Consequences of Fraud and Overcoming Negative Market Reaction

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ABSTRACT

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This paper investigates firms that have attracted scrutiny from the SEC and that have been found to be involved in fraud. We examine the market reaction for the sample of firms following the announcement of their involvement in fraud, which we refer to as trigger event. We match our sample of firms with others by industry, size, market-to-book and Altman Z-Score to compare our sample of firms with others that have not been involved in fraud at the time of trigger event. We find that the fraud sample attract negative and significant returns following the announcement of fraud, in contrast to the control sample. We also examine tactics that firms may use to regain the market's confidence, such as changes in executives, auditing firm and company name. We find that the market reacts negatively right after the change in executives, but the negative trend is reversed in the long-term for the firms that make the executive change quickly after the trigger event. Similarly, firms that change their auditing firm quickly are better off. We also find that there is significantly higher information asymmetry during the trigger event, litigation date, as well as changes in CEO, CFO and auditor. We also use accrual models to identify earnings management and find that the non-discretionary accruals Jones and Modified Jones models show a significant difference between the two samples, matched and fraud, at the year of the trigger event. Finally, we investigate whether any accounting variables predict financial distress. We find that profitability ratios as well as changes in CFO and auditor are positively and significantly related to and therefore predict the absence of financial distress, in contrary to high debt, according to our findings, predict financial distress.

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CONTRIBUTION OF AUTHORS

This thesis is completed with an initial dataset that was made available by Dr. Ullah, initially provided by Karpoff, Lee and Martin. The dataset contains important information such as the names of companies that are involved in fraudulent activities as well as important event dates that are relevant to this study.

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1. INTRODUCTION

Financial fraud, when caught, could change the future of a company. A number of research papers, newspaper articles and movies discuss the concept of financial fraud and focus on where the CEO and/or the CFO ends up after its detection: Gordon Gekko, the fictional character in the movie “Wall Street”, is convicted and imprisoned after being convicted of fraud; Jeffrey Skilling, former CEO of Enron Corporation was found guilty on conspiracy and security fraud and was sentenced to a shortened 13 years in prison. However, it is also important to look at what happens to the companies that are involved in the fraudulent activities: How does the market react to the announcement of fraud, and subsequently, what kind of changes does the company need to make to alleviate any reputational and financial losses?

In this paper, we examine firms that have attracted scrutiny from the SEC, and have been suspected of committing fraudulent activities. We refer to this event as the trigger event. Following this announcement, we identify what changes these firms make to escape from negative market reaction, or to regain any confidence that was lost during the announcement of fraud. While collecting our data, which initially consisted of 270 firms, we find that 61% of our sample ends up changing its CEO within three years of the trigger date, and 65% of the sample changes its CFO within the same time period. For these firms, a change in management may mean that the firm claims to have gotten rid of the reason for the occurrence of fraud, and that it should reclaim confidence from the market following the change. This may not always be the case. In fact, in our study, we find that a change in CEO or CFO causes a negative and significant short-term reaction by the market, and that these negative abnormal returns turn positive only for the firms that have made the management changes quickly after the trigger event.

Although many papers discuss governance changes that can be made in order to recover any losses made by the fraud announcement, the literature regarding the change in top management is contradictory and may lead to different interpretations. For instance, Dikolliet al (2011) find that the sample of firms who have kept their CEOs have superior performance compared to their counterparts who do not.

Similarly, Agarwal, Jaffe, Karpoff (1999) study the change in governance of a sample of firms following a fraud revelation. They examine how these firms have changed their leadership structure to recuperate from losses and find that changing managers after a fraud revelation would not necessarily recuperate the value of the company. They also argue that changing management in these cases may have huge implementation costs.

Other important strategic change is changing the company's auditing firm. We find that 41% of ou sample firms end up changing their auditor around the period of the trigger date. We would expect that a change in auditing firm would be good news for the market, which is supported by many studies. Vast literature can be found regarding the change in auditors by firms that are involved in financial misconduct. For instance, Hennes, Leone, Miller (2012) find that for a sample of firms that have gone through financial restatements, the market responds positively when these firms dismiss the already existing auditing firms.

We also look at company name change following the fraud revelation and expect to find a positive market reaction after the change. Few studies have been done regarding this matter. For instance, Durrani (2013) finds that if the corporate name change is due to a change in structure, the market reaction is significantly positive to this change, and that when the name change is due to a change in strategy, the market reaction is significantly negative. In this study, we further discuss different tactics and trials to transform the negative returns of a firm following the trigger event. We investigate the market reaction to a change in CEO or CFO, that we find attract a negative market reaction, except for those firms that make a decision to change their top management quickly after the trigger event. We also investigate the positive market reaction to the announcement of change in auditing firm and company name.

We also examine the difference in market reaction and spread values for the fraud firms and matched firms. We use size, market to book ratio, industry and Altman-Z score to match companies that have similar firm characteristics. Therefore, the only aspect that differentiates the two samples is that one sample has been involved in fraudulent activities and the other has not. We expect that the fraud sample will be significantly different from the matched sample around the announcement of the trigger event.

Our study also focuses on the presence of information asymmetry during the announcement of the trigger event, as well as the change in CEO, CFO and auditing firm. According to Barakat, Chernobai and Wahernburg (2014) there is high information asymmetry and effective spread widens during operational risk events. We use the Corwin and Schultz (2012) high-low spread estimator for our sample of firms to study the impact of the above mentioned events on information asymmetry. We find that there is significantly higher spread and thus, information asymmetry during the trigger event, litigation date, as well as changes in CEO, CFO and auditor.

In addition, we examine if accrual models can be used to capture the difference in earnings management between the sample that has been involved in fraud and the matched sample. We use the discretionary and non-discretionary Jones and Modified Jones models to identify whether the two samples are significantly different during the trigger year, as well as the preceding and following 2 years and find that the non-discretionary accruals Jones and Modified Jones models show a significant difference between the two samples, matched and fraud, around the trigger date.

Finally, we investigate whether certain explanatory variables are able to predict bankruptcy or the evolution of 3-years mean cumulative abnormal returns, and find that changing the auditing firm, an increase in sales and a high ratio of retained earnings to assets predict a lower probability of financial distress, as opposed to a high debt ratio, that predicts a high risk of financial distress. On the other hand, we find that an increase in ROTA and a quick change in the CFO results in a higher mean cumulative abnormal returns, as opposed to the relationship between the discretionary Jones Model accrual variables and CAARs, where high accruals results in lower mean cumulative abnormal returns.

We summarize existing literature that is applicable to our study in section 2, we state our hypotheses section 3. Then, we discuss the sources and description of our data in section 4 which is followed by a description of the methodology used to analyze the data in Section 5. Finally we discuss our deduced results in section 6 and conclude in section 7.

2. LITTERATURE REVIEW

In this section, we discuss the literature relevant to topics in our paper. These topics include changes in governance after fraud, changes in auditing firms following fraud, information asymmetry during news of company misconduct and subsequently internal and external changes by the company as well as literature about earnings management and the detection of fraud.

2.1 Change in Governance after revelation of fraud:

Agarwal et al(1999) study the change in governance of a sample of firms following a fraud revelation. They look at whether these firms change their leadership structure in order to recuperate the reputational loss caused by the fraud announcement. The authors find that changing managers after a fraud revelation would not necessarily recuperate the firm value, and that sometimes changing managers would have bigger costs of implementation. This would imply that changing the CEO or CFO of a company may not always be perceived well by the market.

In contrast, Dikolli, Mayew and Nanda (2011) study the relationship between CEO tenure and firm performance. The authors look at the CEOs who survived re-elections as opposed to their matched sample who did not, and find that the sample of firms who have kept their CEOs have superior performance. This suggests that the survival of CEOs reduces uncertainty about the performance of the firm. Similarly, Bonnier and Bruner (1988) study the abnormal returns at the announcement of change in top management of firms that are not performing well. According to their research, there are significantly positive returns following the announcement of the change, which would mean that the market has higher expectations from the new management team. .

