International Review of Accounting, Banking and Finance
Vol 9, No. 2/3/4, Summer/Fall/Winter, 2017, Pages 65-84

IRABF

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Human Capital Theory and the U.S. For-Profit Education Industry's Earnings Announcements During the High Unemployment Years of 2008-2010

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A B S T R A C T

Human capital theory posits that individuals will pursue educational opportunities with the intent of improving their economic condition. This suggests that education institutions would experience increased enrollment levels, which would be followed by an increase in surprise positive earnings announcements and corresponding positive, significant abnormal returns. Other researchers concluded that some firms engage in opportunistic timing practices to minimize negative market reactions to the release of adverse earnings news, such as changing the release dates of earnings announcements. This research examines hypotheses related to the quality of earnings announcements using a sample of 24 publicly traded U.S. firms in the for-profit education industry during the high unemployment years of 2008-2010. The empirical results show significant positive abnormal returns in response to surprise positive earnings announcements. The results show no evidence of opportunistic timing practices associated with Friday versus other week-day earnings announcements or evidence of greater positive versus negative surprise earnings announcements.

Keywords: earnings announcements, cumulative abnormal returns, for-profit education industry, analyst expectations
JEL classification: G14, I21, I23, I26

1. Introduction

Human capital theory posits that people will pursue educational opportunities to acquire new skills and knowledge with the intentions of improving their economic conditions (van der Merwe 2010b, a, Vandenberghe 1999, Becker 1993, Loomis and Rodriguez 2009, Courant, McPherson, and Resch 2006, Hewlett 2002, Schumann 2004, Stanfield 2009, Wilson and Moore 1973, Griffith 2011). Consistent with this theory, Perna (2000) concluded that changes in the unemployment and student enrollment levels at adult education institutions have a positive relationship. Assuming these institutions generate a profit from each student enrolled and have the capacity to accommodate all new students, evidence of human capital theory should be present in the profits of each institution. If the market is efficient (see Fama 1970, Fama 1991), then changes in student enrollment levels should be reflected in the stock prices of the publicly traded firms in the education services industry (Ball and Brown 1968). Figure 1 illustrates an interaction model of human capital theory and the publicly traded firms in the education industry.

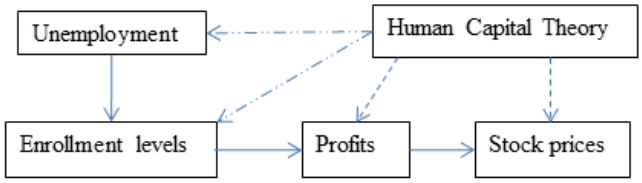

Figure 1: Human Capital Theory- Education Industry Interaction Model

During the 2008-2010 years, the U.S. economy was in a state of turmoil (Seyfried 2011), commonly referred to as a recession, and this suggests evidence of abnormal returns for this industry relative to the stock market may exist. Furthermore, researchers suggest that the education and training services industry may have a market cycle that is different than most publicly traded firms (for example: Hayes 2010, Heller 1999, Perna 2000). Evidence of this cycle difference should be found during a period of expected increased revenues within this industry while other industries simultaneously experience declines in their respective markets. The purpose of this research is to test for evidence of human capital theory through the timing effects of earnings announcements on the abnormal returns relative to market within the education and training services industry during the 2008-2010 calendar years. This study extends the research in earnings announcements by examining the relationship the education industry has with the market. To test for evidence of human capital theory, the nature of abnormal returns through excess earnings and timing effects of the earnings announcements in the industry were examined.

During the years 1994-2007, the median unemployment rate was 5.05 percent with its standard deviation of .8 percent (Division of Labor Force Statistics 2016). The 2008 calendar year was identified as the starting point for this study because the unemployment rate for the year trended upward and was close to the upper limits of one deviation above 1994-2007's

median. The 2010 calendar year was selected as the ending year for this study because the unemployment rate peaked in 2009 and a clear downward trend was evident in 2011.

Utilizing data from the Thomson Reuters IBES, Compustat, CRSP, Google Finance, and Yahoo! Finance databases, this study is further limited to only the Russell 3000 Index and non-ADR, publicly traded, for-profit firms in the education and training services industry, as identified primarily by the NAICS industry classification group 61 (NAICS Association 2016), that are listed on the AMEX, NYSE or NASDAQ exchanges. The Russell 3000 Index was selected as a proxy of the stock market because it represents 98 percent of the publicly available equity investment market in the United States (Russell Investments 2011). It is weighted by its firms' market capitalization as of the end of May and recalculated annually at the end of June (Shankar and Miller 2006).

2. Literature Review

2.1 Education and Training Services Industry

Human capital theory indicates that one's earnings power is positively correlated with the quality of education possessed by that person. Sandy and Duncan (1996) controlled for several variables including school quality and found that those who attend public schools tend to earn less than their counterparts from private schools in the U.S.

Lauer (2002) explored the variables associated with economic motivators and higher education enrollments in Germany and concluded that individuals' perception of probable imminent employment loss outweighed concerns about reducing future losses of employment when making decisions to pursue education opportunities. The cost of tuition has a minimal effect on decisions to pursue education opportunities as a one percent increase in tuition costs, at any level of private higher education institutions, appears to result in an enrollment decline of .22 percent at that level of those institutions (Vasigh and Hamzaee 2004). Considering these two papers together, people appear to be more concerned about hedging against the immediate loss of employment than the cost of obtaining education.

Some researchers argue that the global education system will eventually become practitioner centered, with standardized skillsets, and have no geographical boundaries (Loomis and Rodriguez 2009). Consistent with Loomis and Rodriguez (2009), the for-profit education services industry is known for its career-centered focus (Avirutha et al. 2005, Beaver 2009, Hassler 2006) and offers a significant portion of their education opportunities via distance learning methods (Beaver 2009, Fried and Hill 2009, Hayes 2010) and should be able to meet the enrollment demand assumed for this study. Abelman and Dalessandro (2008) concluded that for-profit education institutions are more motivated by profits than their institutional visions as evidenced by the aggressive marketing of their career preparation abilities relative to other institutions.

2.2 Earnings Announcements

Earnings announcements are the formal release of a firm's actual earnings for a given period. Ball and Brown (1968) evaluated the timeliness and information content of annual earnings announcements for utility. They estimated that at least 85 percent of the informational content of the annual income numbers is communicated through other media. This would negate any assumptions about the annual earnings announcements being a medium of timely communication about a firm's performance.

The work by Beaver (Beaver 1968) explores the role earnings announcements have in the changes of stock prices by examining changes during a three-week period that included "week 0" as the week of the event. The market's reaction through changes in pricing and volume suggests that earnings announcements have information content that is useful to investors even when other information is released through other sources.

