

Analyst estimation revision clusters and corporate events, Part I[★]

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Summary. This paper uses periods of unusually heavy earnings estimate revision activity by analysts to assess the relative usefulness of corporate information events (CIEs) in firm valuation. Because accounting information is more readily available, newsworthy and accessible, we hypothesize that CIEs that focus on financial statement information trigger greater analyst revision activity over a shorter period of time than CIEs that offer strategic or “soft” information. Our results are consistent with this hypothesis. In Part II, we examine investor response to revision clusters that accompany different CIEs.

Keywords and Phrases: Strategic information, Market efficiency, Analyst forecasts, Analyst, Forecast, Earnings forecast, Earnings announcements, Valuation, Home bias, Visibility.

JEL Classification Numbers: G12, G14, G29, M41.

1 Introduction

Corporations disclose a wide variety of information. Some corporate information events (CIEs), such as earnings and stand-alone guidance announcements, predominantly provide accounting information while other events predominantly provide information that the firm hopes will be reflected in future profitability. In Parts I and II of this paper, we provide an initial evaluation of the *relative* usefulness of these

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alternative disclosures to analysts and other market participants as they attempt to value the firm.

Our analysis focuses on CIEs collected by data providers whose major clients are institutional investors. We divide these CIEs into three categories: (1) earnings events, which include all information provided in the earnings announcement press release, conference call or press interviews, including management's estimates of future performance and discussion of trends; (2) stand-alone guidance events, which include management's estimates of future financial performance (usually earnings or sales) provided in the guidance press release, conference call or company presentation; and (3) other events whose main focus is on providing information that is strategic in nature, such as corporate presentations, M&A, joint venture and other strategic alliance announcements, and broker conferences. We then associate these events with periods of unusually heavy earnings estimate revision activity by financial analysts (which we refer to as revision clusters). We do so because earnings estimates are a central element in most valuation models; thus, an examination of the relation between CIEs and revision clusters is likely to provide insight into how information in various events is impounded into measures of firm value.¹

Our hypotheses arise from the key difference in information provided by the three categories of events noted above: earnings and stand-alone guidance CIEs focus on accounting information which is readily adapted for use in valuation models whereas strategic CIEs focus on information about management decisions or actions whose financial performance implications must be inferred or estimated. This difference suggests that revision clusters are more likely to accompany accounting CIEs and that they will be shorter in duration than revision clusters accompanying strategic CIEs. We also expect a stronger response by investors to clusters triggered by earnings and stand-alone guidance CIEs than to clusters triggered by strategic CIEs.

To test these hypotheses, we examine a sample of approximately 82,000 revision clusters formed from First Call analysts' earnings estimate revisions made between December 1997 and February 2003.² We match these clusters to corporate events collected by First Call (a division of Thomson Financial) in their Historical, Company Issued Guidance, and Events databases; CCBN in their Street Events database; and Multex (now a part of Reuters Financial Products and Services) in their Significant Developments file.

The results are generally consistent with our hypotheses. Significantly more clusters are associated with earnings and stand-alone guidance CIEs than strategic CIEs. In fact, 95.2% of strategic CIEs do not trigger clusters, in spite of the fact that (1) all of our sample firms enjoy above-the-median analyst coverage and (2) our database providers deem these events significant enough to collect for their clients. Second, clusters associated with strategic CIEs, when they do occur, are

¹ Commonly used valuation models include the residual income (EBO or Feltham-Ohlson) model, the discounted cash flow (DCF) model and a market-multiples approach (P/E or P/S). For details on applying EBO and DCF valuation models, see standard financial statement analysis textbooks such as Palepu et al. [29] and Penman [30].

² As discussed in detail later, we identify a cluster as beginning when we observe three or more analysts changing estimates (of any horizon) for a particular company's earnings. We mark its end as the date of the last revision when more than three trading days have passed between successive revisions.

significantly longer (in terms of days) than clusters associated with earnings and stand-alone guidance CIEs. This strongly suggests that, first, the information provided in strategic CIEs is generally more difficult to incorporate into estimates of future earnings and firm value, and, second, analysts may be learning from one another when trying to assess the (future) earnings impact of the event. Further, as we demonstrate in Part II of this paper, the initial and total stock price responses to CIEs that provide accounting information are significantly stronger than the responses to CIEs that provide strategic information. Thus, like analysts, investors also appear to find it more difficult to incorporate the information provided in strategic CIEs into firm valuation, even when the event triggers a revision cluster.

This paper makes several contributions to the literature that examines how market participants respond to information disclosures. First, although prior accounting and finance research has examined various aspects of market responses to corporate disclosures, it has not yet assessed the relative valuation impact of the different types of CIEs.³ Thus, we extend the existing research by providing evidence on which categories of CIEs are more likely to provide value-relevant information, as reflected in estimate revisions by financial analysts, and on the market's differential responses to the revision clusters that accompany different CIEs. Second, by focusing on the relationship between revision clusters and CIEs as well as the duration of the clusters, our study contributes to the literature on the timing of analyst revisions (e.g., Ivkovic and Jegadeesh [21], Zhang [35] and Stickel [34]). In particular, an implication of our study is that strategic CIEs are likely to result in less timely forecast revisions than are accounting-focused CIEs.

Third, although it is not the main focus of our paper, our temporal analysis contributes to the recent debate in the accounting literature on whether earnings announcements have lost their relevance in recent years (e.g., Francis et al. [17], Landsman and Maydew [26], Lev and Zarowin [27], Kross and Kim [25], Francis and Schipper [16], and Collins et al. [11]). While the evidence in prior research is mixed, our paper suggests that earnings events have become more useful to analysts and investors over the course of our sample period, in the sense that there is a monotonic increase in the percent of earnings CIEs that trigger revision clusters. We also document a general increase in the percent of stand-alone guidance events that trigger clusters through the 1990s, but the percent peaks in early 2001 immediately after the implementation of Regulation Fair Disclosure (Reg FD) and then drops dramatically, falling by half over the next three quarters. This change may reflect the growing trend of companies including guidance as a part of earnings announcements in the early 2000s, but also suggests that stand-alone management guidance events are now less likely to result in significant earnings estimate revisions.

³ Empirical work on corporate information events is too voluminous to cite completely. However, Kothari [24] and Healy and Palepu [18] provide surveys of the literature related to earnings announcements. More recent work on the response to earnings announcements includes Chen et al. [7] and Ramnath [31]. Baginski et al. [1], Clement et al. [10], Hutton et al. [20], and Soffer et al. [33], among others, examine the usefulness of management's earnings estimates (guidance). Recent papers on what we have classified as strategic corporate events include Francis et al. [14] who examine the value of company presentations; Chen et al. [9] and the references therein on dividend announcements; Rosen [32] on the impact of merger announcements; and Chen et al. [8] on new product announcements.

