Annals of Finance **1**, 379–393 (2005)
DOI: 10.1007/s10436-005-0015-x

Annals of Finance

Analyst estimation revision clusters and corporate events, Part II*

Mark Bagnoli[1], **Stanley Levine**[2], **and Susan G. Watts**[1]

[1] Krannert Graduate School of Management, Purdue University, West Lafayette, IN 47907-2056, USA (e-mail: swatts@krannertpurdue.edu)
[2] QED International Associates, Inc., New York, NY 10024, USA

Received: January 4, 2004; revised version: March 7, 2005

Summary. In Part I of this study, we evaluated the relative usefulness of information in alternative corporate information events (CIEs) to analysts by examining the frequency with which they trigger clusters of analysts' earnings estimate revisions. In Part II, we examine investor response to various CIEs and their revision clusters. We find that stock prices react most strongly and adjust most quickly to revision clusters that accompany CIEs that focus on financial statement information. CIEs that offer strategic information take longer for analysts and investors to assimilate, and investors appear to rely heavily on later analyst revisions following such events.

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

In this paper, we use periods of unusually heavy earnings estimate revision activity by financial analysts (which we refer to as revision clusters) to evaluate the relative usefulness of corporate information events (CIEs) in firm valuation. In Part I, we showed that revision clusters are more likely to accompany CIEs that provide accounting information (earnings and stand-alone guidance announcements) as

* We thank the Editor, an anonymous referee, Joe Cooper, Todd Doersch, Tony Greig, Kent Konkol and Marc Sievers for helpful suggestions and discussions. We also thank Mehmet Ozbilgin and James Su for programming during the planning phase of this project, and Jinyoung Park for research assistance during its execution. We are very grateful to Thomson Financial, CCBN and Reuters Data for providing data used in this study. Bagnoli and Watts thank the Krannert Graduate School of Management and Purdue University for financial support.
Correspondence to: S.G. Watts

opposed to strategic or "soft" information (e.g., new product or M&A announcements). We also showed that clusters triggered by accounting-focused CIEs end significantly more quickly than other types of clusters. These findings led us to conclude that analysts more easily incorporate accounting-based information into estimates of the firm's future performance, an important input in commonly used valuation models.[1] In this part of the paper, we examine the relative usefulness of revision clusters and their associated CIEs to investors as they attempt to value firms.

As in Part I, we divide CIEs into three categories: earnings announcements, stand-alone guidance events and strategic events. We then examine the stock market response to revision clusters that accompany the three types of CIEs as well as those that cannot be matched to any of the events that our database providers collect. Using reasoning similar to that in Part I, we hypothesize that the magnitude of stock price changes during clusters triggered by accounting-focused CIEs is larger than the magnitude of stock price changes during the other clusters.[2] We also expect that if clusters last for a relatively long time (in terms of trading days), as is most common in the case of clusters triggered by non-accounting-focused CIEs, later revisions will elicit relatively large stock price movements when compared to the earliest revisions in the cluster. We expect this because, first, long clusters are likely to result from events whose valuation implications are not immediately clear, and, second, later revisions are more informative to investors in the sense that they aggregate the information in the triggering event and the earlier revisions.

Our empirical tests, using clusters formed from earnings estimate revisions made by First Call analysts between December 1997 and February 2003, generally support these hypotheses. In particular, absolute abnormal returns measured (1) over the entire duration of the cluster and (2) only during the first few days of the cluster indicate that clusters associated with stand-alone guidance and earnings CIEs are significantly more informative to investors than are clusters associated with strategic CIEs or that cannot be matched to database events. (We remind the reader that the major clients of our event database providers, Thomson Financial, CCBN and Reuters, are institutional investors. Thus, all CIEs that we examine are those our data providers deem significant enough to provide to their clients.) Absolute abnormal returns over the rest of the cluster only (day +2 until the day after the end of the cluster), a measure that captures the market's response to the later analyst revisions as well as delays in the market's assimilation of the information in the triggering event, also support our hypotheses. Abnormal price changes around later revisions in long clusters are significant and relatively large, indicating that if clusters last for a relatively long time, it is because the information in the triggering event and/or the initial analyst revisions are not initially well-understood by the

[1] Common approaches to firm valuation include use of a residual income or discounted cash flow model, or multiples (P/E or P/S). Palepu et al. [19] and Penman [20] provide detailed descriptions of these approaches.

[2] As such, our reasoning is similar to the "visibility" explanation for the home-bias paradox (excessive investment in domestic securities relative to the optimally diversified portfolio; see Karolyi and Stulz [13] for a survey and Bradshaw et al. [3] for an application in accounting) and to the limited attention models in Hirshleifer and Teoh [12] and Hirshleifer et al. [11]. The argument for home bias is that domestic investors focus on securities about which they can obtain more information at lower cost. The limited attention models suggest investor focus on only a subset of disclosures, generally those that are most readily available.

market. This finding is also consistent with later revisions in long clusters providing useful information to the investors, most likely because later revisions aggregate and interpret the news in both the triggering event and the earlier revisions.

