

Reversal of 3-Day Losers and Continuation of 3-Day Winners on the NASDAQ

¹*Jose Gutierrez*
Sam Houston State University

Abstract

Using only the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100, this study investigates 130 randomly selected, 3-day formation periods from January 2000 through December 2012 (3,269 trading days). During these formation periods, the three worst and three best performing stocks (based on excess return) are flagged. Once flagged, the subsequent 10-day holding period excess returns are calculated. Results indicate that, on either exchange, investors can outperform the market by going long the stocks that have experienced an excessive 3-day loss. Beyond that, investors can also outperform the market by going long the stocks that have experienced an excessive 3-day gain, however, this result only holds true for NASDAQ securities. Results are robust to the number of best and worst stocks that are flagged. Results are also robust to other combinations of formation and holding period lengths.

Keywords: Market Anomaly; Momentum; Return Reversal; Return Persistence; Trading Strategy

JEL Classification: G11; G12; G14; G17

¹ Sam Houston State University, Department of General Business and Finance, Box 2056, Huntsville, TX, 77341, jag063@shsu.edu.

1. Introduction

A multitude of early academic studies focused on price reversals, often referred to as the “contrarian” effect. The garden-variety study finds that investors overreact to bad news and that stock prices partially recover from significant short-term price declines. The studies differ in terms of markets covered, selection technique, time window, and excess return calculation. For example, De Bondt and Thaler (1985) study the entire CRSP universe and choose the lowest and highest decile of stocks over a multi-year period for entry into loser and winner portfolios. The authors find that loser portfolios outperform the market by, nearly 20%, on average, three years subsequent to portfolio formation. Winner portfolios, on the other hand, earn about 5% less than the market. The authors interpret this result as evidence of excessive pessimism following poor performance, making the stocks of loser firms profitable investments. Similar to the results of De Bondt and Thaler (1987), Atkins and Dyl (1990) find that NYSE stocks with the largest percentage decline on 300 randomly selected days, immediately had positive returns of roughly 2.25% after a severe price decline. As a potential explanation for this return behavior, Ball, Kothari and Shanken (1995) argue that poor stock performance will generally lead to higher leverage, because the value of the stock drops more than the value of the firm’s debt. The increase in leverage should lead to higher risk and higher expected returns than would be reflected in risk estimates from a period before the drop in stock price. More recently, Subrahmanyam (2005) suggests that short-term reversal profits are evidence that market prices may reflect investor overreaction to information, or fads, or simply cognitive error. Providing additional insight, Da, Qianqiu, and Shaumburg (2014) document that stock returns that are unexplained by earnings and cash flow fundamentals are more likely to reverse in the short run than those that are linked to fundamentals.

The opposite of the reversal literature is the continuation (momentum) literature. Unlike the results associated with the “contrarian” effect, Jegadeesh and Titman (1993, 2001) found that recent one-year past winners out-perform recent past losers, which is a continuation effect. Lewellen (2002) later presented evidence that portfolios of stocks sorted on size and B/M characteristics have similar momentum effects. The author argues that the existence of momentum in large diversified portfolios makes it unlikely that behavioral biases in information processing are likely to explain the evidence on momentum. Hong and Stein (1999), as well as Hong, Lim and Stein (2000) argue that momentum is due simply to slow diffusion of private information through the economy. This effect is exacerbated among firms with low analyst coverage. Grinblatt and Moskowitz (1999) present another explanation by demonstrating that tax-loss selling partially explains the momentum effect. They discuss that tax-loss selling creates seasonal variation in the momentum effect. They show that stocks with poor performance during the year may later be subject to selling by investors keen to realize losses that can offset capital gains elsewhere.

In one case, prior winners continue to win; in the other, they perform poorly. The motivation behind this paper is to provide a strict short-term trading perspective, on both the formation and trading period windows to determine whether or not reversal or momentum play any role. Motivated by the findings of Arshanapalli et al., (2006), the focus is solely on large cap securities in order to avoid any small firm, thinly traded, and/or low analyst coverage bias that might exist.

2. Data Source and Selection Procedure

The analysis in this study is conducted through utilization of CRSP daily data for 195 of the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100 for the period

January 2000 through December 2012 (3,269 trading days). Data on five securities was not available. As a result of these omissions, the final data set contains data on 97 and 98 of the NYSE 100 and NASDAQ 100 firms, respectively. This time period was chosen based on data availability and relevancy.