Kim and Verrecchia (1994) proposed a trade model that reflected an increase in asymmetric information and trading volume with a decrease in liquidity. They attributed this increase to disclosures that relate to reporting requirements of financial accounting. The basic theory behind this research posits that information asymmetry exists amongst traders in the market. This is believed to occur because of the differences with various possible interpretations of the disclosures. As a result, the authors concluded that earnings announcements play a pivotal role in the market when the market is not perfectly competitive.

Two issues that were not addressed by the model of Kim and Verrecchia (1994) are the effects of elapsed time and information asymmetry associated with private information. Instead, their model includes a "[characterization] of bid-ask spreads at the time of an earnings announcement, and not before" (p. 59). The absence of measuring changes in a firm's stock values prior to the actual event ignores any role that private information may have on returns associated with a stock. Whereas, the measurement of returns in a post-event environment allows for an assessment of primarily public information as related to the firm's stock value; the pre-event and post-event time periods were included for this research paper.

2.3 Timing Effects of Earnings Announcements

Some researchers have documented observations of firms' tendencies to vary the timing of the disclosure of earnings announcements (e.g. Bushman et al. 1997, DeZoort, Hermanson, and Houston 2003, Philipich 2009). Chen and Mohan (1994) concluded that the release of economic information has limited influence on the timing decision of the release by the public sector. They determined that some firms actually engage in timing strategies when actual earnings experienced deviate from the expected earnings.

Unlike previous researchers (e.g. Damodaran 1989, Dellavigna and Pollet 2009, Penman 1987), who concluded that firms tend to release adverse earnings news on Fridays and positive earnings news during the rest of the week (e.g. Monday-Thursday), Doyle and Magilke (2009) found no evidence of firms engaging in opportunistic timing practices for the release of earnings news based on the information content. They researched market efficiency associated with the disclosure timing of earnings announcements and documented evidence of this phenomenon in their sample during the years 2000 through 2005. The following hypotheses were developed to explore the phenomenon within the context of an industry-wide approach versus a market-wide perspective:

H1: Firms in the for-profit education industry that report earnings on Mondays through Thursdays report better earnings than firms that report on Fridays.

H2: Firms in the for-profit education industry that change from a Monday through Thursday reporting schedule to a Friday announcement date report worse earnings for that quarter relative to the prior quarter.

2.4 Abnormal Returns

Berkman and Troung (2009, 76) define abnormal returns as "the cumulative size-adjusted return over a" specified timeframe. They demonstrate that the price and volume reactions attributed to the timing effects of earnings announcements are not explained by the actual timing of the release when factors such as heterogeneity, volume and price reactions are controlled for. Failure to control for the timing of the earnings announcements' release will produce measurements of the post-event returns that are either overstated or understated. A solution for controlling for the timing of the release involves measuring the "abnormal returns, volumes, and volatility [reactions]" (Berkman and Troung 2009, 98) in windows that cover the event day and at least one day immediately after the event (Berkman and Troung 2009, Jorgensen and Wingender Jr. 2004).

Bushman, et al. (1997) contributed to the literature on asymmetric information and earnings announcements by exploring the liquidity of securities traded on the New York Stock Exchange. Using the assumption that private and public information are substitutes for each other, the authors illustrate that changes in the market's bid-ask spreads could be attributed to a simultaneous combination of discretionary and nondiscretionary shareholders. This dispels conclusions that insider trading is the only source of market liquidity contractions around earnings announcement releases.

Francis, Lafond, Olsson and Schipper (2007) noted that information uncertainty with regards to earnings announcements of a firm is associated with the change in a stock's price after the earnings announcement. Commonly referred to as a "post-earnings announcement drift" (Francis et al. 2007), the uncertainty associated with the information content of an earnings announcement is one of the reasons why stock prices experience "under-and over-reactions to earnings surprises" (Shivakumar 2007, 437).

Ball and Shivakumar (2008) explored the relationship between quarterly earnings announcements and stock prices. They determined that the abnormal price volatility arising from the average earnings announcement accounts for 1-2 percent of the total annual volatility. Another key finding is management forecasts contain considerable information content and these forecasts are associated with abnormal pricing volatility. In essence, the timing of the average earnings announcement's release has minimal influence over the price volatility of a stock.

Some researchers in the areas of market efficiency and disclosure timing noted that within a select group of stocks, positive changes in a firm's stock price occur several days in advance of the earnings release and then the stock experiences a decline in price for several days after the event. This observation spanned a five-day range of an earnings release event in the top 1 percent of a 12-month price performer (Aboody, Lehavy, and Trueman 2010).

One researcher (MacKinlay 1997) describes the event study process along with some of the methodologies utilized to evaluate these events. A concern about the adequacy of parametric event study methodologies is a limited ability to "detect non-zero abnormal returns" and the use of alternative approaches (such as nonparametric tests) is recommended to control for this limitation. Examining event studies involving earnings announcements should be done by segregating the events by types of announcements (positive, neutral, & negative). To test for evidence of this occurring within the for-profit education industry, the following hypotheses have been developed:

H3: During periods of rising unemployment, firms in the for-profit education industry

announce better-than-expected earnings more frequently than the same or worse-than-expected earnings.

H4: During periods of rising unemployment, cumulative abnormal returns are significantly different for better-than, the same-as and worse-than expected returns from the day after the announcement is made.

3. Methodology

Using Compustat, 40 firms were initially identified as belonging to the education and training services industry. These firms were cross-referenced with Yahoo! Finance's list of firms in this industry. This effort yielded another four firms for inclusion in this study. The firm pool was then reduced to 24 (see Table 1) by excluding the firms that met any of the following criteria:

- Traded as an ADR on a U.S. exchange
- Traded as OTC
- Not listed on the AMEX, NYSE or NASDAQ exchanges
- Missing data
- Recently transferred into the industry (one firm)
- Began trading publicly after June 30, 2010
- Ended public trading before June 30, 2008

Table 1: The 24 Firms from the Education and Training Services Industry

Ticker Symbol	Company
APEI	American Public Education, Inc.
APOL	Apollo Group, Inc.
ARCL	Archipelago Learning, Inc.
BPI	Bridgepoint Education, Inc.
CAST	Chinacast Education Corporation
CECO	Career Education Corp.
CEU	China Education Alliance, Inc.
COCO	Corinthian Colleges, Inc.
CPLA	Capella Education Company
DV	DeVry Inc.
EDMC	Education Management Corp
EPAX	Ambassadors Group, Inc.
ESI	ITT Educational Services, Inc.
FC	Franklin Covey Co.
GPX	GP Strategies Corporation
LINC	Lincoln Educational Services Corporation
LOPE	Grand Canyon Education Inc
LRN	K12 Inc.
LTRE	Learning Tree International, Inc.
NLCI	Nobel Learning Communities, Inc.
REVU	The Princeton Review, Inc.
STRA	Strayer Education, Inc.
UTI	Universal Technical Institute, Inc.
WPO	The Washington Post Company

Of these firms, 12 offer postsecondary education that is a combination of campus-based and online services and two are exclusively online. Six provide other services related to the industry and the remaining four deliver a combination of on-site and online training services.
The historical daily price data for 2008 through 2010 originated with Yahoo! Finance (Yahoo! Inc. 2011) and Google Finance (Google 2011) and then was confirmed using data from Compustat (Standard & Poor's 2011c). Compustat (Standard & Poor's 2011a, b) provided the earnings reporting dates.

