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Market Reactions to News of Accounting Manipulation

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Abstract
There is not enough empirical evidence about test of the semi-strong efficient hypothesis using newspaper publications. In this paper, we investigate stock market reactions to news of accounting manipulation which are reported in newspapers. Semi-strong efficient market hypothesis posits that stock prices quickly reflect all publicly available information, of which the newspaper is a part. Newspapers are a public source of information, and an important transmitter of news to the stock market. The news of accounting manipulation that is published in newspaper can have repercussions on stock prices. The purpose of the paper, therefore, is to investigate stock market reactions to news of accounting manipulation that is reported in the newspaper. To test the semi-strong efficient hypothesis, we focus on newspaper reports of accounting manipulation from 36 countries around the world. We hypothesise that there are statistically significant differences between means of post- and pre-event day cumulative average abnormal stock returns of firms caught in accounting manipulation. Results of data analysed using events study methodology are consistent with our hypothesis.
Keywords: Accounting manipulation, Cumulative abnormal stock return, Strong-form market efficiency, Efficient market hypothesis, Newspapers.

1. Introduction

There is not enough empirical evidence about the use of newspapers to test the semi-strong efficient market hypothesis. This paper draws upon semi-strong efficient market hypothesis (Fama, 1970, 1991), which posits that stock prices quickly reflect all publicly available information. In this paper, we use newspaper reports of accounting manipulation from 36 countries around the world to test the semi-strong efficient market hypothesis. In particular, we examine market reactions to news of accounting manipulation as published in newspapers. Newspapers are a public source of information, as they are an important transmitter of news to the stock market. Following Miller (2006) and Karpoff et al. (2008a, b), we track newspaper reports of accounting manipulation to examine market reactions to the published news. Specifically, the paper investigates whether the stock market is semi-strong efficient regarding news of accounting manipulation that is available in the public domain through the newspaper.

In this paper, we define accounting manipulation as a situation whereby the management of a firm acting opportunistically or efficiently misleads parties (other than themselves) by misrepresenting or misstating the firm's earnings, financial position, cash flows, and other non-financial items. There are other possible alternative sources of information such as the television, radio and news-wire which are likely to provide timely news about companies as well. However, these alternative sources are transient and they are themselves likely to use the newspaper as one of their own news inputs. For example, some major electronic news channels and television stations preview next morning's newspapers the night before or early in the morning. Further, newspapers are comparably cheaper than other alternative sources we have mentioned. Both individual and institutional investors still largely depend upon newspapers, unlike electronic sources which are mainly accessible to institutional investors because they can afford them, their apparent higher cost notwithstanding. There is possibility that newspaper reports can influence investors in their investment decision. According to Fang & Peress (2009, p. 2023), "…every weekday, some 55 million newspaper copies are sold to individual readers in the United States, reaching about 20% of the nation's population. If we consider online subscriptions and multiple readers per copy, the actual readership of the printed press is even larger, and certainly far broader than other sources of corporate information. Given (the) mass media's broad reach, one might expect it to affect securities markets." Miller (2006, p. 1015) shows that the press is the first information intermediary to publicly identify accounting issues. He asserts that up to 36% of caught cases of accounting malfeasance originated from reporter-generated information in daily newspapers. Anecdotal evidence is consistent with the newspaper playing a pivotal role in news dissemination about companies to the capital market. Also, a number of investment banks glean capital market information from newspaper publications. According to the Financial Times, "From the tens of thousands of newspaper articles being analysed every day, MarketPsy builds a picture of investor feelings about 6,000 companies.[1] Dow Jones publishes an economic sentiment index based on

[1] MarketPsy, LLC is an investment firm based in the U.S. See http://www.marketpsy.com/index.php

textual analysis of 15 U.S. newspapers, while investment banks measure everything from ratios of derivatives to the number of times the word "crisis" is used in the media." [1] From the foregoing it can be said that newspapers are a very important source of public information about companies, so we expect that there are statistically significant differences between means of post- and pre-event day cumulative abnormal stock return of firms reported to have manipulated their account. We analysed our hand-collected data using event study methodology and two other statistical techniques. The results suggest that there are statistically significant differences between post- and pre-event day cumulative abnormal stock returns of firms reported to have engaged in accounting manipulation.

Our paper contributes to the semi-strong efficient markets hypothesis literature by using, exclusively, newspaper reports of accounting manipulation. The implication of our finding is that the capital market and investors around the world price news of accounting manipulation that is reported in newspapers. This research has potential for future research. It will be interesting in future to see whether the stock market is likely to price news of accounting manipulation that is published in the newspaper.

The remainder of the paper is organised as follows. Section 2 reviews related literature and presents the hypothesis of the paper. Section 3 is the paper's methodology. Section 4 presents the empirical findings while section 5 concludes.