Chi and Sun (2014) agree and find that there is a positive and significant relationship between stock performance and CEO and CFO change.

In the same context, Setiawan (2008) has more mixed results regarding the change in management. The author analyzes the market reaction to a change in top management in a sample of Indonesian firms. The author finds a positive reaction to CEO turnover when the new CEO is a member of the firm, and a negative one, when the new CEO is an outsider.

In addition, Karpoff et al(2008) examine the fate of managers that are culpable and find that 92.4% of these managers lose their job after the fraud has been revealed, the majority of which are explicitly fired.

Finally, Warner et al (1987) examine the relationship between a firm's returns and change in management. The authors find that there are no significant abnormal returns following the announcement of a change in top management, be it president, CEO or chairman. The insignificance of the returns may be due to the positive reaction of the shareholders following the change in top management that is mitigated by the negative reaction of the market regarding the performance of the firm. Since our firms are involved in fraudulent activities prior to the change in management, we expect that a change in CEO or CFO may attract a negative reaction from the market. We study whether the evolution of the returns after the announcement remain negative, or if it will go upward for those fraud firms that make the decision to change their CEO in a timely manner.

2.2 Announcement of fraud and restatements and market reaction

Ferris and Pritchard (2001) analyze the market reaction to the revelation of management fraud. The authors find that there is a significant and negative market reaction after the initial announcement of fraud and a smaller yet negative reaction after the announcement of litigation. Also, they find that the results of the decisions following the litigation do not effect returns, since there has been a significant negative market reaction following the announcement of the potential fraud. Similarly, Palmrose, Richardson and Scholtz (2004) investigate the abnormal returns following the restatements of a sample of firms involving fraudulent activities. The authors find a negative reaction by the market resulting from the restatement involving fraud.

Kedia and Philippon (2006), on the other hand, look at different variables while examining the effect of fraud on companies as they examine the economic results of fraudulent activities. The authors find that after the detection of fraud, firms decrease their labor and therefore, their productivity improves. Economically, the authors find that this is the reason behind improved performance during periods of low employment and diminished economic growth.

2.3 Company name change:

Durrani (2013) studies the effect of company name change on the stock price and volume in a sample of Canadian firms. The author finds different results to the different name change categories. The author concludes that if the corporate name change is due to a change in structure, the market reaction is significantly positive to this change, and that when the name change is due to a change in strategy, the market reaction is significantly negative.

2.4 Change in auditing company and company performance

Agarwal and Cooper (forthcoming, 2016) find that auditor turnover is higher for the sample of restating firms than their matched counterpart. This might imply that these companies would make such a strategic decision to regain market confidence. Siew Hong Teoh (2012) find that the reaction of the market following the change in auditor is dependent on the characteristics of the firm and that for the sample of firms that have low firm value, the market reacts positively to the change in auditor. Hennes et al (2012) study whether financial restatements cause the dismissal of the auditors of the firm and the market reaction to a change in auditors and find that the market responds positively to a change in auditor, specifically if the new auditor is a larger more successful one. The authors therefore find that a change in auditor, specifically when the new auditor is a Big 4, restores the credibility of the company and stress the importance of auditors in the financial reporting of a firm.

2.5 Information asymmetry

Cerqueria and Pereira (2015) examine the high-low spread and associate it with the impact of information asymmetry and financial reporting quality. Similarly, we use the estimator by Corwin and Schultz (2012) who have developed a high-low spread estimator from daily high and low prices in order to study the variance of the bid-ask spread. The high-low spread estimator may be used to study asset-pricing, information asymmetry and market efficiency practices. We also use Barakat et al (2014) as a guide. They examine the magnitude of information asymmetry around periods of operational risk events by using effective spread as a proxy for information asymmetry. The authors find that effective spread increase around the first announcement of such events, specifically when the companies are known to have been involved in fraudulent activities and weak business practices.

2.6 Earnings Management

Kothari et al (2002) study earnings management and market efficiency by looking at discretionary accruals. The authors look at both performance matched accrual measures and traditional accrual measures and conclude that the use of performance matched accrual measures (i.e. on ROA) is more reliable than the latter. In the same context, Jones et al (2007) use 9 different accrual models to study earnings management and examine whether fraudulent activities and financial restatements can be detected through the discretionary Jones and modified Jones accrual models. The authors find that accrual estimation errors may be used to anticipate and discover fraud. We study both models for discretionary and non-discretionary accruals and expect to find significant differences between our fraud and matched samples. In the same logic, Bartov and Gul (2000) study the Jones model and the modified Jones model to identify earnings management in cross sectional models versus time-series models, and find that the cross-sectional Jones and modified Jones models perform better the times-series models in identifying earnings management. These findings allow the research of a larger sample size, since the firms that have a short survival rate would also be included in the research. Finally, Gomez et al (2000) examine the discretionary accruals model and find its relationship with future performance and stock returns and find that a discretionary accruals model may predict the future performance of a company and its stock returns.

2.7 CEO and CFO characteristics and engagement in fraudulent activities

Ge et al (2011) investigate the effect of CFO characteristics (age, tenure, gender, education) on their accounting decisions, on the possibility of these individuals engaging in fraudulent activities and They find that CFO characteristics does have an effect on their accounting decision-making, and that in case of fraudulent activities carried by a CFO, changing that CFO would have significant implications on the firm's financial reporting strategy. Similarly, Karpoff, et al(2007) study a sample of individuals that are responsible for financial misrepresentations (CEO, president chairman etc.…) and find that these managers are more likely to lose their job following the fraud revelation.

Another interesting paper by Khanna et al (2015) discusses the likelihood of the dismissal of a CEO after the detection of fraud, when these CEOs are connected to the board of directors, or other managers of a firm. The paper further discusses how the market, specifically investors, regulators and other specialists react to the appointment of these CEOs. This is relevant in our study when looking at the abnormal returns from the market to the CEOs after the detection and to explain that magnitude of the reaction of the market.

2.8 Prediction of Financial Distress:

Early prediction of financial distress is key for institutions and investors to protect their financial investments. Many researchers have discussed the prediction of financial distress in depth. For instance, Altman (1968) estimates the likelihood of distress of firms by comparing companies that have gone bankrupt compared to another sample who was not. However, bankruptcy has not been the only proxy for distress in literature. Other studies use different proxies to define financial distress of a firm. Theodossiou et al (1996) use a sample of firms that have gone through an M&A and have used this characteristic to compare to other firms that have not and thus, to predict financial distress. They do so by comparing firms that are healthy and others that are distressed, and study whether the latter sample are acquired.

3. HYPOTHESES

The interest of this study is to examine a sample of firms that have been involved in fraudulent activities and control it with another that has not. We study market reaction and information asymmetry around the trigger event, which is known to be the first indication of a company's involvement in fraud as well as other events following the trigger date. We examine significant differences in returns and spread during changes in CEO, CFO, auditing firm and company name. An extensive literature investigates a company's involvement in fraud, how to anticipate, detect that involvement, and how to overcome any reputational losses.

Vast research discuss the aftermath of the revelation of fraud or financial restatements. Ferris and Pritchard (2001) and Palmrose, Richardson and Scholtz (2004) find that the announcement of a restatement or of misconduct by a company is followed by a negative reaction by the market. In light of this information, our first hypothesis is:

> *H1:* There is a significant and negative market reaction for the original sample after the announcement of a trigger event, compared to a non-significant market reaction to the control sample at the same date.

Agarwal, Jaffe, Karpoff (1999) find that changing managers after a fraud revelation would not necessarily recuperate the firm value, and contrarily, findings by Dikolli, Mayew and Nanda (2011) Bonnier and Bruner (1988) that conclude that the sample of firms who have kept their CEOs have superior performance and significantly positive returns following the announcement of the change. This suggests that the survival of executives of a company reduces uncertainty about the performance of the firm. Thus, our second hypothesis is:

H2a: There is a significant negative market reaction for the original sample following the announcement of CEO and CFO change.

H2b: Firms that are able change their CEO or CFO quickly after the announcement of a trigger event are able to regain market confidence in the long-term.

