Insider trading and market efficiency:
Do insiders buy low and sell high?

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ABSTRACT

The purpose of this study was to test the semi-strong form efficient market hypothesis using insider sale and purchase announcements and their effect on the risk adjusted rate of return of the firms' stock price. Past studies using varying methodologies, including the risk adjusted model for event study methodology as used in this study, have found conflicting results regarding the form of market efficiency upheld in the United States. By definition, a semi-strong form efficient market would not allow any investor to earn an above normal risk adjusted return or to consistently outperform the market on the basis of publicly available information, such as an insider trade announcement. This study tests the speed of the market's reaction to an insider trade announcement to determine if the reaction occurs either on or before the event, thus upholding the semi-strong form efficient market hypothesis. The analysis of two sample groups, sale and purchase insider trade announcements, was used to determine if and when the risk adjusted return of the stock price is significantly affected both on the announcement date and during the defined event period. Results for insider sales support the semi-strong form efficient market hypothesis while the insider purchases analysis findings are mixed. The evidence is at odds with the literature as insiders' sales/purchases announcements delivered negative/positive signals, respectively. Evidence of pre-announcement trading and an over-reaction effect were also observed. For insider purchases and sales, the insiders follow a pattern of "buying low and selling high".

Keywords: insider trade, sale announcements, purchase announcements, semi-strong efficient

INTRODUCTION

Does insider trading information affect stock price? If so, how fast does the market react to insider trading? It is reasonable to expect a significant market reaction to trading by insiders who possess non-public information about the firm. However, the efficient market hypothesis suggests that legal insider trading with public information disclosure should not enable any investor to earn above normal returns by acting on this type of news.

Market efficiency is a factor that is constantly tested, and past studies have produced evidence to support both scenarios. Studies provide evidence in favor of and against regulation relating to market efficiency. Some argue that there should be no restrictions on insider trading, allowing for a more strong form efficient market where all information could be used. Others argue that regulations are necessary to uphold market integrity and to keep competition alive in the market. The laws implemented in the United States prohibit certain insider trading, making a strong form efficient market impossible. Therefore, the market should uphold the semi-strong form efficiency definition if tested in regards to insider trading, meaning no investor should be able to earn an above normal return on the basis of an insider trade announcement. Will a trading rule that mirrors insiders produce above normal returns? If so, then the abnormal return to insiders suggests trading based on inside information, which is illegal in the United States even though the insiders are conducting "legal" insider trades.

This research analyzes how insider trading sale and purchase announcements affect stock price up to 30 days before and after the announcement to further examine questions as to whether investors who act on publicly available insider trade announcements can beat the market. Likewise, this study tests whether the market upholds the semi-strong form of efficiency based on insider trading sale and purchase announcements.

BACKGROUND

Efficient market theory examines how accurately stock prices signal resource allocation and fully reflect all available information. Fama (1970) introduced the efficient market hypothesis stating there are three forms of efficiency: weak, semi-strong, and strong. A market that incorporates all historical information is said to be weak form efficient, while one that responds to all publicly available information is semi-strong efficient. In a semi-strong efficient market, prices instantly change to reflect publicly available information. A strong form market, responds to all information, both public and private. The hypothesis claims that achieving above average returns on a risk adjusted basis is impossible (Fama, 1970).

The lowest level of market efficiency, weak form, states that the market only reacts to historical information. This means that no one can earn above normal returns based on published historical information; however, the market does not quickly react to new public or private information. It may be possible then, in a weak form efficient market, to obtain abnormal returns using either new publicly available or private insider information (Fama, 1970).

A semi-strong form market is more efficient that a weak form, as it reacts to publicly available new information quickly and share prices adjust to reflect the market's reaction. Obtaining an abnormal return in this market would only be possible with private inside information, since all public information is used by the market. To test a semi-strong market, such as the United States stock market, stock price fluctuation must be of reasonable size and happen almost instantaneously (Fama, 1970). If consistent fluctuation in either direction occurs

after the initial adjustment, semi-strong efficiency is weakened. A semi-strong efficient market should show no indication after an initial adjustment that further fluctuation is necessary because the market's reaction to the new information should happen immediately. With insider trading, the public announcement of the trade should result in immediate fluctuation of stock price to adapt to the new information and ensure that an abnormal return cannot be achieved.

The last level of market efficiency, strong form, is impossible to achieve in a market with any form of regulation that prevents private information from being acted upon, such as with insider trading laws in the United States. In this form of efficiency, abnormal returns are never possible because all information is being used to make trading decisions (Fama, 1970).

In recent years, there has been evidence revealing limitations to the efficient market hypothesis. Stock market crises and examination of stock price fluctuation have shown a higher degree of inefficiency within the market than proposed by Fama's semi-strong form efficient market. In his book, Barnes suggests that share prices do not adjust to new information as quickly as once thought and that they may overreact or fail to discriminate between information quality differences (Barnes, 2009).