The analysis of investor reaction to clusters in this part of the paper contributes in several ways to the academic literature that examines the market response to corporate disclosures. First, we provide insight into a largely unstudied source of information about how the market impounds news in corporate disclosures, analyst estimate revision clusters. Second, we show that the usefulness of clusters depends on what triggers them. Third, we provide evidence that if analysts do not impound the news in the event into their earnings estimates quickly, investors' initial response to the event is also weak, and that later revisions are more useful to them. Finally, as in Part I, we contribute to the body of research that studies the changing usefulness of earnings over time (e.g., Francis et al. [10], Landsman and Maydew [15], Lev and Zarowin [16], Kross and Kim [14], Francis and Schipper [8], and Collins et al. [5]) by providing evidence of the increasing usefulness of earnings events to analysts and investors in recent years.

Our findings also have two potential implications for analysts, investors and investor relations departments. First, because strategic information appears to be assimilated into earnings estimate revisions and stock prices more slowly than accounting information, analysts and investors may benefit from finding ways to assimilate it more quickly thereby improving market efficiency. Second, investor relations departments may find it useful to know that providing relatively detailed information about the implications for accounting numbers may elicit more frequent and faster responses to strategic information disclosures.

The rest 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 the stock price reaction to clusters. In Section 5, we offer concluding remarks.

2 Hypotheses development

As in Part I, we separate CIEs into three categories: earnings announcements, standalone guidance announcements and strategic announcements. Earnings announcements include all disclosures the firm makes around the release of annual and quarterly earnings, including information provided in the firm's press release, conference call (if held) and interviews (if done). An aspect of these events that is particularly important for our study is their focus on the disclosure of financial statement information prepared in a relatively consistent way (i.e., in accordance with generally accepted accounting principles). Thus, the information that they convey is readily adapted for valuation purposes, regardless of the approach employed (e.g., a market-multiples, discounted cash flow or residual income approach).[3] Standalone guidance announcements 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

[3] See Part I of this paper, Francis et al. [10] and Chen et al. [4] for a more detailed discussion of the content of earnings announcements.

or coming period.[4] Strategic announcements include all 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). These announcements generally convey information about the firm's strategic opportunities rather than information generated directly by the firm's accounting system, and thus provide news that is more difficult to adapt and assimilate into valuation models.

In Part I of this paper, we examined the relative importance of earnings, stand-alone guidance and strategic CIEs to financial analysts, and found that earnings and stand-alone guidance CIEs trigger significantly more revision clusters than do strategic CIEs. Further, clusters associated with accounting-focused CIEs end more quickly. This suggests that not only are analysts more likely to impound the information in such events into their estimates of future earnings (an important input into valuation models), but also that they will do so more rapidly. In this part of the paper, we consider investor reaction to CIEs and their accompanying clusters. Because of the ease with which accounting information is adapted for use in valuation models, we expect investors' responses, like analysts' responses, to be stronger and swifter to earnings and guidance CIEs and their clusters than to strategic CIEs and their clusters.[5] However, we also expect that if a revision cluster continues for a relatively long time, it is because the future earnings and valuation implications of the triggering event were not immediately clear. Thus, revisions that occur later in a revision cluster, and thus impound information from earlier revisions in the cluster, are likely to be more informative to investors. This reasoning leads to our final hypotheses (stated in alternative form):

H3: Stock market responses to CIEs that provide earnings and stand-alone guidance information and their associated clusters are greater than the response to CIEs that provide strategic information and their clusters.

H4: The initial (short window) stock market response to CIEs is smaller the longer is the accompanying analyst revision cluster.

3 Data and sample selection

We use the same data and sample described in Part I. We gather our earnings estimate and CIE data from 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). To examine investor response to CIEs and clusters, we follow Francis et al. [9] and control for the systematic risk of our sample firms by using beta-adjusted stock returns from the CRSP beta-adjusted abnormal returns file.

[4] The estimates provided in these announcements may differ in their precisions. That is, guidance may be offered in the form of a point, interval or range estimate and may even be qualitative in nature (e.g., earnings will be lower than last year)

[5] Note that similar reasoning has been used to explain the home bias in portfolio choice (Merton [17] and Ahearne et al. [1]) and geographic biases in fund manager investment decisions (Coval and Moskowitz [6]).

We remind the reader that we first identify our sample of revision clusters from all First Call earnings estimate revisions made between December 1997 and February 2003.[6] 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 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. It is important to note that our cluster identification procedure ensures that we have relatively widely-followed and visible firms in our sample. (The median number of analysts following a firm in the First Call database is three.) After identifying clusters, we determine whether their start dates are associated with the dates of earnings announcements, stand-alone guidance, or other significant corporate events reported by our database providers (in that order). We classify a cluster as being attached to a particular CIE if the cluster begins within two days of (before or after) the event. As noted in Part I, some of the clusters that we identify cannot be associated with any event collected by our data providers.[7] We use all clusters in Part I of this paper; however, for Part II, we require that beta-adjusted stock returns over the duration of each cluster be available in the CRSP beta-adjusted abnormal returns database. This requirement leaves us with a final sample of 23,126 earnings clusters, 4,489 guidance clusters, 3,436 strategic clusters and 15,173 unmatched clusters or the analysis that follows.