The rest of part I of this paper is organized as follows. In Section 2, we develop our hypotheses. Section 3 describes our data and sample formation procedures and, in Section 4, we present our empirical analysis of cluster occurrence and duration. In Section 5, we offer concluding remarks. Part II, which is in the following issue of this journal, contains our empirical analysis of investors' responses to CIEs and clusters.

2 Hypothesis development

As noted in the introduction, some CIEs provide predominantly accounting information whereas others provide predominantly strategic or "soft" information. Our objective is to use analyst earnings revision clusters, an observable proxy for changes in the market's expectation of future earnings, to identify significant CIEs and to provide an initial evaluation of the relative usefulness of these alternative disclosures.⁴

We begin by separating all CIEs into three categories: earnings announcements, stand-alone guidance announcements and strategic announcements. We define earnings announcements to include all disclosures the firm makes around the release of annual and quarterly earnings, including all information provided in the firm's press release, conference call (if held) and interviews (if done). As a result, earnings announcements provide financial statement information prepared in accordance with generally accepted accounting principles including income statement line items, balance sheet and cash flow information (Chen et al. [7] and Francis et al. [17]), as well as guidance management provides about its expectations of future financial performance and information about trends management chooses to provide. Information of this type is particularly useful and readily adapted for valuation purposes, because regardless of the valuation approach used (a multiples approach or a DCF or EBO model), all rely on current financial performance in the form of accounting information to guide expectations of future financial performance. We define stand-alone guidance announcements as forward-looking corporate information events that occur at distinctly different times than earnings announcements and provide information about future financial performance, usually in the form of management's estimates of earnings or revenues for the current or coming period.⁵ Finally, we aggregate all of the other announcements collected by our data providers (e.g., corporate presentations, IPO filings, M&A, and other joint venture or strategic alliance announcements, dividend announcements and broker conferences) into a third category which we refer to as strategic CIEs. These announcements generally convey qualitative, forward-looking information and tend to focus on the firm's strategic opportunities rather than information generated directly by the firm's accounting system. This strategic or "soft" information can be extremely use-

⁴ Even though analysts also offer buy and sell recommendations, we do not examine changes in them because they provide a relatively coarse categorization (into strong buy, buy, hold, sell, strong sell) and thus are less likely to be as sensitive to CIEs as earnings estimate revisions.

⁵ The estimates provided in these announcements may differ in their precisions. That is, guidance may be offered in the form of a point estimate (e.g., earnings will be \$0.20 per share); an interval estimate (e.g., earnings will be between \$0.15 and \$0.25 per share); or a qualitative estimate (e.g., earnings will be positive; earnings will be higher than last year).

ful for valuation but is more difficult to adapt and assimilate into valuation models because its effects on future earnings must be estimated in order to incorporate it.

There are key similarities and differences among the CIEs in the three categories that play an important role in our hypothesis development. First, earnings and stand-alone guidance announcements provide predominantly accounting information which is readily adapted for use in valuation models. In contrast, announcements that form our strategic CIE sample generally do not provide accounting information and thus analysts and investors must infer/estimate, rather than learn, its impact on the firm's financial statements as they attempt to derive the valuation consequences of these CIEs. These differences suggest that analysts should respond more often and more quickly to earnings and stand-alone guidance events. Second, analysts and investors are generally more aware of when earnings announcements will be made (Bagnoli et al. [2]), slightly less aware of when stand-alone guidance announcements will be made and least aware of when other corporate announcements will be made.⁶ Again, this suggests that analysts should respond more frequently and more quickly to CIEs that predominantly provide accounting information.⁷ Finally, all three types of CIEs are similar in that management has significant discretion about what is disclosed during the event and thus all events are similarly potentially influenced by managerial incentives.⁸ Because this feature is common to the three types of CIEs, we do not expect it to produce differences in analysts' responses to them. This reasoning leads us to the following two hypotheses (in alternative form):

H1: Larger percentages of earnings and stand-alone guidance CIEs are associated with analyst earnings estimate revision clusters as compared to CIEs that provide strategic information.

H2: Revision clusters associated with earnings and stand-alone guidance CIEs are shorter, on average, than those associated with CIEs that provide strategic information.

⁶ Earnings calendars are widely available on financial Web sites. See, for example, Thomson Financial's earnings calendar at <http://money.cnn.com/news/companies/firstcall/>. Guidance is often provided during what is colloquially referred to as "confession season" on Wall Street or during regularly scheduled mid-quarter updates.

⁷ This argument is similar to the "visibility" argument proposed as an explanation for the home-bias paradox (see the survey by Karolyi and Stulz [23]). In that argument, the home bias (excessive investment in domestic assets) is explained by differences in the availability and accessibility of information. Using similar reasoning, Bradshaw et al. [4] hypothesize and find that non-U.S. firms whose accounting methods more closely conform to U.S. GAAP attract more U.S. institutional investors, consistent with their perceiving the accounting information of such firms as being more familiar, of higher quality and easier to process. In our context, the ready availability, newsworthiness and accessibility of accounting information, compared to strategic information, is a possible explanation for why analysts respond to it more strongly and quickly.

⁸ Management is not required to routinely disclose its expectations about forthcoming earnings and is not required to offer it in a particular form. While management may be required to disclose some of the information contained in our strategic CIEs, disclosures of most strategic information is discretionary. Further, management has historically had significant discretion concerning what information was provided during an earnings announcement. In fact, this discretion was partially responsible for a requirement in the Sarbanes-Oxley Act of 2002 (Regulation G) that the company provide earnings as computed according to generally accepted accounting principles (GAAP) and, if they disclose a non-GAAP measure of earnings, they must provide a reconciliation to GAAP earnings.

3 Data and sample selection

The earnings estimate revisions and event information that we use in this study come from several sources: the First Call historical database of analysts' earnings estimates, the First Call Company-Issued Guidance (CIG) database, the First Call Events database, the CCBN Street Events database, and the Multex Significant Developments file (now a Reuters product). The beta-adjusted abnormal stock return data that we use in Part II is from CRSP. We form our sample by first considering all earnings estimate revisions, from the First Call historical database, made between December 1997 and February 2003.⁹ If we observe revisions from at least three different analysts within three trading days for a particular firm, we mark the beginning of a revision cluster on the date of the first of these revisions. This definition of a revision cluster restricts our sample to instances of *significant* revision activity, and thus, we do not examine revision clusters generated by the activity of only one or two analysts. It also means that only firms followed by three or more analysts enter our sample; thus, our sample firms tend to be large and widely-followed. Once a cluster begins, we mark it as having ended when more than three trading days pass between sequential revisions. The ending date of the cluster is the date of the last revision within that cluster.

