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Public Announcement of Analyst Recommendations and the Impact on the Common Stock Market

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PUBLIC ANNOUNCEMENT OF ANALYST RECOMMENDATIONS AND THE IMPACT ON THE COMMON STOCK MARKET

by

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INTRODUCTION

Between 1985 and 1987, R. Foster Winans, a reporter for the Wall Street Journal, received convictions for violating section 10(b) and Rule 10b-5 of the Securities and Exchange Act as well as engaging in mail fraud.[1]

Foster Winans was one of several different reporters for the Wall Street Journal that took part in the writing of the daily column, "Heard on the Street" (hereinafter HOS). HOS reported mostly opinions from different industry analysts, portfolio managers, and company sources on specific companies and usually gave a their recommendation on whether they thought the company was a "buy" or a "sell."

In October of 1983, Winans met with a top broker for Kidder Peabody, Peter Brant. They subsequently agreed that Winans would leak information about the upcoming article to Brant the day before its release, and Brant would then trade on that information. The information leaked included the company mentioned and the overall opinion about that company; whether it was a buy or a sell. All information was to be kept pure in that nothing would be fabricated about the company solely for the purpose of influencing the stock. Brant would execute the trade late in the afternoon on the day before the article was published then close out his position after the article's public release.

The trading scheme between Winans and Brant lasted from October 1983 to February 1984. Over this time, twenty-seven articles were leaked in advance, some of which were not written by Winans. Shortly after, the SEC was investigating Winans on grounds of insider trading. Because the information they traded on had already been declared public, the SEC had to prove to the courts that the article itself was an important information event - meaning its

publication represented an important information event above and beyond the public information contained in the article. Foster Winans was convicted of insider trading, and the conviction was upheld by the U. S. Supreme Court in November 1987.[2]

The introduction of R. Foster Winans and his story gives an account as to the backdrop in which this paper is written. The articles written during this time were full of speculative opinions as well as fresh, up to the minute facts. Since Winans' conviction, the Wall Street Journal has been careful to prevent new information dissemination and such strong opinions from being expressed in its HOS column.[2]

Winans involvement in the insider trading scandal caused several articles to be published in the subsequent years regarding whether or not the "Heard on the Street" column had enough impact to drive the market.

Studies done by Syed, Liu, and Smith[3] (hereinafter SLS) along with articles by Beck-Dudley and Stephens[4] give conflicting results as to the importance of the information leaked about the content of the forthcoming HOS articles by Winans. SLS argue that the information leaked was significant enough to cause a market response. Beck-Dudley and Stephens disagree with the conclusions made by SLS in that a small group of traders trading a relatively small number of shares could not generate the market response seen on the day preceding the release of the article. Forces other than the information leaks must have been taking place in the market that drove the movement in stock price.

The following analysis shows that regardless of the events taking place before the event date, certain articles had more of an impact on the stock price on the day of publication than others. This paper will focus more on the content of the HOS articles as it deals with the

different types of people giving the recommendations as opposed to the overall buy/sell perspective. The purpose of this paper is to analyze whether recommendations from different individuals mentioned in HOS affect the stock price in different ways. Generally speaking, does the recommendation of one type of person or analyst create a significantly different stock price movent than another.

EVENT STUDIES

The methodology used to study the impact that different analysts have on a company's stock price is based on the event study methodology developed by Stephen J. Brown and Jerold B. Warner [3]. Event studies are statistical techniques that use empirical financial data to asses the impact of a particular event on the price of a firm's stock. At first glance, this may seem easier than it really is. On any given day there are a number of different elements that can influence the stock price. Factors such as interest rates, exchange rates, investor sentiment, inflation, and GDP estimates all have some contribution on the daily movements in the stock's price[5]. An equally-weighted index model that represents the entire New York Stock Exchange can be used as a good estimation of most of the forces at play in the market on any given day.

Regression analysis comparing the specific stock movements with the equally-weighted index model gives estimates of α and β for the equation

$$R_{it} = \alpha_i + \beta_{im} * R_{mt} + e_{it}$$

where R_{it} is the expected return on the individual stock, i, for the time period t (in this case t is one day), R_{mt} is the return on the market index in time t, and e_{it} is the error term that is used as a placeholder for the difference between the market return and the stock return that is not explained by the equation $\alpha_i + \beta_{im} * R_{mt}$. α and β are the parameters estimated by the regression analysis.

β_{im} is the firm specific coefficient that measures the sensitivity of the stock to the market and α_i is the average excess return that the stock will realize given a zero market return[6]. The previous equation of $R_{it} = \alpha_i + \beta_{im} * R_{mt} + e_{it}$ imposes a maintained hypothesis of a linear relation between the stock returns and the index model. For this situation, it is believed to be an accurate assumption.

The error term, e_{it}, is the parameter in which the analysis is based. It shows how much the firms stock price changes above and beyond what we would expect based on our market model (sometimes e_{it} is referred to as the abnormal return or residual return). When the error term is small, the model has predicted the stock price movement fairly well. When the error term is large (becomes statistically significant), there may be other reasons for the stock's movement than can be explained by the market regression model. These other reasons usually entail new information that is released into the market about that particular stock. Items such as unexpected dividend announcements and unexpected mergers create large error terms. The new information changes investors opinions concerning the stock resulting in unusual price movements.

The regression for this study used 250 days of daily data ranging from 260 days prior to the publication of the article (the event date), day t = -260, up to 11 days prior, day t = -11. This allows for the regression model to formulate expected returns for the stock given the market return over a relatively long period of time. The event date was not included in the regression to reduce bias that would result in the parameters. If the event date was included in the regression, the regression model would use what might be abnormal data in its computation of parameters. The following 20 days are plotted on graphs, from day t = -10 to day t = +10, where the event date is day t = 0.

The error terms for each day, t = -10 through t = +10, are recorded then combined with all the other companies within the particular subgroup. Even though the companies mentioned all have different publication dates, each one designates the day its article was published as day t = 0. Aligning the different companies so that the event date now becomes the same for all firms, we can begin to look at the combined abnormal returns experienced on the day of the articles release.

Under normal circumstances where no new information is released to the market, the error terms would tend to fluctuate around a value of zero (0). This is a result of the ordinary least squares method of regression, the method used to calculate the parameters in our model. It will be assumed that the distribution of the error terms falls into a normal or bell-shaped curve. The shape of this distribution is fundamental to our interpretation of the results. Without this assumption of a normal curve the hypothesis testing performed later in the article would be invalid. Under this type of distribution, where n is sufficiently large, approximately 98% of all values of the combined error term fall within ±2.326 standard deviations away from 0.

When the values of the error terms fall outside ±2.326 standard deviations they are statistically significant at the $\alpha = .01$ level of significance.[1] There is a strong argument that this value did not appear out of pure chance. As the test statistic moves increasingly further outside of the ±2.326 range, the possibility of a firm specific event driving the stock price becomes a

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[1] This is correct when using a one-tailed test. The data is significant at $\alpha = .01$ when the observations fall above +2.326 for the buy articles and below -2.326 for the sell articles. The other necessary condition for the validity of this statement is that the sample size is very large ($n > 120$). For many of the samples n is less than 120 yet as will be shown most of the test statistics will still be significant even at $\alpha = .005$.

very realistic possibility. The significant test statistic varies depending upon how many observations are included in the group. The fewer the observations, the higher the test statistic needs to be to ensure significance at the specified α level.