We categorize our final sample of clusters by "announcement quarter and year" to help ensure that both guidance and the subsequent earnings report are in the same announcement quarter and year. For example, earnings are predominantly announced in January and, to a lesser extent, in February. Thus, company-issued guidance regarding these earnings announcement is most likely to occur in either December or January. As a result, 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 Stock price reaction to CIEs and their associated clusters

In this section, we present our analysis of stock market responses to CIEs and their associated revision clusters. To test our hypotheses, we examine unsigned abnormal (beta-adjusted) stock returns and focus on three holding periods: (1) days -1, 0 and +1 where day 0 is the date the cluster, (2) day +2 through the day after the end of the cluster (referred to as "ed+1" in the discussion that follows), and (3) days -1 through ed+1. (1) captures the strength of the market's response to the CIE itself and the initial analyst revisions in the cluster; (2) captures the strength

[6] We consider revisions for any earnings horizon when determining the existence of a cluster. Thus, clusters may contain estimates with varying forecast horizons. We adopt this approach to capture all of the information effects associated with a CIE.

[7] As discussed in Part I, these "unmatched" clusters may well have been triggered by a relatively unique information event that is not captured by our database providers. In fact, our search of the Factiva database for a random sample of 100 unmatched clusters indicates that most are coincident with a firm-specific or competitor newswire article.

of the market's response to the later revisions as well as any delays in the market's assimilation of the information in the CIE; and (3) captures the strength of the market's response over the entire duration of the cluster. Implicit in our analysis is the assumption that the magnitude of the abnormal price change during a cluster is an *ex post* measure of the quality or informativeness of the associated event and the accompanying forecast revisions. (See Francis et al. [9] for a detailed discussion of the use of absolute abnormal returns in a similar setting.)

We begin by discussing absolute abnormal returns over the duration of the cluster, measure (3), which are not tabulated. These returns indicate that overall, CIEs that provide accounting information and their associated analyst revision clusters result in stronger price movements than CIEs that provide strategic information, consistent with our expectations and H3. Specifically, the average (median) absolute abnormal return for the entire cluster duration (day −1 to the end of the cluster) is 11.3% (7.8%) for stand-alone guidance clusters and 6.2% (4.2%) for earnings clusters.[8] The average (median) absolute abnormal return is smaller for strategic clusters, 6.0% (4.0%), and smallest for unmatched clusters, 5.8% (4.0%). Combined with our results from Part I of this paper, this finding provides an initial indication that, overall, market participants find that CIEs that provide information about financial statements (or financial performance) and the revision clusters that accompany them are most useful.

To provide additional insight into how investors respond to clusters associated with different types of CIEs, we turn to Table 1 which contains quarterly descriptive statistics for the absolute abnormal returns accumulated over holding periods (1) and (2). We calculate (1) for all clusters and (2) for only those clusters that last beyond day +1, and refer to (1) as the absolute initial impact return and (2) as the absolute abnormal return over the rest of the cluster.[9] Panel A contains those statistics for earnings clusters, and Panels B, C and D contain them for stand-alone guidance, strategic and unmatched clusters, respectively.

The absolute initial impact returns (referred to as |CAR (−1, 0, 1)| in the table) are described in the left half of each panel. Focusing first on the overall means in the bottom row of each panel, the average absolute initial impact return is largest for stand-alone guidance clusters (9.8%), next largest for earnings clusters (5.2%), next largest for strategic clusters (4.4%), and smallest for unmatched clusters (3.9%). Median absolute initial impact returns order in the same way: 6.1% for stand-alone guidance clusters, 3.4% for earnings clusters, 2.9% for strategic clusters and 2.7% for unmatched clusters, indicating that outliers are not affecting the ordering. (All pairwise comparisons of these returns are significant at the 0.00 level using both two-sample t-tests and Mann-Whitney tests.) This ordering supports H3 and our conjecture that CIEs that provide predominantly accounting information and the earliest revisions that they trigger result in stronger investor responses than do CIEs

[8] The returns for earnings and guidance clusters are significantly different from one another at the 0.01 level using both a two-sample t-test and the Mann Whitney test.

[9] Using only clusters that continue beyond day +1 for calculation of (2) ensures that we do not include zero returns for clusters that end before the holding period in the return calculation (2) begins. Thus, the number of observations used to calculate (1) and (2) is slightly different for each type of cluster (Ns are noted in each panel of Table 1).