After identifying clusters, we determine whether their start dates are associated with the dates of earnings announcements, stand-alone guidance (management forecasts of forthcoming earnings, often referred to as preannouncements), or other significant corporate events reported by our database providers. We classify a cluster as being attached to a particular CIE if the cluster begins within two days of (before or after) the event. We match clusters and CIEs from the databases in the following manner. We first match the beginning dates of all of the clusters ($N = 81,988$) with the set of dates that are within ± 2 trading days of the actual earnings announcement dates from the First Call historical database.¹⁰ This match results in 45,001 clusters associated with earnings announcements. This ensures that we identify the cluster with an earnings CIE even when the firm offers additional information such as other financial statement numbers or management's estimates of future performance as part of the earnings announcement.¹¹ We then match the remaining cluster dates ($N = 36,987$) with the dates of guidance from the First Call Company-Issued Guidance (CIG) database, resulting in 8,346 more matched clusters. This approach ensures that only stand-alone guidance CIEs are associated with clusters.

⁹ Analysts may respond to information by changing estimates for different earnings horizons; revision activity could involve changing this quarter's estimate, the current year annual estimate, the two-quarters-ahead estimate, next year's annual estimate, etc. Thus, we consider all revisions when determining the existence of a cluster, and revisions within a cluster are not necessarily associated with a particular earnings horizon. The advantage of not restricting earnings estimate revisions to a fixed horizon is that we can capture all of the information effects of a corporate information event. The disadvantage is that we can only identify whether the news is good or bad by examining stock price reactions.

¹⁰ Approximately 17% of the earnings events that trigger an earnings cluster contain company-issued guidance. The percent of such events is smallest at the beginning of our sample period (5.1%) and increases monotonically to 34.1% in the final quarter of our sample period.

¹¹ Feldman et al. [13] study market reactions to guidance issued after the enactment of Reg FD and find that guidance provided with earnings is not associated with significant price movements whereas guidance issued at other times (what we are calling stand-alone guidance) is.

Finally, we match the remaining cluster dates ($N=28,641$) with the dates of all other CIEs in the CCBN, Multex and First Call Events databases, resulting in 7,144 more matched clusters. Of these, 1,647 are associated with earnings conference calls and earnings releases whose dates are not in the First Call historical database. Because these clusters are related to earnings CIEs, we separate them from the other CIE clusters and add them to the First Call earnings-matched clusters for the analysis in the following sections. We also find that 446 of the other CIE clusters are attached to stand-alone guidance announcements whose dates are not in the CIG database. Because these clusters are related to stand-alone guidance CIEs, we separate them from the other CIE clusters and add them to the stand-alone guidance CIE clusters for the analysis in the following sections.

After completing the database matches, 21,497 clusters remain unmatched to any event recorded by our data providers. We classify these as unmatched clusters, but it is possible that they were triggered by public information releases that are not in the commercial databases we use. To see whether this might be the case, we randomly selected 100 unmatched clusters and searched the Factiva database for articles that were broadcast within two days of the start of each cluster and contain the associated company's name and/or ticker symbol. In only 6 of those cases, we found no articles. In the other cases, articles indicate a variety of potential cluster-triggering CIEs, such as the company being placed on S&P credit watch, announcing sales agreements or the intent to sell excess capacity. In a few cases, the company is mentioned in an article that focuses on some aspect of a competitor's business. Thus, the unmatched clusters in our sample may well have been triggered by a relatively unique information event that is not contained in the commercial databases, other than Factiva, that we use. Also, as we discuss later, some of these clusters could have been triggered by an unprecedented macro event with implications for corporate earnings and valuation: the attacks of September 11, 2001, or the major accounting scandals of late 2001 that led to the passage of the Sarbanes-Oxley Act of 2002.¹² Finally, we cannot exclude the possibility that at least some of the unmatched clusters were triggered by private information and are continued by other analysts who react to the first estimate change in the cluster.¹³

We also identify the earnings, guidance and other events in the First Call, CCBN and Multex databases for firms covered by at least three First Call analysts (so that

¹² The Sarbanes-Oxley Act, which became public law on July 30, 2002, is part of an effort to address deficiencies in auditing and corporate financial disclosures that were uncovered as a result of the Enron scandal in 2001. The law created an oversight board for accounting firms that audit publicly traded companies and addressed auditor independence, corporate disclosure and financial analyst conflict of interest issues. It also created whistleblower protection and new criminal penalties relating to fraud, conspiracy, and interfering with investigations.

¹³ See Cooper et al. [12] for an analysis of lead and follower analysts, as well as Jha et al. [22] and Mozes and Williams [28]. The idea that subsequent analysts' estimates may be influenced by preceding estimates is related to both herding and information cascades. The former refers to behavioral convergence (divergence in the case of anti-herding) and the latter to the use of market rather than private information in decision making (see the review and taxonomy by Hirshleifer and Teoh [19]). If subsequent revisions are (at least partly) motivated by prior revisions, clusters would be an example of behavioral convergence. In contrast, because our clusters contain revisions for a variety of horizons (e.g., one quarter ahead, two quarters ahead, one year ahead, etc.), they are unlikely to be associated with information cascades.

a revision cluster as we define it is possible) that are not accompanied by revision clusters: 25,658 earnings CIEs (35% of all earnings events); 7,910 stand-alone guidance announcement CIEs (47% of all stand-alone guidance events); and 100,263 strategic CIEs (95% of all other events).¹⁴

We examine clusters by what we refer to as “announcement quarter and year.” We define these periods in a manner that helps to ensure that both guidance and the subsequent earnings report are in the same announcement quarter and year. For example, earnings are announced predominantly in January and, to a lesser extent, February (especially for retailers), and the stand-alone guidance for these earnings reports is usually released during the previous month (December and January, respectively in this example). Thus, we define the first announcement quarter in a given year as December, January and February. The second, third, and fourth announcement quarters are March through May, June through August, and September through November, respectively.

4 Empirical analysis of analysts’ responses to CIEs

The distribution of revision clusters

We begin by examining the distribution of clusters, attached to CIEs and not, over our sample period to see whether the general level of significant revision activity varies over time. Figures 1 and 2 contain frequency counts of all clusters on an annual and quarterly basis respectively. These figures show that the occurrence of revision clusters is not stable over time. Specifically, the total number of clusters declines year-by-year during the bull market of the late 1990s, with the sharpest drop between 1999 and 2000 (see Figure 1). However, in 2001, the trend abruptly reverses: the number of clusters increases sharply from 14,710 in 2000 to 17,009 in 2001 (a 15.6% increase). Although the number of clusters drops to 16,195 (a 4.8% decrease) in 2002, it remains well above the pre-2001 levels.¹⁵ These trends suggest that the frequency of clusters (and thus the level of significant analyst estimate revision activity) may be related to market conditions. In particular, it suggests that analysts may revise earnings estimates less (more) often in response to information events during bull (bear) market conditions. The quarterly analysis in Figure 2 provides other interesting insights into analysts’ responses to CIEs. Perhaps the

¹⁴ These events are screened to ensure that guidance events are stand-alone corporate events in which the firm provides guidance. Guidance provided during an earnings announcement is taken to be part of the collection of information provided during the earnings announcement. Similarly, other corporate events are also stand-alone events. If other information is provided during an earnings or stand-alone guidance CIE, the event is classified as an earnings or stand-alone guidance CIE.

