

The Stock Price Overreaction Effect: Evidence on Nasdaq Stocks

Yulong Ma¹
California State University, Long Beach

Alex P. Tang
Morgan State University

Tanweer Hasan
Roosevelt University

We empirically investigate the market overreaction effect of the stocks with the largest daily percentage increases or decreases in price reported in The Wall Street Journal between January 1996 and December 1997. We select 852 stocks for the NYSE and Nasdaq samples of gainers and losers. We find strong evidence of stock price overreaction effects for both the Nasdaq gainers and losers samples but no such evidence for either the NYSE samples. The reversal of stock returns occurs within a two-day post-event period. Regression analysis shows that the stock price reversal is inversely related to the price gains or losses controlling for the size of Nasdaq firms.

Introduction

The stock market overreaction hypothesis states that a stock price usually reverses itself after the stock experiences a sharp increase or decrease in price. If this hypothesis holds, then profitable investment strategies can be constructed to take advantage of the overreaction effect. Therefore, a further understanding of the overreaction effect has important implications not only for academics and practitioners, but also for the investing public. In this paper, we use a two-calendar-year data set from *The Wall Street Journal* to empirically investigate the stock price overreaction

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effect on stocks that have experienced the largest percentage price increases or decreases on any trading day from January 1996 to December 1997.

The issue of stock market overreaction is not a new one. Among the early well-known studies are those by Beaver and Landsman (1981) and DeBondt and Thaler (1985). The new developments in market environments and the inconclusiveness of the previous research on this issue make this area important. The advent of the internet as a mass communication tool and the advance in communication technology means that information can now be more quickly and more cheaply disseminated than ever before. It may be an empirical issue whether these developments will help increase or decrease the overreaction effect. Further, stock market investments are no longer confined to financial professionals and elite investors. More individuals have begun to participate actively in the stock markets; and more retirement money has been channeled to the stock markets through institution-sponsored pension funds. Therefore, a better understanding of the market overreaction effect could help financial professionals and the investing public to formulate their investment strategies.

Using the stocks with the daily largest percentage change in price reported in *The Wall Street Journal*, we find that even though the two-day abnormal returns are about 22 percent for the NYSE gainers and -18 percent for the NYSE losers, there is no evidence of any significant overreaction effect for either the NYSE gainers or the losers. On the other hand, we find significant abnormal returns over two consecutive days right after the event day for the Nasdaq gainer and losers. We observe a stronger overreaction effect for the loser stocks. The two-day event-period abnormal returns for Nasdaq stocks are 38 percent for the gainers and -35 percent for the losers. The abnormal returns during the two-day period following the event day are -1.76 percent for the gainers and 4.5 percent for the losers. Both results are significant at the 0.01 level. Further, in our regression analysis we find that both firm size and prior stock performance are statistically significant factors in determining the overreaction effect.

Background and Relevant Literature

Previous studies on stock market overreaction have generated two important implications. First, the existence of the overreaction phenomenon is against the widely accepted market efficiency theory. Second, the studies question if investors can establish practical and profitable investment strategies to take advantage of the overreaction effect.

The semi-strong form market efficiency theory states that stock prices quickly reflect all publicly available information, implying that no overreaction effect should exist. Empirical finance literature (e.g., Fama, 1970 and 1991) documents strong evidence in support of the semi-strong market efficiency hypothesis. On the other hand, several studies (e.g., Conrad and Kaul, 1988 and Lo and MacKinley, 1988.) find significant empirical results inconsistent with the efficient market hypothesis.

Finance researchers generally consider the latter phenomena as market efficiency anomalies rather than outright rejections of the efficient market hypothesis. For example, French (1980), Gibbons and Hess (1981), Keim and Stambaugh (1984), and Rogalski (1984) find evidence of day-of-the-week and weekend effects on stock returns; Banz (1981) and Reinganum (1983) show the evidence of a size effect on stock returns; and Ariel (1987) shows the January effect.