PURPOSE

The purpose of this study is to test the semi-strong form efficient market hypothesis with respect to insider trading announcements. By analyzing the effects of insider trading on the risk adjusted rate of return of the firms' stock prices, it will be possible to determine how fast a firm's stock price reacts to the announcement of either an insider sale or purchase. Intuitively, one would expect all insider trades, both purchases and sales, to produce abnormal returns. After all, rational insiders would be expected to "buy low" and "sell high". This study tests whether the market does adhere to the semi-strong form of efficiency, whether it more closely aligns with the weak or strong form, or whether it falls between any two of these three categories.

Using standard event study methodology, the research tests two individual random samples; one sample includes insider sales and the other insider purchases. Each sample group is comprised of different companies with different announcement dates to minimize selection bias factors. The sample groups are also analyzed based on the risk adjusted rate of return of the firms' stock prices to determine if insiders "buy low" and "sell high". If the test results support the semi-strong form market hypothesis, then no investor can earn an above normal return by acting on this information.

LITERATURE REVIEW

Insider trading is broadly defined as the act of buying or selling a corporation's stock or other securities by an individual with potential access to non-public information about the company. Insider trading by corporate officers, employees, directors, or significant shareholders is considered legal, but it must be disclosed in accordance to SEC regulations. Any trading based on material, or substantial, non-public information is considered illegal (U.S. Securities and Exchange Commission, 2001, Insider Trading). In many instances, investors mimic the trading of insiders as it becomes publicly available, which is evidence that the market considers insider trading an important source of information pertaining to the long-term prospects of a firm (Allen, 1995). It follows then that trading by corporate insiders can change the value of a firm's

stock, and the level of market efficiency determines whether any insider or investor will obtain an above normal return as a result.

The Securities and Exchange Commission (SEC) regulates insider trading and requires that insiders disclose trades to the public. Under the Fair Disclosure Regulation implemented by the SEC, if a company accidentally discloses material non-public information to one individual, it must then promptly make the information available to the public as a whole (Allen, 1995). While imposing strict regulation on what it deems illegal activity, the SEC allows for legal insider trading. This trading is fairly common, especially among employees of corporations who have stock options. These trades must be documented through the SEC, primarily Form 4, and be made in accordance with the SEC's laws pertaining to insider trades (U.S. Securities and Exchange Commission, 2001, Insider Trading).

Illegal insider trading refers to any trading with the possession of material non-public information. No proof is required that the material information was used in the trading; an insider is guilty of illegal trading by making a trade while merely in possession of the non-public information. This trading is considered fraudulent due to the fiduciary relationship between company officers and shareholders. Company insiders are obligated to act in the shareholder's best interest, and by acting upon company owned information, they are violating this relationship (U.S. Securities and Exchange Commission, 2001, Insider Trading).

An insider by definition has been broadened in recent years to include not only corporate employees, but also any individual that acts upon material non-public information. An example is the 'tipping off' of friends or relatives outside a company by a company official. If this person acts on the information shared with them, they are also considered responsible for breaking the fiduciary relationship (U.S. Securities and Exchange Commission, 2001, Insider Trading).

An exception to the concept of breaking a fiduciary relationship to a shareholder is if the trades were performed based on a preexisting formal contract. Another exception to illegal insider trading includes the overhearing of non-public information disclosure in a public setting, provided there is no connection to the informer. There is a fine line between legal and illegal insider trading, and many insider trading cases have been brought to court or further investigated by the SEC (U.S. Securities and Exchange Commission, 2001, Insider Trading).

Although insider trading can be a signal of a company official's perspective on the outlook of his/her firm, it is not a perfect indicator of future company performance. The profitability of insider trading results from whether the market's reaction is one that follows efficient market hypothesis. The objective of regulation concerning public disclosure, however, is to preserve overall market integrity and curb the effect of unfair enrichment that may be a result of insider trades by those with access to private information (Huddart, et al., 2001).

Certain activities, such as dividend and bankruptcy announcements and repurchases, affect stock value. Evidence shows that insider trading also has an effect on how the market responds to these activities, for example, firms with net selling prior to a dividend initiation announcement have a more negative market response than those with insider purchases or no trading. There is also a negative market response when insider selling takes place at the announcement of bankruptcy. Market response is more positive when there is unexpected insider purchasing before repurchase announcements (Bushman, et al., 2005).

Insider trading can act as a reflection of company officers' confidence in their firm and can influence market reaction. Insider sales often signal uncertainty about future earnings or firm health and it is expected that the market response will be negative and the firm's stock value will decline. The opposite is true for insider purchases; they often signal an expectation that the

firm's value will rise and thus a positive market response increases the firm's stock value (Allen, 1995).