Firing the existing auditing firm may be a strategic move to alleviate the negative reaction by the market. In this context, Hennes, Leone, Miller (2012) find that the market responds positively to a change in auditor, specifically if the new auditor is a larger more successful one and that the auditor restores the credibility of the company. Their findings stress the importance of auditors in the financial reporting of a firm. There for Hypothesis 2c is:

H2c: There is a significant positive market reaction for the original fraud sample following the announcement of an auditor change.

Research regarding company name change is not vastly available in literature. One of few studies is that of Durani (2013) who finds that if the corporate name change is due to a change in structure, the market reaction is significantly positive to this change, and that when the name change is due to a change in strategy, the market reaction is significantly negative. These findings would lead us to Hypothesis 2d.

H2d: There is a significant positive market reaction for the original fraud sample following the announcement of name change.

For our third hypothesis, it is important to note Ferris and Pritchard (2001), who discuss market reaction following announcement of fraud followed by the filing of a lawsuit and find that there is a negative and significant reaction by the market for the first event, and a less significant but negative reaction for the second. Thus, our next hypothesis is:

H3: There is a significant negative market reaction for the original fraud sample following the announcement of a class action

In addition, detailed literature exists around the presence information around difference announcements, good or bad news. An interesting paper to note here is one by Barakat, Chernobai and Wahrenburg (2014) who examine the magnitude of information asymmetry around periods of operational risk events and find that effective spread and therefore information asymmetry increases around the first announcement of such events, specifically when the companies are known to have been involved in fraudulent activities and weak business practices. Thus hypothesis 4 and 5 are as follow:

> *H4:* For the original sample, there is a higher information asymmetry following the announcement of a trigger event, compared to the control sample.

> *H5:* For the original sample, there is higher information asymmetry at the announcement of change in CEO and CFO and auditing firm

we study earnings management through models discussed in Jones et al (2007) who use 9 different accrual models to study earnings management and examine whether fraudulent activities and financial restatements can be detected through the discretionary Jones and modified Jones accrual models. The authors find that accrual estimation errors may be used to anticipate and discover fraud, which would lead us to the following hypothesis.

> *H6:* The Jones and Modified Jones models show that there is a significant difference between the fraud and matched samples which leads us to distinguish between the two samples.

It is also important to predict how some firms may end up being bankrupt, acquired or deleted from a certain exchange. The prediction of financial distress is key for institutions and investors to protect their financial investments, we investigate different tactics and variables that could predict financial distress. In this context, Altman (1968) estimates the likelihood of distress of firms by comparing companies that have gone bankrupt compared to another sample who was not. However, bankruptcy has not been the only proxy for distress in literature. Other studies use different proxies to define financial distress of a firm. Theodossiou et al (1996) use a sample of firms that have gone through an M&A and have used this characteristic to compare to other firms that have not and thus, to predict financial distress. They do so by comparing firms that are healthy and others that are destressed, and study whether the latter sample are acquired. This leads us to our next hypothesis:

H7: Financial distress may be predicted by studying the relationship certain explanatory variables such as profitability and debt ratios, CEO/CFO/auditor changes with the probability of bankruptcy, M&A and Deletion from an exchange.

Finally, we will investigate how certain explanatory variables such as liquidity, debt, market ratios may explain the trend of the mean cumulative abnormal returns. In this context, Martani et al(2009) study certain financial information and investigate whether the explanatory variables significantly explain the trend of the stock returns. This leads us to our next and final hypothesis:

H8: The evolution of mean cumulative abnormal returns may be explained by certain accounting information and ratios.

4. DATA

Our initial sample consists of 300 North American firms that have been involved in fraudulent activities[1]. The sample contains data with their trigger event ranging from 1997 to 2011, with additional 2 years preceding and following the trigger event to identify earnings management around the trigger event. For each of the sample firms, we identify their beginning and end of violation date, trigger date, and regulation period, as well as other variables such as date of change in CEO, CFO, auditor and filing name. As the main characteristic shared by most of the sample firms, we identify the trigger date of each firm as the date where a company has drawn the SEC's scrutiny.

The sample is then reduced to 270 firms, as specific fraud trigger dates are not obtained for some of the firms. Table 1 shows the industries to which our original sample firms belong to, as well as their SIC code and frequency as a percentage of the total sample. Also, in the process of cleaning

[1] We thank Karpoff, Lee and Martin (KLM) for generously providing us with their dataset. KLM dataset contains the names of the companies that have been involved in fraudulent activities as well as important events such as violation period dates, trigger date, regulation period dates. We have obtained information concerning CEO and CFO characteristics such as age and tenure, as well as auditing firm names and change dates and litigation dates.

and managing the data, the sample is reduced to 235 firms, for each of which we obtain the GVKEYs to complete our research.

For each of the sample firms, information about the CEO/CFO name, age, tenure and announcements in change in executives is hand-collected from SEC EDGAR filings, specifically in the 10K, 10K/A and DEF14A filings. The hand collected data contains specific dates of announcement of top management changes in top management and the change in the number of affiliated and non-affiliated members of the company. Information about auditor changes is collected from MergentOnline and class action filing dates are collected for our sample of firms from Stanford Securities Class Action Clearinghouse.

Following the collection of the specified event dates for each company, our sample is again reduced to 190 firms. This was due to the size of some of the firms in the sample and their information availability on COMPUSTAT database. In order to better study the effect of the trigger events on our sample, we proceed by creating a control sample, and matching each firm in our sample with another with similar characteristics. We look at the difference between our sample of firms and their matched firms in order to make conclusions about what draws both samples apart.

Thus, our sample of firm is matched against firms with similar characteristics, such as size, value, industry and financial distress measured by total assets, Market-to-Book ratio, SIC and Altman Z-score. It is important to note that our sample firms are matched with others that are within 70% up to 130% range of their total assets. , the Altman Z-score[2] is also used as a matching characteristic, as it measures a company's financial strength and its likelihood of bankruptcy, as studied in the Altman (2000).

4.1 Variables Used in the Study

We obtain our data from different sources and databases. COMPUSTAT (North America-Fundamentals Annual) is used to get financial information about the fraud and matched samples.

[2] The Altman-Z by using the following function that consists of several financial ratios:

$$Z = 1.2\frac{Working\ Capital}{Total\ Assets} + 1.4\frac{Retained\ Earnings}{Total\ Assets} + 3.3\frac{EBIT}{Total\ Assets} + 0.6\frac{Market\ Value\ of\ Equity}{Total\ Liabilities} + 1.0\frac{Sales}{Total\ Assets}$$

In addition, the Center for Research and Security Prices (CRSP) variables are used to calculate the High-Low Spread. For its calculation, we use daily high, low and closing prices, as well as volume. Also, CRSP value weighted returns are used to look at market reaction and abnormal returns following specified events for both the fraud and control samples.

In addition, SEC EDGAR is used for the hand-collection of CEO, CFO and board information, which includes the name, age, tenure of executives as well as any change in top management or company filing names. Finally, we use MergentOnline and Stanford Securities Class Action Clearinghouse to obtain auditor change announcement and class action announcement dates, respectively and Bloomberg and Equilar Atlas to obtain any other missing information.

4.2 Summary Statistics

We calculate summary statistics of all the variables used in this paper one year before the fraud trigger date. The results are shown in Table 2, where compare the differences in mean of both the fraud and matched samples, and look at the sign of the mean difference and its significance.

Regarding the total assets, used as a proxy for size, and one of our matching criteria, we notice that the fraud and matched samples are not different, with a non-significant p-value of 0.979. Also, we find that the mean and median values for total assets of the matched sample is higher than that of the fraud sample (33,264 Vs 33,608 and 1397.911 Vs 1497.73, respectively). The difference is not significant for these values, as the firms have been matched by size.

Regarding the earnings before interest and taxes, we see that the matched samples has marginally higher mean and median values than the fraud sample, but their difference in mean is not significant, with a p-value of 0.448.