Among these so-called market efficiency anomalies is the issue of stock market overreaction. Although we examine the issue of overreaction effect, the focus of our paper is investigating the returns behavior of the stocks rather than finding proof or disproof of the efficiency hypothesis. Theoretically, if the stock market overreaction exists, what causes it? The answer may lie in both how well individual investors are informed and in the psychology of the individual decision-making process. The combined effect is that investors tend to overreact to unexpected new information. They are likely to overbid or underbid a firm's stock and then later reverse themselves. Researchers believe that this phenomenon is especially evident for significant and negative events. Prior findings from experimental psychology (e.g., Kahneman and Tversky, 1982) have found that people tend to overreact to unexpected news events. The study of the effect of human behavior on investors' financial decision-making is called *behavioral finance*.

Recently, there has been an increasing interest in academic research on behavioral finance. R.H. Thaler is among the prominent researchers who recognize the importance of behavioral finance and who pioneered the studies. DeBondt and Thaler (1985) first apply the findings from experimental psychology research to explain the stock price overreaction effect. Overreaction is said to exist in stock markets because investors tend to overweigh the recent information in an attempt to revise their expectations about a firm and consequently they undervalue prior information. This kind of general tendency of the investors in the stock market leads to overvaluation of the prospects of the company with good news and undervaluation of the prospects of the company with bad news. Subsequently, when investors reappraise the pricing of those companies with extreme changes, the prices of those stocks previously considered the best decrease and those previously considered the worst increase. This kind of price change phenomenon in the literature has been termed *price reversal*.

Empirically, to examine if overreaction exists, DeBondt and Thaler (1985) construct two portfolios of stocks with high abnormal positive and negative returns. They find that extreme changes in stock price are followed by significant stock price changes in the opposite direction. They conclude that this is an example of weak-form market inefficiency. In a follow-up study, DeBondt and Thaler (1987) show that subsequent reversals of stock returns are more pronounced during January than in any other months, even though they have rejected size effect and risk measurement effect.

Using the CRSP weekly data from 1963 to 1981, Howe (1986) finds that stocks with good news experience 30 percent lower returns than the market during the 50-week period following the event, and stocks with bad news experience significantly higher returns than the market during the 20-week period after the event. Howe defines the event as a 50 percent price change in either direction. Similar studies with strong evidence in support of the overreaction hypothesis include Brown and Harlow (1988), Pettengill and Jordan (1990), and Chopra, Lakonishok, and Ritter (1992).

Atkins and Dyl (1990) examine the overreaction theory by selecting three stocks with the highest percentage gain and three stocks with the highest percentage loss for each day of 300 randomly selected days during the period 1975 through 1984. They find that the abnormal return for the loser portfolio is significantly positive immediately after the large price drop, but there is no significant price reversal for the winner portfolio immediately after the sharp price increase. They also examine the effect of bid-ask spread on the price reversal and find that the stocks with the highest bid-ask spread earn the largest abnormal returns.

Cox and Peterson (1994) and Akhigbe, Gosnell, and Harikumar (1998) also use the bid-ask spread to examine the overreaction phenomenon. Cox and Peterson's sample consists of NYSE, AMEX, and Nasdaq stocks with one-day price declines of 10 percent or more over the period January 1963 through June 1991. They find significant price reversals for NYSE and AMEX firms before, but not after, October 1987. For Nasdaq stocks, their results show significant price reversals following the event day both before and after October 1987. They find that most of these reversals are due to the bid-ask bounce. They conclude that there is no evidence consistent with the overreaction hypothesis.

Akhigbe, Gosnell, and Harikumar (1998) examine the overreaction issue by using a sample of NYSE stocks that gains or loses the most in a single trading day in 1992. In contrast to the findings by Cox and Peterson (1994), their empirical results show significant reversals during the immediate post-announcement period. Their results also indicate that the abnormal returns during the reversal period are, on average, less than the bid-ask spread during the same time. Using major losers, they find the price reversals are large enough to be profitable net of the bid-ask spread, which they interpret as evidence consistent with the overreaction hypothesis. After considering the cost of trading, however, they assert that their findings still support weak-form market efficiency.

In a recent study, Larson and Madura (2003) examine NYSE stocks that have incurred a 10 percent one-day price change during the period 1988 to 1998. They find overreaction in response to uninformed events for their sample of gainers and underreaction in response to both informed and uninformed events for their sample of losers.