With the public announcement of insider purchases or sales, investors can respond almost immediately in the next round of trading. The expectation is that these investors will consider the purchases a signal of future increase in firm's value and proceed to purchase, which will increase the stock value. The opposite is expected with insider sales; this is taken as a negative signal and investors will proceed to sell and decrease the firm's stock value. In both instances, the insider trading influences the market's reaction, and by making public disclosure of these trades, market efficiency is increased because investors can react to these trades and reduce the gain by the insider (Bushman, et al., 2005).

In terms of the efficient market hypothesis, the disclosure of insider trades reduces the market reaction time and price discovery process. With public disclosure, the amount of expected insider profits decreases substantially. An insider trade is made publicly available before trading takes place, so there is more opportunity for the market to respond to this information and lower the inside trader's profit. It follows then that market efficiency is increased by public disclosure of insider trades (Allen, 1995).

There are also arguments that public disclosure reduces market efficiency. Without restrictions on insider trading, some argue that efficiency would increase even more because prices would fully reflect all information, including non-public, about a firm. This limits the possible gain by private information acquisition because the market would respond too quickly for the insider to achieve a gain on the purchase or sale (Bushman, et al., 2005).

A study by Garfinkel and Nimalendran (Market Structure and Trader Anonymity: An Analysis of Insider Trading, 2003) shows that there is less trader anonymity on the NYSE than the NASDAQ based on the impact of insider trading on market maker behavior. Specialists in the NYSE are able to elicit information regarding trader identity from floor brokers and are more likely to protect themselves on insider trades than non-insider trades. On the other hand, the electronic dealer market of NASDAQ presents a more anonymous atmosphere that lends itself to more passive trader behavior regarding insider trades (Garfinkel, 2003). This would suggest, in accordance with efficient-market hypothesis, that the type of market may affect the role insider trading has on market efficiency. Less anonymity and more attention to insider trading on the NYSE suggests that it may be more efficient because it will more quickly adapt to new information (Garfinkel, 2003).

According to Rozeff and Zaman (Market Efficiency and Insider Trading: New Evidence, 1988) numerous earlier studies have stated that corporate insiders can earn abnormal returns based on insider transaction and that outsiders can also earn similar abnormal returns based on the publicly disclosed information required by the SEC. The first belief discounts the strong form of market efficiency, which states that all public and private information is reflected in a firm's stock price; therefore, no investor can earn an abnormal return through inside or outside trading. The second belief, however, discounts the semi-strong form of market efficiency, which states that stock price fully reflects all publicly available information. If outside investors mimicking insider trades can earn an abnormal return, the market is not semi-strong efficient. These findings present an anomaly that Rozeff and Zaman (1988) attribute to miscalculation of return due to size and P/E ratio effects. Using their adjusted abnormal return measures, they found that the profits of outsiders essentially disappear and that the profits of insiders still exist, but insubstantially. This finding upholds that the market is semi-strong efficient and no one can receive abnormal returns on a routine basis due to insider trading (Rozeff, 1988).

A study by Jeng, Metrick, and Zenghauser (Estimating the Returns to Insider Trading: A Performance Evaluation Perspective, 2003) questions market efficiency hypothesis in regards to return. Jeng, et. al. (2003) performed a market efficiency test by analyzing the return to the insider instead of the return to the investor. Their findings show that insider purchases do earn above normal returns of approximately 6% per year, while insider sales do not earn significant above normal returns. This evidence discredits some aspects of the market's efficiency since insiders are able to make above normal returns on public information (Jeng, et al., 2003). Using performance evaluation methods, they studied firm's insider purchases and sales for six months. There was no evidence that insider sales produce abnormal returns; however, approximately one-quarter of the abnormal returns on purchases were yielded in the first five days, and half of the abnormal returns were yield in the first month (Jeng, et al., 2003). This has several implications on market efficiency. First, insiders are well informed of developments in their firm. Second, actions by other market participants tend to mimic the insider and move the market. Third, these actions do not happen immediately, which discounts semi-strong form market efficiency (Jeng, et al., 2003).

Another study by King, Roell, et al. (Insider Trading, 1988) focuses on the public policy and regulation concerns of insider trading instead of returns and states that there are both benefits and costs associated with insider trading. Their study discredits semi-strong form efficiency in the United States market due to insider gains for long periods of time even after disclosure and considers regulation more important than upholding the efficient market hypothesis. The obvious benefit of insider trading is quicker information dissemination, while costs occur when bidding spreads increase, creating an essential tax on trading (King, et al., 1988).