The nature of the articles is such that for our purposes it would be preferable to use a one-tailed test when analyzing the significance of the test statistics we observe. The articles are arranged so that the "buy" articles are grouped separate from the "sell" articles". When looking at the graphs for the two different types of articles, it is obvious that it is unnecessary to use a two-tailed test when the data is so heavily biased either positive or negative (for the buy articles, the event date and the days immediately preceding the event date have positive values only. The opposite is true for sell recommendation articles).

Because we are using a large number of firms in our samples, a statistically significant error term on the event date might imply that the article had some impact in moving the stock price. Depending on the content of the article, it may or may not cause a significant market response.

DATA

"Heard on the Street" is a daily column printed in the Wall Street Journal in Section C, Money and Investing. The Wall Street Journal is a nationally distributed newspaper delivered to many businesses and individuals well before the opening of the stock market. The majority of the individuals subscribers do not receive the Wall Street Journal until the delivery of the regular mail, sometimes as late as 4:00 to 5:00 pm. In most areas, this is long after the market has closed for the day.

HOS articles were taken from the beginning of January 1983 to the end of March 1983. Additional articles were used from September 1983 to March 1984. The stock price data used in this article comes from the Center for Research in Security Prices (CRSP) files. Companies that were listed in the Wall Street Journal's HOS column and had data listed in the CRSP files for the time periods in question were the companies ultimately used in the analysis. Before the screening, a total of 533 companies were listed in HOS. The elimination of 157 companies by the lack of data in the CRSP files left 376 companies that were distributed into 203 buy recommendations, 86 sell recommendations, and 87 neutral or no recommendations. The neutral articles were not used in the following analysis. When the analysis was performed, there were a small number of companies in both the buy and sell categories that were unaccessible in the CRSP data files for various reasons, therefore were excluded from the analysis.

ORGANIZATION OF ARTICLES

The HOS articles could have up to five different types of people making comments about any particular stock on any given day. Two of the types of people are named, meaning they have been identified within the article according to their name and position in the financial community. The other three are un-named; their position has been identified but their name was not revealed in the article.

The two named categories, or subsets, are Named Industry Analyst and Named Portfolio / Money Manager Analyst. The majority of the articles mention a named industry analyst. The named portfolio / money managers represent the second most prevalent group of opinions. Typically when a named industry analyst is not mentioned, a named portfolio / money manager

is.

The un-named group has three categories; Analysts / Un-named Source, Un-named Source But Affiliated, and Company Source. The analyst / un-named source was most common among the three, but it does not have nearly the number of articles as either of the named groups. The other two un-named sources did not have enough data to perform an accurate analysis of their impact. The analysis of the three un-named and two named subsets will focus on the categories by themselves and in combination with each other.

In addition to the subsets of articles based on the type of person mentioned, each subset is organized into up to three variations. These variations include any article that the type of person is mentioned in with all other analysts that may be included in the same article, the certain type of person in articles by themselves with no other analyst mentioned, and all articles that do not mention that particular type of person.

The tables included at the end of this article are arranged into four columns. The first column is the day relative to the event - shown on the horizontal axis of the graphs. The second column is the combined decimal change in the stock price for the stocks in that particular subgroup. A value of .015 would indicate a 1.5% average excess return in stock value for all the stocks listed. These are plotted on the vertical axis of the graphs. The third column is the test statistic for each decimal value. This tells the significance for each of the different decimal values. Some values are so large they fall several standard deviations away from the mean. This results in a large or significant test statistic. The fourth and final column is the number of observations (n) that were used in the regression for each day.

RESULTS

Buy Recommendations

One of the most apparent indications of the different influence each of the subsets wield can be seen in the buy recommendation of the named portfolio / money manager. On the day of publication, t = 0, the impact of the article and its contents can be measured by a test statistic as described earlier.

When all the articles with portfolio / money managers mentioned are analyzed (60 in total), there is a significant increase in the stock price on the day of publication. The t = 0 test statistic has a value of 4.31 as seen in Table 1. This is statistically significant at $\alpha = .001$. In layman's terms, this means we can be 99.8% sure that this value has not happened purely by chance. Some outside influence other than that taken into account by the regression model has caused the stock price to increase. There is also a statistically significant movement upward in the day preceding the publication, t = -1. The test statistic value of 3.16 is significant at $\alpha = .005$. (We can be 99% sure of a firm specific event occurring on that day. What the reason and cause for this occurrence is, shall be left to another article.)

The articles that did not mention any portfolio / money managers also had very significant increases in the day of publication and the two days prior. Day t = -2 and t = -1 both had test statistics of 3.26 and 3.47, respectively, significant at the $\alpha = .001$ level of significance for 117 observations (Table 2). The day of publication's test statistic, 3.75, significant at $\alpha = .001$, is an indication that the article had some influence in moving the stock price on that day. The graphs for the three subgroups are seen in Figures 1 - 3 (all the figures numerically correspond to the table they are representing).

The striking divergence between the first two subgroups mentioned and the subgroup that only mentioned named portfolio / money managers can be easily perceived. The other subgroups had significant increases in stock price on the event date and at least one day before. When portfolio / money managers are isolated so they are the only source mentioned in the article, there are absolutely no significant stock price movements. On t = 0 the test statistic of .137 is not even significant at the $\alpha = .25$ level of significance. Day t = -1 is similar and t = -2 is actually negative. Table 3 presents the specific values. This indicates that the mention of a named portfolio / money manager in a HOS column has no effect on the stock price of the company mentioned.

Where it has just been shown that named portfolio / money managers, when mentioned in a HOS article, have no impact on the price of a company's stock, it can now be seen that named industry analysts have a very large impact.

All articles that mention a named industry analyst are the first subgroup to be examined. With 137 observations, test statistics for the two days prior to the event date, t = -2 and t = -1, are statistically significant at the $\alpha = .001$ level with values of 3.49 and 4.62, respectively. On day t = 0 the test statistic is significant with a value of 5.76 (Table 4). The companies mentioned in this subgroup experience a large excess return in stock price on the day of publication as well as the two preceding days. The day immediately following the event, t = +1, is not significant at the $\alpha = .10$ level.

The articles that did not mention a named industry analyst showed no significant stock movements on or around the day of publication. The two days prior to the event date, t = -2 and t = -1, had test statistic values not significant at the $\alpha = .10$ level (Table 5). On day t = 0 the value

of 1.19 was still not significant at $\alpha = .10$. Days t = -4 and t = -3 both have test statistics that are significant at $\alpha = .05$ and $\alpha = .025$, respectively. This is unusual in that the subgroup of stocks moved upwards in price several days before the publication, but did not move when their articles became public.

In comparison with the preceding subgroup, the articles that mention only a named industry analyst have a large increase in stock price on the day the articles were published. The test statistics for the previous two days, t = -2 and t = -1 are not significant at the $\alpha = .05$ level (Table 6). The event date has a value of 4.40 that is significant at the $\alpha = .001$ level. It can be inferred from the three subgroups just mentioned that named industry analysts have a strong influence on the stock price of the companies listed in the HOS articles. The increase in stock price on the two days before the event must have come from a different source than the named industry analyst recommendations. The graphs in Figures 4 - 6 clearly illustrate this effect.

The next two subgroups of buy recommendations are fairly similar and will be discussed together. All articles with an analyst / un-named source and all articles with any of the three un-named sources have similar graphs in the range of t = -2 to t = 0 with one minor discrepancy.

For the analyst / un-named source articles, days t = -2 and t = -1 are both significant at the $\alpha = .001$ level of significance for 22 observations. On day t = 0 the analyst / un-named source seems to have no impact on the market the day the article is released.

The articles that mention all three un-named analysts show similar results. On the two days prior to publication there is a strong and significant increase in stock price at the $\alpha = .001$ level. The day of publication's test statistic is significant only at $\alpha = .05$ (Table 8). This is a much smaller increase than the previous two days indicating that the articles have only a minor

influence in moving the stock price.

