma earnings are more informative than GAAP operating earnings. Finally, we find limited evidence that α_3 is greater than α_2 (since the F -statistic is significant at the 10% level) consistent with the notion that I/B/E/S EPS figures are more informative than actual pro forma earnings numbers.²⁴ However, Philbrick and Ricks (1991) document that matching analysts' forecasts to actual earnings figures reported by the same tracking service provides a more accurate (less noisy) measure of earnings surprise. Therefore, by design, FE_{IBES} is less noisy than the other two forecast error measures since the earnings expectation and EPS_{IBES} include or exclude the same items, while the other two earnings metrics may not make the exact same adjustments. Given this "errors in variables" problem, it is difficult to draw inference regarding the relative informativeness of I/B/E/S earnings figure vis-à-vis the other two earnings metrics.

In order to assess the sensitivity of our results to this "errors in variables" problem, we replicate our information content analyses using a random-walk earnings expectation instead of the I/B/E/S analysts' mean forecast as our expected earnings measure. In other words, we now define our forecast errors as the three respective actual EPS figures (GAAP, pro forma, and I/B/E/S) minus GAAP operating EPS from quarter $q - 4$. We, therefore, induce a bias in favor of finding significance for the GAAP EPS figure. The results are qualitatively similar. The coefficient on the GAAP forecast error in Model 1 is not significant, while the coefficient on the pro forma forecast error in Model 2 is still significantly positive

²²The insignificant coefficient on FE_{GAAP} is not surprising given the unique nature of the firms that self-select into our sample. As explained in Section 3.2, these firms are highly concentrated in the service and high-tech sectors. Moreover, evidence reported in Table 2 indicates that our sample of voluntary pro forma announcers, on average, report losses. Hayn (1995) finds that the association between unexpected earnings and abnormal returns is significantly higher for profit firms relative to loss firms. Moreover, our sample size is relatively small compared to studies that examine the entire population of Compustat/CRSP firms (e.g., Brown and Sivakumar, 2003; Bradshaw and Sloan, 2002).

²³Vuong and Biddle et al. tests comparing Models 1 and 3 (not tabulated) suggest that FE_{IBES} also has significantly more explanatory power for abnormal returns than FE_{GAAP} .

²⁴When we estimate an additional standardized model regressing CAR on FE_{GAAP} and FE_{IBES} , the results indicate that the coefficient on FE_{IBES} is significantly greater than the coefficient on FE_{GAAP} ($p < 0.01$).

(t -statistic = 1.74, two-tailed p -value = 0.082). Interestingly, the coefficient on the I/B/E/S forecast error is no longer statistically significant. The Biddle et al. (1995) χ^2 statistic comparing the explanatory power of Models 1 and 2 is also significant suggesting that the pro forma forecast error has greater explanatory power for abnormal returns than the GAAP forecast error. These results suggest that pro forma EPS is more informative than GAAP operating EPS even when forecast errors are biased in favor of the GAAP EPS figure.

Given the evidence previously reported that managers may report GAAP or pro forma EPS figures first in the press release to highlight their preferred earnings measure, we repeat our Table 3 regressions on the subset of earnings announcements where the pro forma EPS figure is reported first (997 observations) in order to assess whether the results are different from the full sample results. Replication of our results on this subsample yields identical results. When we repeat Table 3 analyses on the subset of observations where the GAAP EPS number is reported first, we find qualitatively similar but weaker results. This is likely due to low statistical power since this sub-sample contains only 152 observations.

4.2. The permanence of pro forma earnings relative to GAAP and I/B/E/S earnings

4.2.1. Methodology for examining the relative permanence of the earnings metrics

We next examine whether pro forma earnings are more permanent (i.e., are perceived to be closer to “core earnings” that are likely to continue in the future periods) than GAAP or I/B/E/S earnings. In order to investigate this question, we regress the revision in analysts’ one-quarter-ahead earnings forecasts on forecast errors based on the three earnings metrics. Prior research (e.g., Easton and Zmijewski, 1989; Collins and DeAngelo, 1990; Johnson, 1999) has measured earnings persistence as the extent to which the mean analysts’ forecast is revised in response to an earnings announcement. The rationale behind this approach is that an earnings innovation that is perceived to be more permanent in nature induces analysts to revise their expectations about future earnings more than an earnings innovation perceived to be less permanent in nature. We therefore, estimate the following models:

$$\text{REVISION} = \beta_{01} + \beta_1 \text{FE}_{\text{GAAP}} + \varepsilon_1 \quad (6)$$

$$\text{REVISION} = \beta_{02} + \beta_2 \text{FE}_{\text{PROFORMA}} + \varepsilon_2 \quad (7)$$

$$\text{REVISION} = \beta_{03} + \beta_3 \text{FE}_{\text{IBES}} + \varepsilon_3 \quad (8)$$

where REVISION is the revision in one-quarter-ahead earnings forecasts based on information in the current quarterly earnings announcement. We first calculate the mean forecast using all quarter $q + 1$ forecasts made within the 60-day post-announcement window beginning on the quarter q earnings announcement date. We then subtract the mean forecast based on all quarter $q + 1$ forecasts made within a 60-day window immediately prior to the quarter q earnings announcement date.

Table 4

Relative persistence of GAAP, IBES, and pro forma earnings measures (based on 796 pro forma press releases of 596 firms during the years 1998–2000)

Panel A: ^a Comparing the relative fit of Models 1–3				
Variable	Coefficient	Model 6	Model 7	Model 8
Intercept	β_{0i}	–0.001 (–4.52) ^{***}	–0.0001 (–7.00) ^{**}	–0.001 (–6.64) ^{***}
FE _{GAAP}	β_1	0.003 (0.80)		
FE _{PROFORMA}	β_2		0.201 (11.41) ^{***}	
FE _{IBES}	β_3			0.429 (19.09) ^{***}
Adjusted- R^2		–0.10%	14.10%	31.50%
			Comparing Models 6 and 7	Comparing Models 7 and 8
Vuong's Z-statistic ^b			2.16 ^{**}	2.98 ^{**}
Biddle, Seow, and Siegel's χ^2 -statistic ^c			4.76 ^{***}	3.58 ^{**}
Panel B: ^d Comparing the incremental persistence of pro forma earnings relative to GAAP and I/B/E/S earnings				
Variable	Coefficient	Model 9	Model 10	
Intercept	β_{0i}	0.005 (0.14)	–0.001 (–0.04)	
FE _{GAAP}	β_1	0.011 (0.34)		
FE _{PROFORMA}	β_2	0.433 (11.38) ^{***}	0.058 (1.35)	
FE _{IBES}	β_3		0.060 (14.25) ^{***}	
Adjusted- R^2		14.00%	31.60%	
F -Statistic: $H_0 : \beta_1 = \beta_2$		70.95 ^{***}		
F -Statistic: $H_0 : \beta_2 = \beta_3$			50.38 ^{***}	

*Significant at the 0.10 level (two-tailed).

**Significant at the 0.05 level (two-tailed).

***Significant at the 0.01 level (two-tailed).

REVISION = The revision in the mean one-quarter-ahead analyst forecast using a 60-day window around the current pro forma earnings announcement date, scaled by stock price five days prior to the announcement; FE_{GAAP} = Forecast error relative to Compustat operating earnings per share, scaled by price on day $t-5$; FE_{PROFORMA} = Forecast error relative to I/B/E/S actual earnings per share, scaled by price on day $t-5$; FE_{IBES} = Forecast error relative to I/B/E/S actual earnings per share, scaled by price on day $t-5$.

^aThis panel compares the relative explanatory power of forecast errors based on each earnings measure for revisions in analysts' one-quarter-ahead earnings forecasts.

Table 4 (continued)

^bVuong's (1989) likelihood ratio test compares two models in terms of fit or explanatory power. A significant Z-statistic indicates that one model has significantly better fit than the other.

^cBiddle et al. (1995) develop a Wald X^2 test to compare the relative explanatory power of two non-nested models. A significant X^2 -statistic indicates that one model fits the data significantly better than the other.

^dThis panel reports results of regressions using standardized (mean 0 and standard deviation 1) variables (Kennedy, 1992) to allow the direct comparison of coefficients as an indication of the informativeness of pro forma earnings relative to GAAP and I/B/E/S earnings measures in explaining variations in cumulative abnormal returns around earnings announcement dates.