The 3,269 trading days are broken up into rolling fragments, comprised of a 3-day formation period and a subsequent 10-day holding period. In this set-up, every 14th day represents a brand new trading fragment where a new 3-day formation period and a subsequent 10-day holding period is assessed. Each stock's beta is calculated on a rolling one-year (daily) term. The market-adjusted approach incorporated in this study uses an estimate of firm beta. Beta is then used to capture the relative risk of an individual stock in comparison to the market, and the market return is adjusted by this estimate of beta before it is subtracted from the return of the individual stock in calculating market-adjusted excess return. In each formation period, a stock is ranked based on its market-adjusted excess return over the three-day trading window. The lowest three excess returns are flagged as "loser" stocks, and the three highest excess returns are flagged as "winner" stocks. This is done for each of the formation periods within the dataset. Then, the subsequent two-week (10 trading days) market-adjusted excess returns are calculated for each loser and winner stock. The objective of this paper is to analyze the subsequent performance of these flagged securities.

Using this 14-day rolling methodology, there ends up being a total of 130 fragments with three loser and three winner stocks within each fragment. In total, there are 390 loser trades and 390 different winner trades that are analyzed.

3. Formation Period Losers and Subsequent Return Performance by Exchange

3.1. Loser Formation Period

Panels A and B of Table 1 contain the summary statistics for the 3-day formation period for all loser stocks, parsed by listing exchange. The objective is to ascertain whether or not loser stocks perform differently based on being listed on the NYSE versus the NASDAQ. Recall that in each formation period, the three stocks with the worst market-adjusted excess return are flagged. As evidenced by Panels A and B of Table 1, each exchange had a total of 130 formation periods where a total of 390 firms were flagged to enter the loser portfolio. Beyond this, the results show that entry into the loser portfolio meant that, on average, a NYSE stock had a statistically significant 3-day holding period excess return of -7.636% whereas a NASDAQ stock had a statistically significant 3-day holding period excess return of -11.36%. Moreover, the mean negative excess return that warranted entry into the loser portfolio was not only deeper negative for NASDAQ securities, but also more volatile. It is also worth noting that both excess and raw return entry metrics, for both exchanges, were statistically different from zero.

Table 1
Formation and Evaluation Period Summary Statistics: Loser Stocks by Exchange

3-Day Formation Period Returns of Worst 3 Loser Stocks, by Exchange

<i>Panel A: NYSE</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	-7.63%	6.84%	-53.00%	-1.77%	-5.92%	-22.01	***	-2.54%
Raw Return	390	-7.78%	8.01%	-50.93%	3.09%	-5.56%	-19.17	***	-2.59%
Market Return	390	-0.04%	2.34%	-10.57%	4.98%	0.23%	-0.31		-0.01%
Beta	390	1.12	0.59	-0.47	3.23	1.09	37.53	***	

<i>Panel B: NASDAQ</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	-11.36%	10.42%	-69.93%	-2.54%	-5.03%	-21.53	***	-3.79%
Raw Return	390	-11.54%	10.94%	-66.30%	1.95%	-8.69%	-20.82	***	-3.85%
Market Return	390	-0.04%	2.34%	-10.57%	4.98%	0.23%	-0.31		-0.01%
Beta	390	1.37	0.59	-0.49	3.42	1.25	45.88	***	

Subsequent 10-Day Holding Period Returns of Formation Period Worst 3 Loser Stocks, by Exchange

<i>Panel C: NYSE</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	0.96%	7.91%	-25.29%	72.75%	0.44%	2.39	**	0.19%
Raw Return	390	1.08%	10.47%	-30.43%	105.74%	0.86%	2.04	**	0.22%
Market Return	390	0.22%	3.31%	-16.18%	11.57%	0.65%	1.34		0.04%

<i>Panel D: NASDAQ</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	0.43%	11.96%	-52.55%	82.98%	0.07%	0.71		0.09%
Raw Return	390	0.70%	12.87%	-52.62%	97.54%	0.17%	1.07		0.14%
Market Return	390	0.22%	3.31%	-16.18%	11.57%	0.65%	1.34		0.04%