The similarity of the two subgroups comes from the overlap between the analyst / un-named sources and the combined un-named analysts. 22 of the 42 articles from the second subgroup are contained in the first. This explains the resemblance between the two graphs (Figures 7 and 8). The discrepancy comes on the day t = 0. The combined un-named analysts have more of an impact on the stock price than the analyst / un-named sources, which have relatively no impact. This would lead to the conclusion that while analyst / un-named sources have little if any impact, the other two un-named analyst groups, un-named source but affiliated and company source have a much stronger impact on the market.

When analyst / un-named sources are removed from the sample leaving only the buy recommendation articles that have excluded them, the results change noticeably (Table 9). For the three days prior to the event, t = -3, t = -2, and t = -1, the test statistics are significant at the α = .01 level. On the day of publication, the value of the test statistic is 6.12. It is highly significant at the α = .001 level. Because all other articles besides analyst / un-named sources covers such a wide variety of analyst recommendations, we can not conclude that the lack of an analyst / un-named source actually drives the market. We can infer though, the presence of an analyst / un-named source does not make any significant contribution to the stock movement.

The graphs presented in this article tend to follow a certain pattern over the 10 days following the event date. For the buy recommendations, after the articles were published, the average stock prices tended to have a slight upward drift in their cumulative daily residuals. This can be seen by the addition of the residuals for days t = +1 to t = +10 (graphs not shown). The sell recommendations also exhibited a cumulative upward movement over the next several days.

These findings are confirmed by the research done by Brown, et al.[7] In their article, they concluded that investors, in exchange for the greater risk incurred by the unexpected event, they set the stock price below their expected value until the eventual outcome is gradually clarified. In which case, it does not matter if the new information was good or bad, the subsequent movements in price will be positive.

Sell Recommendations

The sell recommendation articles resemble the buy articles to a certain degree. There is a slight difference in the results that will be explained shortly.

The articles that list only named industry analysts and those that list any article with a named industry analyst produce comparable results. From tables 10 and 11, the impact according to the daily combined stock movements which the test statistics are based, day $t = 0$ is greater for the subgroup that contains all articles of named industry analysts. The test statistic values are both significant at the $\alpha = .001$ level; -3.57 for the articles with only a named industry analyst and -7.81 for all the articles. The latter subgroup also has a significant increase on the day prior to the event where the former does not. This corresponds to the buy recommendations in two ways: (1) the "all the articles" subgroup has more of an impact than the named industry analyst only articles, and (2) the significant increases prior to publication do not occur with named industry analysts only, but must be influenced by some other outside sources.

The subgroup that contains no named industry analysts has a slightly stronger impact on the market on both the event day, $t = 0$, and the day prior, $t = -1$ than the buy recommendations dealing with the same subgroup. The values of the test statistic on days $t = -1$ and $t = 0$ are -2.44

and -2.49, respectively (Table 12). Unlike the buy recommendations, which were not significant at the $\alpha = .10$ level, the sell recommendations are significant at the $\alpha = .025$ level for 18 observations. This still does not equal the influence of when named industry analysts are mentioned, but it does provide the basis for speculation on the part of sell recommendations. It appears the recommendations to sell a stock are met by a greater impact that the buy recommendations. This may be caused by the certainty of your gains or losses when you sell a stock versus the uncertainty with buying a stock. This is only speculation that has not been confirmed by any empirical tests.

The final subgroup to be analyzed will be the combined named analysts - either named industry analyst or named portfolio / money manager. The two distinct subgroups are all articles that mention a named analyst (Table 13) and the articles that mention a named analyst only and no others (Table 14). These tables indicate that there is a distinction in the impact of the different subgroups. The articles that include any named analysts have higher test statistics on the event date and the day prior than the named analyst only subgroup. The test statistic for day t = -1 is -4.22 for the "all articles" subgroup and -2.73 for the "named articles only" subgroup. The -4.22 test statistic is significant at $\alpha = .001$ while the -2.73 is only significant at the $\alpha = .005$ level. Day t = 0 has test statistic values of -7.79 for the "all articles" subgroup and -5.43 for "named articles only" . Both are significant at the $\alpha = .001$ level of significance (see Figures 13 and 14). Although the latter test statistic for day t = -1 is not significant at the same α level as the former, this is a minor issue. The common statistical standard in which to judge test statistics is $\alpha = .025$ for a one-tailed test. Both of these values easily meet this criteria. They are compared to reveal their relative importance only. The "all articles" subgroup has a stronger

relative influence on the market than the "named articles only" subgroup, yet both are significant at α values greater or equal to .005.

The implication of statistical analysis on the named analysts reveals that there is an influence other than the named analysts themselves that is moving the market more than they are able to alone. The only factor available to make this impact is the un-named analysts. The un-named analysts provide the additional influence needed to increase the impact the publication of the articles have on the stocks mentioned.

SUMMARY

The mentioning of different types of analysts and sources of information in the HOS articles cause very distinct differences in the way the market reacts to the stocks listed.

Named portfolio / money managers tend to elicit no response from the market when they are included in the article. The articles that mentioned only named portfolio / money managers had no significant stock price movements associated with the stocks they recommended. Named industry analysts, on the other hand, strongly influenced the stocks listed by moving the stock price significantly when they were mentioned in the article. When they were not included, the stocks failed to show any significant movements.

Analyst / un-named sources also seemed to have no significant impact on the stock price of the firms they recommended. The other two groups of un-named analysts, un-named source but affiliated and company source, together provide a greater impact on stock prices than the analyst / un-named source alone.

When dealing with named industry analysts, the impact of all the articles in which they

are mentioned is greater than the impact of the articles that mention them and no others. This is true for both the buy and sell recommendations.

The combined named analysts for sell recommendations tend to produce stronger, more significant impacts on the price of a firms stock if they are combined with un-named analysts. This may revert back to the assumption that sell recommendations produce a stronger affect, in general, on market sentiment than buy recommendations.

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NOTES

1. Alan A. Stephens and Caryn L. Beck-Dudley. "Inappropriate Confessions to Nonexistent Crimes? A Look at Insider Trading, Mail and Wire Fraud and the Efficient Market.", 6

2. _____. "In Defense of Foster Winans: Applying Market Efficiency to Insider Trading Cases.", 4

3. Azmat A. Syed, Pu Liu, and Stanley D. Smith. "The Exploitation of Inside Information at the Wall Street Journal: A Test of Strong Form Efficiency." The Financial Review 24 (November 1989), 567-579.