2. Review of related literature and hypothesis

Semi-strong efficient market hypothesis posits that stock prices are most likely to react immediately to all publicly available information (see Fama et al. [1969], Fama [1970, 1980, 1991]). This means that stock prices are likely to react negatively to unfavourable news. Prior literature documents mixed evidence on information content of various kinds of news and events including stock splits, earnings announcements, release of non-financial information, etc. For example, Sah and Zhou (2012) use a sample of 37 announcements from fourth quarter 2008 till first quarter 2010 and find a mean negative abnormal return on the day of stock dividend announcement. Ball & Brown (1968) seminal work provides one of the earliest evidences of the adjustment of stock prices to earnings announcements. Results presented by Ball & Brown (1968) demonstrate that information contained in annual accounting income numbers is useful in impounding stock prices. They show that more than one-half of all the information about an individual firm which becomes available during a year is reflected in that year's income number. Ball & Brown (1968) conclude that the market reacts to earnings report releases even though most of the information contained in the reported income is anticipated by the market before the annual report is released. Likewise, Beaver (1968, p. 74) finds that investors respond quickly to new pieces of information as reflected in changes in volume which were found to be low eight weeks prior to earnings announcement or report release. Beaver's (1968) finding indicates that greater volume and price activities take place in the week of earnings announcement than weeks prior to announcement. Brown & Warner (1985, 1980) also find that the stock market fully reflects information contained in news announcements almost immediately after the announcement date. Beneish (1999) documents evidence of a loss in stock prices of up to 21% following revelation of financial statements manipulation by managers. Feroz et al. (1991) find that the market reacts negatively to news of firms under SEC investigation. Feroz et al. (1991, p. 124) document a cumulative abnormal return of -6% for event days {-1, 0}. Dechow et al. (1996) investigate market reactions to news that some firms are under SEC investigation for various accounting related issues. Their finding indicates that share prices reduced by 9%, on average. Miller (2006) examines market reactions to alleged accounting malfeasance to gauge whether the market considers newspaper articles as providing new information. Miller (2006) finds an average one-day market adjusted reaction of -6.3% and a-three-day market adjusted reaction of -8.20%. Karpoff et al. (2008a, b) find evidence consistent with the view that the market penalises firms whose earnings manipulation is revealed in newspapers. Karpoff et al. (2008a, b) find evidence of abnormal loss of various percentages (depending on the firm) on one day market return of trigger events that attract the attention of the SEC. Benile & Jarrell (2009) investigate stock market reactions to the scandal surrounding stock options backdating in the U.S., which was reported in the Wall Street Journal. They show that investors' typical reaction to firm-specific backdating news is negative and significant, both economically and statistically. Specifically, they report that the first trading day is associated with negative abnormal risk-adjusted returns of around 7%. Benile & Jarrell (2009) attribute their result to the consistency of market efficiency. Joy et al. (1977) report mixed results in their study of adjustment of stock prices to announcements of unanticipated changes in quarterly earnings. Dichotomising between favourable and unfavourable announcement, they report small marginal price adjustments subsequent to an unfavourable announcement. Joy et al. (1977) study suggests that price adjustments to the information concerning security valuations contained in unexpected 'highly favourable' quarterly earnings reports are gradual, rather than instantaneous.

[1] Quoted from Financial Times of London, July17/July 18 2010, page 21

LeRoy (1989) in a theoretical critique and rebuttal of the efficient market hypothesis reject efficient market hypothesis. LeRoy (1989) adduced reasons for the failure of market efficiency including the joint-hypothesis problem, the high volume of trade on organised securities markets that pose a serious problem, the January and holiday effect on traded volumes. Based on these reasons, LeRoy (1989) is led to conclude that,

"*However attractive… capital market efficiency is on methodological grounds; it is extraordinarily difficult to formulate nontrivial and falsifiable implications of capital market efficiency that are not in fact falsified*" (LeRoy 1989, pp. 1614-15).

It can be argued that when there is no newspaper reports of accounting manipulation to disturb equilibrium stock prices, post- and pre-event day stock prices are likely to be equal. If the stock market is expected to be semi-strong efficient, then it follows that stock prices are likely to fall on publication of news of accounting manipulation in the newspapers. Because of the information content of the news, it is expected that mean of post- and pre-event day cumulative average abnormal return will be different. Hence we state our hypothesis in the alternative form thus:

***H*$_1$**: *There are statistically significant differences between the mean of post- and pre-event day cumulative average abnormal stock return of firms reported to have manipulated their account.*

3. Methodology

3.1 Data collection and sample composition

We relied entirely on published cases of the accounting manipulation in online newspapers to collect the research sample. Prior researches have used newspapers to identify their sample (see, for example, Beneish [1997], Miller [2006], Klibanoff et al. [1998], Deschow et al. [1996], and Feroz et al. [1991]).

Following the practice of prior researchers, we conducted detailed online media searches to identify the research sample. Our online research sample search worked with the adopted definition of accounting manipulation (see this paper's Introduction).

We began with random online searches of news of accounting manipulation (or related topics as enumerated below). Through www.onlinenewspaper.com, Dow Jones Factiva iWorks™ and infotrac we searched a number of online newspapers. We also used search engines such as Google, and Yahoo! These channels carry information about alleged cases of accounting manipulation, dates of publication and other pertinent details.