195 of the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100, for the period January 2000 through December 2012 are analyzed. The corresponding 3,269 trading days are broken up into rolling, 13-day fragments, comprised of a 3-day formation period and a subsequent 10-day holding period. Every 14th day represents a brand new trading fragment where a new 3-day formation period and a subsequent 10-day holding period is assessed. In each 3-day formation period, a stock is ranked based on its market-adjusted excess return. Panels A and B provide summary statistics on the lowest three excess returns (loser stocks) across the 130 unique formation periods, parsed by exchange. Panels C and D provide summary statistics on the subsequent two-week market-adjusted excess returns on those same “loser” stocks, parsed by exchange. In total, there are 390 loser trades, per exchange, that are analyzed. *, **, *** denote statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

3.2. Subsequent Return Performance of Losers

Panels C and D of Table 1 then show the subsequent 10-day performance of the flagged loser securities, parsed by listing exchange. Surprisingly, consistent with the reversal literature, loser stocks that traded on the NYSE had statistically significant positive excess return reversal in the subsequent month of trading, whereas the subsequent excess return performance of NASDAQ stocks was not statistically different from zero. With respect to NYSE stocks, on average, the securities that performed so poorly during the formation period, experience a statistically significant, 10-day holding period excess return reversal of 0.96% (1.08% raw return) in the following two weeks of trading.

To further demonstrate the validity of the return reversal in NYSE loser securities, Table 2 first separates the results of the 390 formation trades based on the exchange the stocks are listed on, then summarizes them based on those trades that resulted in subsequent negative, positive, or zero excess returns. For instance, Panel A of Table 2 shows subsequent excess return sign for both NYSE and NASDAQ loser securities. Of the 390 NYSE loser trades, 211 of them had a subsequent positive excess return. This highlights an interesting pattern of performance, as this result is consistent with the notion of a short-term, profitable trading anomaly for NYSE stocks due to a return reversal. However, of the 390 NASDAQ securities, only 198 (50.77%) of them had a subsequent positive market-adjusted excess return. Stated differently, NASDAQ

securities were no more likely to subsequently perform well as opposed to continuing to perform poorly.

Table 2
Subsequent 10-Day Holding Period Return Sign of 390 Formation Period Worst 3 Loser Stocks, by Exchange

Panel A: Excess Return

NYSE	Count	%	Mean	Median	NASDAQ	Count	%	Mean	Median
Excess Return (-)	179	45.90%	-4.62%	-2.99%	Excess Return (-)	192	49.23%	-7.41%	-5.10%
Excess Return (+)	211	54.10%	5.69%	3.83%	Excess Return (+)	198	50.77%	8.03%	4.74%
Excess Return (0)	0	-	-	-	Excess Return (0)	0	-	-	-
	390					390			

Panel B: Raw Return

NYSE	Count	%	Mean	Median	NASDAQ	Count	%	Mean	Median
Raw Return (-)	164	42.05%	-6.26%	-4.18%	Raw Return (-)	191	48.97%	-7.80%	-5.84%
Raw Return (+)	225	57.69%	6.44%	4.18%	Raw Return (+)	198	50.77%	8.90%	5.13%
Raw Return (0)	1	0.26%	0.00%	0.00%	Raw Return (0)	1	0.26%	0.00%	0.00%
	390					390			

195 of the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100, for the period January 2000 through December 2012 are analyzed. The corresponding 3,269 trading days are broken up into rolling, 13-day fragments, comprised of a 3-day formation period and a subsequent 10-day holding period. Every 14th day represents a brand new trading fragment where a new 3-day formation period and a subsequent 10-day holding period is assessed. In each 3-day formation period, a stock is ranked based on its market-adjusted excess return. Panels A and B provide summary statistics on the lowest three excess returns (loser stocks) across the 130 unique formation periods, parsed by exchange. Panel A summarizes sign of the 10-day, subsequent excess return of loser stocks, parsed by exchange. Panel D summarizes the sign of the 10-day, subsequent raw return of loser stocks, parsed by exchange.

Whereas Panels A and B highlight subsequent market-adjusted excess return for loser formation transactions, Panels C and D highlight subsequent raw return. The objective of this raw return metric is to simply show whether a loser formation trade subsequently made or lost money for the trader, without any regard toward a risk-adjustment. Based on the results, loser formation trades for both NYSE and NASDAQ-listed stocks, had a majority of their transactions finish with positive raw returns as opposed to negative raw returns. This result further highlights the relative consistency and safety of the proposed trading rule.