Their research also addresses the ethical issues surrounding insider trading, such as creating profit for oneself but leaving the market as a whole with a lower reputational value. King, Roell, et al. (1988) also discuss the need for regulation, despite the arguments that it reduces market efficiency, to reduce victimization. Although this argument is not popular from an economic standpoint, they argue that profits by an insider result in a potentially unfair loss to an investor. The implicit costs, such as taxation by market makers, also defend their argument that the negative externalities of insider trading create losses for everyone (King, et al., 1988).

Lastly, a study by Fishman and Hagerty (1992) on insider trading regulation supports regulation over efficient-market hypothesis. While some argue that insider trading leads to more efficient stock prices, they instead argue in the article "Insider Trading and the Efficiency of Stock Prices" that the opposite may be true. Insider trading has shown to have two adverse affects on market competition: deterring others from gathering information and participating and skewing the distribution of information to reflect one trader. They argue that insider trading lowers the number of informed market participants and creates a more apathetic approach by the remaining participants. Also, the advantage of the insider with superior information leads to less competition within the market. These two factors lessen the efficiency of stock price and create a less informed market overall (Fishman, 1992).

METHODOLOGY

This study consists of two samples, each consisting of 15 randomly selected companies traded on the NYSE. To reduce time and size selection bias, both samples consist of varying announcement dates for each company, and all announcements consist of trades amounting to a minimum of 200,000 shares. Table 1 (Appendix) describes the insider sale announcements

sample. The announcements in this sample range in date from 9/12/2008 to 8/25/2010. Table 2 (Appendix) describes the insider announcements sample. The announcements in this sample range in date from 9/29/2008 to 6/01/2010.

Using the standard risk-adjusted event study methodology found in finance literature, these two sample groups were analyzed to test the semi-strong form efficiency. This research and the associated hypotheses assume that rational insiders will "buy low" and "sell high". The following null and alternative hypotheses were used to examine the effect of sale and purchase insider trade announcements on stock return and to support or disprove the semi-strong form efficiency hypothesis:

$H1_o$: The risk adjusted return of the stock price of each sample of firms announcing an insider sale/purchase is not significantly affected by this type of information on the announcement date.
$H1_1$: The risk adjusted return of the stock price of each sample of firms announcing an insider sale/purchase is significantly negatively affected by this type of information on the announcement date.
$H1_2$: The risk adjusted return of the stock price of each sample of firms announcing an insider sale/purchase is significantly positively affected by this type of information on the announcement date.

$H2_0$: The risk adjusted return of the stock price of each sample of firms announcing an insider sale/purchase is not significantly affected by this type of information around the announcement date as defined by the event period.
$H2_1$: The risk adjusted return of the stock price of each sample of firms announcing an insider sale/purchase is significantly positively affected by this type of information around the announcement date as defined by the event period.
$H2_2$: The risk adjusted return of the stock price of each sample of firms announcing an insider sale/purchase is significantly negatively affected by this type of information around the announcement date as defined by the event period.

The risk adjusted event study methodology is described below. For each company in both samples, the announcement date (day 0) was obtained from www.finance.yahoo.com and is the date of the firm's announcement of the insider trade. All historical data, including stock prices for each company from day -180 to +30 around its announcement date and the corresponding S&P 500 index were also obtained from www.finance.yahoo.com.

1. Historical prices for each firm in both samples and the S&P 500 index for the event study period of -180 to +30 days (with days -30 to +30 being defined as the event period and day 0 being the announcement date) were obtained.
2. The Holding Period Return ($\mathbf{R}$) of each company and the S&P 500 return ($\mathbf{R_m}$) were calculated for the event study period of -180 to +30 using the following formula:
   Current daily return: <u>(current day close price – previous day close price)</u>
   <div align="center">Previous day close price</div>
3. For each sample, a regression analysis was performed with the return of each company (dependent variable) and the corresponding S&P 500 return (independent variable) over the pre-event period (days -181 to -31) to obtain the intercept alpha and the standardized coefficient beta. Tables 3 and 4 (Appendix) show the alphas and betas of each firm in each sample.

4. The expected return for every firm each day of the event period (days -30 to +30) was calculated using the formula:
    E(R) = alpha + beta(R_m)
5. The excess return for every firm each day of the event period (-30 to +30) was then calculated using the formula:
    ER = Actual Return (R) – Expected Return E(R)
6. For both samples, Average Excess Returns **(AER)** for the event period (days -30 to +30) were calculated by averaging the excess returns for all the firms in a given sample for a given day. The following formula was used:
    Average Excess Return (AER) = Sum of Excess Return (ER) for a given day / n,
    where n = number of firms in the sample (15)
7. For both samples, Cumulative Average Excess Returns **(CAER)** for the event period (days -30 to +30) were calculated by summing the AER's for each day.
8. Graphs of AER and CAER for each sample that covers the event period time span and measures AER and CAER against time were plotted. This shows the trends of the stock return variation over the time period.