The procedures for testing hypotheses H1 and H2 began with firm-level testing within each subsample to identify the behavior of the firms associated with the timing of the earnings announcements (Doyle and Magilke 2009). For H1, the subsamples involved earnings announcements reported on a Monday through Thursday basis versus those that were reported on Fridays. For H2, the subsamples consisted of earnings announcements reported consistently on the same day of the week or during Monday through Thursday versus those that change from a Monday through Thursday reporting day to a Friday reporting day. Once the data was gathered and segregated into subsamples, a test of mean differences was utilized to determine if practices and performance differ among the firms in the education and training industry (Doyle and Magilke 2009). Bootstrap was used to test the means for H1 and Fisher's Exact Test was used for H2. The expectation was that, for the 24 firms, there are *n* instances of earnings reported on Monday through Thursday for four quarters per calendar year during this three-year period, therefore, the maximum number of earnings reports on Friday would be 24 x 4 x 3 – *n*.

H3 was tested using the one proportion test under the exact probability condition with firm level data. This test was used to compare the positive surprises with the same or negative earnings surprises. Earnings surprises are defined as the difference between a firm's actual reported EPS and its expected EPS.

H4 was tested using the Kruskal-Wallis One-Way ANOVA and the Dunn's multiple comparison tests. These tests were used to compare the cumulative abnormal returns of each day spanning the event window of Day -5 through Day +5 for the education firms. A variation of the capital asset pricing model (CAPM), the market model (Fama 1970, Jensen 1969, MacKinlay 1997, Sharpe 1963), was utilized to determine the expected return of a firm's stock price:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$$

where R_{it} represents the return on stock i during the given period t; R_{mt} represents the return associated with the market during the given period t; α and β are the regression coefficients for the i^{th} stock; e_{it} is the ordinary least squares (OLS) residual representing unsystematic return or error when predicting the value of R_{it}. A multifactor version of the market model was not selected since Brown and Weinstein (1985) found that the inclusion of additional factors results in limited added value versus the single factor model.

The abnormal returns to a given stock was computed by finding the difference between the observed return on a stock and the predicted return as determined by the market model. The following model (Basu 1975, Kaplan and Roll 1972) is derived from the previous formula and was used to determine the abnormal returns for a firm's stock on a given day:

$$AR_{it} = R_{it} - (\alpha + \beta_i R_{mt})$$

where AR_{it} represents the abnormal return for stock *i* for period *t*; R_{it} represents the observed return on stock *i* during the given period *t*; $(\alpha + \beta_i R_{mt})$ represents the expected return on stock *i* in period *t* predicted by the market model.

The cumulative abnormal return (*CAR*) of stock *i* over period *t* was calculated by summing the daily AR_{it}. *CAR* represents the cumulative abnormal return (over a period of time) of a security that is adjusted for risk and is in excess of expected market returns (Berkman and Troung 2009).

The estimation window around the earnings announcement dates is important due to the effects of multiple releases associated with the same earnings announcement and the effects of signaling by management about the earnings release. Aboody, et al. (2010) found that *CAR* was relatively constant from day -19 to -5. Their study shows that *CAR* changed significantly during days -4 through 0 (positive *CAR*) and then days 1 through 5 (negative *CAR*). Days 6 through 13 experienced a negative *CAR* but at a lesser decline. Days 14 through 20 involved the resumption of a positive trend in *CAR*.

For this study, the returns associated with the quarterly earnings announcements of each firm was measured by evaluating the *CAR* in the context of a 5 day (Day -5 to -1) pre-announcement period and a 5 day (Day +1 to +5) post-announcement period (Aboody et al. 2010). The event day was included in the estimation window.

4. Results

To test H1, the report dates of the earnings announcements were retrieved from Compustat. This yielded 294 reporting dates. The actual earnings per share (EPS) and the analyst consensus data were retrieved from Thomson Reuters IBES since this data was not available in other databases. If analyst estimated EPS data or analyst coverage was missing, the quarters of the firms were removed. Likewise, the quarters with incomplete data were eliminated. This screening process resulted in 229 usable reporting dates with both actual EPS and analyst estimated EPS data (including 63 estimated ranges for EPS instead of a consensus) representing 24 firms. The reporting dates contained in the sample covered every day of the week except Saturday (see Table 2).

Table 2: Reporting Days of the Week

Reporting Days	
Monday	28
Tuesday	62
Wednesday	43
Thursday	80
Friday	15
Saturday	0
Sunday	1
Total	229

To address the role of an estimated range of EPS by the analyst, actual EPS was treated as "meeting analysts' expectations" whenever the actual EPS was within the estimated range. In the cases were the actual EPS did not fall in the range forecasted by the analysts, the estimated EPS that was closest to the actual EPS was utilized. The EPS "surprise" was expressed as a percentage of the analysts' expected EPS in the IBES database for the quarter.

The descriptive statistics and the histograms of the earnings surprises employed to test H1 are presented in Table 3 and Figure 2 respectively. The non-Friday earnings surprise category had an average earnings surprise of -13.58 percent with a standard deviation of 278.57 percent. The non-Friday earnings surprise sample has a non-normal distribution as evidenced by its skewness of -12.8869 and kurtosis of 180.9036. The Friday earnings surprise category had an average earnings surprise of 7.84 percent with a standard deviation of 73.13 percent. The Friday earnings surprise sample has a non-normal distribution that is skewed to the left as indicated by its skewness of -.2024 and kurtosis of 1.5849.