The following keywords or their variants were used in the search: earnings management; accounting problem; earnings manipulation; financial misstatement; deceptive accounting; false accounting; fraudulent accounting; misleading accounting; inappropriate accounting; misstated earnings; spurious accounting; inflated earnings; inflated profits; overstated earnings; cooking the books; manipulated earnings; accounting fraud; accounting investigation; accounting probe; accounting restatement; understated profit; overstated profits; accounting scandals; accounting deficiencies; creative accounting; inaccurate financial statements; accounting irregularities; accounting errors; among other such related terms.

When a hit comes up during the random search the story is read to determine whether it qualifies as accounting manipulation. When we are satisfied that it so, the story is then traced to the original date of publication and the firm involved. This process enabled the firm to be identified by name, and country. We restricted our search to a number of English language newspapers from around the world. Some of the selected titles of the newspapers include Financial Times of London, The New York Times, The Wall Street Journal, The Washington Post, The Daily Mail of London, The Daily Telegraph of London, Thisday of Nigeria, The Evening Standard of London, The London Times, and DutchNews of Netherland. Others include Kyodo News of Japan, the Japan Times, China Daily, The Moscow Times, Connexion of France, the Independent of London, Los Angeles Times, International Herald Tribune of France, The Philippine Star, Malaysia Today, The Milwaukee Journal Sentinel of Canada, The Guardian of London, and of Nigeria, AFP of Germany, AD newspaper of Amsterdam, The Nation of Kenya, Globe and Mail of Canada, and many others. On gaining access to a newspaper's website, a word-search is carried out through its archives section or through an embedded search field. Most of the newspaper searches returned a variety of hits. There were instances where two or more newspapers published the same event. However, this posed little or no difficulty in identifying the first publication because dates and times are written in the masthead of newspapers. In addition, some newspapers usually indicate whether or not the news is an update. This helped in collecting the news as at the time it was first published, not on subsequent publications of the same news. Where an event is published by newspapers in more than one country, the date of first publication is reckoned with by choosing the newspaper that first published the news. We did not find multiple publications of the same story in the same issue of a newspaper; if by chance we missed any, we did not control for this. Tracing the news to its original date of publication is necessary, which requires that we be as precise as possible in capturing stock prices information.

We used a combination of sources to collect stock prices data, including DataStream, Bloomberg, Google finance, Yahoo finance, AOL money and finance, BusinessWeek, as well as firms' own websites that display historical stock prices data. Stock market index data for the years 2000-2008 were extracted from stock

exchanges. The following list of market indexes were consulted; the list is not exhaustive: S&P 500 (for firms listed in the US), S&P TSX Composite (covering Canada-listed firms), DAX (for firms listed in Germany), Bursa Malaysia Stock Exchange Index (for firms listed in Malaysia), BEL-20 Composite Index (for firms listed in Belgium), FTSE 100 or FTSE- AllShare Index (for firms listed in the United Kingdom). Others include OMX Stockholm 30 (covering firms listed in Sweden), All Ordinaries (for Australia-listed firms), CAC40 Composite Index (covering France-listed firms), Han Seng Composite Index (covering Hong Kong-listed firms), Strait Times Composite Index (covering firms listed on the Singapore Stock Exchange). Others include Jakarta stock exchange composite index (for firms listed in Indonesia), KOSPI Composite index (covering firms listed in South Korea), Nikkie 225 Composite Index (covering Japan-listed firms), Taiwan Composite Index (for firms listed in Taiwan), Shanghai Composite Index (for China-listed firm), BSE Sensex Composite Index (covering firms listed in India). In the absence of an active stock exchange from a firm's home country, we go to the nearest stock exchange in the region or an alternative exchange where the firm is listed to collect data.

3.2 Sample composition

We are interested in alleged cases of accounting manipulation by listed firms covering the period 2000 up to August 2008, inclusive. August 2008 is set as the cut-off date because of the financial crisis which was experienced in major free-market economies in the world. The essay by Ball (2009, p. 1) supports this paper's limiting itself to the period 2000 to 2008. According to Ball (2009, p. 1), "the tsunami of accounting scandals at the beginning of the millennium is well known."

To be included in the sample, we required that all materials about a firm or country must be in English language or have English language version. We found a total sample of 183 publicly quoted firms from 36 countries around the world where alleged cases of accounting manipulation were reported in newspapers. Based on criteria listed in Table 1, we pruned down the 183 firms to 99. We further deleted one of the firms because of being an outlier case). This makes our analysis of stock prices to use a final sample of 98 firms. [1]

Table 1. Table showing composition of final research sample.