4. Alan A. Stephens and Caryn L. Beck-Dudley. "In Defense of Foster Winans : Applying Market Efficiency to Insider Trading Cases.", 8

5. Zvi Bodie, Alex Kane, and Alan J. Marcus, Investments, 2nd ed. (Homewood, IL : Irwin, 1993), 367

6. Ibid., 368

7. Keith C. Brown, W. V. Harlow, and Seha M. Tinic. "How Rational Investors Deal With Uncertainty." Financial Management Collection 5 (Fall 1990) : 2-3

Table 1
All Portfolio / Money Managers

-10	-0.007731	-2.483830	60
-9	0.001728	0.555279	60
-8	0.004240	1.362412	60
-7	-0.002671	-0.858289	60
-6	0.003551	1.141094	60
-5	-0.000652	-0.209524	60
-4	0.007010	2.252200	60
-3	0.003950	1.269295	60
-2	0.003417	1.098036	60
-1	0.009844	3.162920*	60
0	0.013411	4.309038*	60
1	-0.001800	-0.578386	60
2	-0.001221	-0.392389	60
3	-0.003653	-1.173706	60
4	-0.000425	-0.136484	60
5	0.001881	0.604433	60
6	0.002840	0.912547	60
7	0.005081	1.632555	60
8	-0.000339	-0.109054	59
9	0.001246	0.400244	59
10	0.003663	1.176933	59

Table 2
No Portfolio / Money Managers

-10	-0.005462	-2.086245	117
-9	-0.001064	-0.406561	117
-8	-0.001485	-0.567271	117
-7	0.004305	1.644234	117
-6	0.000078	0.029800	117
-5	-0.001210	-0.462216	117
-4	0.002174	0.830400	117
-3	0.004480	1.710959	117
-2	0.008558	3.268531*	117
-1	0.009093	3.473038*	117
0	0.009831	3.754835*	117
1	0.002463	0.940799	117
2	-0.001877	-0.716936	117
3	-0.001219	-0.465589	117
4	0.002535	0.968042	117
5	0.001720	0.656797	117
6	-0.000286	-0.109117	117
7	0.000792	0.302642	117
8	0.000634	0.242061	117
9	0.000406	0.155200	117
10	-0.001514	-0.578403	117

Figure 1

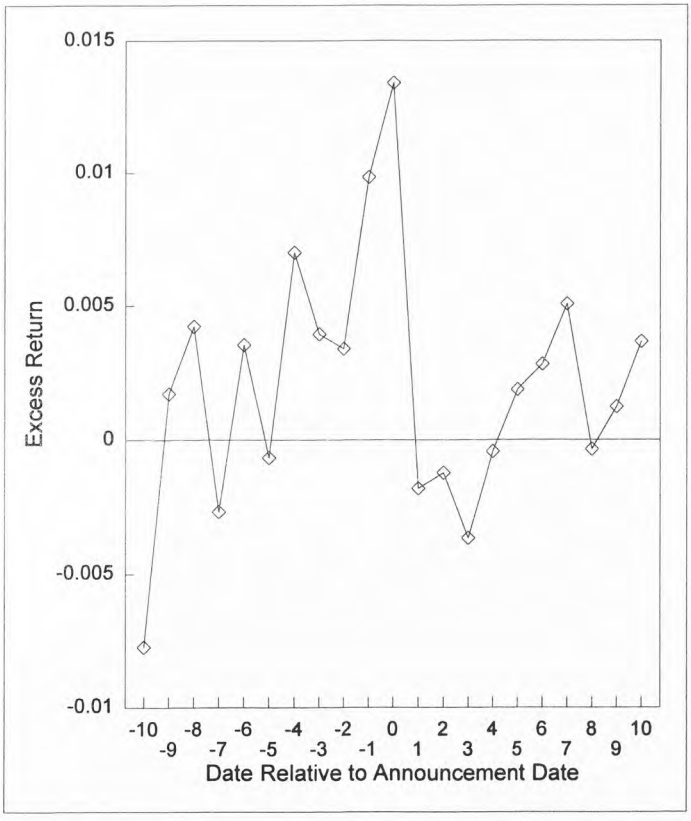
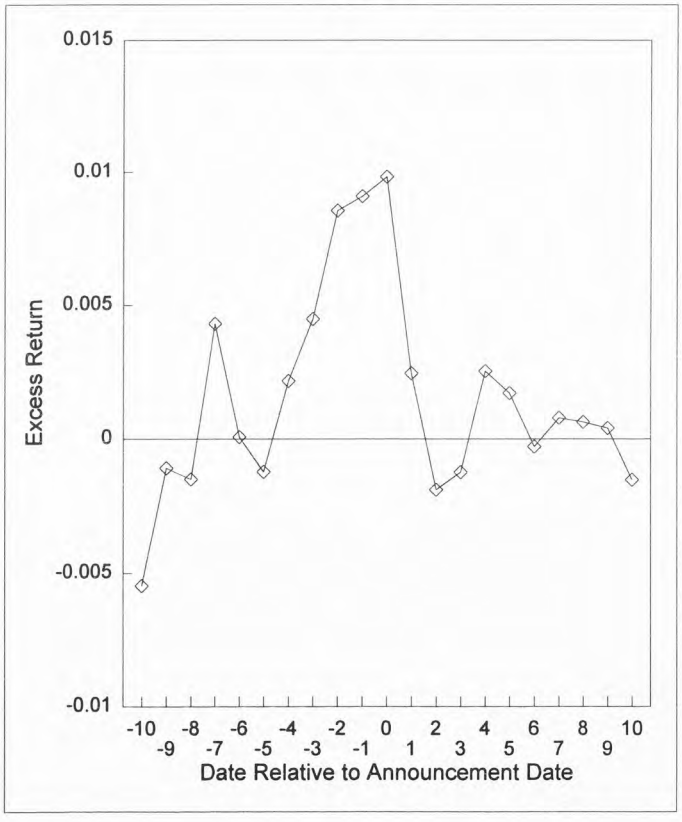


Figure 2



* Significant Test Statistic

Table 3
Only Portfolio / Money Managers

-10	-0.004952	-1.087754	24
-9	0.003438	0.755268	24
-8	0.001586	0.348369	24
-7	0.000693	0.152206	24
-6	0.004696	1.031694	24
-5	-0.000657	-0.144277	24
-4	0.006316	1.387567	24
-3	0.007410	1.627932	24
-2	-0.002578	-0.566393	24
-1	0.000896	0.196728	24
0	0.000626	0.137519	24
1	-0.000880	-0.193367	24
2	-0.002630	-0.577794	24
3	-0.003160	-0.694143	24
4	0.007103	1.560352	24
5	0.006025	1.323543	24
6	-0.001188	-0.261026	24
7	-0.000457	-0.100459	24
8	-0.004064	-0.892731	24
9	-0.000651	-0.143003	24
10	0.003294	0.723595	24

Table 4
All Named Industry Analysts

-10	-0.004989	-2.183338	137
-9	-0.000740	-0.323910	137
-8	0.000782	0.342224	137
-7	0.001796	0.785991	137
-6	0.000676	0.296017	137
-5	-0.000396	-0.173263	137
-4	0.002962	1.296407	137
-3	0.003051	1.335245	137
-2	0.007995	3.498605*	137
-1	0.010565	4.623238*	137
0	0.013173	5.764431*	137
1	0.001700	0.743958	137
2	-0.000965	-0.422252	137
3	-0.001343	-0.587524	137
4	0.001822	0.797468	137
5	0.000539	0.235954	137
6	0.001339	0.585779	137
7	0.001003	0.439040	137
8	-0.001077	-0.471089	136
9	0.001098	0.480287	136
10	0.000130	0.056928	136