4. Formation Period Winners and Subsequent Persistence of Returns by Exchange

4.1. Winner Formation Period

Now, the study switches its focus from the 3-day formation period of loser stocks to the 3-day formation period of winner stocks. Here, in each formation period, the three stocks with the best market-adjusted excess return are flagged. The subsequent 10-day performance of these winner stocks is the focus of the remainder of the study.

Similar to Table 1, Table 3 presents the formation period metrics for all winner securities, parsed by listing exchange. To begin, Panels A and B show that of the 390 winner formation trades that occurred on the NYSE, the mean market-adjusted excess return that warranted entry into the winner portfolio was 7.20%, but for the 390 NASDAQ winners, the mean market-adjusted excess return was 11.77%. It should be noted that the median return metrics demonstrate the exact same pattern as the mean. Beyond the return metrics, the average beta for NASDAQ securities was slightly higher than the average beta for NYSE stocks. However, despite NASDAQ securities having a larger beta, the market-adjusted excess return metrics take this difference into account. Stated differently, the market-adjusted approach incorporated in this study uses an estimate of firm beta. Beta is then used to capture the relative risk of an individual stock in comparison to the market, and the market return is adjusted by this estimate of beta before it is subtracted from the return of the individual stock in calculating market-adjusted excess return.

Table 3
Formation and Evaluation Period Summary Statistics: Winner Stocks by Exchange

3-Day Formation Period Returns of Best 3 Winner Stocks, by Exchange

<i>Panel A: NYSE</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	7.20%	5.76%	2.00%	78.02%	6.02%	24.69	***	2.40%
Raw Return	390	7.01%	6.51%	-12.25%	80.49%	6.08%	21.26	***	2.34%
Market Return	390	-0.04%	2.34%	-10.57%	4.98%	0.25%	-0.31		-0.01%
Beta	390	1.11	0.57	-0.47	3.09	1.04	38.24	***	

<i>Panel B: NASDAQ</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	11.77%	10.37%	2.34%	122.01%	9.39%	22.42	***	3.92%
Raw Return	390	11.58%	10.80%	-2.89%	123.08%	9.39%	21.19	***	3.86%
Market Return	390	-0.04%	2.34%	-10.57%	4.98%	0.23%	-0.31		-0.01%
Beta	390	1.36	0.85	-0.49	3.42	1.29	46.14	***	

Subsequent 10-Day Holding Period Returns of Formation Period Best 3 Winner Stocks, by Exchange

<i>Panel C: NYSE</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	-0.98%	7.89%	-72.24%	19.92%	-0.45%	-2.45	**	-0.20%
Raw Return	390	-0.64%	8.70%	-82.92%	23.74%	-0.40%	-1.45		-0.13%
Market Return	390	0.22%	3.31%	-16.18%	11.57%	0.65%	1.34		0.04%

<i>Panel D: NASDAQ</i>	N	Mean	StdDev	Min	Max	Median	t		Daily
Excess Return	390	1.77%	12.82%	-49.71%	72.63%	0.83%	2.72	***	0.35%
Raw Return	390	2.06%	13.51%	-49.63%	72.41%	0.99%	3.00	***	0.41%
Market Return	390	0.22%	3.31%	-16.18%	11.57%	0.65%	1.34		0.04%

195 of the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100, for the period January 2000 through December 2012 are analyzed. The corresponding 3,269 trading days are broken up into rolling, 13-day fragments, comprised of a 3-day formation period and a subsequent 10-day holding period. Every 14th day represents a brand new trading fragment where a new 3-day formation period and a subsequent 10-day holding period is assessed. In each 3-day formation period, a stock is ranked based on its market-adjusted excess return. Panels A and B provide summary statistics on the highest three excess returns (winner stocks) across the 130 unique formation periods, parsed by exchange. Panels C and D provide summary statistics on the subsequent two-week market-adjusted excess returns on those same “winner” stocks, parsed by exchange. In total, there are 390 winner trades, per exchange, that are analyzed. *, **, *** denote statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

4.2. Subsequent Return Performance of Winners

Panels C and D then show the subsequent 10-day performance of the flagged winner securities. The most interesting results from Table 3 come from these sections. Panel C shows subsequent return performance for NYSE-listed securities. Here, we see that the subsequent 10-day holding period market-adjusted performance of these 390 NYSE winner trades is again consistent with a return reversal phenomenon. In this particular instance, on the NYSE, winner securities subsequently become losers. Panel D, on the other hand, shows that the corresponding 390 NASDAQ 10-day holding period trades resulted in a statistically significant market-adjusted excess return of 1.77% on average (0.83% median). Thus, unlike both the loser and winner securities on the NYSE, which demonstrate a subsequent reversal, the winner securities on the NASDAQ demonstrate a momentum.