When looking at total liabilities, we see that there is no significant difference between the means of the fraud and matched samples. When looking at the debt ratio, both samples have similar ratios, with 0.866 for the fraud sample and 0.877 for the matched sample.

For the retained earnings, we see that the fraud sample has retained close to 25% more earnings than their control sample. There is not a significant difference in the means with the p-value of

0.618 and the median values are 9783.47 for the fraud sample and 6375.14 for the matched sample.

As for the market-to-book ratio, we notice that there is no significant difference, as the two samples are matched to have similar company values, with a non-significant p-value of 0.9998. Their means (4.434 for fraud VS 4.435 for matched), medians and standard deviations are all almost equal.

The Altman Z-score, one of our matching criteria, there is no significant difference between the fraud and matched samples with non-significant p-value 0.5132.

For the current liabilities, we notice that the means of both samples are very close, with a p-value of 0.94 but a higher dispersion for the matched sample in terms of difference between the standard deviations (239.7 for fraud sample and 147.73 for the matched sample).

For the net sales variable, we see that the sales of the fraud sample of firms is only 10% more than that of the matched sample. Also the standard deviation of the matched sample is higher.

5 METHODOLOGY

5.1 Event Study around Fraud Announcement

We study the difference between the two samples before and after an announcement has drawn the attention of the SEC, referred to the trigger date: the original fraud sample and the matched sample that has not been involved in fraudulent activities. We use the daily event study methodology [3]to study the market reaction before and after the announcement.

We use the estimation period (-301,-46) for both the market and Fama French models. We will closely look at the value weighted market model, both in short-term and long term periods. It is important to note that the calculated returns are market-adjusted and that we look at the CAARs in different windows ranging from -30 to +365 days in order to see the long and short-term implications of the presence and absence of a fraud event.

[3] The following assumptions are made for the event study methodology: (1) Event studies assume market efficiency (2)Event studies provide (2) Stock returns belong to a normal distribution (3)Although the event must be forseen, we do expect some anticipation before the trigger event, as well as the change in CEO/CFO auditor and name change. (4)There are no other coonfounding effects during the event (5) the Capital Asset Pricing Model (CAPM) is used for the methodology of the event study.

i. Market Model

In order to calculate the abnormal returns of a firm, there are two steps to cover. The first the actual return R_{it} of security 'i' at day 't', and the other, E (R_{it}) which is the expected return of security 'i' at day 't'. Thus, the abnormal return is the difference between the actual return and the expected return. Subsequently,

$$AR_{it} = R_{it} - E(R_{it}) \qquad (1)$$

It is important to also note that the actual return R_{it} is calculated by adding the return on the market R_{mt} and the error term ε_{it}. $R_{it} = R_{mt} + \varepsilon_{it}$ (2)

Finally, we obtain the cumulative abnormal return values with the following formula. This formula is also formulated by Mackinlay (1997):

$$CAR\ (t_1,t_2) = \sum_{t-t1}^{t2} AR_t \qquad (3)$$

We would expect that following the trigger event, there will be a negative reaction by the market for the simple of firms that might been involved in fraudulent acitivites.

ii Fama French Model

Another model that is used in this study is the Fama French Model. This model looks at other firm specific characteristics, such as size, book to market and momentum. This would lead us to the following formula:

$$R_{it} - R_{ft} = a_p + b_p\left(R_{Mt} - R_{ft}\right) + S_p.SMB + h_p.HML + e_{pt} \qquad (4)$$

Where, R_{it} represents the return on the stock i at day t, R_{ft}stands for the risk free return at day t, R_{mt} represents the return of the market at day t, SMB stands for the difference between small and big firm returns, HML is the difference between high and low book to market ratios.

Similarly to the market model, we will look at the sign and significance of both short term and long term abnormal returns. We would expect to find that there is a negative market reaction for the fraud sample following the trigger event and the possibility of fraudulent activities, when controlled with the matched sample.

5.2 Event Study around CEO, CFO, Auditor and Name Change Announcement

For this second event study, we study the market reaction to a CEO, CFO, auditor or name change announcement. With this analysis, we study the market adjusted value-weighted monthly abnormal returns are looking to see whether the firms that make changes in their top management, their auditing firm or their filing name will be able to recuperate from the negative market reaction and whether the ARs in the long term will return to their estimated levels.

When investigating the change in CEO or CFO, we use an monthly event study [4]with an estimation period of (-42,-6) for both the market and Fama-French models and look at different monthly windows ranging from -6 to + 24 to study both the short and long term implications of the change announcement.

5.3 High-Low Spread

For the calculation of the spread, we refer to the methodology used by Corwin and Schultz (2011), where the authors use the following steps to calculate the spread estimates. First, it is important to adjust for overnight prices, so that the daily high-low ratios reflect the difference between high and low prices during trading hours. Since stock prices may also move significantly during non-trading periods or overnight, we will adjust the t+1 prices with the difference between the closing price at day t and the low price in t+1.

In addition, due to a high variances in the years t and t+1, the spread could have a negative sign. In order to accurately calculate the spread estimates for those days, we will set the spread values to 0. We calculate the spread using the daily bid, ask and closing prices as well as the volume to identify the non-trading days obtained on CRSP.

In order to study the information asymmetry around the event day 0, we use an estimation period of (-290,-45) in order to calculate the expected spread. We then calculate the actual spread

[4] A monthy event study is better suited to investigate long-term implications of an event. This methodology uses the mothly excess returns for each firm at month t.

estimates using bid, ask and closing prices and finally, compute the difference between the two, in other words, the abnormal spread[5].

5.4 Earnings Management Models

a. A measure of discretionary accruals: The JONES model[6]:

$$TA_{it} = \beta_0 + \beta_1(1/AT_{it-1}) + \beta_2 \Delta REV_{it} + \beta_3 PPE_{it} + \varepsilon_{it} \quad (5)$$

Where TA_{it} is the total accruals for firm i at year t, AT_{it-1} is the total assets for firm i at year t-1, ΔREV_{it} is the change in Sales from year t-1 to year t for firm i at year t, PPE_{it} is the Gross property, plant and equipment variable.

The cross-sectional Jones model is more effective in detecting earning management than its time-series counterpart and will be used in our study.

b. MJONES: Modified JONES model:

$$TA_{it} = \beta_0 + \beta_1(1/AT_{it-1}) + \beta_2(\Delta REV_{it} - \Delta AR_{it}) + \beta_3 PPE_{it} + \varepsilon_{it} \quad (6)$$

Where ΔAR_{it} represents the change in is Accounts receivable from year t-1 to year t for firm i.

On the contrary, the MJONES or Modified Jones model discussed thoroughly by Dechow et al. (1995) detects earnings management more accurately by looking at an additional variable, change in accounts receivable and make an assumption that sales that have not yet been paid for are due to earnings management.

5 We also examine the mean cumulative abnormal spread estimates, calculated as the sum of the average spread estimates over t days, to get a better sense of the aggregate effect of abnormal spread, specifically if the effect of the event does not discontinue at the event day itself, but is effective over a period of time.

6 We will study both the non-discretionary and discretionary Jones Models, where non-discretioanry model reflects the operating cycle of the firm and the discretionary model, that reflects management choices.

Both the Jones and Modified Jones will be used to examine if they can be used to capture the difference in earnings management between the sample that has been involved in fraud and its matched sample for the 2 years before and after the trigger event.

5.5 Prediction of Distress: Bankruptcy, Mergers & Acquisitions and Dropped firms

Many researchers have used Bankruptcy as the definition of distress. Altman (1968) estimates the likelihood of distress of firms by comparing firms that have gone bankrupt and those that have not. However, other studies use different proxies to define financial distress of a firm. Theodossiou et al (1996) use a sample of firms that have merged or have been acquired as one of their variables to predict financial distress amongst firms. They do so by comparing firms that are healthy and others that are financially destressed, and study whether the latter sample are acquired.

We will use the three mentioned dependent variables, whether the firm has gone bankrupt, if they have merged or been acquired or whether they have been dropped from an exchange as proxies for financial distress.