Figure 3

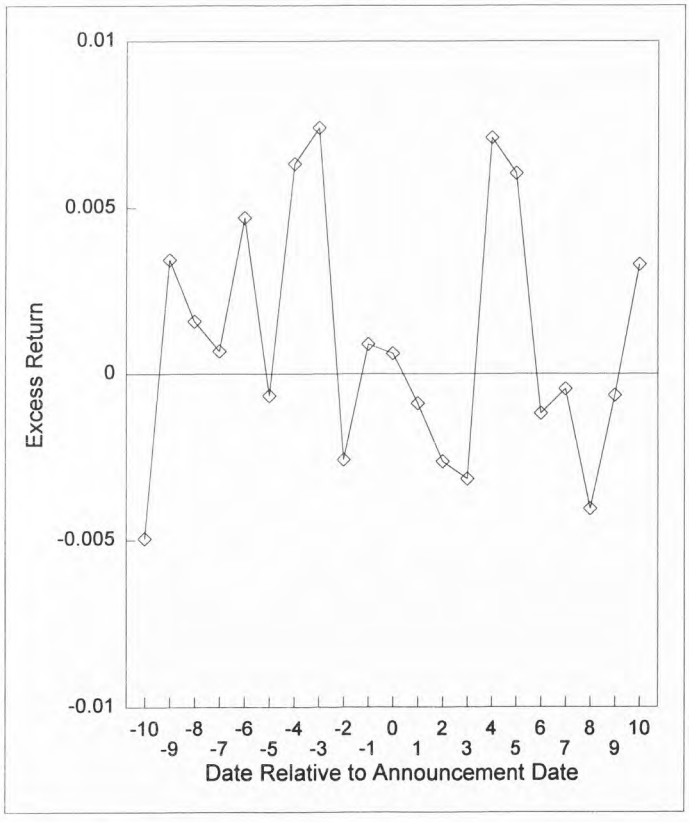
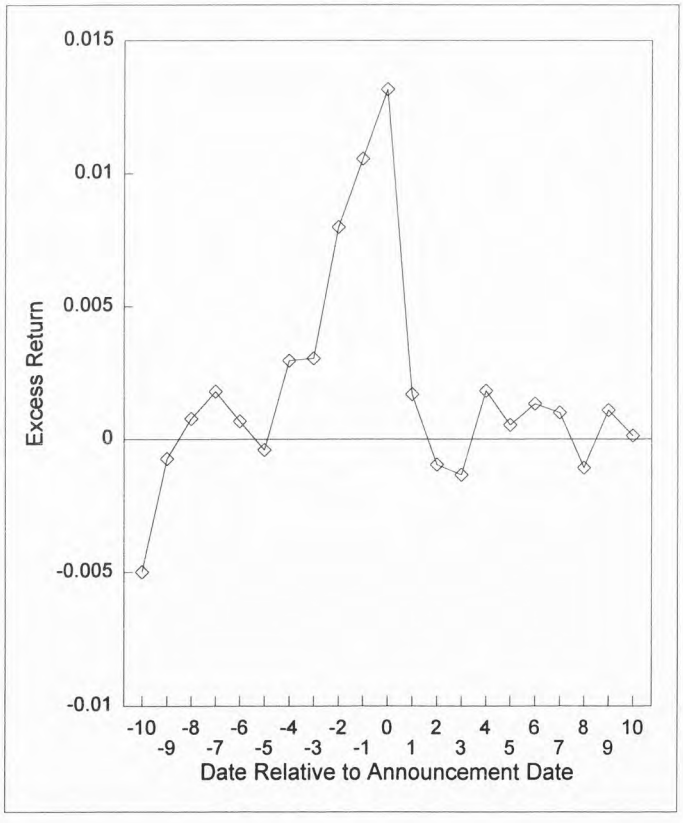


Figure 4



* Significant Test Statistic

Table 5
No Named Industry Analysts

-10	-0.008033	-2.003660	41
-9	0.002800	0.698339	41
-8	0.001396	0.348328	41
-7	0.000628	0.156544	41
-6	0.003584	0.894076	41
-5	-0.001349	-0.336606	41
-4	0.006788	1.693255	41
-3	0.008375	2.089046*	41
-2	0.003496	0.872000	41
-1	0.003468	0.865048	41
0	0.004799	1.197156	41
1	-0.002079	-0.518697	41
2	-0.003289	-0.820405	41
3	-0.002154	-0.537185	41
4	0.000383	0.095428	41
5	0.004783	1.193117	41
6	-0.000890	-0.222070	41
7	0.006366	1.587840	41
8	0.003371	0.840951	41
9	-0.001988	-0.495779	41
10	-0.000178	-0.044319	41

Table 6
Only Named Industry Analysts

-10	-0.004909	-1.675245	92
-9	-0.001842	-0.628488	92
-8	-0.001994	-0.680496	92
-7	0.004843	1.652565	92
-6	-0.000766	-0.261345	92
-5	-0.001328	-0.452999	92
-4	0.002498	0.852222	92
-3	0.004208	1.435732	92
-2	0.004595	1.567955	92
-1	0.002235	0.762803	92
0	0.012905	4.403600*	92
1	0.003334	1.137777	92
2	-0.000486	-0.166005	92
3	-0.000494	-0.168447	92
4	0.003163	1.079344	92
5	0.001563	0.533481	92
6	0.001482	0.505786	92
7	-0.000787	-0.268413	92
8	-0.000148	-0.050433	92
9	-0.001061	-0.362152	92
10	-0.001897	-0.647418	92

Figure 5

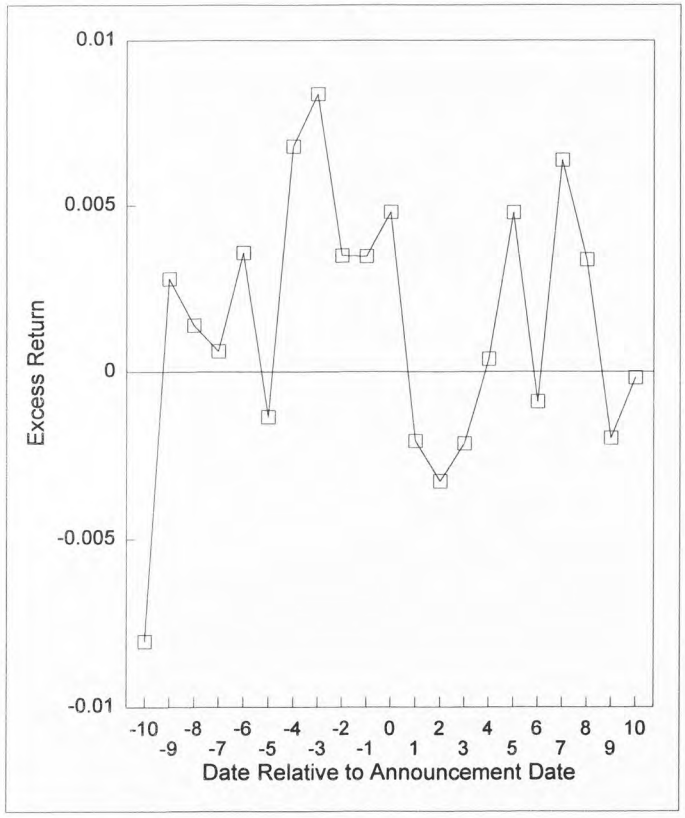
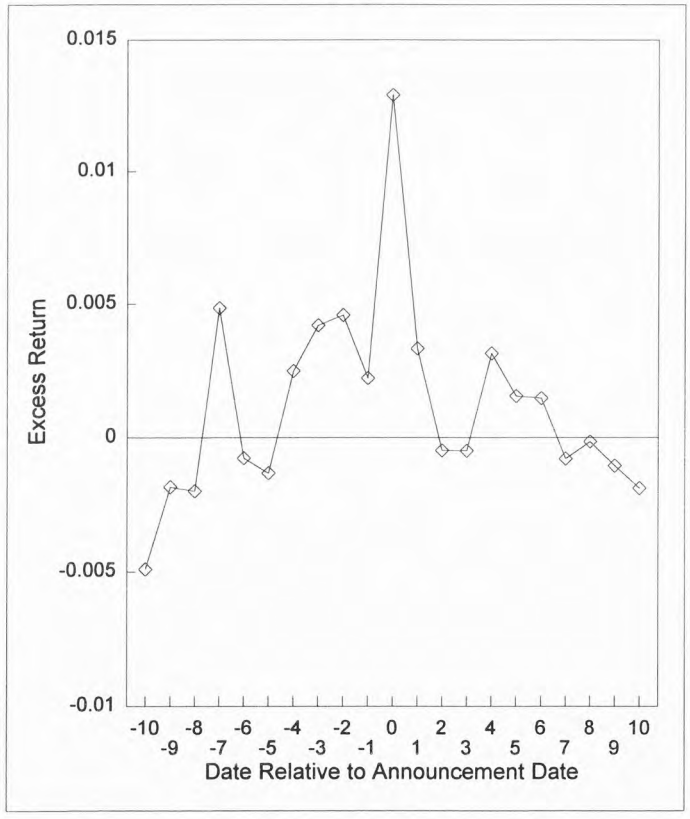