QUANTITATIVE TESTS AND RESULTS

Did the market react to insider sale or purchase announcements, and if so, how quickly? One would expect there to be a significant difference in the Actual Average Daily Returns (Day -30 to Day +30) and the Expected Average Daily Returns (Day -30 to Day +30) if the event impounds new, significant information to the market, and this would be reflected by fluctuations in the risk adjusted returns of the firms' stock prices (see AER graph in Chart 1 below). If a significant risk adjusted difference is observed, then we support our hypothesis that this type of information did in fact significantly either increase or decrease stock price. To statistically test for a difference in the Actual Daily Average Returns (for the firms over the time periods day -30 to day +30) and the Expected Daily Average Returns (for the firms over the time periods day -30 to day +30), we conducted a paired sample t-test and found a significant difference at the 5% level between actual average daily returns and the risk adjusted expected average daily returns over the event period. Results here support the alternate hypothesis $H2_1$: The risk adjusted return of the stock price of both samples of firms with announced insider sales/purchases is significantly positively affected around the announcement date as defined by the event period. This finding supports the significance of the information around the event since the market's reaction was observed.

Is it possible to isolate and observe the sample's daily response to the announcement of an insider sale or purchase from day -30 to day +30? If so, at what level of efficiency (weak, semi-strong, strong form according to efficient market theory) did the market respond to the information and what are the implications for market efficiency?

Another purpose of this analysis was to test the efficiency of the market in reacting to the announcement of an insider sale or purchase event. Specifically, do we observe weak, semi-strong, or strong form market efficiency as defined by Fama (1970), in the efficient market hypothesis? The key in the analysis or tests is to determine if the AER (Average Excess Return)

and CAER (Cumulative Average Excess Return) are significantly different from zero or that there is a visible graphical or statistical relationship between time and either AER or CAER. See AER and CAER graphs in Charts 1 and 2 (Appendix) for Sample 1 and Charts 3 and 4 (Appendix) for Sample 2. T-tests of AER and CAER for both samples tested different from zero at the 1% level of significance. Likewise, observation of Charts 2 and 4 (graph of CAER from day –30 to day +30 for both samples) confirms the significant reaction of the risk adjusted returns of the sample of firms tested to the announcement of insider sales and purchases especially on or around the announcement date.

The evidence in Chart 2 supports the null hypothesis $H1_o$: The risk adjusted return of the stock price of the sample of firms announcing an insider sale/purchase is not significantly affected by this type of information on the announcement date. For the sample of firms analyzed, an investor is not able to earn an above normal risk adjusted return by acting on the public announcement of the insider sales on day 0. However, evidence of pre-event day trading is observed. There was a significant increase from day -6 to day -1 with some over-reaction and a slight decline to day 0 in support of the semi-strong efficient market hypothesis. In fact, the insiders who own the stock prior to announcement earn an above normal return as of day 0, but outsiders who bought the stock on the announcement failed to earn an above normal return, since returns drifted downward from day 0 to day 30. Evidence here supports the notion that insiders do in fact "sell high".

The evidence also supports the alternate hypothesis $H2_1$: The risk adjusted return of the stock price of the sample of firms announcing an insider sale is significantly positively affected by this type of information around the announcement date as defined by the event period. The graph in Chart 2 suggests that the insider sales announcements did have a significant positive impact on the firm's share price starting on day -6 followed by a sharp increase to day 0. Insiders themselves and investors acting on the information prior to the announcement did earn above normal returns. Although the literature links a negative signal to insider sales announcements, the evidence here fails to support this proposition. Possibly outside investors presume that insiders will "sell high" so they "buy early and low" to be in a position to gain on the insider's announcement.

The evidence in Chart 4 supports the alternate hypothesis $H1_2$: The risk adjusted return of the stock price of the sample of firms announcing an insider purchase is significantly positively affected by this type of information on the announcement date. For the sample of firms analyzed, an investor is able to earn an above normal risk adjusted return by acting on the public announcement of the insider purchases on day 0.

The evidence also supports the alternate hypotheses $H2_1$ and $H2_2$: The risk adjusted return of the stock price of the sample of firms announcing an insider purchase is significantly negatively and positively affected by this type of information around the announcement date as defined by the event period. From day 0, we observe a significant increase in return and possible over-reaction to day 9 followed by a similar see-saw affect to positive return territory by day 30. However, evidence of pre-event day trading is observed. There was a significant decline beginning on day -24, then a rebound to day -10 followed by a sharp drop and apparent over-reaction to day -1, then a significant uptick to day 0. The purchase announcement delivered a negative pre-announcement signal followed by a positive post-announcement response. In fact, investors who purchased the stock on day -1 did earn an above normal return to day 30. Evidence here supports the notion the insiders do in fact "buy low". However, the negative pre-announcement signal contradicts the literature while the positive post-announcement return

response is in agreement. Apparently, investors "sell early and high" on the presumption that insiders correctly time the market by buying at the stock's lowest price.