Table 1. Absolute value of cumulative abnormal returns during clusters

Panel A: Earnings clusters: Day 0 is day on which revision cluster begins								
Quarter year	|CAR(−1,0,1)| for all clusters with stock return data N = 23,126				|CAR (2 to ed+1)| includes only clusters of 3+days in length, N = 20,943			
	Mean	Q1	Median	Q3	Mean	Q1	Median	Q3
1A98	0.042	0.013	0.029	0.056	0.024	0.007	0.016	0.032
2A98	0.037	0.011	0.024	0.047	0.021	0.006	0.014	0.027
3A98	0.044	0.013	0.031	0.058	0.029	0.009	0.020	0.037
4A98	0.061	0.019	0.043	0.084	0.036	0.011	0.025	0.048
1A99	0.054***	0.015	0.036	0.071	0.032***	0.010	0.021	0.041
2A99	0.055***	0.016	0.037	0.073	0.033***	0.010	0.023	0.045
3A99	0.042	0.011	0.028	0.056	0.024***	0.007	0.016	0.031
4A99	0.057	0.017	0.037	0.075	0.031***	0.009	0.021	0.042
1A00	0.061**	0.018	0.041	0.076	0.036**	0.011	0.023	0.045
2A00	0.063***	0.017	0.041	0.086	0.034	0.011	0.024	0.046
3A00	0.055***	0.015	0.037	0.074	0.029***	0.009	0.021	0.038
4A00	0.061	0.018	0.042	0.083	0.034*	0.010	0.023	0.045
1A01	0.051***	0.016	0.037	0.069	0.032**	0.009	0.021	0.041
2A01	0.048***	0.014	0.032	0.062	0.028***	0.008	0.018	0.037
3A01	0.044***	0.013	0.029	0.058	0.025***	0.007	0.016	0.033
4A01	0.049***	0.015	0.033	0.062	0.030**	0.009	0.019	0.038
1A02	0.047*	0.012	0.029	0.058	0.026***	0.007	0.017	0.033
2A02	0.040***	0.011	0.027	0.051	0.025*	0.007	0.015	0.031
3A02	0.067***	0.020	0.044	0.086	0.038***	0.012	0.025	0.049
4A02	0.059***	0.017	0.037	0.073	0.033	0.009	0.021	0.043
1A03	0.046	0.012	0.030	0.059	0.024	0.007	0.014	0.029
Total	0.052	0.015	0.034	0.067	0.030	0.008	0.019	0.038
Panel B: Stand-alone guidance clusters: Day 0 is day on which revision cluster begins								
Quarter year	|CAR(−1,0,1)| for all clusters with stock return data N = 4,899				|CAR (2 to ed+1)| includes only clusters of 3+days in length, N = 4,489			
	Mean	Q1	Median	Q3	Mean	Q1	Median	Q3
1A98	0.099	0.038	0.057	0.124	0.037	0.009	0.021	0.052
2A98	0.088	0.033	0.061	0.140	0.032	0.010	0.019	0.041
3A98	0.100	0.031	0.084	0.147	0.041	0.009	0.022	0.047
4A98	0.136	0.043	0.101	0.179	0.049	0.017	0.034	0.067
1A99	0.113	0.029	0.069	0.156	0.036	0.010	0.026	0.048
2A99	0.100	0.036	0.068	0.132	0.037	0.011	0.019	0.052
3A99	0.144***	0.036	0.103	0.234	0.036	0.011	0.026	0.045
4A99	0.156	0.040	0.117	0.256	0.050	0.017	0.032	0.063
1A00	0.122	0.045	0.088	0.177	0.059***	0.015	0.036	0.089
2A00	0.145***	0.041	0.096	0.207	0.062***	0.016	0.041	0.086
3A00	0.146	0.048	0.110	0.210	0.041	0.013	0.034	0.055
4A00	0.129**	0.038	0.100	0.172	0.041**	0.015	0.025	0.060

Table 1 (continued)

1A01	0.084***	0.028	0.064	0.120	0.041***	0.014	0.026	0.055
2A01	0.078***	0.024	0.056	0.094	0.039***	0.012	0.032	0.047
3A01	0.069***	0.016	0.043	0.093	0.031***	0.008	0.020	0.037
4A01	0.072***	0.019	0.045	0.092	0.054**	0.014	0.032	0.058
1A02	0.055***	0.014	0.034	0.070	0.031***	0.008	0.018	0.040
2A02	0.063**	0.015	0.035	0.084	0.029***	0.009	0.021	0.036
3A02	0.083	0.024	0.045	0.107	0.057***	0.009	0.023	0.054
4A02	0.085	0.022	0.053	0.104	0.044	0.012	0.026	0.054
1A03	0.071**	0.016	0.038	0.092	0.030	0.008	0.018	0.038
Total	0.098	0.025	0.061	0.132	0.042	0.012	0.026	0.052
Panel C: Strategic clusters: Day 0 is day on which revision cluster begins								
Quarter year	|CAR(−1,0,1)| for all clusters with stock return data N = 3,436				|CAR (2 to ed+1)| includes only clusters of 3+days in length, N = 3,248			
	Mean	Q1	Median	Q3	Mean	Q1	Median	Q3
1A98	0.039	0.014	0.035	0.059	0.032	0.010	0.021	0.036
2A98	0.034	0.010	0.024	0.041	0.025	0.008	0.017	0.028
3A98	0.050	0.009	0.036	0.067	0.026	0.008	0.020	0.037
4A98	0.055	0.011	0.040	0.081	0.028	0.010	0.022	0.044
1A99	0.051*	0.017	0.044	0.078	0.030	0.012	0.023	0.045
2A99	0.049*	0.014	0.036	0.058	0.043**	0.010	0.026	0.048
3A99	0.048	0.013	0.031	0.061	0.035*	0.011	0.028	0.050
4A99	0.044	0.016	0.033	0.065	0.039	0.009	0.020	0.046
1A00	0.057	0.022	0.046	0.070	0.048***	0.015	0.032	0.060
2A00	0.072**	0.019	0.050	0.101	0.046	0.020	0.031	0.060
3A00	0.047	0.016	0.041	0.061	0.039	0.011	0.025	0.056
4A00	0.056*	0.017	0.036	0.074	0.038	0.015	0.027	0.058
1A01	0.048	0.015	0.036	0.066	0.048	0.009	0.030	0.067
2A01	0.045***	0.016	0.029	0.057	0.038	0.010	0.024	0.049
3A01	0.045	0.011	0.028	0.048	0.038	0.010	0.022	0.043
4A01	0.045*	0.014	0.029	0.060	0.057***	0.014	0.030	0.066
1A02	0.033***	0.010	0.021	0.043	0.036*	0.010	0.020	0.042
2A02	0.033***	0.008	0.023	0.044	0.029**	0.009	0.019	0.036
3A02	0.044	0.014	0.029	0.056	0.038	0.011	0.022	0.044
4A02	0.043	0.012	0.032	0.058	0.048	0.012	0.029	0.055
1A03	0.036	0.009	0.024	0.044	0.035	0.008	0.019	0.044
Total	0.044	0.013	0.029	0.057	0.040	0.011	0.024	0.048
Panel D: Unmatched clusters: Day 0 is day on which revision cluster begins								
Quarter year	|CAR(−1,0,1)| for all clusters with stock return data N = 15,173				|CAR (2 to ed+1)| includes only clusters of 3+days in length, N = 14,493			
	Mean	Q1	Median	Q3	Mean	Q1	Median	Q3
1A98	0.033	0.010	0.023	0.044	0.031	0.009	0.021	0.040
2A98	0.029	0.009	0.020	0.037	0.029	0.008	0.019	0.037