Finally, we scale the forecast revision by the closing stock price five days before the quarter q earnings announcement date.²⁵

The coefficient on the earnings surprise or forecast error (β_1 or β_2 or β_3) as well as the adjusted- R^2 value from each regression provide evidence regarding the permanence or persistence of the respective earnings metrics.²⁶ We again employ Vuong's (1989) test and the Biddle et al. (1995) test to compare the relative explanatory power (based on the adjusted- R^2 values) of Models 6–8. Finally, we estimate the following standardized regressions to directly compare the coefficients: β_1 versus β_2 and β_2 versus β_3

$$\text{REVISION} = \beta_{04} + \beta_1 \text{FE}_{\text{GAAP}} + \beta_2 \text{FE}_{\text{PROFORMA}} + \varepsilon_4, \quad (9)$$

$$\text{REVISION} = \beta_{05} + \beta_2 \text{FE}_{\text{PROFORMA}} + \beta_3 \text{FE}_{\text{IBES}} + \varepsilon_5. \quad (10)$$

4.2.2. Testing the permanence of pro forma earnings relative to GAAP and I/B/E/S earnings

Table 4 reports results of tests examining the persistence of the three earnings measures.²⁷ Panel A of Table 4 indicates that the coefficient on FE_{GAAP} , β_1 , is not significant, while the coefficients on both $\text{FE}_{\text{PROFORMA}}$ (β_2) and FE_{IBES} (β_3) are significantly positive. Comparisons of Models 6 and 7 suggest that pro forma numbers have significantly greater explanatory power for revisions in analysts' one-quarter-ahead earnings forecasts than GAAP operating earnings (since both Vuong's Z-statistic and Biddle, Seow, and Siegel χ^2 statistic are significant in the comparison of Models 6 and 7). Similar to the results presented in Table 3, we find that the forecast error based on I/B/E/S earnings has significantly greater

²⁵When we perform sensitivity analyses using 45-day pre- and post-earnings-announcement windows and also using the revision in two-quarter-ahead forecasts (instead of one-quarter-ahead forecasts) the results are qualitatively similar.

²⁶Another method for assessing earnings persistence is to employ a pure time-series design (e.g., Kormendi and Lipe, 1987; Easton and Zmijewski, 1989). However, as explained in Section 3.2 and Footnote 11, very few of our sample firms reported pro forma numbers multiple times during our three-year sample period. This highlights the difficulty of performing formal time-series analysis in our sample.

²⁷All regressions that examine the permanence of our earnings metrics (presented in Tables 4 and 6) are limited to 796 observations due to limited data for the REVISION variable on the I/B/E/S database.

explanatory power for forecast revisions than the forecast error based on pro forma earnings.

Although we find evidence that EPS figures reported by I/B/E/S are more permanent than both pro forma and GAAP earnings, we believe it is problematic to assess the relative permanence of I/B/E/S EPS values vis-à-vis pro forma and GAAP earnings figures, given that the “errors in variables” problem mentioned in Section 4.1.2 applies here as well. Panel B of Table 4 reports standardized regression results for pairs of forecast errors. Model 9 results suggest that the coefficient on $FE_{\text{PROFORMA}} (\beta_2)$ is significantly greater than the coefficient on $FE_{\text{GAAP}} (\beta_1)$. Model 10 results indicate that the coefficient on $FE_{\text{IBES}} (\beta_3)$ is significantly greater than the coefficient on $FE_{\text{PROFORMA}} (\beta_2)$. In sum, the results reported in this table corroborate the results presented in Table 3. Overall, this body of evidence suggests that market participants view pro forma earnings to be significantly more informative and a more permanent measure of future profitability than GAAP operating income.

We repeat our Table 4 analyses after partitioning our sample into two sub-samples based on which earnings metric (GAAP or pro forma) is announced first in the press release. When we replicate our Table 4 analyses on the subset of announcements where the pro forma figure is reported first, we obtain qualitatively similar results. When we repeat our Table 4 analyses on the announcements where the GAAP number is reported first, we get similar results except for Model 10 (where the pro forma and I/B/E/S forecast errors are included simultaneously in the regression). Model 10 results indicate that for the GAAP-first sub-sample, the coefficient on the pro forma forecast error is significantly positive while the coefficient on the I/B/E/S forecast error is insignificant.