CONCLUSION

This study tested the effect of insider sale and purchase announcements on the stock price's risk adjusted rate of return for randomly selected samples of 15 firms each on varying dates spanning from 9/12/2008 to 8/25/2010. Using standard risk adjusted event study methodology with the market model, the study analyzed 12,660 recent observations on the thirty publicly traded firms and the S&P 500 market index.   Appropriate statistical tests for significance were conducted. For the insider sale announcement sample, the results support the semi-strong efficient market hypothesis since an investor is not able to earn an above normal risk adjusted return by acting on the public announcement. However, evidence of pre-event day trading is observed. Insiders themselves and investors acting on the information prior to the announcement did earn above normal returns. Although the literature links a negative signal to insider sales announcements, the evidence here fails to support this proposition. Evidence here supports the notion that insiders do in fact "sell high" and outside investors "buy early and low" to profit from this expectation.

For the insider purchase sample of firms analyzed, results contradict semi-strong form efficiency since an investor is able to earn an above normal risk adjusted return by acting on the public announcement of the insider purchases. Evidence of pre-event day trading is observed. Contrary to the literature, the purchase announcement delivered a negative pre-announcement signal followed by the expected, positive post-announcement response.   Evidence here supports the notion the insiders do in fact "buy low" and outsiders "sell early and high" to gain from the anticipated insider trade.

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APPENDIX

Table 1: Description of Sale Announcement Sample (Sample 1)

Company Name	Symbol	Announcement Date	# of Shares	Amount ($)
Campbell Soup Co.	CPB	9/12/2008	278,155	10,617,176
Ford Motor Co.	F	9/18/2008	1,000,000	5,050,000
Bed Bath & Beyond, Inc.	BBBY	4/9/2009	1,100,000	33,990,000
Vonage Holdings Corporation	VG	8/28/2009	7,100,000	11,076,000
Nike Inc.	NKE	10/21/2009	333,152	21,875,000
Qwest Communications International, Inc.	Q	10/28/2009	17,200,000	59,683,999
Kellogg Company	K	1/22/2010	396,500	21,510,125
Lumber Liquidators Holdings, Inc.	LL	2/26/2010	296,177	6,589,938
Pepsico, Inc.	PEP	3/2/2010	362,597	23,101,054
Anadarko Petroleum Corporation	APC	3/31/2010	584,534	42,735,280
Target Corp.	TGT	4/9/2010	305,909	16,972,000
Valeant Pharmaceuticals International	VRX	4/30/2010	2,637,545	106,583,193
The Home Depot, Inc.	HD	6/14/2010	3,342,404	107,825,953
Juniper Networks, Inc.	JNPR	7/23/2010	375,000	10,301,250
Estee Lauder Companies, Inc.	EL	8/25/2010	250,000	14,178,000

Table 2: Description of Purchase Announcement Sample (Sample 2)

Company Name	Symbol	Announcement Date	# of Shares	Amount ($)
Wendy's/Arbys Group, Inc.	WEN	9/29/2008	680,000	3,152,000
Cliffs Natural Resources Inc.	CLF	10/13/2008	245,646	8,762,000
Landry's Restaurants Inc.	LNY	10/20/2008	363,524	4,209,607
Zale Corporation	ZLC	11/26/2008	1,000,000	6,290,000
JPMorgan Chase & Co.	JPM	1/16/2009	500,000	11,465,000
Bank of America Corporation	BAC	1/20/2009	200,000	1,204,000
Las Vegas Sands Corp.	LVS	3/31/2009	4,726,910	14,227,999
MGM Resorts International	MGM	5/19/2009	14,285,714	99,999,998
Citigroup, Inc.	C	8/5/2009	1,000,000	3,410,000
Mueller Water Products, Inc.	MWA	9/17/2009	200,000	950,000
The Coca-Cola Company	KO	10/26/2009	510,000	27,555,300
Barnes & Noble, Inc.	BKS	11/13/2009	1,136,900	22,851,690
Enterprise Product Partners LP	EPD	3/2/2010	374,100	12,491,199
NuStar Energy LP	NS	5/19/2010	350,000	19,792,500
Titanium Metals Corporation	TIE	6/1/2010	2,010,355	34,015,206

Table 3: Alphas and Betas of Sale Announcement Sample (Sample 1)