Table 1 (continued)

3A98	0.038	0.012	0.026	0.050	0.040	0.011	0.025	0.051
4A98	0.048	0.016	0.033	0.066	0.052	0.015	0.035	0.068
1A99	0.042***	0.014	0.030	0.057	0.044***	0.012	0.028	0.055
2A99	0.042***	0.014	0.032	0.056	0.041***	0.012	0.028	0.055
3A99	0.035	0.012	0.026	0.046	0.034***	0.011	0.023	0.044
4A99	0.046	0.015	0.033	0.056	0.040***	0.012	0.026	0.051
1A00	0.048**	0.016	0.034	0.064	0.043	0.011	0.029	0.059
2A00	0.051***	0.017	0.038	0.068	0.048***	0.015	0.034	0.066
3A00	0.041***	0.012	0.030	0.053	0.040***	0.012	0.026	0.054
4A00	0.041*	0.015	0.030	0.057	0.047**	0.013	0.032	0.063
1A01	0.046	0.016	0.035	0.063	0.048	0.015	0.033	0.064
2A01	0.034***	0.010	0.024	0.043	0.035***	0.010	0.022	0.045
3A01	0.029***	0.008	0.020	0.040	0.039	0.011	0.025	0.052
4A01	0.043	0.014	0.032	0.056	0.045	0.014	0.031	0.064
1A02	0.029***	0.009	0.020	0.038	0.034***	0.011	0.022	0.044
2A02	0.025***	0.008	0.018	0.034	0.031	0.010	0.021	0.039
3A02	0.037***	0.010	0.023	0.040	0.040	0.010	0.025	0.046
4A02	0.037**	0.012	0.024	0.043	0.042	0.012	0.025	0.056
1A03	0.027	0.009	0.018	0.035	0.031	0.009	0.020	0.041
Total	0.039	0.012	0.027	0.051	0.040	0.011	0.026	0.052

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$ for a two-tailed, two-sample t-test: H_0: No difference in mean absolute cumulative abnormal returns between the current quarter and the same quarter in the previous year; H_A: Mean absolute cumulative abnormal return in the current quarter mean absolute cumulative abnormal return in the same quarter in the previous year.

All mean absolute abnormal returns are significantly different from zero at the 0.01 level.

The sample consists of (1) clusters 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) clusters not aligned in time with any event in the same databases for the same firms. For the analysis in this table, we also require that stock returns be available over the duration of the cluster in the CRSP beta-adjusted abnormal returns file. 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 or CIG database, 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. Clusters lasting more than 25 days are eliminated from this analysis.

Abnormal returns are beta-adjusted abnormal returns from CRSP. We accumulate these returns over two holding periods, (1) days -1, 0 and 1 where day 0 is the day on which the revisions begin, and (2) day 2 through the day after the end of the cluster, referred to as CAR(2 to ed+1) in the table, and take the absolute value of the cumulative abnormal return. We refer to (1) as the absolute initial impact return and (2) as the absolute abnormal return over the rest of the cluster. We include only clusters of 3 or more days duration in the calculations of (2).

that predominantly provide strategic or "soft" information and the earliest revisions that they trigger.

Despite this, there is an interesting contrast between analysts' and investors' responses to accounting-focused CIEs after the enactment of Regulation Fair Disclosure (Reg FD) in October 2000. Specifically, our examination of analysts' responses in Part I of this paper shows that the frequency with which stand-alone guidance CIEs trigger clusters drops off dramatically after the implementation of Reg FD, falling from approximately 80% to 35%, while the frequency with which earnings CIEs trigger clusters continues to grow. In contrast, investor response to stand-alone guidance clusters, while also declining in the post-Reg FD period, generally continues to surpass the investor response to earnings CIEs during the same period. We conjecture that there are at least three reasons for this result. First, stand-alone guidance CIEs are likely to have more "surprise value" than earnings CIEs because earnings announcements are predictable, mandated disclosure events (Bagnoli et al. [2]) whereas stand-alone guidance events are not. Second, stand-alone guidance events have become increasingly rare (see Part I of this paper) and therefore are likely to elicit stronger reactions from investors when they do occur. Finally, analysts' early interpretations of stand-alone guidance, as reflected in their earnings estimate revisions, are likely to be more immediately useful to investors than their early interpretations of announced earnings. This final reason, in particular, is consistent with the greater subjectivity and uncertainty in stand-alone guidance arising from the potential exercise of managerial opportunism and the fact that stand-alone guidance is often offered as a range or interval, rather than a point, estimate—thus increasing the importance of the information intermediary role played by analysts.