Table 4
Subsequent 10-Day Holding Period Return Sign of 390 Formation Period Best 3 Winner Stocks, by Exchange

Panel A: Excess Return

NYSE	Count	%	Mean	Median	NASDAQ	Count	%	Mean	Median
Excess Return (-)	210	53.85%	-5.63%	-3.30%	Excess Return (-)	171	43.85%	-7.17%	-4.68%
Excess Return (+)	180	46.15%	4.45%	3.29%	Excess Return (+)	219	56.15%	8.74%	4.71%
Excess Return (0)	0	-	-	-	Excess Return (0)	0	-	-	-
	390					390			

Panel B: Raw Return

NYSE	Count	%	Mean	Median	NASDAQ	Count	%	Mean	Median
Raw Return (-)	204	52.31%	-6.09%	-4.04%	Raw Return (-)	175	44.87%	-7.63%	-5.23%
Raw Return (+)	184	47.18%	5.39%	4.25%	Raw Return (+)	213	54.62%	10.03%	6.88%
Raw Return (0)	2	0.51%	0.00%	0.00%	Raw Return (0)	2	0.51%	0.00%	0.00%
	390					390			

195 of the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100, for the period January 2000 through December 2012 are analyzed. The corresponding 3,269 trading days are broken up into rolling, 13-day fragments, comprised of a 3-day formation period and a subsequent 10-day holding period. Every 14th day represents a brand new trading fragment where a new 3-day formation period and a subsequent 10-day holding period is assessed. In each 3-day formation period, a stock is ranked based on its market-adjusted excess return. Panels A and B provide summary statistics on the lowest three excess returns (loser stocks) across the 130 unique formation periods, parsed by exchange. Panel A summarizes sign of the 10-day, subsequent excess return of winner stocks, parsed by exchange. Panel D summarizes the sign of the 10-day, subsequent raw return of winner stocks, parsed by exchange.

Similar to Table 2, Table 4 provides the proportion of the 390 NYSE and 390 NASDAQ winner formation trades that resulted in subsequent negative, positive, or zero market-adjusted excess returns, parsed by listing exchange.

From Panel A, we see that of the 390 NYSE winner formation trades, 204 (52.31%) of them demonstrated a subsequent negative 10-day excess return, whereas the remaining 184 (47.18%) demonstrated a subsequent positive 10-day excess return. Simply stated, the winning NYSE securities were again more likely to subsequently reverse their recent performance.

In stark contrast to the NYSE performance, the 390 NASDAQ-listed winner trades demonstrate a different, and even more interesting pattern. Table 4 shows that of the 390 winner

formation trades, 213 (54.62%) of them subsequent, positive market-adjusted excess return performance over the 10-day holding period. This leaves only 175 (44.87%) that had subsequent negative market-adjusted excess return performance. Like earlier NYSE results, this result is consistent with the notion of a short-term, profitable trading anomaly for NASDAQ stocks, however, this time, due to momentum.

5. Robustness

Up to this point, the entire piece has been written under the assumption of a 3-day formation period, a subsequent 10-day evaluation period, and choosing the best and worst three securities, from both the NYSE and NASDAQ exchanges. To help ensure that these results are not a result of selection bias, the current section provides a brief summary of the results found when different combinations are explored. Specifically, instead of only choosing the best and worst three securities, this section explores the results when the best and worst firm, up to the best and worst five firms are included. Additionally, instead of only a subsequent 10-day holding period, subsequent 5-day and 21-day holding periods are also explored.

Table 5 summarizes results previously found in Tables 1 and 3, but for all possible combinations, and in an abbreviated format. The objective of the matrix is to better highlight patterns of subsequent behavior for the best and worst performing firms from each exchange. As a starting point, Panels A, B, C, and D each have the center square highlighted. These four highlighted squares are a repeat of results found in Tables 1 and 3. These four results mark the starting point, and are the combination of the best and/or worst three firms and a subsequent 10-day holding period. Other firm counts and holding periods are analyzed within the table.