Firm Name	Alpha	Beta
CPB	0.000791	0.533290
F	0.000128	1.464479
BBBY	0.001142	0.883103
VG	-0.005960	1.053559
NKE	0.000190	0.913956
Q	-0.000130	0.798100
K	0.001062	0.320623
LL	0.002340	0.978240
PEP	0.000722	0.424529
APC	0.001171	1.625761
TGT	0.001014	0.754646
VRX	0.000466	0.814549
HD	0.001197	0.815887
JNPR	-0.000430	1.236570
EL	0.001946	0.975093

Table 4: Alphas and Betas of Purchase Announcement Sample (Sample 2)

Firm Name	Alpha	Beta
WEN	-0.000604	1.475176
CLF	0.006058	1.046315
LNY	0.000688	1.110109
ZLC	0.002264	0.955517
JPM	0.002582	1.446930
BAC	0.001995	1.873434
LVS	-0.003830	1.674538
MGM	-0.005140	1.457713
C	-0.001430	3.046075
MWA	-0.002800	2.399559
KO	0.000805	0.448456
BKS	-0.000620	1.060916
EPD	0.000916	0.645342
NS	0.000726	0.632255
TIE	0.001415	2.539792

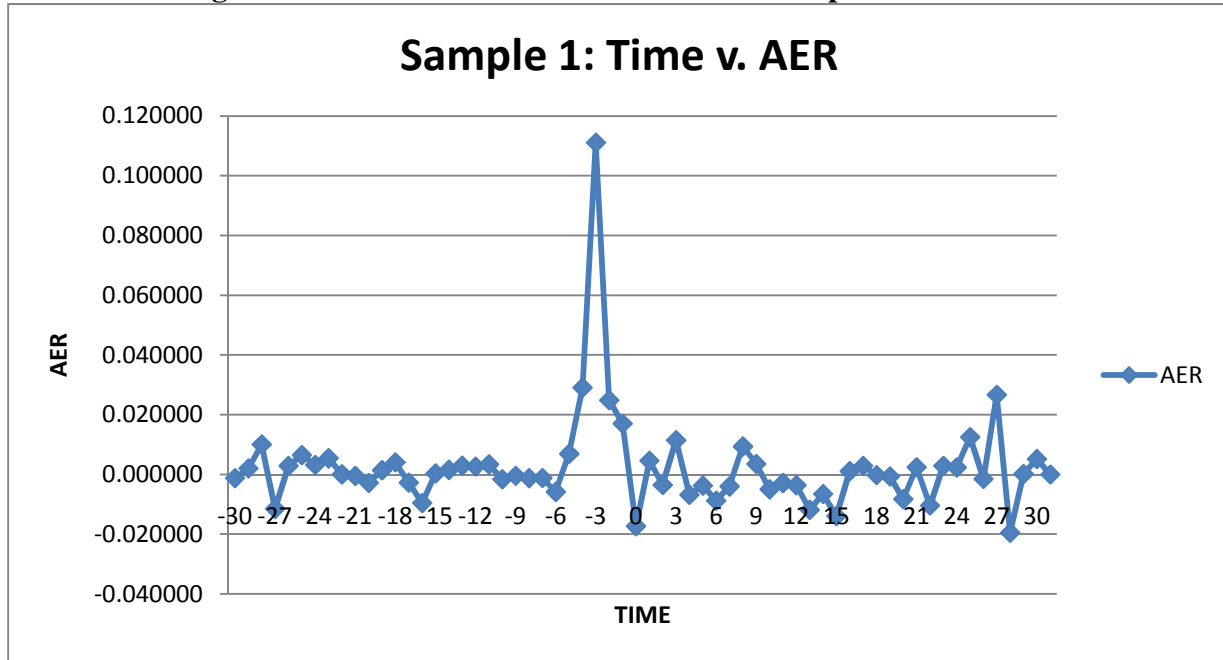**Chart 1: Average Excess Return Over Event Period for Sample 1**