Figure 6



* Significant Test Statistic

Table 7
All Analysts / Un-Named Source

-10	-0.006850	-1.223115	22
-9	-0.006656	-1.188373	22
-8	-0.001004	-0.179346	22
-7	0.004323	0.771839	22
-6	0.009280	1.656953	22
-5	0.004363	0.778955	22
-4	0.002448	0.437107	22
-3	-0.004152	-0.741315	22
-2	0.023573	4.208972*	22
-1	0.026942	4.810556*	22
0	0.000067	0.011932	22
1	-0.004422	-0.789645	22
2	-0.009543	-1.703993	22
3	-0.000960	-0.171356	22
4	-0.003280	-0.585738	22
5	-0.009956	-1.777664	22
6	-0.001408	-0.251408	22
7	0.007203	1.286177	22
8	0.008904	1.589904	22
9	-0.004456	-0.795562	22
10	0.001257	0.224456	22

Table 8
All Three Un-Named Analysts

-10	-0.002715	-0.663357	42
-9	0.000760	0.185820	42
-8	0.003675	0.898122	42
-7	0.001508	0.368591	42
-6	0.007203	1.760291	42
-5	0.001459	0.356526	42
-4	0.000963	0.235308	42
-3	0.000909	0.222095	42
-2	0.018368	4.488545*	42
-1	0.022161	5.415545*	42
0	0.007920	1.935410	42
1	-0.002084	-0.509184	42
2	-0.003790	-0.926096	42
3	-0.003157	-0.771400	42
4	-0.003510	-0.857734	42
5	-0.002767	-0.676230	42
6	-0.001352	-0.330399	42
7	0.004683	1.144441	42
8	0.004321	1.055870	42
9	-0.002532	-0.618639	42
10	0.000179	0.043735	42

Figure 7

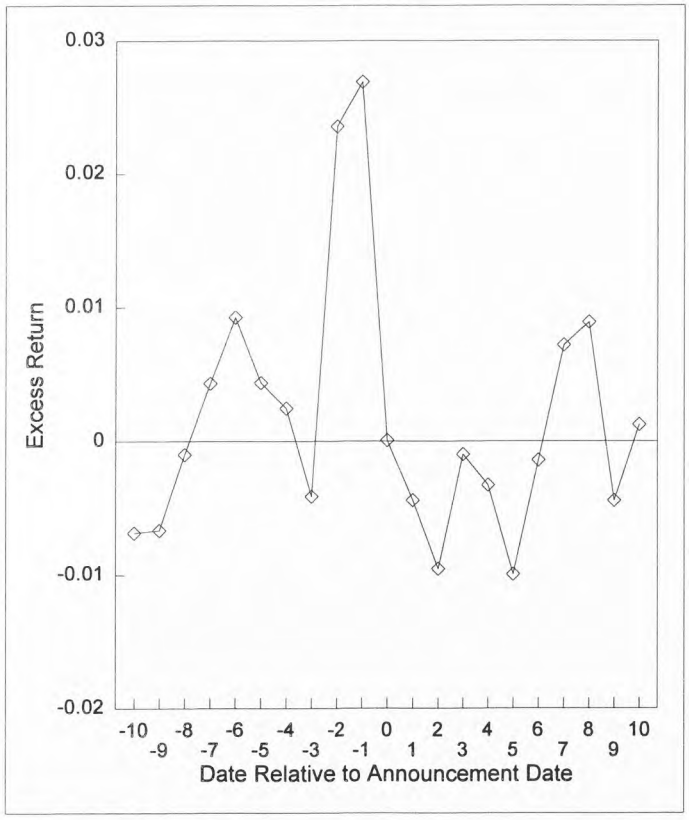
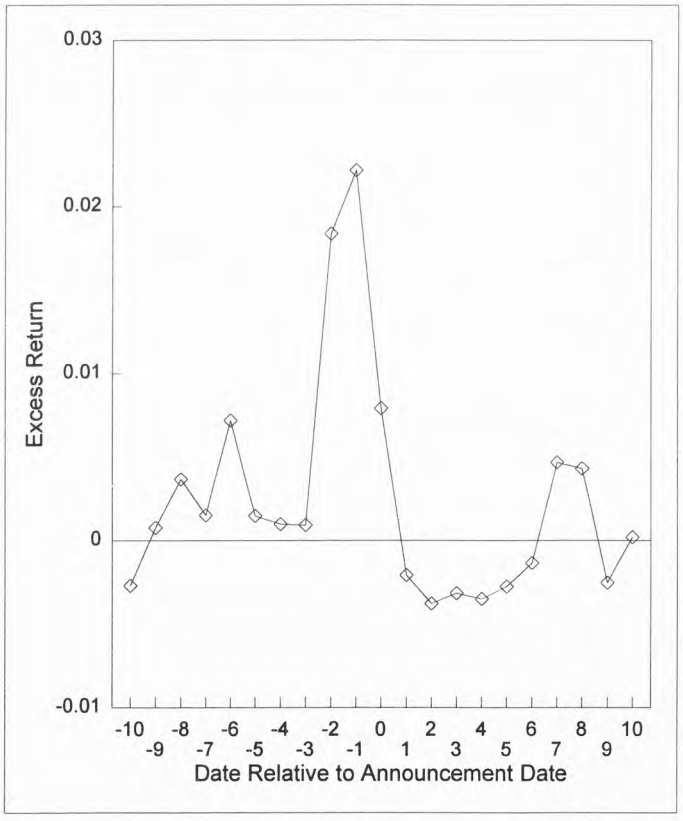


Figure 8



* Significant Test Statistic

Table 9
No Analysts / Un-Named Source

-10	-0.005537	-2.620269	156
-9	0.000873	0.413101	156
-8	0.001166	0.551695	156
-7	0.001135	0.537335	156
-6	0.000185	0.087767	156
-5	-0.001401	-0.662899	156
-4	0.004051	1.917150	156
-3	0.005595	2.647925*	156
-2	0.004629	2.190743*	156
-1	0.006374	3.016565*	156
0	0.012933	6.120241*	156
1	0.001562	0.739165	156
2	-0.000363	-0.171605	156
3	-0.001680	-0.795117	156
4	0.002202	1.042183	156
5	0.003272	1.548480	156
6	0.001035	0.489765	156
7	0.001348	0.637783	156
8	-0.001200	-0.567676	155
9	0.000999	0.472624	155
10	-0.000156	-0.073851	155

Table 10
Only Named Industry Analysts

-10	0.007191	1.321976	27
-9	0.000473	0.086957	27
-8	-0.008467	-1.556383	27
-7	0.004742	0.871793	27
-6	-0.003245	-0.596580	27
-5	0.002989	0.549496	27
-4	-0.001653	-0.303893	27
-3	0.001066	0.195995	27
-2	-0.001175	-0.216023	27
-1	0.006888	1.266240	27
0	-0.019434	-3.572521*	27
1	-0.006825	-1.254622	27
2	-0.002015	-0.370419	27
3	-0.000244	-0.044938	27
4	0.006012	1.105161	27
5	0.005355	0.984373	27
6	0.002418	0.444433	27
7	-0.003253	-0.597912	27
8	-0.006426	-1.181218	26
9	0.002222	0.408376	26
10	0.000503	0.092433	26