Sample Composition

	Number	%
Number of firms discovered to have manipulated their accounts	183	100
Number of firms delisted from an exchange during the period	(11)	(6)
Number of firms merged with or acquired by other firms	(9)	(5)
Number of firms without websites or whose information or page cannot be found on a stock exchange's website	(23)	(13)
Number of firms whose website is not in English (or their English language translation is considered insufficient)	(15)	(8)
Number of firm qualified to be included in sample	125	68
Number of firms without stock quotes	(26)	(14)
Number of firms qualifying for final sample	99	54

Out of the183 firms originally identified, 125 (68%) firms' data are useable. Eleven or (6%) were delisted from the stock exchanges, 9 (5%) were either merged or acquired by another company.[2] Twenty-three or 13% of the firms had no website of their own and their information could not be found on the stock exchanges. Fifteen (8%) of the firms had no English version of their web pages; and where an English web pages exist for them, it was

[1] The sample size satisfies the central limit theorem, which requires that sample size (N) ≥ 30 can be considered adequate for meaningful statistical analysis.

[2] We cannot say whether the delisting of some of the firms from the sample introduces survivorship bias, the possibility exists. Attrition is due to a firm being delisted from an exchange, or merged with or acquired by other firms. We do not attempt to control or account for survivorship bias. Generally, reducing the sample size can only have the effect of reducing the explanatory power of the tests.

not inadequate.
Consistent with prior research, banks and financial institutions are excluded from our analysis.

3.3 Methods of analysing data

Following prior literature, our test of the semi-strong efficient market hypothesis uses the widely accepted events study methodology (e.g., Sah & Zhou [2012], Campbell & Ohuocha [2011], Brown & Warner [1980], and DeFond & Jiambalvo [1994]) to capture market reactions to caught cases of accounting manipulation. Fama (1970) posits that events studies are ways to directly test for market efficiency or information content of news event as a reduction in *post* abnormal stock returns is consistent with semi-strong-form market efficiency. We follow Faccio et al. (2006), and Oppong's (1980) approaches to calculate a thirteen-day (-6, 6) announcement period abnormal returns. We are interested in daily event windows immediately following the news because daily stock returns are capable of ameliorating possible clustering effects associated with monthly, quarterly, weekly, or yearly stock returns. We posit that daily stock returns immediately following publication of the news of accounting manipulation allow us to make inferences about the information content of the news, particularly as Brown & Warner (1980, p. 211) opine that in the absence of problems of non-normality and non-synchronous trading, all methods for measuring abnormal performance are potentially more powerful with daily data. The authors also point to the fact that daily returns have smaller standard deviations than do returns of longer windows or intervals. They argue that the power of all the methodologies increases with knowledge about precisely when an event occurred. Hence, the "use of daily data is potentially useful in that it permits the researcher to take advantage of prior information about the specific day of the month on which an event took place." In applying events study methodology, we examine changes in stock prices pre and post the publication day of the event. We examine the event windows ranging from day -6 to day +6 (-6, 6) as we set the event day to *zero*. Our choice of event window is arbitrary. There is no theory that prescribes the choice of event windows. We note that there are upsides and downsides to various lengths of event windows. For example, a short window eliminates problems of clustering and reduces the effects of other extraneous variables that are not related to accounting manipulation, but which may impact on data of a wider window. According to Balsam et al. (2002, p. 1001, *footnote* 13), the choice of a very wide window will reduce the statistical power of a test whereas a very short window will fail to capture stock prices reaction sufficiently, which can lead to insignificant results. Reasonable and short windows allow news of accounting manipulation to be immediately impounded throughout the market.

Modified market model

The modified market model is derived from the stochastic version of the capital asset pricing model of Sharp (1963) and Lintner (1965). In this paper, we follow Fuller et al. (2002), Ross et al. (2002, p. 351) and Brown & Warner (1980) in using the modified market model to specify abnormal stock returns, $AR_{i,t}$, which is assumed normal, independent and identically distributed. Expected mean of the event day abnormal stock return, $E(AR_{i,0}) = 0$.

The following equations and definitions used in this study are to be noted, beginning with:

Abnormal stock return, AR[1]:

$$AR_{i,t-n} = \acute{R}_{i,t-n} - M_{i,t-n} \quad (1.a)$$

$$AR_{i,t+n} = \acute{R}_{i,t+n} - M_{i,t+n} \quad (1.b)$$

Where: (1.a) is to the left of day *0* and (1.b) is to the right of day *0*. As mentioned earlier, day *0* is the event day.

$AR_{i,t-n}$ = abnormal stock return for firm *i* on day t. $AR_{i,t-n}$ is cumulated over a six-day period, to the left of day 0, event day; i.e., days -6, -5, -4, -3, -2, -1

$AR_{i,t+n}$ = abnormal stock return for firm *i* on day t. $AR_{i,t+n}$ is cumulative over a six-day period, to the right of day 0, the event day; i.e., days +6, +5, +4, +3, +2, +1

$\acute{R}_{i,t-n}$ = realised stock return of firm *i* on day t. $\acute{R}_{i,t-n}$ is cumulated over a six-day period, to the left of day 0, event day; i.e., days -6, -5, -4, -3, -2, -1

$\acute{R}_{i,t+n}$ = realised stock return of firm *i* on day t. $\acute{R}_{i,t+n}$ is cumulated over a six-day period, to the right of day 0, event day; i.e., days +6, +5, +4, +3, +2, +1