On the other hand, when he controls for risk and size differences in firms, Zarowin (1990) finds little evidence of abnormal returns after the event day. Zarowin constructs three-year nonoverlapping portfolios from 1932 through 1977 with a data set similar to that used by DeBondt and Thaler (1987). After controlling for risk and seasonality, he finds that losers outperform the winners in all months. When he controls for size difference, he finds that the superior performance of losers over winners is not due to investor overreaction, but due to size discrepancies between winners and losers, as losers tend to be smaller than winners. In a prior study, Zarowin (1989) examines the overreaction theory by including size and seasonal effects. Using the monthly CRSP database for the period 1927 through 1985, he constructs ten portfolios in a descending order of returns and examines the return behavior of the highest and the lowest return portfolios. He finds that when he groups winners and losers by size, losers outperform the winners only in January; and when winners are smaller than losers, winners outperform the losers.

Our study differs from the previous research in the following aspects. First, our construction of the initial sample firms is different. Unlike Cox and Peterson (1994) and Larson and Madura (2003) who use firms with 10 percent price declines, we use the daily largest percentage gainers and losers. Unlike Akhigbe, Gosnell, and Hari-kumar (1998) who use only 1992 NYSE firms, we include both NYSE/AMEX and Nasdaq firms. Second, we examine in detail the information from the *Wall Street Journal Index* (WSJI) to check any concurrent news announcements associated with the event day for gainers and losers. Our purpose is to find the relation between the overreaction effect and the type of news announcements. Third, we make comparative analyses between NYSE and Nasdaq firms and between positive and negative events. Our idea is to examine how firm size, market structure, and the nature of the event affect the level and significance of stock price overreaction. Further, we use regression analysis to analyze if the magnitude of reversals is related to the magnitudes of gains or losses.

Data and Method

Data

We select our sample firms from the *Wall Street Journal* (WSJ) microfilm. In the "Stock Market Data Bank" column of Section C, the WSJ lists the top 20 gainers and losers from the New York Stock Exchange, top 14 gainers and losers from the Nasdaq National Market System, and top five gainers and losers from the American Stock Exchange. From the daily listing, we select the firms with the highest percentage gains and losses in both the New York Stock Exchange and the Nasdaq National Market System for each trading day from January 1996 through December 1997. That is, for each trading day, we select only two firms from each market, the best and worst performers based on daily percentage return.

We choose the initial NYSE and Nasdaq sample firms in this manner for two reasons. First, firms with the highest percentage gains and losses should best exhibit overreaction behavior and provide the strongest empirical evidence. Second, we can perform comparative analyses between best- and worst-performing stocks and between NYSE and Nasdaq stocks.

The initial sample size includes 1,012 observations. Within the initial sample firms, we use the following screening procedure to construct the final sample. First, to prevent the estimation period from being contaminated, we remove from the sample any firms that appear more than once as the highest percentage gainer or loser within a six-month period. Second, we find the stock CUSIP numbers based on the abbreviations of firm names we obtain from the WSJ. Third, we then use these CUSIP numbers to match firms on the 2002 Daily CRSP Database. Finally, we eliminate from further analysis those firms with fewer than 60 daily returns during the estimation period from -120 to -21 event days. Panel A of Table 1 shows the final sample firm distribution and firm value.

Table 1—Distributions of Sample Firms and the WSJ Related News

We estimate firm value by using the firm's total equity market value prior to the event date. The average firm size shows the mean value of all of the firms in the total sample and is expressed in millions of dollars. We use stock prices one week before the event day in computing firm value. If, due to any reason, the stock price is unavailable for that day, then we use stock prices over the prior two days. If a firm has no valid price data over this three-day period, then we do not use the firm in the computation of the average sample firm size. For NYSE firms, one firm has missing firm value for the sample of gainers; and for the Nasdaq firms, one firm has missing firm values for the sample of gainers

	NYSE Firms		Nasdaq Firms	
	Gainers	Losers	Gainers	Losers
1996 Sample	88	79	130	123
1997 Sample	89	99	124	120
Total Sample	177	178	254	243
Average Firm Size	1048.174 m	1341.729 m	105.172 m	312.954 m