¹⁵ The average number of clusters per firm with clusters follows a similar pattern, declining from 4.2 in 1998 to 4.0 in 2000 (not tabulated or shown graphically), and then increasing to 4.9 in 2001. The average increases slightly to 5.1 clusters per firm in 2002, indicating that while the total number of clusters remains elevated in 2002 relative to pre-2001 levels, they are concentrated in a smaller number of firms in 2002. This trend is also evident through changes in the fraction of firms with “low” versus “high” cluster activity over time (also not tabulated or shown graphically). The fraction of firms with four or fewer clusters per year declines from 69% in 1998 to 52% in 2002 while the fraction of firms with five to eight clusters per year increases from 20% in 1998 to 36% in 2002.

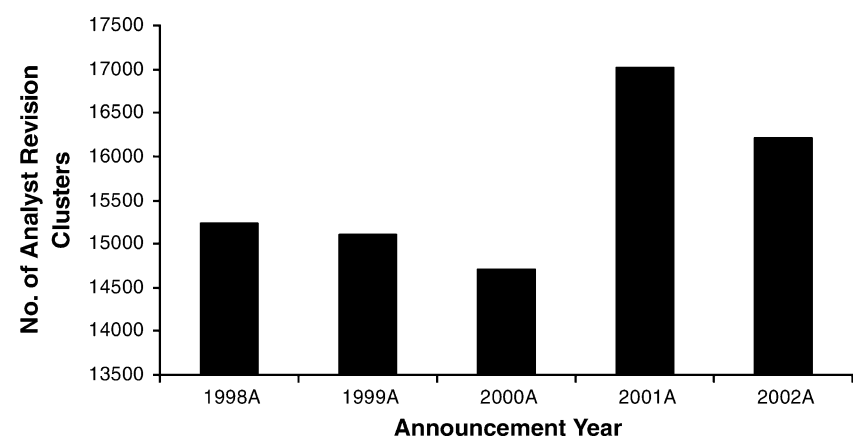


Figure 1. Distribution of analyst revision clusters by announcement year

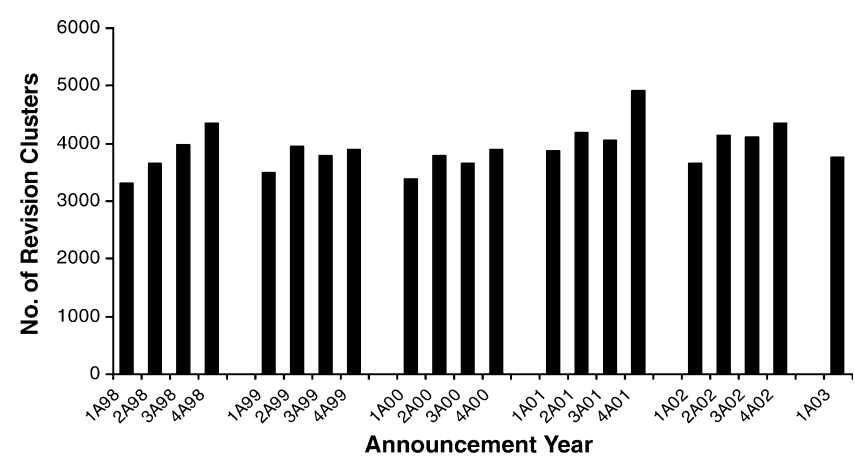


Figure 2. Distribution of analyst revision clusters by announcement quarter

most interesting is the spike in analyst revision activity in the fourth announcement quarter of 2001 (referred to as 4A01 in Figure 2), which contains 9/11 and the first of the accounting scandals that led to the passage of the Sarbanes-Oxley Act in 2002. The sharp increase indicates that analysts were unusually active in terms of revising their earnings estimates during this short period of unprecedented, negative shocks.¹⁶

To more closely examine the relation between the frequency of clusters and various corporate information events, which is the focus of our paper, we turn to the analysis in Figures 3–7 and Table 1. Figure 3 contains *annual* frequency counts of clusters associated with earnings, stand-alone guidance and strategic CIEs as well

¹⁶ Another interesting feature of Figure 2 is the lack of an (overall) significant increase in the number of revision clusters during the quarter containing and immediately following the implementation of Reg FD (quarters 4A00 and 1A01). We discuss this in more detail when we analyze revision clusters associated with specific CIEs.

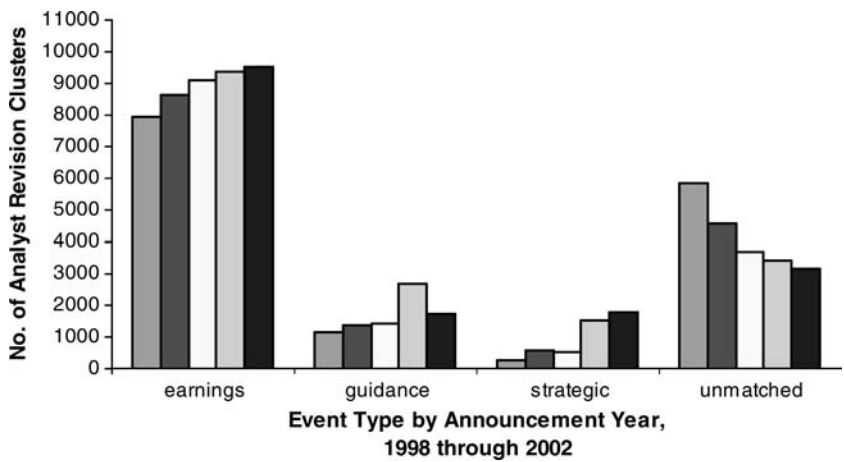


Figure 3. Distribution of analyst revision clusters by event type and announcement year

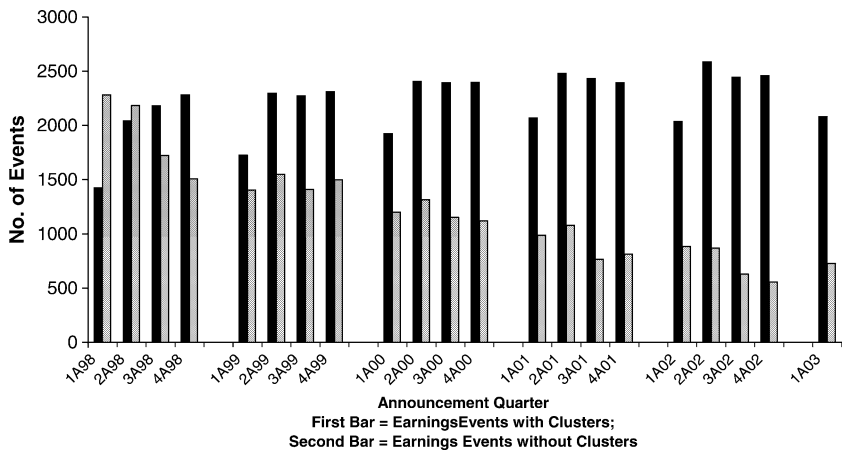


Figure 4. Distribution of earnings announcements with and without analyst revision clusters by announcement quarter