We will use the following models to predict financial distress:

$$Logit\text{ (Distress)} = \alpha + \beta_1(\text{Debt Ratio}) + \beta_2\left(\frac{\text{Operating Income}}{\text{Total Assets}}\right) + \beta_3\left(\frac{\text{Retained Earnings}}{\text{Total Assets}}\right) + \beta_4(\text{Current Ratio}) + \beta_5(\text{Log of Sales}) + \beta_6(\text{CEO Dummy}) + \beta_7(\text{CFO Dummy}) + \beta_8(\text{Auditor Dummy}) \quad (7)$$

$$Probit\text{ (Distress)} = \alpha + \beta_1(\text{Debt Ratio}) + \beta_2\left(\frac{\text{Operating Income}}{\text{Total Assets}}\right) + \beta_3\left(\frac{\text{Retained Earnings}}{\text{Total Assets}}\right) + \beta_4(\text{Current Ratio}) + \beta_5(\text{Log of Sales}) + \beta_6(\text{CEO Dummy}) + \beta_7(\text{CFO Dummy}) + \beta_8(\text{Auditor Dummy}), \quad (8)$$

where $\text{Debt Ratio} = \frac{\text{Total liabilities}}{\text{Total Assets}}$, $\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$, the CEO dummy takes a value of 1 if the firm has changed the COE in the first 6 months, 0 otherwise, the CFO dummy takes a value of 1 when the firm has change the CFO in the first 6 months, 0 otherwise and the auditor dummy takes a value of 1 if the firm has changed the auditing company in the first 6 months, 0 otherwise

5.6 Evolution of 3-Year CAARs.

Financial reports may contain accounting information that provide ratios and other variables (debt ratio, profitability ratio, sales etc.…) that are able to predict how the stock returns of a firm may evolve. Martani (2009) use profitability, debt, size and market ratios as proxies for accounting information and investigate their relationship with firms' the mean cumulative abnormal returns. They find that the profitability, turnover have a significant impact on the CAARs. In this section, we will use OLS regressions to investigate the evolution of 3-year cumulative average abnormal returns and investigate the relationship between explanatory variables and the dependant variable. We will also use the method of two dimension clustering[7] as a robustness check to control for correlation between firms at a moment of time.

We will estimate the following model to further investigate the relationship between explanatory variables and the evolution of CAARs:

$$3 - Year\ CAAR = \alpha + \beta_1(\text{Debt Ratio}) + \beta_2\left(\frac{\text{Retained Earnings}}{\text{Total Assets}}\right) + \beta_3(\text{Current Ratio}) + \beta_4(\text{Log of Sales})$$

$$\beta_5(\text{CEO Dummy}) + \beta_6(\text{CFO Dummy}) + \beta_7(\text{Auditor Dummy})$$

6 EMPREICAL RESULTS

6.1 Event Study:

In this part, we investigate the market reaction following the announcements of the possibility of detection of fraud, and the announcement of other changes that companies make following the trigger event in order to minimize the effect of the market following the fraud detection announcement.

[7] We use the Kellogg School of Management Programming techniques that discuss the two dimension clustering and run an OLS regression and calculate standard errors which account for two dimensions: firm and time. This method can be found at the following website: http://www.kellogg.northwestern.edu/faculty/petersen/htm/papers/se/se_programming.htm

We use both Market Model and Fama-French daily and monthly event studies and study the abnormal returns around trigger events, CEO change announcements, CFO change announcements, auditor change announcements, name change announcements and class action announcements. Also, we compare our fraud and matched samples at the trigger date and look at whether the two samples are significantly different. To conserve space, we only report the Market –Adjusted returns in our results for the mentioned event studies.

In the first subpart, we look at our full original fraud sample for each of the mentioned announcements. In the second subpart, we compare our two samples and make conclusions regarding the magnitude of their difference.

i.) Event study: The Original Fraud Sample

Using the market model, we first obtain the value weighted market-adjusted returns for the original sample at the trigger event. We see that there are daily significant and negative abnormal returns that start 8 days before the trigger date. We see in figure 1, panel a, that at day -8, there is a negative abnormal return of -0.55%, significant at 0.01. This trend continues, with an abnormal return of -1.04% at day -2, significant at 0.001. This shows that the information has leaked and that the market anticipates the event, thus the negative reaction. At day 0, we see a very significant and negative abnormal return of -13.37%, significant at 0.001. Following day 0, the downward trend continues, we notice that for a week after the fraud date, on a daily basis, more than at least 50% of our sample firms have negative abnormal returns (170 out of 202 firms are negative at day 0, 113 out of 200 firms are negative on day 6). In table 3, we also see a Z-value of -8.636 significant at 0.001 in the (0, +1) event window. The negative trend continues after the event date, seen in event window (0, +7) that has a mean cumulative abnormal return of -13.6% significant at 0.001, but seems to alleviate after a week from the announcement of the fraud. We see a positive and significant returns of 1.86% and 0.48% at days 12 and 14, respectively. This may be due to some actions that some companies might be taking action following the fraud announcement such as change in management or auditing companies. These actions will be discussed further in this study.

Using a monthly event study, we obtain the value-weighted market adjusted returns for the event period around the change in CEO. In the results, we see that at month 0, there is a negative abnormal return of -4.51% significant at 0.1. Also looking at the event windows in table 4, we notice that at window (-1, 0), there is a significantly negative abnormal return of -6.13% with 71 of the firms that have changed their CEOs having negative ARs. This demonstrates that the market believes that a change in CEO is a desperate move by the company to regain some of the confidence of the market. In the months following the event month, we do not see any significant trends in the abnormal returns, which would lead us to look more closely at the sample of firms that have changed their CEOs, and how quickly they have done that change. In this context, figure 2, panel A shows that firms that have changed their CEO quickly, in this case after up to 3 months, tend to have an upward trend in their abnormal returns lasting up to 2 years. This could be compared to the other 3 subsamples that represent firms that have changed their CEO after 3 to 6 months, 6 to 12 months, and 12 to 24 months. We see that for the 3 latter subsamples, after the negative trend around the announcement of the change of CEO, there is no good news, and the market keeps reacting negatively or stabilizes at negative CAR values. This leads to support our hypothesis 2b, which states that firms that act quickly in changing their CEO are able to experience positive ARs and a positive market reaction in the longer-term. This indicates that a CEO that was chosen to replace another early after fraud detection is more likely to regain the market confidence.

Similarly with our sample that has changed their CFO following the trigger date, we see in table 5, that there are significant abnormal returns in the event period (-6,-2) which may itself be due to the announcement, followed by a negative and significant market reaction at (-1,0), with a Z-value of -1.898 significant at 10%, and where 72 of the 132 firms have negative mean cumulative abnormal returns. This subsample also has a negative abnormal return of -4.47% at month -1. Following the event month 0, we notice that there is a mixed reaction from the market and it would be hard to make conclusions looking at the full sample of firms that have changed their CFO. Thus, we divide the sample into subsamples, according to how quickly the firms have changed their CFO. We obtain clearer results that are very similar to our results for the CEO sample. Looking at the cumulative abnormal returns in figure 2 panel B, we see that for all the subsamples there is a negative trend before the event month, which would be the effect of the announcement. Following the event month, we see an upward trend, in the long term, for the subsample that has changed their CFO quickly, and negative CARs for the other samples. This confirms our findings in the CEO sample, and supports hypothesis 2b, which states that firms that change their CFO quickly will have positive ARs in the long-term. This again indicates that a change in leadership may be a good tactic to recuperate loss, as long as the targeted company makes quick and confident decision in replacing the existing CFO.