Table 3: Descriptive Statistics of Earnings Surprises by Event Category

	Non-Friday Earnings Surprises Percent Difference from Analyst Forecast	*Friday Earnings Surprises Percent Difference from Analyst Forecast*
Mean	-13.58%	7.84%
Median	6.45%	9.09%
Standard Deviation	278.57%	73.13%
Kurtosis	180.9036	1.5849
Skewness	-12.8869	-0.2024
Minimum	-3900%	-158.62%
Maximum	550%	153.15%
Sample Size	213	15

The assumptions of the t-test include a normal distribution, equal variances, independent samples, random selection of samples. The normal distribution assumption of the t-test was not met since the non-Friday earning surprise sample does not have a normal distribution. The Mann-Whitney test has the following assumptions: ordinal scale, distributions of the populations are identical, and independence and random selection of the samples. The identical distributions assumption of the Mann-Whitney test was not met with the samples having different distributions. Bootstrap does not have normality or symmetrical assumptions as a requirement. It only requires that the samples be independent and that makes it the most appropriate for testing this hypothesis.

The bootstrap test results were calculated via NCSS (Hintze 2007) and appear in Table 4. The bootstrap test provided a mean of -0.2135 and a standard error of 0.2653 with lower and upper confidence limits of -0.6999 and 0.3297 respectively. This leads to the conclusion that no statistically significant differences exist in the quality of the earnings announcements that are released on Friday and the releases on any other day of the week.

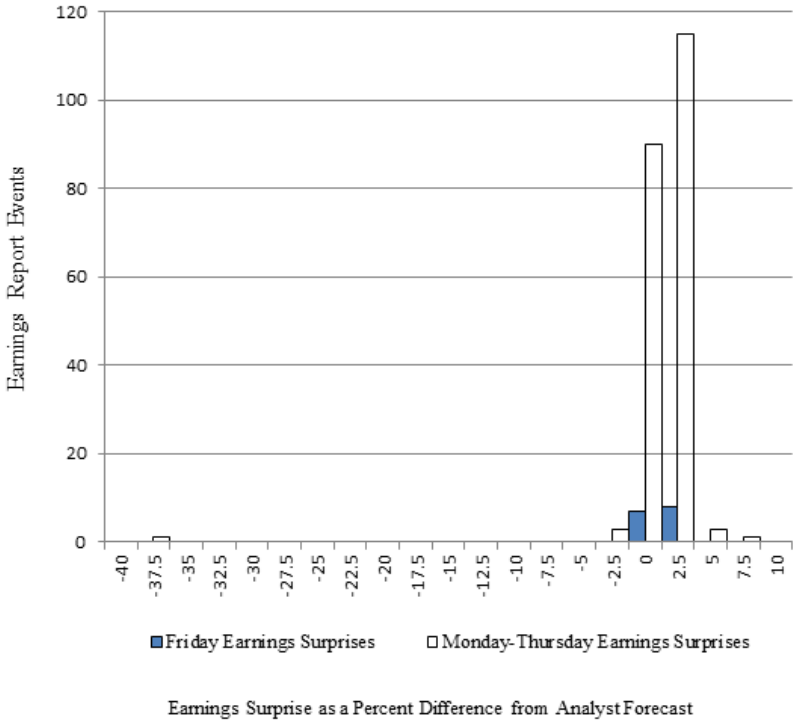

Figure 2: Histograms of Earnings Surprises by Event Category

Using the data collected for H1, the data was segregated into two subsamples: quarters that changed from a non-Friday to a Friday announcement date and quarters that did not change to a Friday announcement date for testing H2 (see Table 5). Events that had missing data or non-consecutive quarter data were excluded from this sample. A comparison of the actual EPS for consecutive same-firm quarters was made to determine the differences in actual EPS between the consecutive quarters. This process produced 199 useable differences in earnings between quarters. These differences were then classified into three groups based on if the difference in EPS of consecutive same-firm quarters was unchanged, increased or decreased. Table 6 contains the results of the Fisher's Exact Test of the differences in EPS between subsequent quarters based on earnings report dates changing to a Friday or remaining unchanged and changing to a non-Friday, which yielded a p-value of .5978 (GraphPad Software Inc. 2011, Uitenbroek 1997). This test was used because the sample sizes are too small for other tests to apply. There are no statistically significant differences in EPS quality between the firms that changed from a non-Friday to a Friday and those firms that did not change to a Friday for the earnings announcement dates. No evidence was found that supported H2.

Given the positive correlation between increased unemployment and post-secondary enrollment levels (Perna 2000), a change in enrollment should be reflected in the earnings of a firm. H3 was designed to explore this concept by comparing the EPS from one quarter to the next quarter. The 294 earnings announcement reporting dates retrieved initially from Compustat were screened to identify the reporting dates that would apply to the work on H3. Since it is common practice for a firm undertaking an IPO to have multiple earnings announcements leading up to the actual IPO event, all earnings announcement reporting dates associated with IPO actions were removed from the sample. In addition, events associated with

abnormal returns that were caused by non-earnings related activities that occurred during the earnings announcement window were removed from the sample. This screening effort reduced the sample to 222 event dates.

Table 4: Bootstrap results- H1

Estimation Results		Confidence Limits		
Parameter	Estimate	Conf Level	Lower	Upper
Difference				
Original value	-0.2141	0.90	-0.6243	0.2473
Bootstrap mean	-0.2135	0.95	-0.6999	0.3297
Bias (BM-OV)	0.0007	0.99	-0.8040	0.5369
Bias corrected	-0.2148			
Standard error	0.2653			
Non-Friday Events				
Original value	-0.1358	0.90	-0.3748	0.2313
Bootstrap mean	-0.1382	0.95	-0.3976	0.2953
Bias (BM-OV)	-0.0024	0.99	-0.4362	0.4976
Bias corrected	-0.1333			
Standard error	0.1876			
Friday Events				
Original value	0.0784	0.90	-0.2240	0.3834
Bootstrap mean	0.0753	0.95	-0.2789	0.4340
Bias (BM-OV)	-0.0031	0.99	-0.3995	0.5504
Bias corrected	0.0815			
Standard error	0.1842			

[1] Based on 3000 samples

Table 5: Descriptive Statistics of Differences in Earnings per Share in Subsequent Quarters

	Changed to a Friday Reporting Actual Difference Between Quarters	*Not changed to a Friday Reporting Actual Difference Between Quarters*
Mean	-2.2986	0.1107
Median	0	0.02
Standard Deviation	4.7619	0.6706
Kurtosis	4.9283	58.6680
Skewness	-2.2199	6.5212
Minimum	-12.59	-1.05
Maximum	0.26	6.9
Sample Size	7	192

Table 6: Fisher's Exact Test Results of Differences in Earnings per Share in Subsequent Quarters

	Worse	Same or Better	Totals
Changed to Friday	3	4	7
Not changed to a Friday	78	114	192
Totals	81	118	199
Fisher's exact test: one-tailed P-value = 0.5978			

Table 7 contains the results of the one-proportion test with exact probability for the

binomial distribution was used to test H3. The z-value of 1.5437 for this test is not significant. The conclusion of the test result is there is no statistically significant difference between the earnings that are better-than and those that are the same-or-worse-than expected.