	NYSE Firms		Nasdaq Firms	
	Gainers	Losers	Gainers	Losers
Revenues and Earnings	20	44	35	51
Dividend	8	3	4	2
Mergers and Acquisitions	65	11	45	2
Restructuring	7	1	2	2
Others	7	7	1	19
Earnings Warnings	0	22	0	21
None	70	90	167	146

The total market value of a firm's equity is used as an estimate of firm value. We use stock prices on the event days of -5 , -6 , or -7 in the estimation of firm value, depending on the availability of stock prices on these event days. Table 1 reports the average firm value for each of the four sample firms. As shown in the

table, the NYSE gainers and losers are much larger than their counterparts on Nasdaq. The size difference motivates us to use different market indexes for NYSE stocks and Nasdaq stocks calculating abnormal returns.

We then examine the WSJI (Corporate Edition) and check to see if there is any company-specific news during a three-day window around the event day. We want to know if the gains or losses are associated with certain particular news. Panel B of Table 1 presents the results of this search.

It appears that except for the group with no news, the largest subsample of NYSE and Nasdaq gainers are associated with mergers and acquisitions news. The second largest subsample gainers are associated with revenues and earnings news. The largest subsample of NYSE and Nasdaq losers are associated with news of revenues and earnings news. The second largest subsample losers are associated with earnings warnings.

Methodology

We obtain daily stock returns from the Daily CRSP Database. We estimate abnormal returns by using the market model suggested by Brown and Warner (1985). To mitigate the size difference between NYSE and Nasdaq stocks, we use the equally weighted market index from the daily CRSP file as our proxy for market return of NYSE gainers and losers in the model. We use the Nasdaq index as the proxy for market return of Nasdaq gainers and losers.

We define the stock abnormal return for firm i on an event day t , AR_{it} , as follows:

$$AR_{it} = R_{it} - (a_i + b_i R_{mt}) \quad (1)$$

where R_{it} is the daily observed stock return; a_i and b_i are the estimated parameters from the market model; and R_{mt} is the CRSP market index return (or Nasdaq index return) on day t . The estimation period we use to compute the model parameters is from -120 to -21 event days, and we define the event date for each stock as the day when the stock has the largest percentage change in price. We use the standard t -test to examine the significance of abnormal returns.

We use the following multiple regression model to see if there is any relation between the level of post-event price reversals and that of event period abnormal returns after we control for the size of firms:

$$CARA_i = \alpha_0 + \alpha_1 SIZE_i + CARB_i + \varepsilon_i \quad (2)$$

In the model above, $CARA_i$ is the two-day (+1, +2) cumulative abnormal return that measures the reversal effect; $SIZE_i$ is the firm value measured by natural log of the firm's equity market value over the trading period of -7 to -5 ; and $CARB_i$ is the two-day announcement period (-1, 0) cumulative abnormal return. If there is overreaction during the announcement period, we should expect an inverse relation

between the two-day post-announcement cumulative abnormal returns and two-day announcement period cumulative abnormal returns.

Results

Abnormal Stock Returns

We first study the overreaction effect by examining the level and the significance of abnormal returns before, and particularly after, the event day on which the stocks have the largest percentage gains and losses. Table 2 shows the empirical results of abnormal returns for NYSE stocks.

Table 2—Abnormal Returns for the Gainers and Losers of NYSE Firms

We compute abnormal returns using the market model approach. Our estimation period is from -125 to -21 trading days prior to the event day. Panel A presents the daily average abnormal returns and their *t*-statistics for the samples of gainers and losers. The panel also shows the proportion of firms in the sample with positive abnormal returns on each event day. Panel B presents the cumulative abnormal returns and their respective *t*-statistics for the samples of NYSE gainers and losers