To begin, Panels A and B show whether or not the subsequent 5, 10, and 21-day holding period market-adjusted excess returns for the worst firm(s) are statistically different

Table 5

Evaluation Period Average Excess Return: 5, 10, and 21-Day Holding Periods, Loser and Winner Stocks, by Exchange

		Panel A: Negative (-) formation period returns on the NYSE					Panel B: Negative (-) formation period returns on the NASDAQ				
Worst firm(s) during formation period		1	2	3	4	5	1	2	3	4	5
Avg subsequent 5-day excess return	1.04% ** Reversal	0.41%	0.77% *** Reversal	0.61% *** Reversal	0.68% *** Reversal	0.87%	0.92% * Reversal	0.76% * Reversal	0.49%	0.42%	
Avg subsequent 10-day excess return	1.18%	0.64%	0.96% ** Reversal	1.04% *** Reversal	1.10% *** Reversal	-0.11%	0.67%	0.43%	0.42%	0.35%	
Avg subsequent 21-day excess return	0.94%	0.18%	0.50%	0.71%	0.88% * Reversal	2.51% * Reversal	1.75% * Reversal	1.37% * Reversal	1.44% ** Reversal	1.46% *** Reversal	
		Panel C: Positive (+) formation period returns on the NYSE					Panel D: Positive (+) formation period returns on the NASDAQ				
Best firm(s) during formation period		1	2	3	4	5	1	2	3	4	5
Avg subsequent 5-day excess return	-0.05%	0.31%	0.36%	0.21%	0.18%	1.12%	1.36% ** Persistence	0.81% * Persistence	0.57%	0.35%	
Avg subsequent 10-day excess return	-1.45% ** Reversal	-1.11% ** Reversal	-0.98% ** Reversal	-0.77% ** Reversal	-0.55% * Reversal	1.00%	1.62% * Persistence	1.77% *** Persistence	1.33% ** Persistence	0.79%	
Avg subsequent 21-day excess return	-0.92%	-0.57%	-0.24%	-0.25%	-0.23%	3.62% ** Persistence	3.09% *** Persistence	3.13% *** Persistence	2.94% *** Persistence	2.02% *** Persistence	

195 of the 200 large-cap securities that make up the NYSE 100 and NASDAQ 100, for the period January 2000 through December 2012 are analyzed. The corresponding 3,269 trading days are broken up into rolling, 8, 13, and 24-day fragments, comprised of a 3-day formation period and a subsequent 5, 10, and 21-day holding periods. Every 9th, 14th, and 25th day represents a brand new trading fragment where a new 3-day formation period and a subsequent 5, 10, and 21-day holding period is assessed. In each 3-day formation period, a stock is ranked based on its market-adjusted excess return. Panels A and B provide summary statistics on the subsequent market-adjusted excess returns on formation period “loser” stocks, parsed by exchange. Panels C and D provide summary statistics on the subsequent market-adjusted excess returns on formation period “winner” stocks, parsed by exchange. *, **, *** denote statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

from zero. To summarize, firm(s) that experience the worst formation returns have a tendency to reverse themselves in the subsequent trading period, regardless of the exchange. More specifically, for the NYSE, the worst three, four, and five firms, combined with 5 and 10-day holding periods, have a significant tendency to reverse course. With respect to the NASDAQ, the strongest results come from the 21-day holding period, where all firm counts demonstrate the tendency to exhibit a return reversal. Here, for both exchanges, losers subsequently turn into winners.

Panels C and D, however, tell a slightly different story. With respect to the NYSE, the best performing firms during the formation period reverse course and subsequently become losers. Panel C shows specifically that the subsequent 10-day holding period excess return for NYSE winner stocks is a statistically significant reversal from the 3-day formation period that warranted entry into the NYSE winner portfolio. On the NASDAQ, however, the best performing firms during the formation period, do not reverse, but instead persist into the subsequent 5, 10, and 21-day trading periods. Here, 10 of the possible 15 firm/holding period combinations exhibit a statistically significant tendency to persist into the subsequent evaluation periods. In summary, NYSE winner firms subsequently become losers, but NASDAQ winner firms subsequently stay winners.