$M_{i,t-n}$ = realised market index stock return of country *i* where firm *i* is listed on day t. $M_{i,t-n}$ is cumulated over a six-day period, to the left of day 0, event day; i.e., days -6, -5, -4, -3, -2, -1

$M_{i,t+n}$ = realised market index stock return of country *i* where firm *i* is listed on day t. $M_{i,t+n}$ is cumulated over a six-day period, to the right of day 0, event day; i.e., days +6, +5, +4, +3, +2, +1

Cumulative abnormal stock returns, CAR, is the summation of abnormal stock returns for firm *i* on day t, to the

[1] We use a true return generating process to calculate abnormal stock return, AR, by subtracting realised daily stock return of the market index of the country where a firm is listed from the firm's daily stock return around the event window. That is, $AR = [(p_1 - p_0) / p_0] - [(M_1 - M_0) / M_0]$; where, respectively, the first and second term on the right is the daily returns of a single firm and market daily index return. Returns are calculated here as price relatives.

left and right of day 0:

$$\Sigma(AR_{i,t-n} = \acute{R}_{i,t-n} - M_{i,t-n}) \quad (2.a)$$
$$\Sigma(AR_{i,t+n} = \acute{R}_{i,t+n} - M_{i,t+n}) \quad (2.b)$$

Cumulative average abnormal stock returns for all firms, is obtained by dividing the summed up abnormal stock return, ($\Sigma AR_{i,t-n}$, $\Sigma AR_{i,t+n}$) by N, the final 98 sample firms; to the left or right of day 0; that is,

$$\Sigma(AR_{i,t-n} = R_{i,t-n} - M_{i,t-n}) / 98 \quad (3.a)$$
$$\Sigma(AR_{i,t-n} = R_{i,t-n} - M_{i,t-n}) / 98 \quad (3.b)$$

Operationalising equations (3.a) and (3.b) produces Graph 1, which shows the static cumulative average abnormal stock return for all firms.

Another type of cumulative average abnormal stock return calculated in this paper is explained as follows: Firm *i*'s *day zero* stock price, $P_{i,t-0,}$ and market index stock return on *day zero*, $\acute{M}_{i,t-0,}$ are used as denominators in calculating realised abnormal stock return.

Firm *i*'s stock price of any of the days in our ±6 day window, $P_{i,t}$, and the market index, $\acute{M}_{i,t}$, of the same window are used as numerators in calculating realised abnormal stock return. It should be noted that this is on a rolling or "day-on-day" basis because the numerator changes each day. That is,

$$CAAR_{(98)} = \frac{\sum AR_{i,j}}{98} = \sum \frac{P_{i,t} - P_{i,t-0}}{P_{i,t-0}} - \frac{\acute{M}_{i,t} - \acute{M}_{i,t-0}}{\acute{M}_{i,t-0}} / 98 \quad (4)$$

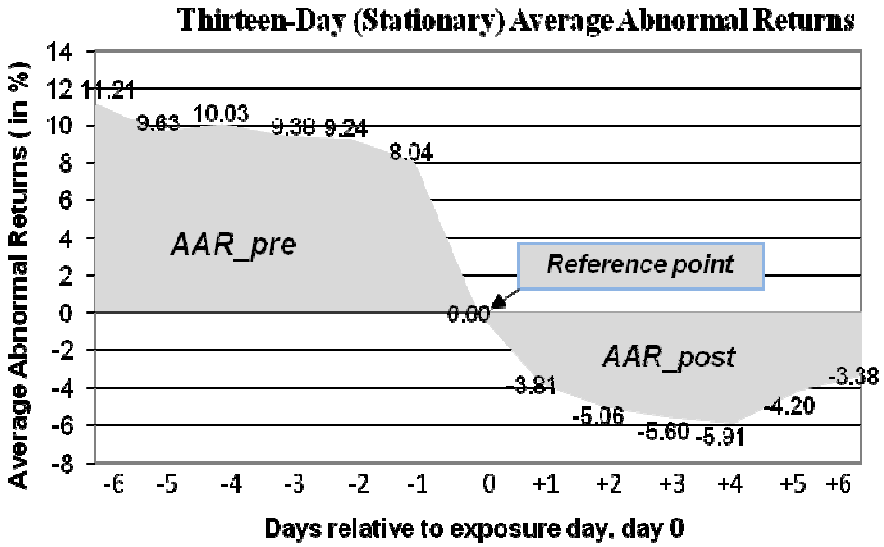
Hence equation (4) neutralises cumulative abnormal stock return of event day to *zero*, and this is shown in Graph 2. We calculated the "day-on-day" or "rolling" cumulative average abnormal return, CAAR, for a-twelve-day window: t-5 to t+6. We could not calculate the CAAR for day six before the news was published in the newspapers because to do so would require stock prices data of the seventh day before the news; our event window does not cover day seven before the news. Hence, as Graph 2 shows, we have a-twelve-day rolling CAAR. Compare equation (4) to the one in footnote 5 and the difference will be clear.