Panel A: Sample Average Daily Abnormal Returns

Day	Gainers			Losers		
	AR (%)	t-Value	AR Ratio	AR (%)	t-Value	AR Ratio
-5	0.09	0.45	45.76	-0.37	-1.75	43.26
-4	0.16	0.86	48.59	-0.23	-1.12	41.57
-3	-0.08	-0.41	46.33	0.11	0.54	45.51
-2	0.37	1.97	57.06	-0.50	-2.41	36.52
-1	0.72	3.87	57.06	-0.13	-0.62	39.89
0	21.66	116.06	100.00	-17.87	-85.89	0.00
1	0.03	0.18	51.98	-0.04	-0.19	52.81
2	0.21	1.11	45.20	-0.09	-0.43	47.19
3	-0.16	-0.83	40.11	0.03	0.14	45.51
4	-0.10	-0.51	44.07	0.33	1.58	50.00
5	0.22	1.18	49.72	-0.13	-0.60	44.38

Panel B: Cumulative Abnormal Returns

Event Period	Gainers		Losers	
	AR (%)	t-Value	AR (%)	t-Value
(-10, -2)	1.37	2.44	-2.15	-3.44
(-1, 0)	22.38	84.80	-18.00	-61.17
(+1, +2)	0.24	0.91	-0.13	-0.44
(+3, +10)	0.68	1.30	-0.08	-0.14
(+11, +20)	0.82	1.39	-0.39	-0.59
(+21, +50)	1.41	1.38	1.09	0.96

Panel A of Table 2 contains the daily abnormal returns for both the samples of gainers and losers over day -5 to day +5. Panel B contains the CARs for these two samples over the event period of -10 to +50 days. The table shows that NYSE gainers record an average abnormal return of 21.66 percent on the event day, and NYSE losers record an average abnormal return of -17.87 percent on the event day. Both of these two abnormal returns are highly significant. Given such highly significant and

large abnormal returns, we would expect significant price reversals if the overreaction effect exists. The results, however, show that none of the post-event daily abnormal returns are statistically significant at a commonly accepted level.

Panel A also shows the proportion of firms in the sample that have positive abnormal returns on each day from day -5 to day +5. Except on the event day, this ratio should average about 50 percent. The data in the table do not exhibit any significant difference in the pattern of values of the ratio before and after the event day. These results indicate that the overreaction effect for NYSE stocks is not significant during the two-year period of our study.

Our findings differ from the previous study by Cox and Peterson (1994), who use different criteria in selecting sample firms over the period 1963 to 1991. The different findings could suggest that the market structure development over the years has helped improve the market efficiency.

In Panel B of Table 2, we provide the CARs for six post-event time periods, (-10, -2), (-1, 0), (+1, +2), (+3, +10), (+11, +20) and (+21, +50). For the sample of both gainers and losers, there appear to be some price reactions prior to event day 0. The CAR for the period of (-10, -2) is 1.37 percent, which is significant at the 0.05 level for the gainers. For the losers, the CAR for the same time period is -2.15 percent, which is significant at the 0.01 level. For the four post-event periods, none of the cumulative abnormal returns is significant for either the gainers or the losers.

Table 3 reports the empirical results of abnormal returns for the Nasdaq firms. Similar to Table 2, Panel A of the table shows the daily abnormal returns for both the samples of gainers and losers over day -5 to day +5. Panel B shows the CARs for these two samples over the event period of -10 to +50 days. In contrast to the results in Table 2, the data in Table 3 show significant price reversals after the event day, indicating that there exist significant overreaction effects for both Nasdaq gainers and losers. The event day abnormal returns are 38.01 percent and -35.32 percent for the samples of gainers and losers, respectively. For both samples, the daily abnormal returns are significant at the 1 percent level for the next two event days.

Using the numbers in Panel B, we find that the CARs over the two-day (+1, +2) are -1.76 percent with a t-value of -4.78 for the gainers, and +4.5 percent with a t-value of 8.57 for the losers. The cumulative abnormal returns are not significant over the rest of the post-event periods for the gainers sample, but are significantly negative at the 0.1 level for the sample of losers over the period of +3 to +10 days. When we compare the abnormal return ratio variable, we see that there are significantly fewer firms with positive abnormal returns for Nasdaq gainers after the event day than before the event day; and that there are significantly more firms with positive abnormal returns for Nasdaq losers after the event day than before the event day.