as unmatched clusters. Figures 4–7 contain *quarterly* frequency counts. The dark bars in Figures 4–7 are frequency counts of CIEs associated with clusters (earnings events in Figure 4, stand-alone guidance events in Figure 5, and other corporate events in Figure 6) and unmatched clusters (in Figure 7). The light bars in Figures 4, 5 and 6 are frequency counts of the number of earnings, stand-alone guidance and other corporate CIEs for firms followed by three or more analysts that did not trigger significant revision activity and thus are not associated with clusters. Table 1 contains similar quarterly information in tabular form. In Panel A, we focus on earnings CIEs and present (1) the total number of earnings CIEs in our databases for firms with coverage by three or more analysts; (2) the total number of those events accompanied by a cluster; and (3) the percent of those events accompanied by clusters. Panels B and C contain similar information for stand-alone guidance and strategic CIEs, respectively.

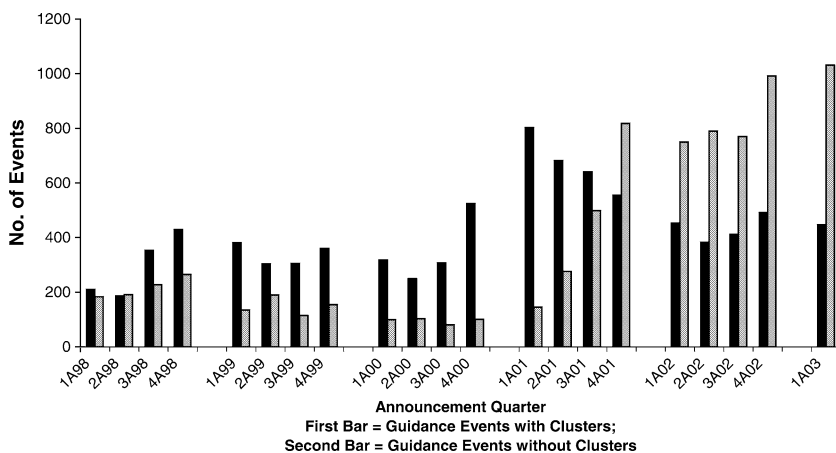


Figure 5. Distribution of standard-alone guidance with and without analyst revision clusters by announcement quarter

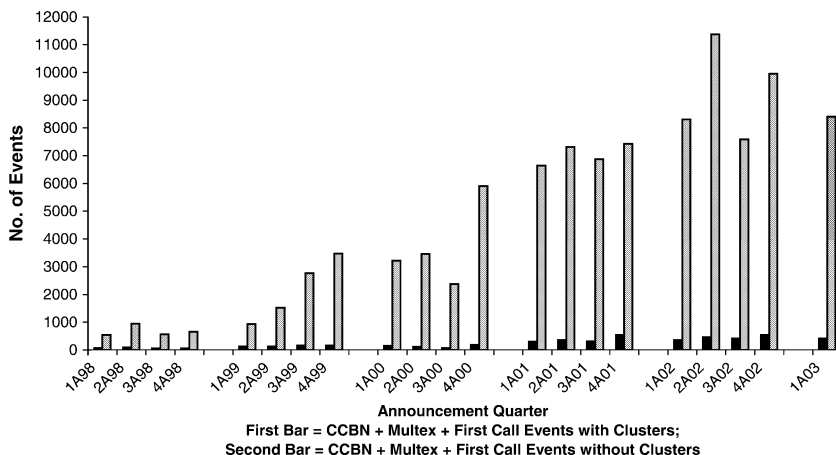


Figure 6. Distribution of strategic corporate events with and without analyst revision clusters by announcement quarter

Consistent with H1, we find that clusters are most often associated with earnings CIEs. Specifically, 57% of all clusters are associated with earnings announcements; 11% are associated with stand-alone guidance CIEs; 6% are associated with strategic CIEs; and 26% are unmatched.¹⁷ However, Figure 3 indicates that the relative

¹⁷ When we compare characteristics of firms with different types of clusters on a year-by-year basis, we find that firms with strategic and unmatched clusters are generally significantly larger, on average, in terms of sales, assets, long-term debt, daily volume and market capitalization, than firms with earnings clusters. The characteristics of firms with stand-alone guidance clusters tend to be statistically indistinguishable from those of firms with earnings clusters with one exception—annual sales, which are significantly higher for stand-alone guidance cluster firms each year. Generally, industry affiliation is not associated with particular types of clusters. However, firms in the 1300, 4800 and 4900 SIC categories (oil and gas, telecommunications, cable, electric and natural gas businesses) tend to have relatively

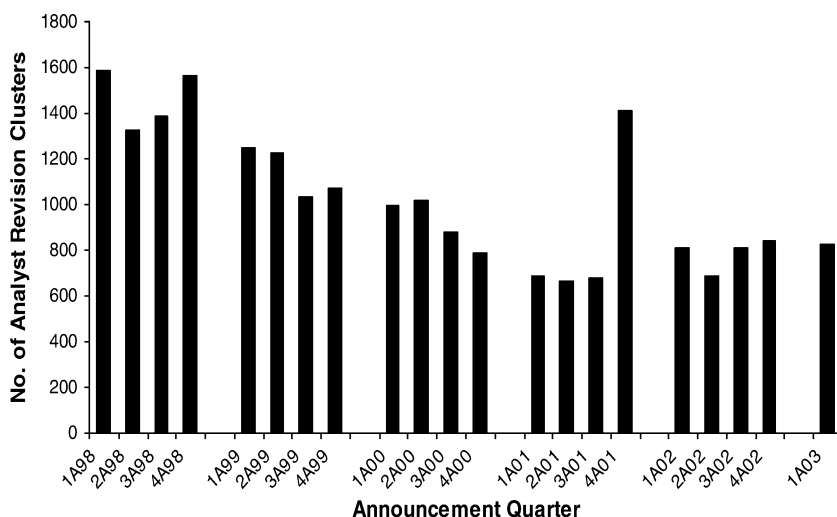


Figure 7. Distribution of unmatched analyst revision clusters by announcement quarter

proportions of unmatched clusters and those associated with earnings, stand-alone guidance, and strategic CIEs change over the years in our sample period (Chi-square tests indicate that the change is significant at the 0.01 level for each year). This evidence suggests that the relative informativeness of CIEs to analysts is also not constant over time.