Table 7: One Proportion Exact Test of Differences in Actual EPS and Analyst Expectations for Consecutive Quarters

	Z-value[1]	Probability
Better than expected = same or worse than expected	1.5437	0.1225
Better than expected < same or worse than expected	1.5437	0.9534
Better than expected > same or worse than expected	1.5437	0.0612

[1] Significant when z-value>1.96

Researchers have documented that the change in unemployment levels is positively correlated with the change in enrollment levels on the post-secondary level (for example Perna 2000). This should translate to periods of higher profits during periods of high unemployment. To test H4, the methodology discussed by MacKinlay (1997) was followed. Event windows of Day -5 through Day +5 were determined for the 222 event dates from H3.

Daily returns were calculated for each of the firms and for the Russell 3000 Index. Abnormal returns were then determined by finding the difference between the actual daily return for a given stock and the expected daily return based on the projections of the market model. Cumulative abnormal returns were calculated for the 11 days in the window of each of the 222 events. Then each set of CARs for all of the 222 event dates were divided into 11 sets corresponding to each day in the event window. This group was then subdivided into three categories corresponding to positive, negative or no change in the earnings from the previous quarter (as determined during the work for H2). The descriptive statistics are presented in Table 8. A graph of the medians of the cumulative abnormal returns for each day of the event window appears in Figure 3.

Table 8: Descriptive Statistics for Day -5 through Day +5- CAR

	Mean	Median	Std Dev	Kurtosis	Skewness	Min	Max
Day -5	-0.0022	0.0003	0.0376	36.4006	-4.0593	-0.3571	0.1156
Day -4	0.0006	0.0002	0.0312	3.7381	-0.1246	-0.1420	0.1412
Day -3	0.0000	-0.0010	0.0278	1.8314	0.5210	-0.0780	0.1056
Day -2	-0.0002	0.0005	0.0283	3.7591	-0.3304	-0.1208	0.1176
Day -1	0.0010	0.0014	0.0271	1.9367	-0.6031	-0.1028	0.0659
Day 0	0.0014	0.0020	0.0585	3.3446	-0.3735	-0.2339	0.1911
Day +1	0.0000	0.0042	0.0765	5.5629	-1.1978	-0.3885	0.2357
Day +2	-0.0004	-0.0005	0.0366	2.2921	-0.1029	-0.1419	0.1434
Day +3	-0.0015	-0.0008	0.0249	1.5738	0.2853	-0.0786	0.1007
Day +4	0.0008	0.0001	0.0241	0.5933	0.0381	-0.0718	0.0773
Day +5	-0.0006	0.0008	0.0303	4.2284	0.1021	-0.1062	0.1603

Sample Size 222

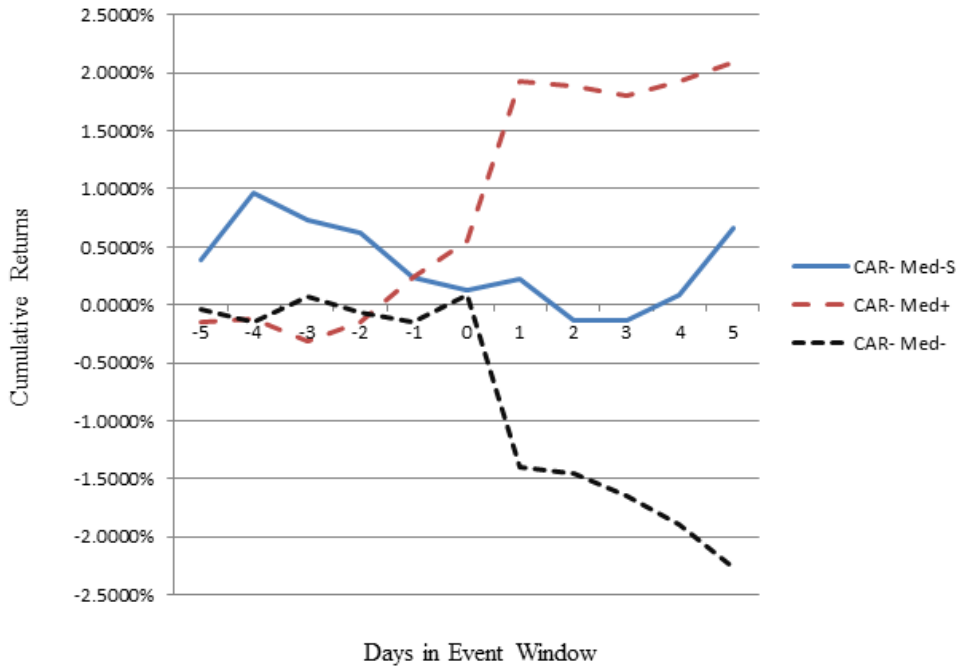

Figure 3: Cumulative Abnormal Returns of Earnings Announcements from Event Day -5 to Event Day +5

The differences in cumulative abnormal returns among three earnings groups for each of the eleven days in the event windows were tested using the Kruskal-Wallis One-Way ANOVA and the Dunn's multiple comparison tests. The non-parametric Kruskal-Wallis One-Way ANOVA test (Appendix A) was selected because the response variables representing CARs for each of the eleven days in the event window were not normally distributed, while their variances among the three groups were about equal. These results show that the differences in CARs among the three groups of earnings are not significantly different for the event days from Day -5 up until Day 0. From Day +1 through Day +5, the difference between median CARs becomes significant.

From the results of the Dunn's multiple comparison tests (Appendix B), the negative and positive earnings announcements within the event window are consistently different: 3.7852 (Day +1), 3.5406 (Day +2), 3.9224 (Day +3), 3.8538 (Day +4), and 4.1317 (Day +5). Likewise, the same and positive earnings announcements within the event window were significant for event Day +3 with a z-value of 2.0228 but this may be spurious since no explanation was identified as to why it would be this way. The results associated with the unchanged earnings announcements within the event window were insignificant. Day +1 is a key day in the window since many of the earnings announcements associated with significant abnormal returns occurred either after trading hours or towards the end of the trading day on Day 0. This finding supports H4.