4.3. Benchmarking the results with other pro forma studies

We next examine how our results compare with those of other studies that use actual pro forma press releases. Two recent working papers by Lougee and Marquardt (2002; hereafter LM) and (Johnson and Schwartz (2001); hereafter JS) analyze actual pro forma press releases. LM find weak evidence that pro forma earnings have incremental information content relative to GAAP earnings in their full sample. However, they also find stronger evidence that in certain circumstances (when GAAP earnings quality is low and when the firm avoids reporting a loss or a negative earnings surprise), pro forma income is significantly more informative than GAAP earnings. Thus, the results reported in the LM working paper are generally consistent with ours. However, the JS study does not find pro forma earnings to be incrementally more informative relative to GAAP earnings. We therefore investigate the observed differences between our results and those reported in the JS study.

One important difference between our study and the JS study is the difference in sample size. To investigate whether the difference in inferences could be at least partially attributable to sample size, we repeat our Table 3 analyses after limiting our sample to the period examined by JS. Although their full sample includes 433 pro forma announcements published in the three months between June and August 2000,

their analysis concerning the informativeness of pro forma earnings involves only 253 observations (according to the December 2001 version of the JS paper). Restricting our sample to the JS sample period results in a sub-sample of 189 pro forma earnings reports.²⁸ When we re-estimate our Models 1–5 on this sub-sample, we no longer find that pro forma income is significantly more informative than GAAP operating earnings. The adjusted- R^2 values of the models also decrease. This suggests that the reduced sample may lack statistical power to detect the effects observed in our full sample (which is more than six times larger than this sub-sample).

In order to further investigate the role of sample size in explaining the observed differences between our results and those reported in the JS study, we replicate the JS information content methodology on our full sample. In contrast to the inference reached by JS, we find evidence that investors perceive pro forma earnings to be informative.²⁹ In sum, the strong result in our full sample (that pro forma earnings figures are significantly more informative than GAAP earnings numbers) disappears when we limit our analysis to the period examined by JS. Further, when we replicate the JS information content methodology on our full sample, we find results consistent with our evidence that pro forma earnings are informative to investors. These results suggest that the observed differences between our results and those reported in the JS study are likely to be at least partially attributable to the difference in sample size. We however, recognize that our analyses do not completely reconcile our results with those reported in the JS study because (1) we do not replicate all of their tests, (2) we search for pro forma press releases using a different database, and (3) we use a different search string in identifying pro forma earnings reports. Consequently, the difference in sample size is likely to be only one of many factors contributing to the differences in inferences.

5. Factors associated with the informativeness and permanence of pro forma earnings

5.1. Factors associated with the informativeness of pro forma earnings

We now investigate factors that could influence market participants' reliance on pro forma earnings information. Schrand and Walther (2000) report evidence of opportunistic disclosures by managers attempting to paint the most favorable picture of their companies. Critics of pro forma reporting specifically argue that managers' decision to disclose pro forma figures are often motivated by incentives to

²⁸There are two likely reasons why we have fewer usable pro forma press releases in this sub-period. First, JS search *Dow Jones Interactive*, while we search *LexisNexis*. Second, we use a more restrictive search string that focuses solely on the announcements that use a variant of the term 'pro forma'.

²⁹Specifically, we replicate the analysis reported in Table 6 of the JS (2001) working paper using our full sample. In contrast to JS, we find that the pro forma incremental intercept term is significantly negative, and the pro forma loss intercept term is significantly positive. Thus, the results based on our larger sample, which examines pro forma releases over a three-year period as opposed to a single quarter, suggest that investors find pro forma earnings to be informative.