To examine this more closely, we continue to focus on Figure 3 but also analyze the quarterly information in Figures 4 through 7 and Table 1. Several trends are evident from the figures and Table 1. First, in the case of earnings, Figure 3 shows that the number of earnings CIEs associated with revision clusters rises each year. Converting the raw frequency counts in Figure 3 to percentages (not tabulated) shows this trend even more clearly. In 1998, 50.57% of earnings CIEs are accompanied by clusters; by 2002, the percent increases to 76.43%.¹⁸ This increase is not driven by an increase in the number of publicly-traded firms in the late 1990s; the average number of earnings clusters per firm with earnings clusters also increases each year, going from 2.4 clusters per firm in 1998, to 2.6 in 1999, to 2.7 in 2000, to 2.9 in 2001, and finally to 3.1 in 2002.

Second, Figure 5 and Panel B of Table 1 indicate that the percent of stand-alone guidance CIEs associated with clusters also increases during the late 1990s (67.47% of guidance events are associated with clusters in 1998, increasing to 69.48% in

more strategic and unmatched clusters than earnings and stand-alone guidance clusters; and firms in the 7300 SIC category (service businesses) have relatively few unmatched clusters. These results are not tabulated but are available from the authors upon request.

¹⁸ When first, second, third or fourth quarters are considered separately, the year-over-year increase in earnings clusters is still apparent. Perhaps not surprisingly, fourth quarter earnings CIEs are most often associated with clusters—by 2002, 81.56% of these events are associated with clusters, up from 60.24% in 1998. First quarter earnings CIEs are the least likely of the quarterly earnings events to be associated with clusters: by 2003, 69.74% of such events are accompanied by clusters, up from 38.42% in 1998.

Table 1. Distribution of events and analyst revision clusters

Panel A: Earnings events and associated clusters			
Announcement quarter and year	Number of events for firms covered by 3+ analysts	Number of events associated with clusters	% of events accompanied by clusters
1A98	3704	1423	38.42%
2A98	4227	2043	48.33%
3A98	3904	2180	55.84%
4A98	3790	2283	60.24%
1A99	3131	1726	55.13%
2A99	3847	2297	59.71%
3A99	3683	2273	61.72%
4A99	3813	2313	60.66%
1A00	3127	1926	61.59%
2A00	3722	2408	64.70%
3A00	3545	2394	67.53%
4A00	3518	2397	68.14%
1A01	3055	2068	67.69%
2A01	3558	2480	69.70%
3A01	3196	2431	76.06%
4A01	3209	2395	74.63%
1A02	2921	2037	69.74%
2A02	3458	2588	74.84%
3A02	3075	2446	79.54%
4A02	3016	2460	81.56%
1A03	2807	2080	74.10%
Total	72306	46648	64.51%

1999). However, in contrast to what we observe for earnings CIEs, the percent of stand-alone guidance CIEs associated with clusters does not increase over our entire sample period but instead peaks at 84.69% in the first announcement quarter of 2001 immediately after the implementation of Reg FD and the sudden economic downturn. It then drops off sharply, falling to 71.19% in the second announcement quarter of 2001, and then to 56.28% and 40.42% in the next two announcement quarters respectively. The percent remains below 40% throughout the remainder of our sample period (the average is 33.71%). The average number of stand-alone guidance clusters per firm with stand-alone guidance clusters exhibits the same pattern: it grows year over year from 1998 through 2001 (going from 1.58 clusters per firm in 1998, to 1.75 in 1999, to 1.91 in 2000, to 2.07 in 2001), and then declines (dropping to 1.61 clusters per firm in 2002).

These results suggest that stand-alone guidance CIEs are significantly less likely than earnings CIEs to be associated with heavy analyst revision activity after 2001. (Formally, Chi-square tests indicate that proportions of clusters that attach to

Table 1 (continued)

Panel B: Stand-alone guidance events and associated clusters			
Announcement quarter and year	Number of events for firms covered by 3+ analysts	Number of events associated with clusters	% of events accompanied by clusters
1A98	393	210	53.44%
2A98	377	186	49.34%
3A98	580	353	60.86%
4A98	694	429	61.82%
1A99	516	381	73.84%
2A99	494	304	61.54%
3A99	419	305	72.79%
4A99	514	360	70.04%
1A00	417	318	76.26%
2A00	352	249	70.74%
3A00	388	307	79.12%
4A00	624	524	83.97%
1A01	947	802	84.69%
2A01	958	682	71.19%
3A01	1139	641	56.28%
4A01	1373	555	40.42%
1A02	1203	453	37.66%
2A02	1172	383	32.68%
3A02	1182	412	34.86%
4A02	1482	491	33.13%
1A03	1478	447	30.24%
Total	16702	8792	52.64%

earnings and guidance in 2001 and 2002 are significantly different from each other, and from the proportions in every other year, at the 0.01 level.) There are at least two possible reasons for this. First, as Francis et al. [17] note, earnings announcements have expanded in recent years to include other disclosures, such as guidance about next year's (or the next few quarters') earnings or sales figures, an observation that is consistent with the pattern in our data: 5.08% of earnings events are coincident with guidance events in 1998; by 2002, 30.91% are. This means that analysts may now be relying more heavily on earnings events for most of their accounting and guidance information. Second, the drop-off in clusters accompanying stand-alone guidance CIEs in the post-Reg FD period is consistent with Bailey et al. [3], who find that the increase in guidance immediately after Reg FD "...does not seem to be associated with a clear increase in the quality of information." However, as Francis et al. [15] point out, there are many industry-specific and economy-wide changes that occurred at the same time as Reg FD, and so it is difficult to attribute the pattern we observe to Reg FD directly.

Table 1 (continued)

Panel C: Strategic corporate events and associated clusters			
Announcement quarter and year	Number of events for firms covered by 3+ analysts	Number of events associated with clusters	% of events accompanied by clusters
1A98	612	67	10.95%
2A98	1032	88	8.53%
3A98	622	54	8.68%
4A98	716	59	8.24%
1A99	1057	121	11.45%
2A99	1648	124	7.52%
3A99	2924	161	5.51%
4A99	3626	157	4.33%
1A00	3367	144	4.28%
2A00	3580	114	3.18%
3A00	2445	72	2.94%
4A00	6088	183	3.01%
1A01	6946	304	4.38%
2A01	7679	361	4.70%
3A01	7184	310	4.32%
4A01	7963	540	6.78%
1A02	8670	360	4.15%
2A02	11840	461	3.89%
3A02	8011	421	5.26%
4A02	10494	542	5.16%
1A03	8810	408	4.63%
Total	105314	5051	4.80%

The sample consists of events in the First Call historical, CIG and Events databases, the CCBN Street Events database and the Multex Significant Developments database for firms followed by three or more First Call analysts, and analyst revision clusters identified from earnings estimate revisions from the First Call historical database. Clusters are identified as follows. If we observe revisions from at least three different analysts within three trading days for a particular firm, we mark the beginning of a revision cluster on the date of the first of these revisions. Once a cluster begins, we mark it as having ended when four or more trading days pass between sequential revisions. The ending date of the cluster is the date of the last revision within that cluster. We classify a cluster as being attached to a particular event from the First Call historical, CIG or Events databases, the CCBN Street Events database or the Multex Significant Developments database if the cluster begins within two days (before or after) of the event. Announcement quarters are defined as December, January and February (announcement quarter 1); March, April and May (announcement quarter 2); June, July and August (announcement quarter 3); and September, October and November (announcement quarter 4). Announcement periods are defined so that quarterly guidance (preannouncements) and the subsequent earnings announcement are in the same period for purposes of our analysis.