5. Conclusion

This study examines the earnings announcements of the publicly traded for-profit education industry during the high unemployment years of 2008 through 2010 (during and after the U.S. subprime loan crisis) for evidence of human capital theory. This study also looks for evidence of opportunistic earnings surprise announcement behavior by management, as predicted by behavioral accounting theory. Human capital theory predicts that these firms should experience increased earnings in the education industry during recessionary periods because individuals should seek to acquire new knowledge and skills through formal education to improve their economic prospects. Thus, greater earnings surprise announcements and significant abnormal returns in response to positive earnings surprises are expected for this industry during recessionary periods. Behavioral accounting theory expects that management may engage in opportunistic timing practices to minimize negative market reactions to adverse earnings surprises by making announcements on Fridays versus other weekdays.

This research examines hypotheses related to the quality of earnings announcements using a sample of 24 publicly traded U.S. firms in the for-profit education industry. As predicted by human capital theory, the empirical results show significant positive abnormal returns after earnings reports in response to positive earnings surprise announcements. The results also show no evidence of greater positive earnings surprise announcements, which is inconsistent with human capital theory's expectations for a recessionary period. The results also show no evidence of opportunistic timing practices by managers as suggested under behavioral accounting theory, with no significant difference between the number of Friday negative earnings surprise announcements and those for other weekdays. These results may be partially explained by a lag factor associated with declining enrollment levels that precede decreasing unemployment rates (Hayes 2010, Heller 1999, Humphreys 2000, Perna 2000) could partially explain the results. Others have questioned the education quality of the for-profit sector as evidenced by its low graduate success and loan repayment rates (for example: Burnsed 2010). Issues in the student loan market (Ergungor and Hathaway 2008) and the magnitude of the economic conditions (Seyfried 2011) during 2008-2010 may partially explain these results. The industry has been plagued with scandals (for example: Fain 2016, Funke 2016, United States Government Accountability Office 2010) and these most likely contribute to this study's results.

The finding of no significantly greater positive earnings surprise announcements than negative earnings surprise announcements is inconsistent with human capital theory's expectations for this industry during a recessionary period. Additional research could provide greater insights to the behavior of earnings for the educational sector over business cycles by examining and comparing earnings surprise announcement effects for both high employment and high unemployment periods.

Acknowledgement: This paper is a product of my dissertation while at Nova Southeastern University. I thank my dissertation committee: Michael Bendixen (chair; Nova Southeastern University), Yuliya Yurova (Nova Southeastern University), and Edward R. Walker (University of Central Oklahoma) for their guidance throughout this research project. I also thank Elizabeth Cooperman (University of Colorado Denver) and an anonymous reviewer for their input on this paper. The interpretations and conclusions presented in this paper are the author's.

References

Abelman, Robert, and Amy Dalessandro. (2008). The institutional vision of community colleges: Assessing style as well as substance. Community College Review 35 (4): 306-335. Accessed December 18, 2010. doi:10.1177/0091552108315604.

Aboody, David, Reuven Lehavy, and Brett Trueman. (2010). "Limited attention and the earnings announcement returns of past stock market winners." Review of Accounting Studies 15 (2):317-344. doi: 10.1007/s11142-009-9104-9.

Avirutha, Anupong, Mai X. Bui, Geraldine H. Goodstone, Kenya Reid, Juanita Rendon, and Deborah Schaff. (2005). Current overview and future of business higher education. Futurics 29 (1/2): 77-84.

Ball, Ray, and Philip Brown. (1968). An empirical evaluation of accounting income numbers. Journal of Accounting Research 6 (2): 159-178. doi:10.2307/2490232.

Ball, Ray, and Lakshmanan Shivakumar. (2008). "How much new information is there in earnings?" Journal of Accounting Research 46 (5):975-1016. doi: 10.1111/j.1475-679X.2008.00299.x.

Basu, Sanjoy. (1975). "The information content of price-earnings ratios." Financial Management 4 (2):53-64. doi: 10.2307/3665200.

Beaver, William H. (1968). "The information content of annual earnings announcements." Journal of Accounting Research 6 (Empirical Research in Accounting: Selected Studies 1968):67-92. doi: 10.2307/2490070.

Beaver, Wlliam. (2009). For-profit higher education: A social and historical analysis. Sociological Viewpoints 25: 53-73.

Becker, Gary S. (1993). Nobel lecture: The economic way of looking at behavior. The Journal of Political Economy 101 (3): 385-409. doi:10.1086/261880.

Berkman, Henk, and Cameron Troung. (2009). "Event day 0? After-hours earnings announcements." Journal of Accounting Research 47 (1):71-103. doi: 10.1111/j.1475-679X.2008.00312.x.

Brown, Stephen J., and Mark I. Weinstein. (1985). "Derived factors in event studies." Journal of Financial Economics 14 (3):491-495. doi: 10.1016/0304-405x(85)90010-8.

Burnsed, Brian. (2010). "Online Degrees: Learn More Before You Enroll." U.S. News & World Report, September 22, 1. Accessed August 27, 2011. http://www.usnews.com/education/online-education/articles/2010/09/22/online-degrees-learn-more-before-you-enroll.

Bushman, Robert, Sunil Dutta, John Hughes, and Raffi Indjejikian. (1997). "Earnings announcements and market depth." Contemporary Accounting Research 14 (1):43-68. doi: 10.1111/j.1911-3846.1997.tb00519.x.

Chen, Carl R., and Nancy J. Mohan. (1994). "Timing the disclosure of information: Management's view of earnings announcements." Financial Management 23 (3):63-69. doi: 10.2307/3665622.

Courant, Paul N., Michael McPherson, and Alexandra M. Resch. (2006). The public role in higher education. National Tax Journal 59 (2): 291-318. Accessed December 18, 2010. doi:10.17310/ntj.2006.2.06.

Damodaran, Aswath. (1989). The weekend effect in information releases: a study of earnings and dividend announcements. The Review of Financial Studies 2 (4): 607-623.

Dellavigna, Stefano, and Joshua M. Pollet. (2009). "Investor inattention and Friday earnings announcements." The Journal of Finance 64 (2):709-749. doi: 10.1111/j.1540-

6261.2009.01447.x.

DeZoort, F. Todd, Dana R. Hermanson, and Richard W. Houston. (2003). "Audit committee member support for proposed audit adjustments: A source credibility perspective." Auditing 22 (2):189-205. doi: 10.2308/aud.2003.22.2.189.

Division of Labor Force Statistics. (2016). "Unemployment Rate." [Online Database]. U.S. Bureau of Labor Statistics, Last Modified August 14. http://data.bls.gov/timeseries/LNS14000000.

Doyle, Jeffrey T, and Matthew J. Magilke. (2009). "The timing of earnings announcements: An examination of the strategic disclosure hypothesis." The Accounting Review 84 (1):157-182. doi: 10.2308/accr.2009.84.1.157.