report a profit or to meet analysts' expectations (e.g., Elstein, 2001; Dow Jones, 2001b). Consequently, we investigate scenarios where strategic disclosure is likely to occur. Our evidence is consistent with the allegations of opportunistic pro forma reporting. As previously mentioned, Fig. 5 reports that the percentage of pro forma announcements reporting a profit (65.5%) is higher than the proportion reporting positive GAAP operating earnings (52.0%). Similarly, Fig. 5 indicates a vast difference between the proportion of pro forma earnings figures that meet or exceed analysts' mean forecasts (80.1%) and the percentage of GAAP operating earnings numbers that meet or beat analysts' expectations (only 38.7%). Therefore, we examine whether investors find earnings announcements that report a pro forma profit corresponding to a GAAP loss to be less informative. Similarly, we investigate whether investors find pro forma earnings announcements meeting or exceeding analysts' expectations while the corresponding GAAP operating income figure falls short of analysts' mean forecasts to be less informative. In order to do so, we define two new variables: PROFIT, an indicator variable coded one if EPS_{GAAP} is negative while $EPS_{PROFORMA}$ is greater than or equal to zero and CONSENSUS, an indicator variable coded one if FE_{GAAP} is negative while $FE_{PROFORMA}$ is greater than or equal to zero. We then regress cumulative size-adjusted abnormal returns (CAR) on $FE_{PROFORMA}$, and three interaction terms between $FE_{PROFORMA}$ and (1) MKTVALUE to control for size effects,³⁰ (2) PROFIT, and (3) CONSENSUS.

Accordingly, Table 5's Model 1 examines whether managers' implied incentives for pro forma reporting affect the extent to which investors find pro forma earnings to be informative. Consistent with Table 3 results, the coefficient on $FE_{PROFORMA}$ is significantly positive. However, the coefficient on the $PROFIT \times FE_{PROFORMA}$ interaction term is also marginally significant (at the 10% level) suggesting that investors find pro forma announcements that report a profit while the corresponding GAAP operating earnings report a loss to be incrementally more informative. The coefficient on the $CONSENSUS \times FE_{PROFORMA}$ interaction term is significantly negative ($p < 0.05$). This suggests that investors are skeptical of (or attach less weight to) pro forma announcements that meet or exceed analysts' expectations, while the corresponding GAAP earnings figure does not. These results suggest that investors are somewhat sensitive to managers' perceived motivations for reporting non-standard earnings metrics.

Next, we examine whether particular types of pro forma adjustments render pro forma earnings more informative to investors. In order to do so, we define new indicator variables for each of the eight categories of adjustments: (1) depreciation and amortization, DEPRAMORT, (2) stock-based compensation costs, STOCK-COMP, (3) merger and acquisition costs, MERGE, (4) in-process research and development costs, R&D, (5) gains or losses on asset disposals, GAINLOSS, (6) extraordinary items and discontinued operations, EXTRADISC, (7) the number of

³⁰ We control for firm size in all sensitivity analyses, since prior studies suggest that firm size is related to firms' information environments (e.g., Atiase, 1985; Shores, 1990). Firm size is also likely related to firm profitability.

Table 5

Factors affecting the informativeness of pro forma earnings (based on 1,149 pro forma press releases of 596 firms during the years 1998–2000)

Variable	Coefficient	Model 1 Parameter estimate (<i>T</i> -statistic)	Model 2 Parameter estimate (<i>T</i> -statistic)
Intercept	γ_0	0.003 (0.061)	0.003 (0.061)
FE _{PROFORMA}	γ_1	2.752 (4.86)***	1.591 (1.72)*
MKTVALUE \times FE _{PROFORMA}	γ_2	-0.037 (-1.35)	-0.027 (-0.93)
PROFIT \times FE _{PROFORMA}	γ_3	1.777 (1.69)*	0.644 (0.56)
CONSENSUS \times FE _{PROFORMA}	γ_4	-1.775 (-2.12)**	-1.203 (-1.37)
DEPRAMORT \times FE _{PROFORMA}	γ_5		0.766 (1.32)
STOCKCOMP \times FE _{PROFORMA}	γ_6		-0.874 (-1.45)
MERGE \times FE _{PROFORMA}	γ_7		-0.155 (-0.78)
R&D \times FE _{PROFORMA}	γ_8		2.047 (2.18)**
GAINLOSS \times FE _{PROFORMA}	γ_9		3.345 (2.08)**
EXTRADISC \times FE _{PROFORMA}	γ_{10}		4.446 (2.34)**
SHARES \times FE _{PROFORMA}	γ_{11}		-0.105 (-0.45)
OTHER \times FE _{PROFORMA}	γ_{12}		0.970 (1.08)
NOADJUST \times FE _{PROFORMA}	γ_{13}		0.463 (0.32)
Adjusted- <i>R</i> ²		2.80%	3.90%

*Significant at the 0.10 level (two-tailed).