Figure 9

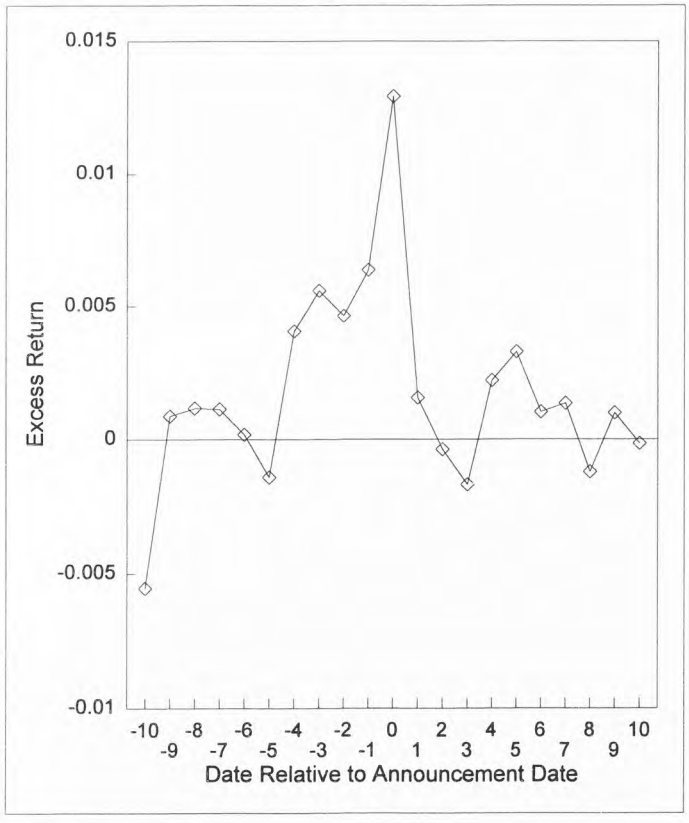
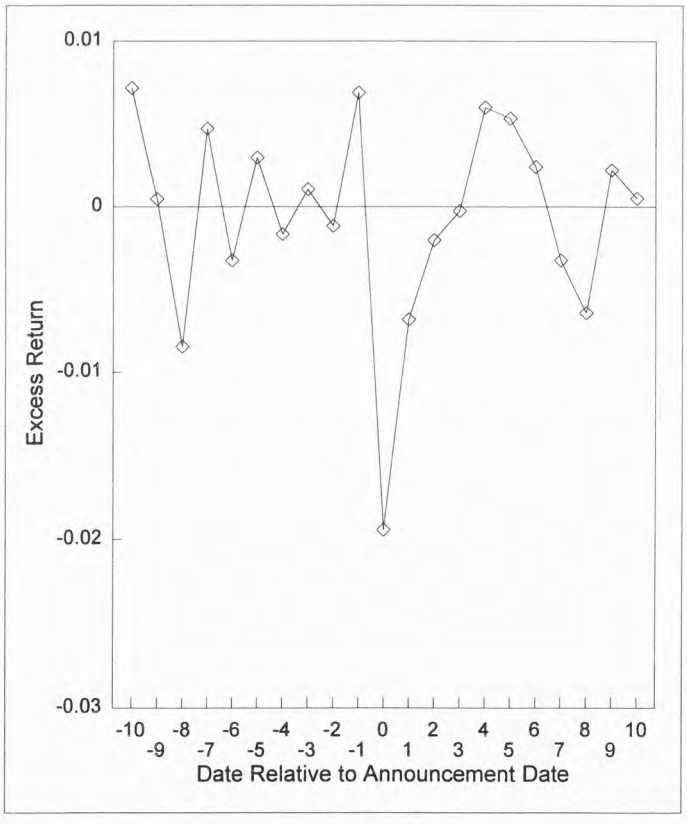


Figure 10



* Significant Test Statistic

Table 11
All Named Industry Analysts

-10	0.001470	0.430729	59
-9	0.002540	0.744061	59
-8	-0.002823	-0.826833	59
-7	0.004819	1.411666	59
-6	-0.004939	-1.446888	59
-5	-0.000276	-0.080970	59
-4	-0.005740	-1.681486	59
-3	-0.006995	-2.049078*	59
-2	-0.002410	-0.705892	59
-1	-0.012083	-3.539724*	59
0	-0.026677	-7.814871*	59
1	-0.004606	-1.349357	59
2	0.003370	0.987248	59
3	0.002772	0.812058	59
4	0.006082	1.781728	59
5	0.005324	1.559528	59
6	0.001672	0.489832	59
7	0.002956	0.865849	59
8	-0.009259	-2.712378*	58
9	0.000413	0.120841	57
10	0.000163	0.047791	57

Table 12
No Named Industry Analysts

-10	-0.003374	-0.527453	18
-9	-0.004501	-0.703808	18
-8	-0.007767	-1.214444	18
-7	-0.015535	-2.428921*	18
-6	0.012690	1.984121	18
-5	0.000935	0.146147	18
-4	-0.000520	-0.081281	18
-3	0.000956	0.149421	18
-2	-0.000407	-0.063591	18
-1	-0.015634	-2.444430*	18
0	-0.015959	-2.495278*	18
1	0.000553	0.086524	18
2	-0.006374	-0.996642	18
3	0.008038	1.256753	18
4	0.006640	1.038124	18
5	-0.004973	-0.777595	18
6	0.001103	0.172403	18
7	0.002689	0.420445	18
8	0.007094	1.109152	18
9	-0.002653	-0.414828	18
10	0.009154	1.431199	18