As mentioned before, strategic CIEs include a much more diverse set of events, and as Figures 3 and 6 and Panel C of Table 1 clearly show, such events do not trigger as many revision clusters in absolute or percentage terms as do earnings and stand-alone guidance CIEs. It is also evident from the figures and table that there are significantly more strategic CIEs in the second half of our sample period. There are at least two explanations for this. First, our data providers (in particular CCBN and Multex) expended greater resources in collecting this data in the later part of our sample period. Second, companies significantly increased their use of conference calls and corporate presentations during the late 1990s (see Bushee et al. [6] for a discussion of the use of conference calls). Because of this, we focus on the results for the year 2000 through the end of our sample period, when the level of strategic CIEs is more stable. During that period, only 4.53% of strategic CIEs are accompanied by clusters, with the quarterly percentages ranging from 3.01% to 6.78%, consistent with these events not resulting in significant analyst revision activity in general.

The results in this section, when considered collectively, provide strong support for H1: earnings and stand-alone guidance CIEs are more likely to trigger revision clusters than are strategic CIEs. As mentioned earlier, we interpret this as indicating that the type of information provided in a CIE affects the frequency of analyst revision activity. In particular, events that focus on financial statement information (and thus are relatively consistent in terms of time of occurrence and presentation format) are much more likely to generate significant changes in one important input into firm valuation models: analyst forecasts of the firm's earnings.

Before turning to an analysis of the length of clusters associated with different events, we remind the reader that approximately 21,500 (26%) of the clusters we identify cannot be matched to database events. Figure 3 indicates that the number of these unmatched clusters declines each year, a finding that is consistent with the increased use and collection of conference calls and corporate presentations during our sample period. However, the quarterly information in Figure 7 provides additional insight into the occurrence of unmatched clusters. While it is clear from Figure 7 that the number of unmatched clusters generally declines between 1998 and the third announcement quarter of 2001, this trend abruptly changes in the fourth announcement quarter of 2001, the quarter that contains 9/11 and the beginning of the major accounting scandals. In that quarter, there are 1,411 unmatched clusters, a 109% increase from the 676 unmatched clusters in the previous quarter. In the next quarter, the number of unmatched clusters declines to 804 (a 43% drop) and generally remains at that level until the end of our sample period (there are 825 unmatched clusters in our final announcement quarter). The fact that the level of unmatched clusters falls after the spike in the fourth announcement quarter of 2001 seems to suggest that they are driven by the events of 9/11 rather than the accounting scandals which began during that quarter but continued long after. Again, assuming that the spike in unmatched clusters is driven by the company-specific effects of the extremely unusual macro events of the fourth announcement quarter of 2001, this finding indicates that one of the benefits of human, as opposed to statistical, updating of earnings estimates is that the impact of technological or economic shocks can be incorporated into forecasts in a timely manner (Brown and Rozeff [5]). It also suggests that news associated with these clusters (which is not collected by

our database providers) is relatively more difficult to anticipate and assimilate in valuation models than even the information provided in strategic CIEs.

CIEs and the duration of clusters

H2 states that clusters associated with earnings and stand-alone guidance CIEs are shorter, on average, than those associated with strategic CIEs. In this section, we use the duration of clusters in trading days to test this hypothesis.

Table 2 contains descriptive statistics for lengths of clusters associated with different CIEs and for unmatched clusters (Panel A focuses on clusters associated with earnings and stand-alone guidance CIEs; and Panel B focuses on clusters associated with strategic CIEs and unmatched clusters).¹⁹ As is clear from the table, different CIEs are associated with clusters of different lengths in a manner that is consistent with H2. In particular, clusters associated with earnings CIEs tend to be shortest, consistent with the focus of these events on financial statement information, which is delivered in a clear and relatively consistent format (i.e., in accordance with generally accepted accounting principles) at predictable times. When the entire sample period is considered (see the bottom row of Panel A), the mean (median) number of days in an earnings cluster is 2.8 (2.0). Further, the median length is 2.0 days in every quarter, and the mean length varies only slightly quarter to quarter, ranging from 2.7 to 3.0 days. Such short durations indicate that analysts react quickly to the information in earnings CIEs.

Clusters associated with stand-alone guidance CIEs tend to be slightly longer with an overall mean (median) length of 3.3 (3.0) trading days. This is consistent with the forward-looking nature of guidance and the variation in its form relative to earnings event information. However, like the duration of earnings clusters, the duration of stand-alone guidance clusters is relatively stable during our sample period, ranging from 3.0 to 3.7 trading days; the median length is 3.0 days in each quarter. Interestingly, during the unusual fourth announcement quarter of 2001, average stand-alone guidance cluster length increases significantly to 3.7 days (the maximum quarterly average during our sample period), suggesting that during that period of unprecedented events, analysts took more time to impound the information in stand-alone guidance CIEs into their earnings estimates.

Panel B of Table 2 shows that clusters associated with strategic CIEs are, on average, significantly longer than clusters associated with both earnings and stand-alone guidance CIEs. Overall, these clusters have an average (median) length of 4.5 (4.0) days. Average length also varies more across quarters than it does for earnings and guidance; ranging from 3.4 to 5.6 days. Perhaps not surprisingly, unmatched clusters are, on average, the longest of all the types of clusters, with an overall average (median) length of 4.7 (4.0) days. As Panel B of Table 2 shows, the distribution of unmatched cluster lengths is more stable across quarters than is the distribution for strategic CIEs, with the average length ranging from 4.3 to 5.5 days. Once again,

¹⁹ We delete clusters with durations of more than 25 days for purposes of analyzing cluster lengths because they are outliers. These deleted observations explain the differences in Ns between Tables 1 and 2 in certain quarters.