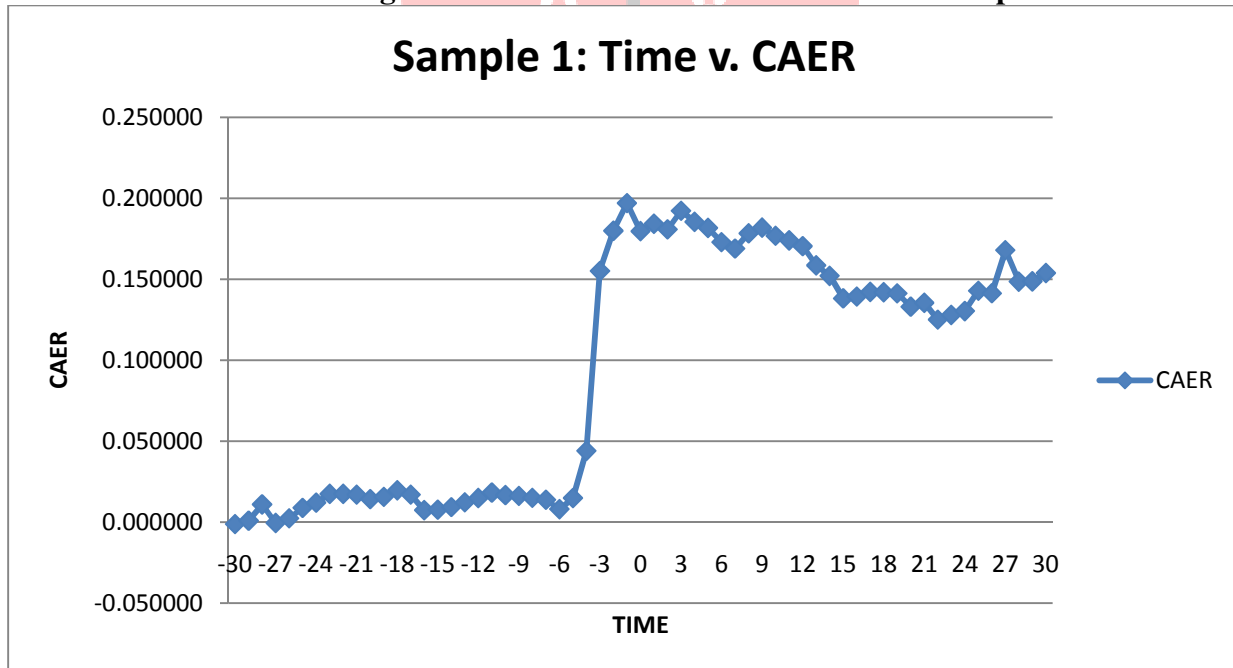**Chart 2: Cumulative Average Excess Return Over Event Period for Sample 1**

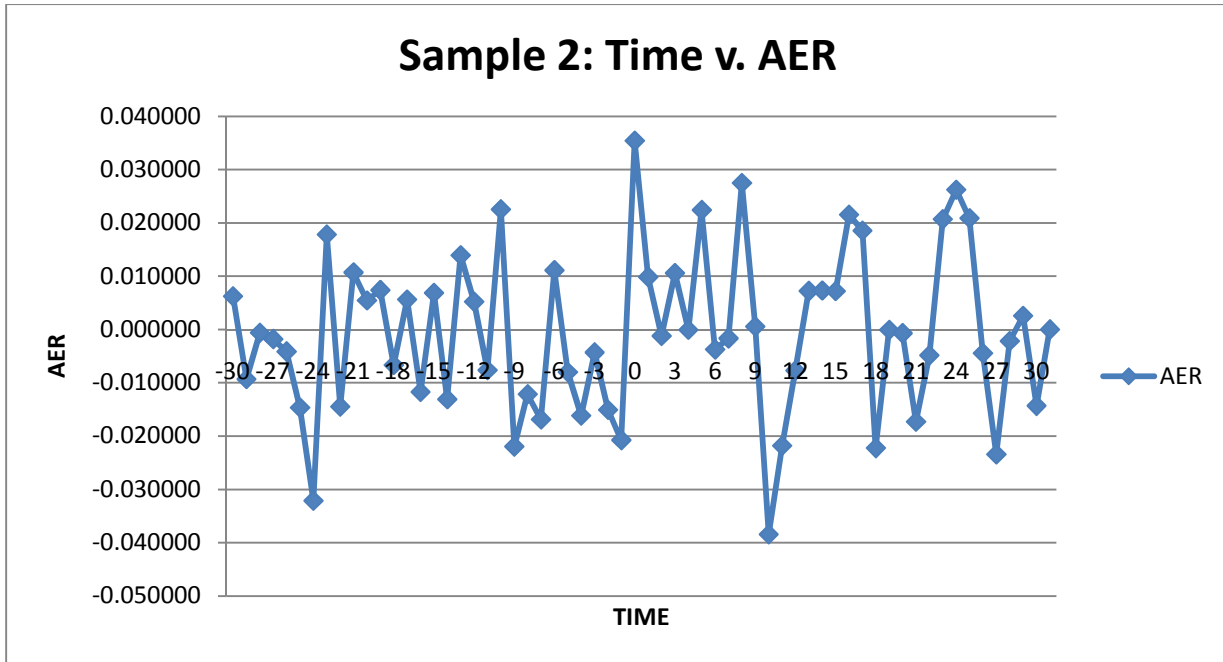**Chart 3: Average Excess Return Over Event Period for Sample 2**

Chart 4: Cumulative Average Excess Return Over Event Period for Sample 2