4. Empirical Findings

We compare CAAR of day zero, publication day, against CAAR in our event window, to the left or to the right. The stationary CAAR shown in Graph 1 indicates CAAR of 11.21%, 9.63%, 10.03%, 9.38%, 9.24%, and 8.04% for day -6 to -1, respectively. It can be seen that CAARs to the left of day 0 are positive but declining in magnitude as the day inches closer to the event day. After the news is published CAARs become negative. For example, CAAR is -3.81%, -5.06%, -5.60%, -5.91%, -4.20%, and -3.38% for day +1 through +6, respectively.

Graph 1 Data

Days	AAR (%)
-6	11.21
-5	9.63
-4	10.03
-3	9.38
-2	9.24
-1	8.04
0	0
1	-3.81
2	-5.06
3	-5.60
4	-5.91
5	-4.20
6	-3.38



Graph 1. Graph of Stationary Average Abnormal Returns over a thirteen-day window.

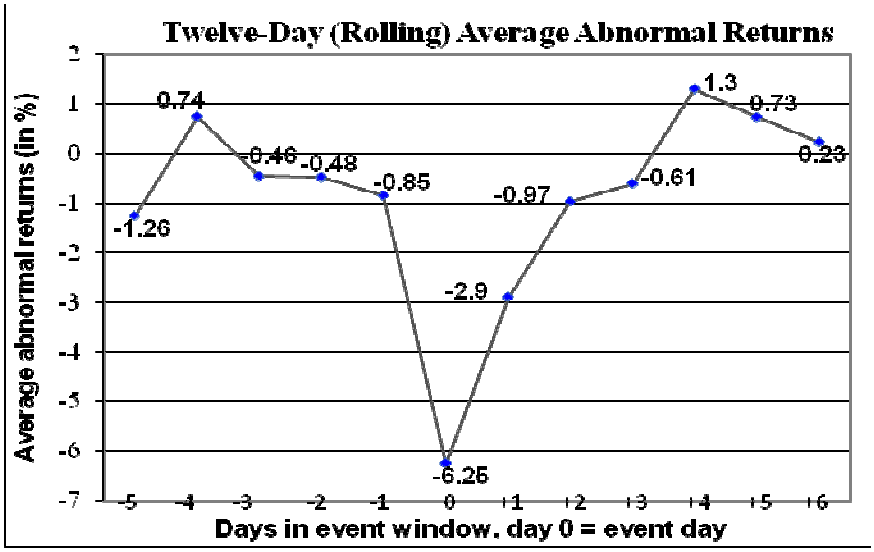
In Graph 1, the areas under and above 0.0, on the *y* axis, and day *0*, on the *x* axis, are shaded for visual clarity. It can be seen from the graph that after the news CAAR falls below 0.0 (becomes negative) post-event day. The shaded area of CAAR pre-event day is above 0.0 on the *y* axis. Evidence presented in Graph 1 suggests that the stock market is, indeed, semi-strong efficient with respect to news of accounting manipulation that is published in newspapers. Specifically, CAAR is at its lowest decline ever on day 0. Indeed, no CAAR before that day is as low as that of day zero and one day after the news (i.e., t+1). Days 0 and +1 were days that stock markets

quickly reflected the news publication. In Graph 2 CAAR begins to rally as from day t+1, which is negative (-2.90%); but not up to the levels of those on the left side of day zero, days t-1 to t -5. CAAR peaked at 1.30% on day four after the news and then began another round of descent from day t+5. It tumbled to 0.23% on day t+6. The rise in CAAR from day t+1 onwards is indicative that as the days on the right-hand side of day zero went by the news began to fizzle out such that its negative impact begins to fade away. It can be noticed that CAAR begins to rise as from day t+2 and day t+4, only to tumble again on day t+5 and t+6, an anomaly that is beyond the scope of this research.

Furthermore, in Graph 2, event day CAAR is -6.25%. CAAR before the event day is 1.26%, 0.74%, -0.46%, -0.48%, -0.85%; respectively for day -5 through -1.

Graph 2 Data

Days	AAR (%)
-5	-1.26
-4	0.74
-3	-0.46
-2	-0.48
-1	-0.85
0	-6.25
1	-2.90
2	-0.97
3	-0.61
4	1.30
5	0.73
6	0.23



Graph 2. Graph of "Rolling" Average Abnormal Returns over a twelve-day window.

Comparing any of these CAAR to the event day CAAR, it can be seen that the market reacts very negatively on the event day, day *0*, by witnessing the greatest fall in stock prices. Post- event CAAR, excluding that of day 0, is -2.90%, -0.97%, -0.61%, 1.30%, 0.73%, and 0.23%. Again, in absolute terms, no CAAR is as large as that of day *0*; evidence that stock prices immediately impound all publicly available news. It is interesting to see the sharp turning point of CAAR between day -1 and 0 in Graphs 1 and 2. Further, following the publication day, we find a weak positive abnormal return (from -6.25% to -2.9%) on the day after that (+1), which may convey some optimistic market reaction.