Ergungor, O. Emre, and Ian Hathaway. (2008). Trouble Ahead for Student Loans? In Economic Commentary, edited by Federal Reserve Bank of Cleveland. United States, Cleveland: Federal Reserve Bank of Cleveland.

Fain, Paul. (2016). "Accreditor on Life Support." Inside Higher Ed, June 24. Accessed August 15, 2016. https://www.insidehighered.com/news/2016/06/24/federal-panel-votes-terminate-acics-and-tightens-screws-other-accreditors.

Fama, Eugene. (1970). Efficient capital markets: A review of theory and empirical work. Journal of Finance 25 (2): 383-417. doi:10.2307/2325486.

Fama, Eugene F. (1991). Efficient capital markets: II. The Journal of Finance 46 (5): 1575-1617. doi:10.2307/2328565.

Francis, Jennifer, Ryan Lafond, Per Olsson, and Katherine Schipper. (2007). "Information uncertainty and post-earnings-announcement-drift." Journal of Business Finance & Accounting 34 (3-4):403-433. doi: 10.1111/j.1468-5957.2007.02030.x.

Fried, Vance H., and Aaron D. Hill. (2009). "The future of for-profit higher education." The Journal of Private Equity 12 (4):35. doi: 10.3905/JPE.2009.12.4.035.

Funke, Daniel. (2016). "Former Corinthian Colleges to pay over $1B for defrauding students." USA Today College, March 25. Accessed August 15, 2016. http://college.usatoday.com/2016/03/25/former-corinthian-colleges-to-pay-over-1b-for-defrauding-students/.

Google. (2011). "Google finance historical prices." accessed June 17. http://www.google.com/finance/historical?q=NASDAQ:CAST.

GraphPad Software Inc. (2011). "Fisher's Exact Test." GraphPad Software Inc.,, accessed July 8. http://www.graphpad.com/quickcalcs/contingency1.cfm.

Griffith, Andrew S. (2011). Educational attainment: A model for maximizing earnings of the nontraditional student. The Journal of Continuing Higher Education 59 (2): 85-91. doi:10.1080/07377363.2011.568824.

Hassler, Richard P. (2006). "The flogging of for-profit colleges." Academic Questions 19 (3):63-74. doi: 10.1007/s12129-006-1005-9.

Hayes, Dianne. (2010). "College on demand." Diverse Issues in Higher Education 27 (3):17-18.

Heller, Donald E. (1999). The effects of tuition and state financial aid on public college enrollment. The Review of Higher Education 23 (1): 65-89. Accessed September 18, 2010. doi:10.1353/rhe.1999.0023.

Hewlett, Roderic. (2002). Integrating human capital concepts in productivity and growth topics. Journal of Management Research 2 (1): 22-42.

NCSS 2007 07.1.21. (2007). NCSS, LLC, Kaysville, UT.

Humphreys, Brad R. (2000). Do business cycles affect state appropriations to higher education? Southern Economic Journal 67 (2): 398-413. doi:10.2307/1061477.

Jensen, Michael C. (1969). Risk, the pricing of capital assets, and the evaluation of investment portfolios. The Journal of Business 42 (2): 167-247.

Jorgensen, Randy D., and John R. Wingender Jr. (2004). A survey on the dissemination of earnings information by large firms. Journal of Applied Finance 14 (1): 77-84.

Kaplan, Robert S., and Richard Roll. (1972). "Investor evaluation of accounting information: Some empirical evidence." The Journal of Business 45 (2):225-257. doi: 10.1086/295446.

Kim, Oliver, and Robert E. Verrecchia. (1994). "Market liquidity and volume around earnings announcements." Journal of Accounting and Economics 17 (1-2):41-67. doi: 10.1016/0165-4101(94)90004-3.

Lauer, Charlotte. (2002). Enrolments in higher education: Do economic incentives matter? Education & Training 44 (4/5): 179-185. Accessed December 18, 2010. doi:10.1108/00400910210432068.

Loomis, Steven, and Jacob Rodriguez. (2009). The individual-collective problem in education: The special cases of John Dewey and human capital theory. Oxford Review of Education 35 (4): 509 - 521. doi:10.1080/03054980903072587.

MacKinlay, A. Craig. (1997). Event Studies in Economics and Finance. Journal of Economic Literature 35 (1): 13-39.

NAICS Association. (2016). "NAICS 61: Six Digit NAICS Codes & Titles." Last Modified August 14. https://www.naics.com/six-digit-naics/?code=61.

Penman, Stephen H. (1987). "The distribution of earnings news over time and seasonalities in aggregate stock returns." Journal of Financial Economics 18 (2):199-228. doi: 10.1016/0304-405x(87)90039-0.

Perna, Laura Walter. (2000). Differences in the decision to attend college among African Americans, Hispanics, and Whites. The Journal of Higher Education 71 (2): 117-141. doi:10.2307/2649245.

Philipich, Kirk L. (2009). Changes in the disclosure regulatory environment and managers' timing of earnings announcements. Journal of American Academy of Business, Cambridge 15 (1): 24-30.

Russell Investments. (2011). "Russell 3000® Index." Last Modified May 31, accessed June 4. http://www.russell.com/indexes/data/fact_sheets/us/russell_3000_index.asp.

Sandy, Jonathan, and Kevin Duncan. (1996). Does private education increase earnings? Eastern Economic Journal 22 (3): 303-312.

Schumann, Jochen. (2004). Migration in the context of countries' human capital and social capital. Jahrbuch für Wirtschaftswissenschaften 55 (1): 33-55.

Seyfried, Bill. (2011). Employment during the Great Recession: was this time different? Research in Business and Economics Journal 3: G1-G14.

Shankar, S. Gowri, and James M. Miller. (2006). Market reaction to changes in the S&P SmallCap 600 Index. Financial Review 41 (3): 339-360. doi:10.1111/j.1540-6288.2006.00146.x.

Sharpe, William F. (1963). "A simplified model for portfolio analysis." Management Science 9 (2):277-293. doi: 10.1287/mnsc.9.2.277.

Shivakumar, Lakshmanan. (2007). "Discussion of information uncertainty and post-earnings-announcement-drift." Journal of Business Finance & Accounting 34 (3-4):434-438. doi: 10.1111/j.1468-5957.2007.02031.x.

Standard & Poor's. (2011a). "Compustat Monthly Updates- Fundamentals Annual." accessed June 17. http://wrdsweb.wharton.upenn.edu/wrds/ds/compq/funda/index.cfm?navGroupHeader=Compustat%20Monthly%20Updates&navGroup=North%20America.