Table 3—Abnormal Returns for the Gainers and Losers of Nasdaq Firms

We compute abnormal returns using the market model approach. Our estimation period is from -125 to -21 trading days prior to the event day. Panel A presents the daily average abnormal returns and their t-statistics for the samples of gainers and losers. The panel also shows the proportion of firms in the sample with positive abnormal returns on each event day. Panel B presents the cumulative abnormal returns and their respective t-statistics for the samples of Nasdaq gainers and losers

Panel A: Sample Average Daily Abnormal Returns						
Day	Gainers			Losers		
	AR (%)	t-Value	AR Ratio	AR (%)	t-Value	AR Ratio
-5	-0.84	-2.28	43.58	0.72	1.94	48.97
-4	0.63	1.71	50.46	0.06	0.15	44.44
-3	0.29	0.79	49.54	-0.98	-2.64	38.68
-2	0.29	0.80	45.41	-0.83	-2.22	36.21
-1	0.95	2.60	51.38	-0.40	-1.07	37.04
0	38.01	103.70	100.00	-35.32	-95.17	0.00
1	-0.54	-1.46	38.99	3.55	9.57	58.85
2	-1.22	-3.34	42.66	0.95	2.55	49.79
3	0.03	0.08	45.41	-0.27	-0.73	43.21
4	-0.61	-1.66	41.74	-0.39	-1.05	46.09
5	0.51	1.39	48.17	-0.81	-2.17	41.98

Panel B: Cumulative Abnormal Returns				
Event Period	Gainers		Losers	
	AR (%)	t-Value	AR (%)	t-Value
(-10, -2)	0.94	0.85	-2.24	-2.02
(-1, 0)	38.96	75.16	-35.72	-68.05
(+1, +2)	-1.76	-3.40	4.50	8.57
(+3, +10)	-0.19	-0.18	-2.04	-1.94
(+11, +20)	0.64	0.55	-0.68	-0.58
(+21, +50)	-0.89	-0.44	1.85	0.91

The results provide strong empirical evidence that supports the stock market overreaction hypothesis for the Nasdaq stocks. Further, it seems that the overreaction effect is not symmetric between samples of gainers and losers. The sample of losers shows a stronger reversal effect over the two-day period after the event day. In addition, pre-event daily abnormal returns show that the loser firms experience significant declines in value three days before their stocks record the largest percentage drop in price on the event day.

There appears to be stronger evidence on information leakage associated with the Nasdaq loser sample. The abnormal return ratio variable shows that the percents of positive abnormal returns during the three days leading up to the event are all well below 40 percent. The asymmetry of overreaction effects for samples of gainers and losers implies that the market is more likely to overreact to unfavorable news. This finding is consistent with prior work by Brown and Harlow (1988).

In Tables 4 and 5, we present abnormal returns for Nasdaq gainers and losers separately in subgroups differentiated by news categories. Table 4 shows abnormal returns for Nasdaq gainers grouped by concurrent revenues and earnings news, mergers and acquisition news, and no news. We omit the other news categories due

to insufficient observations. Table 5 shows abnormal returns for Nasdaq losers grouped by concurrent revenues and earnings news, earnings warnings, and no news.

The only group of Nasdaq gainers that shows the reversal effect is the no news group. There the two-day (+1, +2) CAR is -2.33 percent with a *t*-statistic of -3.06. None of the other post-event CARs are significant at the 0.1 level. For the pre-event CARs, only the mergers and acquisitions group of Nasdaq gainers shows significant positive CARs for the period of (-10, -2).

Table 4—Abnormal Returns for Nasdaq Gainers with Concurrent News Announcements

We compute abnormal returns using the market model approach. Our estimation period is from -125 to -21 trading days prior to the event day. Panel A presents the daily average abnormal returns and their *t*-statistics for the groups with different news announcements of Nasdaq gainers. The panel also shows the proportion of firms with positive abnormal returns on each event day. Panel B presents the cumulative abnormal returns and their respective *t*-statistics for each group of gainers