When absolute returns over holding period (2), referred to as |CAR (2 to ed+1)| in the table, are considered, we find that the ordering changes, relative to that for the initial impact returns: the average for stand-alone guidance clusters is 4.2%; for strategic and unmatched clusters, it is 4.0%; and for earnings clusters, it is 3.0%. A similar ordering is reflected in the medians: 2.6% for stand-alone guidance clusters, 2.6% for unmatched clusters, 2.4% for strategic clusters, and 1.9% for earnings clusters. These percentages seem to indicate that the market culls the *least* information from later revisions in clusters accompanying earnings events. However, the absolute returns for holding period (2) summarized in Table 1 are calculated for clusters of different lengths—and as we showed in Part I, cluster length varies systematically with CIE type. In particular, strategic and unmatched clusters are significantly longer, on average, than earnings and stand-alone guidance clusters, with earnings clusters shortest of all.

To control for this variation so that we can better understand relative investor reaction to revisions that occur both early and later in clusters that accompany the different CIEs (or in unmatched clusters), we estimate regressions of the following form:

$$
\begin{aligned}
&|\mathrm{CAR}|_{\mathrm{i,q}} \\
&\quad = \gamma_0 + \gamma_1 \mathrm{Length}_{\mathrm{i,q}} + \gamma_2 \mathrm{Guidance}_{\mathrm{i,q}} + \gamma_3 \mathrm{Strategic\ Events}_{\mathrm{i,q}} + \gamma_4 \mathrm{Unmatched}_{\mathrm{i,q}} \\
&\qquad + \gamma_5 (\mathrm{Length}_{\mathrm{i,q}} * \mathrm{Guidance}_{\mathrm{i,q}}) + \gamma_6 (\mathrm{Length}_{\mathrm{i,q}} * \mathrm{Strategic\ Events}_{\mathrm{i,q}}) \\
&\qquad + \gamma_7 (\mathrm{Length}_{\mathrm{i,q}} * \mathrm{Unmatched}_{\mathrm{i,q}}) + \varepsilon_{i,q}
\end{aligned}
$$

where $|\text{CAR}|_{i,q}$ is either the absolute initial impact return *or* the absolute return over the rest of the cluster for cluster i in quarter q; $\text{Length}_{i,q}$ is the duration of cluster i in quarter q in trading days; $\text{Guidance}_{i,q}$ is a dummy variable that takes on the value of one if the CIE associated with cluster i in quarter q is stand-alone guidance; $\text{Strategic Events}_{i,q}$ is a dummy variable that takes on the value of one if the event associated with cluster i in quarter q is a strategic CIE; and $\text{Unmatched}_{i,q}$ is a dummy variable that takes on the value of one if cluster i in quarter q is not associated with a CIE collected by our data providers.

As the variable definitions indicate, we estimate the model twice, once using initial impact returns as the dependent variable, and once using the absolute return over the rest of the cluster. The estimated model using absolute initial impact returns as the dependent variable is (t-statistics are in parentheses below the estimated coefficients, and earnings clusters are the base-line event):

$$\begin{aligned}
&\text{Initial Impact}|\text{CAR}| \\
&= 0.0056 - 0.0012\text{Length} + 0.0594\text{Guidance} - 0.0101\text{Strategic Events} \\
&\quad (66.74) \quad (-5.19) \qquad (31.48) \qquad (-5.04) \\
&\quad -0.0137\text{Unmatched} - 0.0035(\text{Length*Guidance}) \\
&\quad (-11.21) \qquad (-7.61) \\
&\quad +0.0008(\text{Length} * \text{Strategic Events}) + 0.0006(\text{Length} * \text{Unmatched}) \\
&\quad (2.03) \qquad (2.16)
\end{aligned}$$

The estimated model using absolute returns over the rest of the cluster as the dependent variable is (again, t-statistics are in parentheses below the estimated coefficients):

$$\begin{aligned}
&\text{Remainder}|\text{CAR}| \\
&= 0.0079 + 0.0065\text{Length} + 0.0013\text{Guidance} + 0.0037\text{Strategic Events} \\
&\quad (12.31) \quad (38.33) \qquad (0.88) \qquad (2.56) \\
&\quad +0.0085\text{Unmatched} + 0.0019(\text{Length} * \text{Guidance}) \\
&\quad (9.37) \qquad (5.58) \\
&\quad -0.0007(\text{Length} * \text{Strategic Events}) - 0.0019(\text{Length} * \text{Unmatched}) \\
&\quad (-2.52) \qquad (-9.70)
\end{aligned}$$

As the t-statistics above indicate, all of the coefficients are significant with the exception of the Guidance dummy variable in the second regression. To aid in interpreting the estimations, we provide graphs of predicted absolute returns for the various cluster types for fixed cluster lengths in Figures 1 and 2.