Hypothesis 2c states that there is positive market reaction when a firm that has been possibly involved in fraudulent activities changes its auditing firm. Here, we notice that at day 0 there is a positive abnormal return 1.66% significant at 0.001, followed by a negative abnormal return of -0.81% significant at 0.01 at day 1. In order to fully grasp our results, we also look at the event windows around the event date. We see that during the event periods shown in table 6, the windows (-2,+2), (-1,+1), (0,+1), (0,+7) have positive abnormal returns of 1.37% (significant at 0.1), 1.42% (significant at 0.01), 0.85% (significant at 0.1), and 4.02% (significant at 0.001), respectively. These results show a positive and significant market reaction following the announcement of the auditing change, which agree with out hypothesis 2d. We continue by dividing the sample of firms that have changed their auditing firm into 3 subsamples. The first subsample, where the firms involved in fraud change their auditor in the first year and the second subsample, where the firms involved change their auditing firm after a year and up to 3 years. in figure 2, panel C, we compare both subsamples and conclude that the subsample that changes its auditing firm faster has positive and significant abnormal returns that continue a positive trend up to a year. In contrast, we notice that there is not much change in the sample that makes an auditor change a year following the trigger event.

Regarding the announcement of class action, we hypothesize that following the announcement of a lawsuit, there would logically be a negative reaction by the market. The results in figure 1, panel b, show that there are negative and significant abnormal returns that start 8 days before the event. This would imply that the market has anticipated the event, thus its negative reaction. For the days -5 and -4, the abnormal returns are -0.86% and -1.04%, respectively, significant at 0.01. For the days -1 and 0, close to the event, the abnormal returns are -3.31% and -2.36%, respectively, both significant at 0.001. For the event windows surrounding the event day 0 shown in table 8, we see that there are negative and significant returns for the event windows (-2,+2), (-1,+1), (0,+1) and (0,+7).

For the sample of firms involved in fraud that change their names after trigger event, the results are not very significant. There is a negative and non-significant abnormal return of -0.18% at day -1, followed by -0.01 at day 0. Similarly, event windows (-1, +1) and (0, +1) have non-significant mean cumulative abnormal returns of 0.59% and 0.77%, respectively. When looking at the evolution of mean CARs in figure 1, panel c, we see that there is a upward trend, before and after the name change announcement, which may imply good news from the market.

Finally, we investigate and compare our sample firms that have made all three changes: CEO, CFO and auditor to other samples that have made 2 changes of the mentioned as well as upto one change. In figure 4, we find the subsample that has changed their CEO, CFO and auditor performs better after a year to the trigger date, as opposed to the other subsamples that are not able to recuperate their losses.

ii.) Event Study: The Matched Sample

To compare the two matched samples, we obtain the market adjusted value weighted returns and compare them. For the firms in the new fraud sample, each of which has been matched with a firm that has similar size, value and financial distress characteristics, we find that the market anticipates the bad news before the trigger event. At day -14, we find an abnormal return of -3.41% and another negative abnormal return of -4.49% at day -8, both returns significant at 0.001. At day 0, the abnormal return of -12.68%, significant at 0.001 shows a negative market reaction, as hypothesized. In contrast, for our matched sample, we find a non-significant abnormal return of -0.47% at day 0, which shows no significant market reaction. Also, we find a non-significant mean cumulative abnormal return of -0.33% for the event window (-1, 0) for our matched sample compared to a significant mean cumulative abnormal return of -12.22%, significant at 0.001 for the fraud sample. Similarly, we find a non-significant mean cumulative abnormal return of 0.02 for the event window (0,+1) for our matched sample compared to a significant mean cumulative abnormal return of -12.24%, significant at 0.001 for the fraud sample. We also notice in the evolution of the CARs seen in figure 3 that the two samples split around 15 days to day 0, which shows anticipation by the market regarding the detection of fraud for the fraud sample. At day 0, there is an abrupt decrease in CARs for the fraud sample, which completely divides both samples. Following the day 3, we see a parallel progress of both samples, with the fraud sample having 20% lower CARs. By comparing the fraud and matched samples, we see that although fraud firms and matched firms have similar size, value and financial distress values, the fraud firm is exposed to significantly more negative abnormal returns from the market, which agrees with our first hypothesis.

6.2 High-Low Spread: Information Asymmetry

The information asymmetry is known to increase during bad news events (Barakat et al (2014)). We use the Corwin and Schultz (2012) high-low spread estimator for our sample of firms to study the impact of trigger event, change in CEO, CFO and auditing firm. In order to capture the effect of the trigger announcement on our sample, we use the matched sample as comparison. In subpart 1, we compare the fraud and matched samples in terms of spread and look at the evolution of information asymmetry during the trigger event. In subpart 2, we look at changes that firms may make, be it change in CEO, CFO, auditor and the effect these announcements have on spread and information asymmetry.

i. High-Low Spread : Fraud Sample vs. Matched Sample

When examining the high-low spread results for our fraud sample, we use our matched sample to control for the ongoing downward trend of the high-low spread in the previous years.

In table 9, we see that for most of the studied windows, we have significantly positive mean cumulative abnormal spread values. For instance, in event window (-30,-2), there is a spread value of 0.00123 significant at 0.0001. This may show that the market has anticipated the announcement, and there is an increase in information asymmetry and therefore the high-low spread. When comparing with the matched sample, we find that there is a mean difference of 0.0012, which shows that the two samples are significantly different. Similarly, in event window (-1,+1), we notice that the two samples have a difference of means of 0.00416 significant at 0.05, which shows that the fraud sample has significantly higher spread values than its counterpart. This trend continues for the latter event windows. We notice that most of the matched sample windows are significantly different from the fraud sample. This supports our hypothesis 4 that states that around the announcement of fraud, there is an increase in information asymmetry and therefore the high-low spread, compared to the other firms that have not been involved in fraudulent activities.

ii. High-Low Spread: Announcement of change in CEO, CFO and Auditing firm

When studying the effect of the trigger announcement amongst a firm, it is important to look at what changes the firms make in order to recuperate any losses that they might make. In this context, it is important to look at the information asymmetry and therefore spread evolution when the companies that might have been involved in fraudulent activities make changes in top management or their auditing firms. In table 10, column 1 we see that the firms that change their CEO after the trigger event are exposed to high spread values around the period of the change in CEO. This again may be due to the difference in knowledge of information surrounding the announcement. Thus, there would be an increase in information asymmetry and therefore spread for our fraud sample. When we look at the event windows in table 10, we see that there are significant and positive abnormal spread values in the periods surrounding the announcement of change in CEO. For instance, in monthly event windows (-1, +1) and (0, +1), there are mean cumulative abnormal spread values of 0.00213 and 0.00239, both positive and significant at 0.0001. This shows a high level of information asymmetry before, on, and after month of the announcement. The results suggest that the market is unsure about the implications of the change in CEO and how the company will do after the change. We also look at the event windows after the announcement, up to month +6, and we notice that the market is still unsure about the change, and that the information asymmetry is still present. This agrees with hypothesis 4, which states that there is an increase in information asymmetry during the first announcement of an event, in this case, the trigger event.

For the companies that have changed their CFO after the trigger event, the results are similar. In table 10, column 2, we notice significant and positive mean cumulative abnormal spread values of 0.00322 and 0.00328 for the monthly event windows (-1,0) and (0,+1), both significant at

0.0001. Similarly to the sample that changed their CEO, the significant and positive mean abnormal spread values continue during the event month 0 and 6 months after the event month. These findings agree with our hypothesis 5 that states that the announcement to change a CFO will create information asymmetry in the market and therefore high values of high-low spread.

According to our findings regarding the change in the auditing firm, we notice that the results are not as significant as the ones mentioned earlier, regarding the changes in CEO and CFO. for instance, at for event windows (0,+7), (1,+5),(+5,+10) and (1,+15), the mean cumulative abnormal returns are all not significant as opposed to the windows (-1,+1),(0,+1), (-2,+2) and (+10,+30) that are all significant at 0.05. This would agree with hypothesis 5, that an announcement in change in auditor creates a significant increase in information asymmetry and therefore spread. These results also may suggest that information asymmetry is not as high when the announcement is good news, as in when the market reaction and abnormal returns were tested positive and significant, as mentioned earlier in our study.