Our preliminary result is generally consistent with those reported by Bernile & Jarrell (2009) who find a statistically significant negative (-7%) abnormal stock returns on the first day of announcement of firm-specific backdating allegations in the press. The result is also in accord with Miller (2006) who finds day zero (and a three-day) stock reaction to be up to -6.30% and (-8.20%), respectively. Further, our result is also consistent with Beneish (1999) who documents evidence of a rapid and immediate price adjustment subsequent to unfavourable news about a company. Beneish (1999) documents evidence of a loss in stock price of up to 21% following revelation of financial statements manipulation by managers. Finally, our result is consistent with Sah & Zhou (2012) who find a mean negative abnormal return of -1.23 percent on the day of stock dividend announcement.

4.1 Parametric t-tests

We perform a-two sample parametric t-test to test the alternative hypothesis that there is statistically significant difference between the mean of post- and pre- event day cumulative average abnormal stock returns. The t-test assumes normality of data and equality of sample variances for pre- and post-event day CAAR. The result of the test is shown in Table 2. Consistent with expectation, the mean of pre- event CAAR (9.9) is higher than the mean of post-event day CAAR (-4.96). The difference (14.86) is statistically significant at the .001 level using either a parametric t-test or a non-parametric Wilcoxon rank-sum test. We therefore conclude that the market reacts to newspaper reports of accounting manipulation by the reduction in post-event day CAAR ($p < 0.001$, 2-tailed). This t-test supports the alternative hypothesis, $\boldsymbol{H_1}$, that there is a statistically significant difference between means of post- and pre-event day cumulative average abnormal returns, which is due to stock prices impounding news of accounting manipulation.

Table 2. Descriptive statistics and two-sample *t*-tests (mean different from mid-point of 0)

	$\Sigma AR_{i,t-n}$	$\Sigma AR_{i,t+n}$	*Difference in mean CAAR*
Mean	9.90	-4.96	14.86
Variance	328.85	178.64	
Standard deviation	105.18	80.16	
Observations	98	98	
Pooled Variance	253.74		
Hypothesised Mean Difference	0.00		
df	194		
t Stat	6.53		
P(T<=t) two-tail	0.00		
t Critical two-tail	1.97		
$\Sigma AR_{i,t-n}$ = pre-event day, *day 0*, cumulative abnormal stock return			
$\Sigma AR_{i,t+n}$ = post-event day, *day 0*, cumulative abnormal stock return			

Table 2 showing the result of parametric t-test.

4.2 Additional non-parametric t-tests

As a robustness check, we performed two additional non-parametric tests. These are the Wilcoxon Signed Ranks Test and Sign Test. These additional tests is to determine whether the result is driven by the two-sample parametric t-test. The test results are presented in Table 3, Panel A (Wilcoxon Signed Ranks test) and Panel B (Sign test).

Table 3. Table presenting results of non-parametric t-tests

Test Statistics[a,b]		
	Pre-event day CAAR – Post-event day CAAR	
	Panel A. Wilcoxon Signed Ranks Test	Panel B. Signed Test
Z	-7.007[c]	-6.364[c]
Asymp. Sig. (2-tailed)	.000	.000
[c] Based on negative ranks. [a] Wilcoxon Signed Ranks Test		[b] Sign Test

Consistent with the results reported in the sections above, both tests indicate that the difference between the medians of pre- and post-event day CAAR is statistically significant, see Panel *A* and Panel *B*. The *z*-value of Wilcoxon Test is -7.007 whereas that of Signed Test is -6.364, both with Asymp. Sig. ρ-value (2-tailed) = 0.000. Taken together, the tests performed in this paper suggest that post- and pre-event day cumulative abnormal returns are different from each other due to newspaper reports of accounting manipulation.

5. Conclusion

This paper examined market reaction to news of accounting manipulation based on newspaper reports of the event from 36 countries around the world. The paper draws upon the semi-strong efficient market hypothesis. The semi-strong efficient market hypothesis posits that stock prices quickly reflect all publicly available information. The paper's objective was to investigate whether the market reacts to newspaper reports of accounting manipulation. We used events study methodology for our test. We applied parametric and non-parametric statistical techniques to test the hypothesis that there are significantly differences between the means of post- and pre-event day cumulative average abnormal returns. Consistent with our expectation, the documented evidence suggests that there are statistically significant differences between the means of post- and pre- event day cumulative average abnormal stock returns which can be attributable to the information content of the news of accounting manipulation. We show that cumulative average abnormal returns are at their lowest the day the news of accounting manipulation is published in newspapers. The result is robust to alternative tests.

Our paper contributes to the semi-strong efficient markets hypothesis literature by using, exclusively, newspaper reports of accounting manipulation. The implication of our finding is that the capital market and investors around the world price news reported in newspapers. The implication of the finding is that investors still rely on newspaper reports to price stocks.

This research has potential for future research. It will be interesting in future to gauge whether there is

information content of newspaper publication of news of accounting manipulation.

5.1 Caveat

This study is based entirely on newspaper reports of accounting manipulation from 36 countries around the world. One might question whether the newspaper is relevant to investors in their investment decision making process, especially given that there are other sources of information like the television, radio and others. In the course of our study, we pointed to anecdotal as well as research evidences that suggests that most reliable electronic media use the newspaper as one of their own sources of news. Therefore, the newspaper is still relevant to investors today.