**Significant at the 0.05 level (two-tailed).

***Significant at the 0.01 level (two-tailed).

CAR = Cumulative abnormal returns over the three-day window centered on the pro forma earnings announcement date relative to the firms's size-decile portfolio; FE_{PROFORMA} = Forecast error calculated as pro forma EPS minus IBES mean forecast, scaled by price on day $t-5$; MKTVALUE = Market value of common equity five days prior to the pro forma announcement; PROFIT = Indicator variable coded 1 if the GAAP (Compustat) EPS is a loss, while the pro forma EPS is a profit; 0 otherwise; CONSENSUS = Indicator variable coded 1 if the GAAP EPS figure fails to meet mean analyst' forecasts, while the pro forma EPS figure meets or exceeds mean analysts' forecasts; 0 otherwise; DEPRAMORT = Indicator variable for depreciation and amortization costs (excluding amortization of stock-based compensation); STOCKCOMP = Indicator variable for stock compensation costs; MERGE = Indicator variable for merger and acquisition costs; R&D = Indicator variable for research and development (R&D) costs and write-offs of purchased in-process R&D costs; GAINLOSS = Indicator variable for gains and losses on sales of various assets; EXTRADISC = Indicator variable for extraordinary items and discontinued operations; SHARES = Indicator variable for changes in the number of shares outstanding used in EPS; OTHER = Indicator variable for all other adjustments; NOADJUST = Indicator variable if no information is given in the press release about which adjustments are made.

shares used in the denominator of the EPS calculation, SHARES, and (8) other adjustments, OTHER.³¹ We then interact FE_{PROFORMA} with each of these new indicator variables and add these interaction terms to those used in Model 1. The results from estimating this model (Model 2 in Table 5) reveal that pro forma earnings are incrementally informative when the firm adjusts earnings for in-process research and development costs (R&D), gains and losses related to asset disposals (GAINLOSS), and “below the line” items (EXTRADISC). This suggests that investors find pro forma numbers more value relevant if the adjustments are one-time exclusions as opposed to routine expenses (namely, depreciation and amortization).³² However, we find that after controlling for adjustment type, we no longer find significant coefficients on the two manager incentive variables, PROFIT and CONSENSUS.

5.2. Factors associated with the persistence of pro forma announcements

We next explore whether similar factors affect the persistence of pro forma earnings. In order to do so, we re-estimate Models 1 and 2 described in Table 5 after replacing CAR with REVISION as the dependent variable. Consistent with our Table 4 results, Model 1 of Table 6 indicates that FE_{PROFORMA} is significantly positive. The $\text{PROFIT} \times FE_{\text{PROFORMA}}$ interaction term is significantly negative ($p < 0.01$) suggesting that analysts attach less weight to the pro forma earnings surprise in assessing the permanence of the earnings innovation when pro forma adjustments convert a GAAP operating loss to a pro forma profit. This evidence is interesting because it suggests that analysts are more skeptical than the average investor in situations where managers transform a GAAP loss into a pro forma profit (since the interaction term between PROFIT and FE_{PROFORMA} is significantly positive in Table 5’s Model 1). The $\text{CONSENSUS} \times FE_{\text{PROFORMA}}$ interaction term is, however, insignificant, consistent with the notion that analysts do not discount pro forma announcements for which the pro forma numbers meet analysts’ expectations, while the GAAP operating EPS figure falls short of the target.

Results for Model 2 of Table 6 are consistent with the results for Model 1. Moreover, the $\text{GAINLOSS} \times FE_{\text{PROFORMA}}$ interaction term is significantly positive similar to the results reported in Table 5’s Model 2. However, the interaction terms between FE_{PROFORMA} and (1) R&D and (2) EXTRADISC are not significant as they were in Table 5. Finally, the $\text{SHARES} \times FE_{\text{PROFORMA}}$ interaction term is significantly negative suggesting that analysts discount pro forma earnings figures when managers appear to manipulate the pro forma figure by simply changing the number of shares used in the denominator of the EPS calculation. Once again, analysts appear to be more skeptical than investors. Overall, the results

³¹Note that these categories are not mutually exclusive since firms typically make more than one adjustment from GAAP earnings to arrive at pro forma earnings.

³²We also repeated these analyses after including indicator variables to control for year and industry effects. The inferences are unaffected by these additional controls.