6.3 Earnings Management: Accrual Models

We use the Jones and Modified Jones Models to accurately detect earnings management. The models take into account the change in total assets from year t-1 to year t, the change in sales from year -1 to year 0, the change in gross property, plant and equipment from year -1 to year 0 as well as the change in accounts receivable (only for the Modified Jones model). In Tables 11 and 12, we see that for the years -2 and -1 from the trigger event, the mean values for total accruals are lower for the fraud sample, but that the two samples are not significantly different for any of the models.

For year 0, shown in table 13, we notice that there are two accrual models that show a significant difference between the fraud and matched samples. The Non-Discretionary current accruals-Jones model shows that the difference in means between the two samples is -0.022, the matched sample having a lower total accruals value, and that the difference is significant at 0.10.

Similarly, for the Modified Jones nondiscretionary accruals model, we notice that the matched sample has a significantly lower mean, a difference of -0.023, significant at 0.10 These findings suggest that for year 0, year of the occurrence of the trigger event, the two samples are significantly different in mean total accrual estimates, the fraud sample having significantly higher and positive mean values than its matched counterpart.

We also report earnings management at year +1 and year +2 from the trigger event. We find that for Nondiscretionary Current Accruals for the Jones and modified Jones models, there is a mean difference of -0.135 and 0.15, respectively, both significant at 0.001.

Thus, in accordance with hypothesis 6, since the non-discretionary Jones and Modified Jones models show a significant difference between the two samples, the models are able to detect the firms involved in fraudulent earnings as opposed to their matched firms.

6.4 Prediction of Distress: Bankruptcy, Mergers & Acquisitions and Deletions

In table 16, panel A, columns 1 and 2 for all years, we find that current ratio for the logit model is significantly and negatively related to the dependant variable, which in this case is the Bankruptcy Binary variable with a chi-squared of -0.91, significant at 0.001. This demonstrates that the firms that have the ability to pay short term and long term obligations are not likely to go bankrupt in the future. Also, we notice that the ratio of operating income to assets is negatively related to the bankruptcy dependent binary variable, with a significance of 0.10. This shows that the firms that have higher profitability ratio (op. income/assets) are less likely to go bankrupt. We would expect that the variable retained earnings/assets would also be negatively related to the bankruptcy binary variable, as it also measures profitability. We find that the two are positively related, significant at 0.01. In contrast, for the sample -1 to +1, there are no variables that are significantly explain the bankruptcy variable.

For the significance of the model for all years as a whole shown in table 16, panel B, the likelihood ratio chi-square of 62.6137 with a p-value of 0.0001 leads us to conclude that the model as a whole fits significantly and that that it is statistically significant.

In table 17, panel A, we find that for the sample for all years, the debt ratio is positively related to the Mergers and Acquisitions binary dependant variable with a chi-squared of 6.5207 significant at 0.05 for the logit model and a chi-squared of 6.75 significant at 0.01 for the probit model. This could be explained with the fact that a higher debt ratio could lead to a higher probability for bankruptcy. On the other hand, we see a negative relationship between sales and M&A probability, significant at 0.0001. This demonstrates that higher sale leads to lower probability of mergers or acquisitions. In addition, we see a negative relationship between the auditor dummy and probability of M&A with a chi-squared of 34.4, significant at 0.0001 for the logit model and 41.02 with a significant p-value of 0.0001 for the probit. This significant and negative relationship allows us to conclude that firms that do change their auditing firm quickly (in the first 6 months) tend to have a lower probability of distress, and a lower probability of merging or being acquired by another firm.

As for the sample for trigger year and year +1, we find a significant and negative relationship between the retained earnings to assets variable and M&A probability. This is as expected, since a high profitability ratio would lead a lower risk of distress for a company.

For the significance of the model for the years ranging from the trigger year to year +3, shown in panel Table 17, panel B, the likelihood ratio chi-square of 163.3480 with a p-value of 0.0001 leads us to conclude that the model as a whole fits significantly and that that it is statistically significant.

Finally, in table 18, panel A, we study the explanatory variables and their effect on the probability of firm to be dropped from an exchange. We find that there is significant and negative relationship between sales and the probability of a firm's deletion form an exchange, for the sample ranging from year 0 to year 3, shown with a chi-squared of 41.01, significant at 0.0001 for the logit model and a chi-squared of 41.3 significant again at 0.0001. Similarly, we find that there is significant and negative relationship between sales and the probability of a firm being dropped form an exchange for the sample from -1 to +1, shown with a chi-squared of 6.2817, significant at 0.05 for the logit model and a chi-squared of 6.6716 significant again at 0.05.

For the significance of the model for all years as a whole shown in table 18, panel B, the likelihood ratio chi-square of 73.33 with a p-value of 0.0001 leads us to conclude that the model as a whole fits significantly and that that it is statistically significant. In addition, for the model for the period (-1+1) years, we find a likelihood ratio 15.35 for the logit regression and 15.60 for the probit regression, with significant p-values of 0.052 and 0.048, respectively.

We conclude and partially agree with hypothesis 7 that changing the auditing firm, an increase in sales and a high ratio of retained earnings to assets predict a lower probability of financial distress, as opposed to a high debt ratio, that predicts a high risk of financial distress.

6.5 Evolution of 3-Year CAARs.

Accounting information from financial statements can describe the financial condition of a company. These reports may also provide information that could be used to forecast the evolution of the mean cumulative abnormal returns of a firm. In this section, we discuss our findings and investigate whether some accounting ratios or other explanatory variables may be significantly related to the trend in the CAARs of our sample firms. In table 19, panel A, we find that there is a significant and positive relationship between earnings before interest and taxes to assets (ROTA) ratio and the dependant 3-year CAAR variable. This is as expected, since it demonstrates how the firms in our sample that effectively use their assets to generate higher earnings before obligatory payments made tend to have higher cumulative average abnormal returns. Similarly, table 19 demonstrates how firms that do change their CFO In the first 6 months tend to enjoy higher mean cumulative abnormal returns in the next 3 years. In contrast, firms with high accruals tend to have low 3-year CAAR values. This can be explained by the negative relationship between the non-discretionary and discretionary Jones model variables, with t-stats of -1.84 and -1.77 respectively, both significant at 10%.

We conclude and partially support our 9th hypothesis as we find that an increase in ROTA and a quick change in the CFO results in a higher mean cumulative abnormal returns, as opposed to the relationship between accruals and CAARs, where high accruals results in lower mean cumulative abnormal returns.

7. CONCLUSIONS

There are many ways for a company to re-create itself, be it replacing the CEO or CFO, or its auditing firm. But our research suggests that it is also all about the timing. Our findings show that after the trigger event where the SEC is aware of a potential problem with a firm, the market, once also aware, reacts significantly and negatively. We compare our sample that had a trigger event with another matched sample that did not and find that the two samples are significantly different. This gives the firm an incentive for the firms that have received scrutiny from the SEC to make changes both inside and outside the company, be it in the top management, the name of the firm, or changing its auditing firm. Through our results and previous literature, we find that that a change in CEO or CFO causes a negative and significant short-term reaction by the market, which was discussed by Karpoff et Al (2008), while these negative abnormal returns return to their positive trend only for the firms that have made the change quickly after the trigger event, one of the contributions of our study. We see that the only subsample of firms that end-up having a positive trend in their CARs is the subsample that made the change in CEO and CFO after up to 3 months from the trigger date. This suggests that a timely change is needed for recuperation in stock returns.

We also study the spread evolution around the trigger announcement and find that high-low spread values are higher for the fraud sample compared to the matched sample starting days before the announcement of the trigger event. This suggests that the trigger event has increased the information asymmetry in the market, and that informed traders start trading even before the trigger event, explained by the significant and positive spread values before event day 0. We also test that the two matched samples have significantly different means. Our findings also show that an announcement in change in CEO CFO or Auditing firm causes information asymmetry, with the market wondering whether it was the right decision to change the top management. Just as literature suggests that there are conflicting interpretations to changing a CEO, it may also be the case for the investors. Also, we find that the Nondiscretionary Jones and Modified Jones models show a significant difference between the two samples, and therefore conclude that these models are able to detect the firms involved in fraudulent earnings as opposed to their matched firms.