H4 states that the longer the cluster, the smaller the initial investor response to the cluster and its associated CIE, if one exists. The first regression supports this hypothesis: the regardless of cluster type, longer accompanying clusters are associated with smaller initial abnormal price responses. (The regression results are illustrated in Figure 1.) This suggests that if clusters last for a relatively long time, it is because the news in the triggering CIE and/or in the initial analysts' revisions

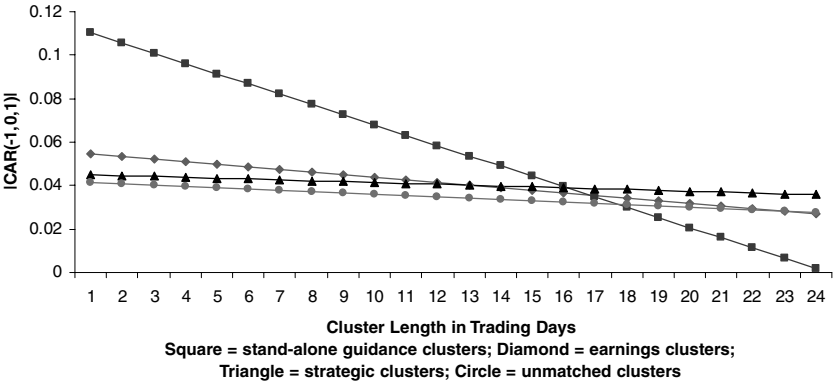

Figure 1. Predicted values of $|\mathrm{CAR}(-1,0,1)|$ from impact regressions. Impact regression: Initial impact |CAR| = 0.0056 − 0.00120 length + 0.0594 guidance − 0.0101 strategic events − 0.0137 unmatched − 0.00352 (length * guidance) + 0.000799 (length * strategic events) + 0.000593 (length * unmatched)

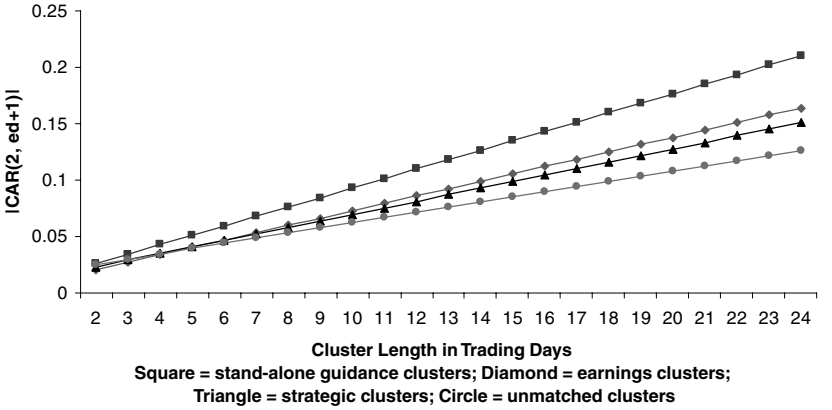

Figure 2. Predicted values of $|\mathrm{CAR}(2, \mathrm{ed}+1)|$ from remainder regressions. Remainder regression: Remainder |CAR| = 0.0078 + 0.00651 Length + 0.00126 guidance + 0.00374 strategic events + 0.00845 unmatched + 0.00187 (length * guidance) − 0.000706 (length * strategic events) − 0.00193 (length * unmatched)

Footnotes for Figures 1 and 2:

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 database, the CCBN Street Events database or the Multex Significant Developments database if the cluster begins within two days (before or after) of the event. The length of clusters is measured in trading days.

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 years consist of months December through November. Announcement periods are defined so that quarterly guidance (preannouncements) and the subsequent earnings announcement are in the same period for purposes of our analysis.

Absolute abnormal returns are beta-adjusted abnormal returns from CRSP. We accumulate these absolute abnormal returns over two holding periods: (1) days −1, 0 and 1 where day 0 is the day on which the revisions begin, and (2) day 2 through the day after the end of the cluster. We refer to (1) as the absolute initial impact return and (2) as the absolute abnormal return over the rest of the cluster. We include only clusters of 3 or more days duration in the calculations of (2).

Variables in the Impact and Remainder regressions in Figures 1 and 2 are defined as follows. |CAR| is either the absolute initial impact return (Figure 1) or the absolute return over the rest of the cluster (Figure 2); Length is the duration of the cluster in trading days; Guidance is a dummy variable that takes on the value of one if the associated event is stand-alone guidance; Strategic Events is a dummy variable that takes on the value of one if the associated event is a strategic corporate event; and Unmatched is a dummy variable that takes on the value of one if the cluster is not associated with a database event.

(and only the latter if the cluster is unmatched) is not initially well understood by the market. However, it is also consistent with later revisions in clusters of longer duration providing useful information to the market, perhaps because there is a perception that later revisions aggregate the news in both the event and/or previous revisions. Interestingly, the relation is most pronounced for clusters associated with stand-alone guidance CIEs, a less anticipated event (compared to earnings) that contains voluntarily disclosed accounting information.[10] The strength of this relation lends additional support to our conclusion that events that provide accounting information, especially when it is forward looking, are an especially useful source of information to investors.