Figure 11

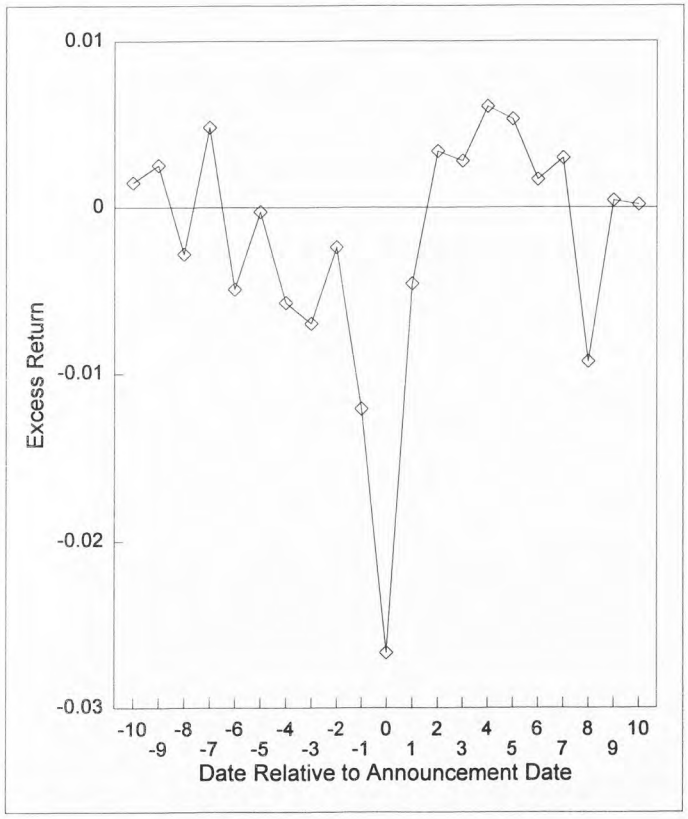
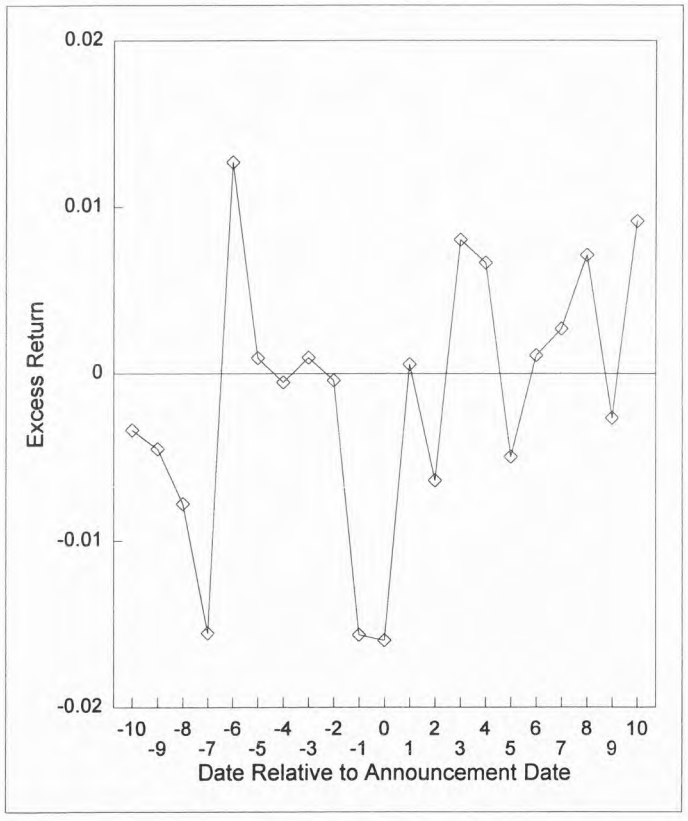


Figure 12



* Significant Test Statistic

Table 13
All Named Analysts

-10	0.000812	0.266045	74
-9	0.001438	0.471495	74
-8	-0.004375	-1.434347	74
-7	0.000118	0.038845	74
-6	-0.001263	-0.414019	74
-5	0.000201	0.065754	74
-4	-0.005096	-1.670620	74
-3	-0.005416	-1.775429	74
-2	-0.001176	-0.385372	74
-1	-0.012893	-4.226722*	74
0	-0.023764	-7.790479*	74
1	-0.002996	-0.982123	74
2	0.002288	0.750186	74
3	0.001819	0.596399	74
4	0.005376	1.762578	74
5	0.002955	0.968626	74
6	0.001392	0.456458	74
7	0.003333	1.092777	74
8	-0.005379	-1.763359	73
9	-0.000159	-0.052016	72
10	0.002513	0.823716	72

Table 14
Only Named Analysts

-10	0.001882	0.516136	51
-9	0.000275	0.075387	51
-8	-0.004756	-1.304087	51
-7	-0.002374	-0.650991	51
-6	-0.000328	-0.090009	51
-5	0.003770	1.033815	51
-4	-0.003401	-0.932607	51
-3	-0.003765	-1.032367	51
-2	-0.004344	-1.191200	51
-1	-0.009977	-2.735985*	51
0	-0.019818	-5.434587*	51
1	-0.005344	-1.465472	51
2	0.000869	0.238228	51
3	0.001140	0.312583	51
4	0.006718	1.842148	51
5	0.001160	0.317977	51
6	0.000995	0.272724	51
7	0.002297	0.629996	51
8	-0.008233	-2.257674*	50
9	0.003273	0.897545	50
10	0.000956	0.262229	50

Figure 13

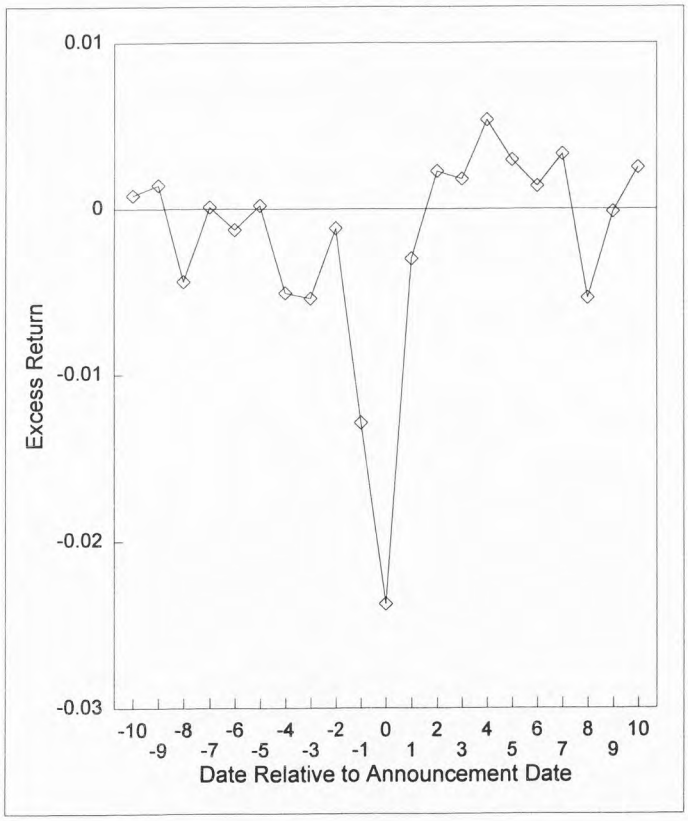
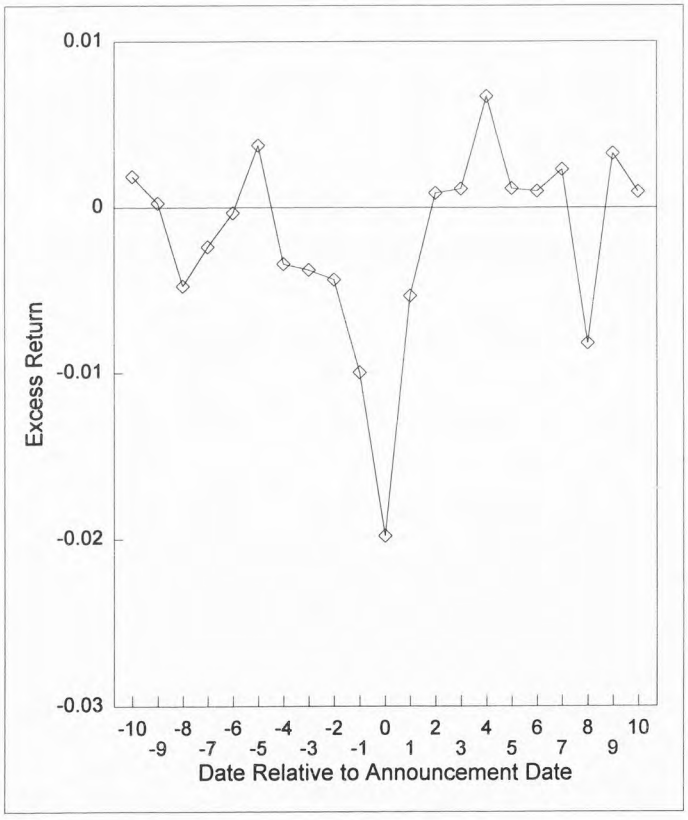


Figure 14



* Significant Test Statistic