Standard & Poor's. (2011b). "Compustat Monthly Updates- Fundamentals Quarterly." accessed June 18. http://wrdsweb.wharton.upenn.edu/wrds/ds/compq/fundq/index.cfm?navGroupHeader=Compustat%20Monthly%20Updates&navGroup=North%20America.

Standard & Poor's. (2011c). "Compustat Monthly Updates- Security Daily." accessed June 18. http://wrdsweb.wharton.upenn.edu/wrds/ds/compq/secd/index.cfm?navGroupHeader=Compustat%20Monthly%20Updates&navGroup=North%20America.

Stanfield, James. (2009). The rise and fall of human capital theory. Economic Affairs 29 (1): 100-100. doi:10.1111/j.1468-0270.2009.01881.x.

Uitenbroek, Daan G. (1997). "The Fisher exact test." D. G. Uitenbroek, accessed July 8. http://www.quantitativeskills.com/sisa/statistics/fisher.htm.

United States Government Accountability Office. (2010). For-profit Colleges: Undercover Testing Finds Colleges Encouraged Fraud and Engaged in Deceptive and Questionable Marketing Practices. Washington, DC: United States Government Accountability Office.

van der Merwe, Alex. (2010a). Does human capital theory account for individual higher education choice? The International Business & Economics Research Journal 9 (6): 81-93.

van der Merwe, Alex. (2010b). Does human capital theory explain the value of higher education? A South African case study. American Journal of Business Education 3 (1): 107-118. Accessed August 28, 2010.

Vandenberghe, V. (1999). Economics of education. The need to go beyond human capital theory and production-function analysis. Educational Studies 25 (2): 129-143. doi:10.1080/03055699997864.

Vasigh, Bijan, and Reza G. Hamzaee. (2004). Testing sensitivity of student enrollment with respect to tuition at an institution of higher education. International Advances in Economic Research 10 (2): 133-149. doi:10.1007/BF02295676.

Wilson, David A., and Michael L. Moore. (1973). Education costs human capital theory and tax policy. Business and Society 14 (1): 13-18. doi:10.1177/000765037301400102.

Yahoo! Inc. (2011). "Russell 3000 Historical Prices." accessed June 17. http://finance.yahoo.com/q/hp?s=%5ERUA&a=00&b=1&c=2008&d=11&e=31&f=2010&g=d.

APPENDIX A

Kruskal-Wallis One-Way ANOVA on Ranks- CAR							
	Chi-Square	Probability		Sum of Rank	Mean Rank	Z-value	Median
Day -5	0.6770	0.7128	Negative	6086	108.68	-0.3801	-0.0003
			Positive	13567	110.30	-0.3101	-0.0015
			Same	5100	118.60	0.8078	0.0039
Day -4	0.7466	0.6885	Negative	5887	105.13	-0.8589	0.0014
			Positive	13945	113.37	0.4846	-0.0003
			Same	4921	114.44	0.3345	0.0008
Day -3	0.0154	0.9923	Negative	6254	111.68	0.0241	0.0010
			Positive	13663	111.08	-0.1083	-0.0024
			Same	4836	112.47	0.1097	-0.0002
Day -2	0.0152	0.9924	Negative	6195	110.63	-0.1179	-0.0040
			Positive	13764	111.90	0.1041	0.0041
			Same	4794	111.49	-0.0013	-0.0049
Day -1	0.0542	0.9733	Negative	6148	109.79	-0.2310	0.0014
			Positive	13796	112.16	0.1713	-0.0012
			Same	4809	111.84	0.0383	-0.0002
Day 0	1.7371	0.4196	Negative	5967	106.55	-0.6665	0.0020
			Positive	14332	116.52	1.2981	0.0071
			Same	4454	103.58	-0.9003	-0.0079
Day +1	14.7426	0.0006	Negative	4812	85.93	-3.4453	-0.0194
			Positive	15390	125.12	3.5222	0.0294
			Same	4551	105.84	-0.6438	-0.0052
Day +2	13.1629	0.0014	Negative	4927	87.98	-3.1687	-0.0268
			Positive	15331	124.64	3.3982	0.0140
			Same	4495	104.53	-0.7919	-0.0116
Day +3	16.2791	0.0003	Negative	4793	85.59	-3.4911	-0.0347
			Positive	15523	126.20	3.8018	0.0247
			Same	4437	103.19	-0.9453	-0.0063
Day +4	15.2697	0.0005	Negative	4785	85.45	-3.5103	-0.0392
			Positive	15418	125.35	3.5810	0.0245
			Same	4550	105.81	-0.6465	-0.0062
Day +5	17.3751	0.0002	Negative	4663	83.27	-3.8038	-0.0479
			Positive	15504	126.05	3.7618	0.0287
			Same	4586	106.65	-0.5513	0.0001
					Negative	Positive	Same
Degrees of Freedom		2		Count	56	123	43

APPENDIX B

Dunn's Multiple Comparisons Test[1]

		Cumulative Abnormal Returns		
		Negative	Positive	Same
Day -5	Negative	0.0000	0.1567	0.7622
	Positive	0.1567	0.0000	0.7297
	Same	0.7622	0.7297	0.0000
Day -4	Negative	0.0000	0.7967	0.7154
	Positive	0.7967	0.0000	0.0938
	Same	0.7154	0.0938	0.0000
Day -3	Negative	0.0000	0.0577	0.0604
	Positive	0.0577	0.0000	0.1216
	Same	0.0604	0.1216	0.0000
Day -2	Negative	0.0000	0.1234	0.0663
	Positive	0.1234	0.0000	0.0364
	Same	0.0663	0.0364	0.0000
Day -1	Negative	0.0000	0.2296	0.1575
	Positive	0.2296	0.0000	0.0286
	Same	0.1575	0.0286	0.0000
Day 0	Negative	0.0000	0.9626	0.2282
	Positive	0.9626	0.0000	1.1371
	Same	0.2282	1.1371	0.0000
Day +1	Negative	0.0000	3.7852*	1.5287
	Positive	3.7852*	0.0000	1.6948
	Same	1.5287	1.6948	0.0000
Day +2	Negative	0.0000	3.5406*	1.2710
	Positive	3.5406*	0.0000	1.7671
	Same	1.2710	1.7671	0.0000
Day +3	Negative	0.0000	3.9224*	1.3512
	Positive	3.9224*	0.0000	2.0228*
	Same	1.3512	2.0228*	0.0000
Day +4	Negative	0.0000	3.8538*	1.5639
	Positive	3.8538*	0.0000	1.7168
	Same	1.5639	1.7168	0.0000
Day +5	Negative	0.0000	4.1317*	1.7955
	Positive	4.1317*	0.0000	1.7047
	Same	1.7955	1.7047	0.0000

[1] Significant when z-value>1.96 * Statistically Significant