The second regression confirms the usefulness of later revisions in clusters that last two or more days (illustrated in Figure 2): average absolute abnormal stock returns from day +2 until the end of the cluster increase monotonically with cluster length, regardless of the type of cluster. However, for a given cluster length, abnormal stock price movements are largest for stand-alone guidance clusters. (The next largest are for earnings clusters, followed by strategic clusters and then unmatched clusters, with the differences increasing as cluster length increases.) This ordering confirms the importance of accounting-focused CIEs to investors: later earnings estimate revisions that arise from events that provide predominantly financial statement (or financial performance) information result in stronger stock price movements and greater changes in firm valuation, consistent with the logic we employed to derive the hypotheses in Parts I and II of this paper.

5 Conclusions

Corporate earnings are a central element in most valuation models. In this paper, we use periods of unusually heavy earnings estimate revision activity by financial analysts, which we refer to as revision clusters, to assess the significance of corporate events designed to provided either accounting-focused or strategic information

[10] The relation is strongest for stand-alone guidance clusters of less than 15 days duration. However, since the vast majority of these clusters are well under 15 days in length—the average length is 3.3 days (see Part I of this paper), it is appropriate to focus on that range in Figure 1.

to capital market participants. In Part 1, we hypothesized and found that CIEs that predominantly offer accounting information (earnings and stand-alone guidance announcements) trigger more frequent and shorter analyst revision clusters than CIEs that predominantly offer strategic information. In Part II, we hypothesize and find that investors also respond more strongly to CIEs that predominantly offer accounting information and their accompanying clusters. We also document a negative relation between the abnormal stock price movements at the beginning of the cluster and its length, regardless of the event that triggers the cluster. This indicates that analysts who revise later in a revision cluster act as information intermediaries by aggregating the information in both the triggering event and the earliest analyst reactions to it.

The results of our study, when considered collectively, show that analysts do not react with the same speed to all CIEs and, further, that revision clusters are not equally informative to investors. Thus, the underlying information event appears to be an important determinant of the usefulness of analysts' earnings estimate revisions in a cluster. As a result, our study may be useful to regulators as they consider potential changes in financial disclosure policy and to managers who want to communicate more effectively with the market. It may also be a useful supplement to proposals for enhanced voluntary disclosure policies (see for example, Eccles et al. [7] or Miller and Bahnson [18]).

References

1. Ahearne, A., Griever, W., Warnock, F.: Information costs and home bias: an analysis of U.S. holdings of foreign equities. Journal of International Economics **62**, 313–136 (2004)
2. Bagnoli, M., Kross, W., Watts, S.: The information in management's expected earnings report date: a day late, a penny short. Journal of Accounting Research **40**(5), 1275–1296 (2002)
3. Bradshaw, M., Bushee B., Miller, G.: Accounting choice, home bias and U.S. investment in non-U.S. firms. Journal of Accounting Research **42**(5), 795–841 (2004)
4. Chen, S., DeFond, M., Park, C.: Voluntary disclosure of balance sheet information in quarterly earnings announcements. Journal of Accounting and Economics **33**(2), 229–251 (2002)
5. Collins, D., Maydew, E., Weiss, I.: Changes in the value-relevance of earnings and book value over the past forty years. Journal of Accounting and Economics **24**(1), 39–67 (1997)
6. Coval, J., Moskowitz, T.: Home bias at home: Local equity preference in domestic portfolios. Journal of Finance **52**, 2045–2073 (2001)
7. Eccles, R., Herz, R., Keegan, E., Phillips, D.: The value reporting revolution, New York, NY: Wiley 2001
8. Francis, J., Schipper, K.: Have financial statements lost their relevance? Journal of Accounting Research **37**(2), 319–352 (1999)
9. Francis, J., Schipper, K., Vincent, L.: Earnings announcements and competing information. Journal of Accounting and Economics **33**(3), 313–342 (2002)
10. Francis, J., Schipper, K., Vincent, L.: Expanded disclosures and the increased usefulness of earnings announcements. The Accounting Review **77**, 515–546 (2002)
11. Hirshleifer, D., Lim, S., Teoh, S.: Disclosure to an audience with limited attention. Working Paper, The Ohio State University and DePaul University (2004)
12. Hirschleifer, D., Teoh, S.: Limited attention, information disclosure and financial reporting. Journal of Accounting and Economics **36**(1–3), 337–386 (2003)
13. Karolyi, G., Stulz, R.: Are financial assets priced locally or globally? In: Constantinides, G., Harris, M., Stulz, R. (eds.) Handbook of the economics of finance. Amsterdam: Elsevier 2004
14. Kross, W., Kim, M.: Differences between market responses to earnings announcements in the 1990s versus the 1960s. Working Paper, Purdue University (1999)

15. Landsman, W., Maydew, E., Beaver (1968) revisited: Has the information content of annual earnings announcements declined in the past three decades? Working Paper, University of North Carolina (2000)
16. Lev, B., Zarowin, P.: The boundaries of financial information and how to extend them. Journal of Accounting Research **37**(2), 353–385 (1999)
17. Merton, R.: Presidential address: a simple model of capital market equilibrium with incomplete information. Journal of Finance **42**, 482–510 (1987)
18. Miller, P., Bahnson, P.: Quality financial reporting. New York, NY: McGraw-Hill 2002
19. Palepu, K., Healy, P., Bernard, V.: Business analysis & valuation. Cincinnati, OH: South-Western College 2003
20. Penman, S.: Financial statement analysis and security valuation. New York, NY: McGraw-Hill 2003