Panel A: Sample Average Daily Abnormal Returns						
Day	Revenues/Earnings		Mergers/Acquisitions		No News	
	AR (%)	t-Value	AR (%)	t-Value	AR (%)	t-Value
-5	-0.15	-0.16	0.17	0.21	-1.16	-2.15
-4	0.90	0.91	3.12	4.01	-0.27	-0.50
-3	-1.49	-1.51	0.70	0.90	0.54	1.00
-2	-1.65	-1.67	1.72	2.21	0.38	0.70
-1	-1.74	-1.76	3.09	3.97	0.88	1.64
0	38.88	39.40	46.13	59.28	34.83	64.56
1	0.07	0.07	-0.15	-0.19	-0.89	-1.65
2	-0.28	-0.28	-1.07	-1.38	-1.45	-2.68
3	0.34	0.35	0.26	0.34	-0.10	-0.19
4	-2.27	-2.30	-0.26	-0.33	-0.42	-0.77
5	1.11	1.12	-0.37	-0.48	0.71	1.31

Panel B: Cumulative Abnormal Returns						
Event Period	Revenues/Earnings		Mergers/Acquisitions		No News	
	AR (%)	t-Value	AR (%)	t-Value	AR (%)	t-Value
(-10, -2)	0.17	0.06	9.86	4.22	-1.42	-0.88
(-1, 0)	37.14	26.62	49.23	44.72	35.71	46.81
(+1, +2)	-0.21	-0.15	-1.22	-1.11	-2.33	-3.06
(+3, +10)	-0.80	-0.29	0.30	0.14	-0.29	-0.19
(+11, +20)	-1.07	-0.34	0.14	0.06	1.18	0.69
(+21, +50)	0.26	0.05	-2.58	-0.60	-1.46	-0.50

For Nasdaq losers, all three groups show overreaction and subsequent reversal effects. The two-day (+1, +2) CARs for the groups of revenues and earnings news, earnings warnings, and no news are 3.37 percent, 5.71 percent, and 5.88 percent, respectively, and all are significant at the 0.01 level. The only other significant post-event cumulative abnormal return is the (+3, +10) CAR for the group of no news. None of the pre-event (-10, -2) CARs are significant.

In conclusion, Nasdaq losers show more pervasive overreaction and reversal effect than do Nasdaq gainers. It appears that a trading strategy can be used to profit from the overreaction and reversal effect exhibited by Nasdaq losers. An investor

could buy the largest percentage losers of Nasdaq stocks at the end of the trading day, then sell two trading days later. The two-day (+1, +2) cumulative abnormal return of 4.5 percent should be enough to cover the transaction costs.

Table 5—Abnormal Returns for Nasdaq Losers with Concurrent News Announcements

We compute abnormal returns using the market model approach. Our estimation period is from -125 to -21 trading days prior to the event day. Panel A presents the daily average abnormal returns and their t-statistics for the groups with different news announcements of Nasdaq losers. The panel also shows the proportion of firms with positive abnormal returns on each event day. Panel B presents the cumulative abnormal returns and their respective t-statistics for each group of losers

Panel A: Sample Average Daily Abnormal Returns

Day	Revenues/Earnings		Earnings Warnings		No News	
	AR (%)	t-Value	AR (%)	t-Value	AR (%)	t-Value
-5	0.92	1.12	-0.76	-0.63	0.96	2.23
-4	1.38	1.67	0.51	0.42	-0.47	-1.09
-3	-1.32	-1.60	-0.73	-0.61	-0.91	-2.11
-2	-0.37	-0.45	-1.36	-1.13	-0.73	-1.69
-1	-1.85	-2.25	-2.17	-1.80	0.49	1.14
0	-29.87	-36.25	-41.60	-34.64	-34.64	-80.37
1	4.63	5.61	4.08	3.40	4.14	9.61
2	-1.26	-1.53	1.63	1.36	1.74	4.03
3	-0.38	-0.47	-2.38	-1.98	-0.10	-0.24
4	1.06	1.29	-0.13	-0.11	-0.78	-1.81
5	0.51	0.62	-0.55	-0.46	-1.51	-3.51