6. Concluding Remarks

From January 2000 through December 2012, 195 of the 200 large-cap stocks that make up the NYSE 100 and NASDAQ 100 were analyzed. Using a rolling 13-day methodology, these 3,269 trading days allowed for 130 unique trading windows, each with a 3-day formation period and a subsequent 10-day trading period. From there, stocks were then ranked based on their market-adjusted excess return metrics, within the 3-day formation period. The three lowest

excess returns are flagged as loser stocks, whereas the three highest are flagged as winner stocks. Surprisingly, within the subsequent 10-day trading period, loser and winner stocks on the NYSE experience statistically significant return reversals. However, winner stocks on the NASDAQ experience statistically significant return momentum. Stranger still, is the fact that these results are robust to the number of best and worst stocks that are flagged, as well as different combinations of formation and holding period lengths. Stated differently, on the NYSE, losers subsequently win and winners subsequently lose. But, on the NASDAQ, losers subsequently win and winners continue to win.

This anomalous return behavior seems definitive enough for an efficient trader to make money trading on it, which is inconsistent with maintained theories of asset-pricing behavior. It will be curious to see whether this inefficiency disappears once documented. Beyond that, if it does disappear, will it be a result of selection bias or will it be because practitioners trade the profitable transactions away?

Acknowledgement

This work is supported by the Sam Houston State University's COBA Summer Research Grant Program. I would like to thank the participants at the 2015 Academy of Economics and Finance annual conference (Jacksonville, FL) for their helpful comments and insight. I would also like to thank Jose Ivan Alvarado for excellent research assistance.

References

- Arshanapalli, B, Fabozzi, F., and Nelson, W. 2006. "The value, size, and momentum spread during distressed economic periods" *Finance Research Letters* 3: 535-547.
- Atkins, A. B., and Dyl, E. E. 1990. "Price reversals, bid-ask spreads, and market efficiency" *Journal of Financial and Quantitative Analysis* 25, 4: 535-547.
- Ball, R., Kothari, S. P., and Shanken, J. 1995. "Problems in measuring portfolio performance: An application to contrarian investment strategies" *Journal of Financial Economics* 38, 1: 79-107.

Da, Z., Qianqiu, L., and Shaumburg, E. 2014. "A closer look at the short-term return reversal" *Management Science* 60, 3: 658-674.

DeBondt, W., and Thaler, R. 1985. "Does the stock market overreact?" *Journal of Finance* 40: 793-808.

DeBondt, W., and Thaler, R. 1987. "Further evidence on investor overreaction and stock market seasonality?" *Journal of Finance* 42: 557-581.

Grinblatt, M., and Moskowitz, T. 1999. "The cross-section of expected returns and its relation to past returns" Working Paper (University of Chicago).

Hong, H., and Stein, J. 1999. "A unified theory of underreaction, momentum trading, and overreaction in asset markets" *Journal of Finance* 54: 2143-2184.

Hong, H., Lim, T., and Stein, J. 2000. "Bad news travels slowly: size, analyst coverage, and the profitability of momentum strategies" *Journal of Finance* 55: 265-295.

Jegadeesh, N., and Titman, S. "Returns to buying winners and selling losers: implications for stock market efficiency" *Journal of Finance* 48: 65-91.

Jegadeesh, N., and Titman, S. 2001. "Profitability of momentum strategies: an evaluation of alternative explanations" *Journal of Finance* 56: 699-720.

Lewellen, J. 2002. "Momentum and autocorrelation in stock returns" *Review of Financial Studies* 15: 533-563.

Subrahmanyam, A. 2005. "Distinguishing between rationales for short-horizon predictability of stock returns" *Financial Review* 40: 11-35.

Highlights

- * *Worst* performing NYSE 100 stocks, over a 3-day formation period, experience significant return *reversal* over the subsequent 10-day trading period.
- * *Best* performing NYSE 100 stocks, over a 3-day formation period, experience significant return *reversal* over the subsequent 10-day trading period.
- * *Best* performing NASDAQ 100 stocks, over a 3-day formation period, experience significant return *momentum* over the subsequent 10-day trading period.
- * Over different formation and evaluation lengths, worst and best performing NYSE securities consistently demonstrate statistically significant return reversal, but do not demonstrate return momentum.

- * Over different formation and evaluation lengths, worst performing NASDAQ securities demonstrate return reversal, however, the best performing NASDAQ securities demonstrate return momentum.