References

Ball, R. (2009). Market and Political Regulatory Perspectives on the Recent Accounting Scandals. *Journal of Accounting Research*, 47(2), 277-323

Ball, R. J. & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research*, 6(2), 159-78

Balsam, S., Bartov, E., & Marquardt, C. (2002). Accruals Management, Investor Sophistication, and Equity Valuation: Evidence from 10-Q Fillings. *Journal of Accounting Research*, *40*(4), 987-1012

Beaver, W.H. (1968). The Information Content of Annual Earnings Announcements. *Journal of Accounting Research*, 6 (3), 67-92

Beneish, M. D. (1999). Incentives and Penalties Related to Earnings Overstatements that Violate GAAP. *Accounting Review*, 74(4), 425-57

Beneish, M. D. (1997). Detecting GAAP Violation: Implications for Assessing Earnings Management among Firms with Extreme Financial Performance. *Journal of Accounting and Public Policy*, 16(3), 271-309

Bernile, G., & Jarrell, G. A. (2009). The Impact of the Options Backdating Scandal on Shareholders. *Journal of Accounting and Economics*, 47(1-2), 2-26

Brown, S. J., & Warner, J. B. (1980). Measuring Security Price Performance. *Journal of Financial Economics*, 8(3), 205-258

Brown, S. J., & Warner, J. B. (1985). Using Daily Stock Returns: the Case of Event Studies. *Journal of Financial Economics*, 14(1), 3-31

Campbell, K., & Ohuocha, C. (2011). The Stock Market Reaction to Stock Dividends in Nigeria and their Information Content. *Managerial Finance*, 37(3)

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC. *Contemporary Accounting Research*, 13(1), 1–36

DeFond, M.L., & Jiambalvo, J. (1994). Debt Covenant Violation and Manipulation of Accruals. *Journal of Accounting and Economics*, 17(1-2), 145-76

Faccio, M., McConnell, J. J., & Stolin, D. (2006). Returns to Acquirers of Listed and Unlisted Targets. *Journal of Financial and Quantitative Analysis*, 41(1), 197-220

Fang, L., & Peress, J. (2009). Media Coverage and the Cross-section of Stock Returns. *Journal of Finance*, 64(5), 2023-52

Fama, E.F. (1991). Efficient Capital Markets: II. *The Journal of Finance*, 46(5), 1575-1617

Fama, E.F. (1980). Agency Problems and the Theory of the Firm. *Journal of Political Economy*, 88(2), 288-307

Fama, E.F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of Finance*, 25(2): 383-417

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The Adjustment of Stock Prices to New Information. *International Economic Review*, 10(1), 1-21

Feroz, E.H., Park, K., & Pastena, V. S. (1991). The Financial and Market Effects of the SEC's Accounting and Auditing Enforcement Releases. *Journal of Accounting Research*, 29 (Supplement) (3), 107-42

Financial Times, London, July17/July 18 2010, page 21

Fuller, K., Netter, J., & Stegemoller, M. (2002). What Do Returns to Acquiring firms Tell Us? Evidence from Firms That Make Many Acquisitions. *Journal of Finance*, 57(4), 1763-93

Joy, O. M., Litzenberger, R., & Mcenally, R.W. (1977). The Adjustment of Stock Prices to Announcements of Unanticipated Changes in Quarterly Earnings. *Journal of Accounting Research*, 15(2), 207-25

Karpoff, J. M, Lee, D. S., & Martin, G. S. (2008a). The Cost to Firms of Cooking the Books. *Journal of Financial and Quantitative Analysis*, 43(3), 581-611

Karpoff, J. M, Lee, D. S., & Martin, G. S. (2008b). The Consequences to Managers for Financial Misrepresentation. *Journal of Financial Economics*, 88(2), 193-215

Klibanoff, P., Lamont, O., & Wizman, T. A. (1998). Investor Reaction to Salient News in Closed-End Country Funds. *Journal of Finance*, 53(2), 673-699

LeRoy, S.F. (1989). Efficient Capital Markets and Martingales. *Journal of Economic Literature*, 27(4), 1583-

1621
Lintner, J. (1965). The Valuation of Risky Assets and the Selection of Investments in Stock Portfolios and Capital Budgets. *Review of Economics and Statistic*s, 47(1), 13-37
Miller, G. S. (2006). The Press as a Watchdog for Accounting Fraud. *Journal of Accounting Research*, 44(5), 1001-33
Oppong, A. (1980). Information Content of Annual Earnings Announcements Revisited. *Journal of Accounting Research*, 18(2), 574-84
Ross, S. A., Westerfield, R. W., & Jaffe, J. (2002). *Corporate Finance*. McGraw-Hill, New York, USA
Sah, V., & Zhou, X. (2012). Elective Stock Dividend in REITs: Market Reaction and Determinants. *Journal of Property Investment & Finance*, 30(6)
Sharp, W. F. (1963). A Simplified Model for Portfolio Analysis. *Management Science*, 9(2), 277-293

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