Table 2. Length of clusters in trading days by event type

Panel A: Earnings and stand-alone guidance clusters										
Quarter/year	Earnings clusters					Stand-alone guidance clusters				
	N	Mean	Q1	Median	Q3	N	Mean	Q1	Median	Q3
1A98	1423	2.9	2.0	2.0	4.0	210	3.0	2.0	3.0	4.0
2A98	2043	2.8	2.0	3.0	4.0	186	3.3	2.0	3.0	4.0
3A98	2180	2.8	2.0	2.0	3.0	353	3.5	2.0	3.0	5.0
4A98	2283	2.8	2.0	2.0	4.0	429	3.0	2.0	3.0	4.0
1A99	1726	2.8	2.0	2.0	4.0	381	3.3*	2.0	3.0	4.0
2A99	2297	2.9	2.0	3.0	4.0	304	3.3	2.0	3.0	4.0
3A99	2273	2.8	2.0	2.0	4.0	305	3.2**	2.0	3.0	4.0
4A99	2313	2.9	2.0	2.0	4.0	360	3.3**	2.0	3.0	4.0
1A00	1926	2.7	2.0	2.0	3.0	318	3.3	2.0	3.0	4.0
2A00	2408	2.9	2.0	2.0	4.0	249	3.3	2.0	3.0	4.0
3A00	2394	2.7*	2.0	2.0	3.0	307	3.3	2.0	3.0	4.0
4A00	2397	2.7***	2.0	2.0	3.0	524	3.2	2.0	3.0	4.0
1A01	2068	2.8	2.0	2.0	4.0	802	3.3	2.0	3.0	4.0
2A01	2480	2.8	2.0	2.0	4.0	682	3.2	2.0	3.0	4.0
3A01	2431	2.8	2.0	2.0	3.0	641	3.2	2.0	3.0	4.0
4A01	2395	3.0***	2.0	3.0	4.0	555	3.7***	2.0	3.0	5.0
1A02	2037	2.8	2.0	2.0	4.0	453	3.3	2.0	3.0	4.0
2A02	2588	2.8	2.0	2.0	4.0	383	3.4	2.0	3.0	4.0
3A02	2446	2.9***	2.0	2.0	4.0	412	3.4	2.0	3.0	4.0
4A02	2460	3.0	2.0	3.0	4.0	491	3.6	2.0	3.0	4.0
1A03	2080	3.0***	2.0	3.0	4.0	447	3.3	2.0	3.0	4.0
Total	46648	2.8	2.0	2.0	4.0	8792	3.3	2.0	3.0	4.0

there is a significant increase in cluster length in the fourth announcement quarter of 2001 to 5.5 days (the maximum quarterly average during our sample period).

The significantly longer duration of strategic clusters, when compared to the duration of earnings and stand-alone guidance clusters, provides strong support for H2 and indicates that strategic information is more difficult to map into estimates of future earnings and firm value than is accounting information. Thus, we conclude that the type of information provided in a CIE affects the speed with which analysts complete their earnings revision activity. Further, the longer and more variable duration of strategic and unmatched clusters, in particular, suggests that later revisions in a cluster add value by providing an interpretation of both the information in the triggering event (if one exists) and the earlier analyst revisions in the cluster.

5 Conclusions

The purpose of this paper is to provide an initial evaluation of the *relative* usefulness of the information in alternative corporate information events (CIEs) to

Table 2 (continued)

Panel B: Strategic and unmatched clusters										
Quarter/year	Strategic clusters					Unmatched clusters				
	N	Mean	Q1	Median	Q3	N	Mean	Q1	Median	Q3
1A98	67	3.7	2.0	3.0	4.0	1580	4.3	3.0	4.0	5.0
2A98	88	3.5	2.0	3.0	4.0	1323	4.4	3.0	4.0	5.0
3A98	54	3.4	2.0	3.0	4.0	1376	4.8	3.0	4.0	6.0
4A98	59	3.5	2.0	3.0	4.0	1559	4.6	3.0	4.0	5.0
1A99	121	3.8	2.0	3.0	5.0	1240	4.7***	3.0	4.0	6.0
2A99	123	4.1**	2.0	3.0	5.0	1220	4.7***	3.0	4.0	6.0
3A99	159	4.4***	2.0	3.0	6.0	1026	4.9	3.0	4.0	6.0
4A99	157	4.0	2.0	3.0	5.0	1065	4.7	3.0	4.0	6.0
1A00	144	4.0	2.0	3.0	5.0	994	4.5	3.0	4.0	5.0
2A00	114	4.0	2.0	3.0	5.0	1013	4.6	3.0	4.0	5.0
3A00	72	4.0	2.0	3.0	5.0	868	4.7	3.0	4.0	6.0
4A00	183	4.1	2.0	3.0	5.0	779	5.0**	3.0	4.0	6.0
1A01	304	4.6*	2.0	4.0	6.0	684	5.0***	3.0	4.0	6.0
2A01	359	4.4	2.0	4.0	6.0	665	4.6	3.0	4.0	6.0
3A01	308	4.7*	3.0	4.0	6.0	672	5.1**	3.0	4.0	6.0
4A01	539	5.6***	3.0	4.0	7.0	1404	5.5***	3.0	4.0	7.0
1A02	359	4.3	2.0	3.0	5.0	802	4.9	3.0	4.0	6.0
2A02	460	4.4	2.0	4.0	5.8	686	4.7	3.0	4.0	6.0
3A02	418	4.5	2.0	4.0	6.0	810	4.9	3.0	4.0	6.0
4A02	539	4.7***	2.0	4.0	5.0	837	4.6***	3.0	4.0	5.0
1A03	408	4.3	2.0	4.0	5.0	823	4.7	3.0	4.0	6.0
Total	5035	4.5	2.0	4.0	5.0	21426	4.7	3.0	4.0	6.0

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ for a two-tailed, two-sample t-test: H_0 : no difference in mean length in trading days between current quarter and the same quarter in the previous year; H_A : Mean length in current quarter $\neq$ mean length in the same quarter in the previous year.

The sample consists of clusters (1) associated with events in the First Call historical, CIG and Events databases, the CCBN Street Events database and the Multex Significant Developments database for firms followed by three or more First Call analysts, and (2) not aligned in time with any event in the same databases for the same firms. Clusters are identified as follows. If we observe revisions from at least three different analysts within three trading days for a particular firm, we mark the beginning of a cluster on the date of the first of these revisions. Once a cluster begins, we mark it as having ended when four or more trading days pass between sequential revisions. The ending date of the cluster is the date of the last revision within that cluster. We classify a cluster as being attached to a particular event from the First Call historical, CIG or Events databases, the CCBN Street Events database or the Multex Significant Developments database if the cluster begins within two days (before or after) of the event. Announcement quarters are defined as December, January and February (announcement quarter 1); March, April and May (announcement quarter 2); June, July and August (announcement quarter 3); and September, October and November (announcement quarter 4). Announcement periods are defined so that quarterly guidance (preannouncements) and the subsequent earnings announcement are in the same period for purposes of our analysis. The length of clusters is in trading days.

Clusters lasting more than 25 days (16 of the strategic clusters and 71 unmatched clusters) are eliminated from this analysis.

analysts and investors as they attempt to value the firm. In Part I, we hypothesize that analysts' responses to CIEs offering accounting information differs from their responses to CIEs offering strategic information because accounting information is more readily accessible and more easily incorporated into valuation models. Our results are consistent with this hypothesis. In particular, we find that earnings and stand-alone guidance CIEs are much more likely to result in significant numbers of analysts updating their earnings estimates. Further, the relative speed with which analyst updating occurs for these CIEs suggests that stock prices are likely to reflect new accounting information more rapidly than strategic information. In part II of this paper, we examine this possibility.

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