Table 6

Factors affecting the permanence of pro forma earnings (based on 796 pro forma press releases of 596 firms during the years 1998–2000)

Variable	Coefficient	Model 1 Parameter estimate (<i>T</i> -statistic)	Model 2 Parameter estimate (<i>T</i> -statistic)
Intercept	$\hat{\lambda}_{0i}$	0.001 (-5.65) ^{***}	0.001 (-5.69) ^{***}
FE _{PROFORMA}	$\hat{\lambda}_1$	0.309 (11.99) ^{***}	0.256 (6.36) ^{***}
MKTVALUE × FE _{PROFORMA}	$\hat{\lambda}_2$	-0.006 (-5.21) ^{***}	-0.005 (-3.87) ^{***}
PROFIT × FE _{PROFORMA}	$\hat{\lambda}_3$	-0.208 (-3.64) ^{***}	-0.226 (-3.31) ^{***}
CONSENSUS × FE _{PROFORMA}	$\hat{\lambda}_4$	-0.030 (-0.78)	-0.022 (-0.54)
DEPRAMORT × FE _{PROFORMA}	$\hat{\lambda}_5$		-0.015 (-0.54)
STOCKCOMP × FE _{PROFORMA}	$\hat{\lambda}_6$		0.041 (1.38)
MERGE × FE _{PROFORMA}	$\hat{\lambda}_7$		-0.043 (-0.86)
R&D × FE _{PROFORMA}	$\hat{\lambda}_8$		-0.063 (-1.34)
GAINLOSS × FE _{PROFORMA}	$\hat{\lambda}_9$		0.204 (3.08) ^{***}
EXTRADISC × FE _{PROFORMA}	$\hat{\lambda}_{10}$		0.013 (0.10)
SHARES × FE _{PROFORMA}	$\hat{\lambda}_{11}$		-0.030 (-2.30) ^{**}
OTHER × FE _{PROFORMA}	$\hat{\lambda}_{12}$		0.046 (1.08)
NOADJUST × FE _{PROFORMA}	$\hat{\lambda}_{13}$		0.107 (1.49)
Adjusted- <i>R</i> ²		18.90%	20.50%

*Significant at the 0.10 level (two-tailed).

**Significant at the 0.05 level (two-tailed).

***Significant at the 0.01 level (two-tailed).

REVISION = The revision in the mean one-quarter-ahead analyst forecast using a 60-day window around the current pro forma earnings announcement date, scaled by stock price five days prior to the announcement; FE_{PROFORMA} = Forecast error calculated as pro forma EPS minus IBES mean forecast, scaled by price on day $t-5$; MKTVALUE = Market value of common equity five days prior to the pro forma announcement; PROFIT = Indicator variable coded 1 if the GAAP (Compustat) EPS is a loss, while the pro forma EPS is a profit; 0 otherwise; CONSENSUS = Indicator variable coded 1 if the GAAP EPS figure fails to meet mean analysts' forecasts, while the pro forma EPS figure meets or exceeds mean analysts' forecasts; 0 otherwise; DEPRAMORT = Indicator variable for depreciation and amortization costs (excluding amortization of stock-based compensation); STOCKCOMP = Indicator variable for stock compensation costs; MERGE = Indicator variable for merger and acquisition costs; R&D = Indicator variable for research and development (R&D) costs and write-offs of purchased in-process R&D costs; GAINLOSS = Indicator variable for gains and losses on sales of various assets; EXTRADISC = Indicator variable for extraordinary items and discontinued operations; SHARES = Indicator variable for changes in the number of shares outstanding used in EPS; OTHER = Indicator variable for all other adjustments; NOADJUST = Indicator variable if no information is given in the press release about which adjustments are made.

reveal some differences in the way investors and analysts interpret pro forma information.³³

6. Conclusion

This study examines the informativeness and permanence of pro forma earnings relative to GAAP and I/B/E/S operating income measures. Although most prior studies have used I/B/E/S, First Call, or Zacks EPS figures as proxies for pro forma earnings, we employ a large sample of hand-collected pro forma earnings numbers gathered from actual press releases (1,149 pro forma announcements over a three-year period). We also provide descriptive evidence regarding the characteristics of firms that announce pro forma numbers and the common types of pro forma adjustments and exclusions firms make to arrive at their pro forma numbers. We find that pro forma announcers are mostly concentrated in the service and high-tech industries. Finally, we find highly significant differences between each of our earnings metrics: GAAP operating EPS, I/B/E/S actual EPS figures, and actual pro forma EPS numbers.