Panel B: Cumulative Abnormal Returns

Event Period	Revenues/Earnings		Mergers/Acquisitions		No News	
	AR (%)	t-Value	AR (%)	t-Value	AR (%)	t-Value
(-10, -2)	-1.88	-0.76	-4.38	-1.21	-1.44	-1.11
(-1, 0)	-31.72	-27.22	-43.77	-25.77	-34.15	-56.03
(+1, +2)	3.37	2.89	5.71	3.36	5.88	9.64
(+3, +10)	-0.08	-0.03	-4.30	-1.27	-3.43	-2.81
(+11, +20)	1.73	0.66	-1.49	-0.39	-0.85	-0.63
(+21, +50)	-4.30	-0.95	4.96	0.75	3.81	1.62

Results of Regression Estimations

Our evidence indicates significant market overreaction effects for Nasdaq stocks: the gainers and the losers. We further examine the relation between the announcement-period stock return and the subsequent stock price reversal after controlling the size of the firm.

Table 6 shows the separate results of the multiple regression analysis for Nasdaq gainers and losers samples. For Nasdaq gainers, the coefficient CARB is significantly negative at the 0.01 level. For Nasdaq losers, the coefficient CARB is significantly negative at the 0.1 level, while the size coefficient is significantly negative at the 0.01 level, suggesting that the reversal effect is smaller for larger Nasdaq firms.

Table 6—Multiple Regression Analysis of the Overreaction and the Reversal Effects

The table presents the multiple regression results of the overreaction and reversal effects. We estimate the regression model:

$$CARA_i = \alpha_0 + \alpha_1 SIZE_i + \alpha_2 CARB_i + \varepsilon_i$$

In the model, $CARA_i$ is the two-day (+1, +2) cumulative abnormal return that measures the reversal effect; $SIZE_i$ is the firm value measured by natural log of the firm's equity market value over the trading period of -7 to -5 days; and $CARB_i$ is the two-day announcement period (-1, 0) cumulative abnormal return. The numbers in parentheses show the t-statistics for the variables

Variable	Nasdaq Gainers	Nasdaq Losers
Constant	0.030 (1.618)	0.365*** (4.338)
Firm Size Variable	-0.001 (-0.569)	-0.031*** (-4.079)
CARB Variable	-0.113*** (-3.060)	-0.109* (-1.675)
F Value	4.987	8.421
R ²	0.043	0.075
Sample Size	224	210

*** Statistically significant at the 1 percent level

* Statistically significant at the 10 percent level

The overall results are consistent with our hypothesis that there is an inverse relation between announcement-period return and subsequent stock price reversal. The stocks that have higher absolute announcement period (-1, 0) abnormal returns also have larger reversal effect during the (+1, +2) period.

Conclusions

In this paper we study the overreaction issue by examining the price reversal behavior of those NYSE and Nasdaq stocks that have the largest daily percentage changes in price. Our sample period is 1996 to 1997. We use a total sample of 852 stocks for both the gainers and losers. Our primary purpose is to determine if there is an overreaction phenomenon for the NYSE and Nasdaq stocks. Our idea is that the recent advances in telecommunication technology help disseminate information more quickly and also may help weaken the stock market overreaction effect.

We construct four subsamples to investigate possible differences in the overreaction effect between the NYSE and Nasdaq stocks and between the gainer and loser stocks. Our empirical results show that there is little evidence of overreaction effect for either the NYSE gainers or losers sample. On the other hand, we find significant abnormal returns in the opposite direction for the Nasdaq samples of both gainers and losers, indicating the existence of an overreaction effect. Our results also show that there is a stronger overreaction effect for the Nasdaq losers than gainers. We also find that after we control for firm size, the magnitude of reversal is inversely related to announcement-period stock returns. The overreaction effect lasts only about two days for the Nasdaq stocks.

These results suggest that, given the insignificance of abnormal returns for NYSE stocks, recent market developments in the rapid dissemination of information may help alleviate the overreaction effect. The overreaction and reversal effects still exist for the Nasdaq stocks, although the reversal occurs in a very brief time period. These findings imply that the markets and investors may react to and digest new information differently in the NYSE and Nasdaq markets. Therefore, the optimal utilization of overreaction effects in constructing trading strategies may help improve investors' investment performance.

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