Our investigation of short-window abnormal returns around earnings announcement dates reveals that pro forma earnings are significantly more informative than GAAP operating earnings. In addition, we find evidence based on one-quarter-ahead revisions in analysts' earnings forecasts that pro forma earnings appear to be a more permanent summary measure than GAAP operating earnings. Collectively, our results suggest that market participants perceive pro forma earnings to be closer to "core earnings" than GAAP operating earnings. This is consistent with the view held by supporters of pro forma reporting that pro forma numbers are cleaner and more permanent measures of firm profitability than GAAP earnings.

³³ We also modify the PROFIT and CONSENSUS variables to see if the results are strengthened when the observations are partitioned based on whether recurring expenses or one-time expenses are excluded in changing a GAAP loss to a pro forma profit or changing from a position of missing analysts' expectation to meeting or beating the target. The only category that can be unambiguously classified as a recurring expense is the depreciation and amortization category (DEPRAMORT). Consequently, we modify the PROFIT variable to be coded 1 if the firm reports a GAAP loss and a pro forma profit *and* at least one of the adjustments used to calculate the pro forma number is DEPRAMORT and 0 otherwise. Likewise, we modify the CONSENSUS variable to be coded 1, if a firm reports a GAAP operating EPS figure below the mean analysts' forecast and a pro forma number at or above the mean forecast, and at least one of its adjustments is DEPRAMORT and 0 otherwise. The notable changes between the results based on the modified (and more restrictive) definitions of PROFIT and CONSENSUS, and the results reported in Tables 5 and 6 are as follows. Investors appear to place more weight on pro forma earnings surprises when GAAP losses are converted into pro forma profits by adding back depreciation and amortization costs (i.e., the PROFIT \times FE_{PROFORMA} interaction term is positive and highly significant as opposed to being marginally significant in Model 1 of Table 5). Similarly, investors do not seem to be skeptical about increases in earnings to reach the target analysts' expectations by adding back depreciation and amortization costs (i.e., the interaction term between CONSENSUS and FE_{PROFORMA} is no longer negatively significant). In sum, it appears that investors are generally less skeptical about pro forma announcements that achieve their targets (reporting profit or meeting analysts' expectation) by adding back non-cash expenses such as depreciation and amortization.

Our descriptive evidence further reveals that about 80% of firms announcing pro forma earnings meet or exceed analysts' forecasts, while only about 39% of these same firms meet or beat analysts' forecasts based on GAAP operating income numbers. In addition, about 66% of pro forma announcements report a profit while only 52% of GAAP operating earnings figures result in a profit. This prompts us to investigate whether market participants find pro forma releases less reliable when GAAP losses have been converted to pro forma profits or GAAP earnings below analysts' expectations have been transformed to pro forma numbers that meet or exceed expectations. We find evidence that investors do not discount pro forma numbers that report a profit while the corresponding GAAP earnings are losses. However, the results indicate that investors attach less weight to announcements that meet analysts' expectations while the corresponding GAAP earnings fall short. Analysts, on the other hand, appear to be skeptical about pro forma announcements that transform a GAAP loss to a pro forma profit and also about announcements that only manipulate the number of shares used in the EPS calculation.

Our results are based on forecast errors calculated using the mean analysts' forecast as an earnings expectation. Therefore, the results should be interpreted with caution because I/B/E/S actual EPS figures generally exclude the same items that analysts exclude from their forecasts. As a result, the I/B/E/S forecast error (by construction) is the least noisy measure of earnings surprise, and both pro forma and GAAP forecast errors are measured with noise. This creates a bias towards finding I/B/E/S EPS numbers to be more informative than either GAAP operating EPS or pro forma EPS figures. In order to assess how this bias affects our results, we repeat our information content analyses using a seasonal random-walk earnings expectation (instead of analysts' mean forecasts). This approach likely creates a bias in favor of finding significance for the GAAP EPS figure. However, we still find that pro forma EPS figures are significantly more informative than GAAP operating EPS numbers, suggesting that our inferences are not attributable to the bias created by using I/B/E/S forecasts to compute an earnings expectation.

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