Finally, we find that a change the auditing firm, an increase in sales and a high ratio of retained earnings to assets predict a lower probability of financial distress, and, in contrast, a high debt ratio, that predicts a high risk of financial distress. On the other hand, firms that use their earnings portion of the assets more effectively and change their CFO quickly after the fraud announcement tend to have higher mean cumulative abnormal returns, as opposed to the relationship between accruals and CAARs, where high accruals results in lower mean cumulative abnormal returns.

Our research focuses on the aftermath of the fraud trigger event, how the market reacts subsequently and how the firm reacts to the market reaction. It would be interesting to also investigate the specific type of fraud and its effect on the market. Also, it would be thought-provoking to also investigate at the probability to change the management after the trigger event, based on their age and tenure.

8. REFERENCES

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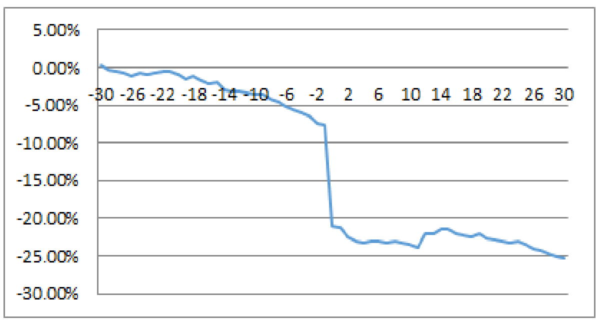
9. APPENDICES

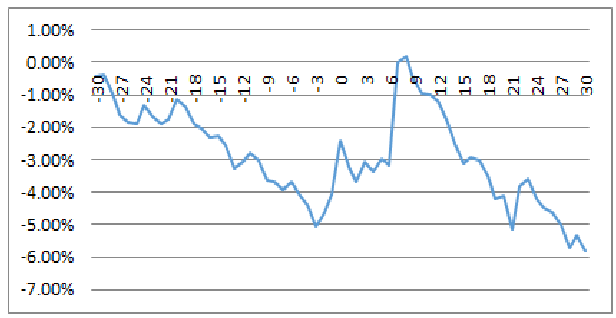
FIGURES

Figure 1: Evolution in Cumulative Average Abnormal Returns around Trigger event for the original fraud sample. This figure shows Market Adjusted Cumulative Average Abnormal returns for the original fraud simple around different events. The figure shows for the window (-30,+30). The trigger event, day 0, is where the fraud firms separate from the matched firms. Panel A shows the evolution of the cumulative average abnormal returns around the trigger event (Day 0). Panel B shows the evolution of cumulative average abnormal returns around the Announcement of change in auditing firm. Panel C shows the evolution of cumulative abnormal returns around the announcement of change in company name. Panel D shows the evolution of cumulative abnormal returns around the announcement of a class action.

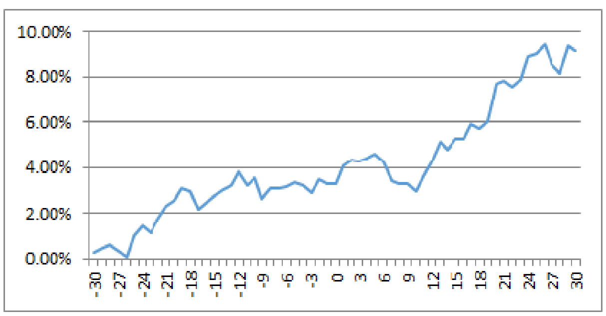
Panel A: Evolution of Mean Cumulative Abnormal Returns Around the Trigger Date



Panel B: Evolution of Mean Cumulative Abnormal Returns Around the Announcement of Change in Auditing Firm



Panel C: Evolution of Mean Cumulative Abnormal Returns Around the Announcement of Change in Company Name



Panel D: Evolution of Mean Cumulative Abnormal Returns Around the Announcement of Class Action

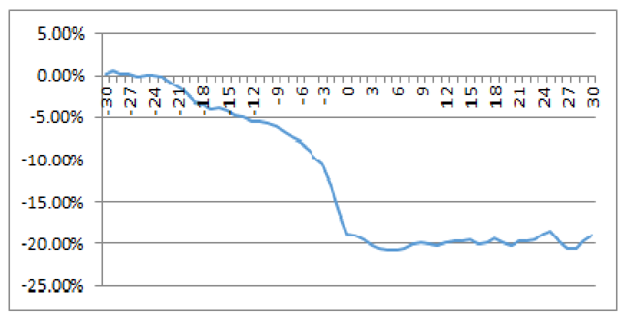
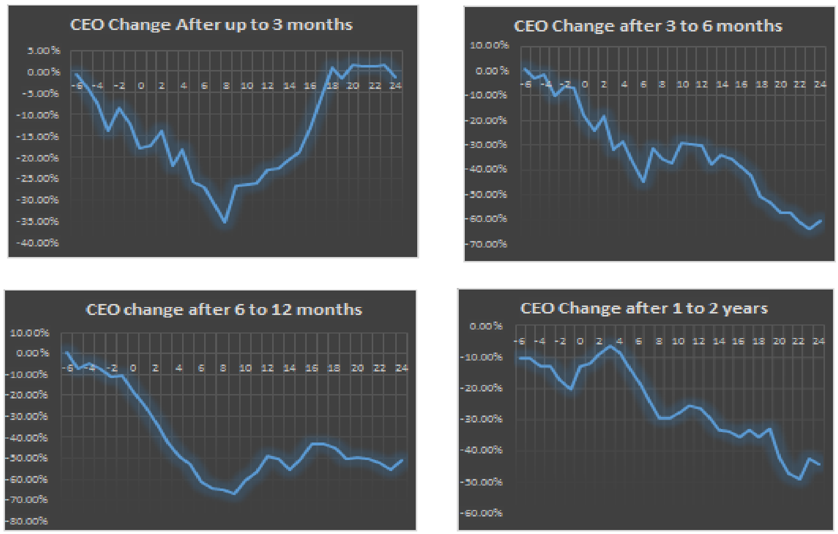
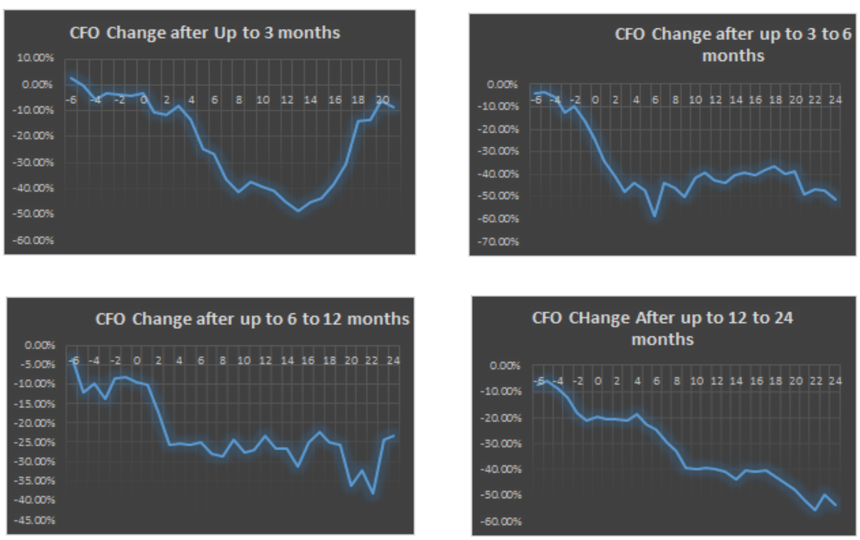


Figure 2. Evolution in Cumulative Average Abnormal Returns aroud announcement of change in CEO. This figure shows Market Adjusted Cumulative Average Abnormal returns for the original fraud simple around the announcement of change in CEO.. The 4 Figures show the evolution of the mean cumulative abnormal returns after the announcement of the change in CEO (Month 0) in Panel A after the Announcement of the CFO (Month 0) in Panel B and after the announcement of change in auditing firm in Panel C.

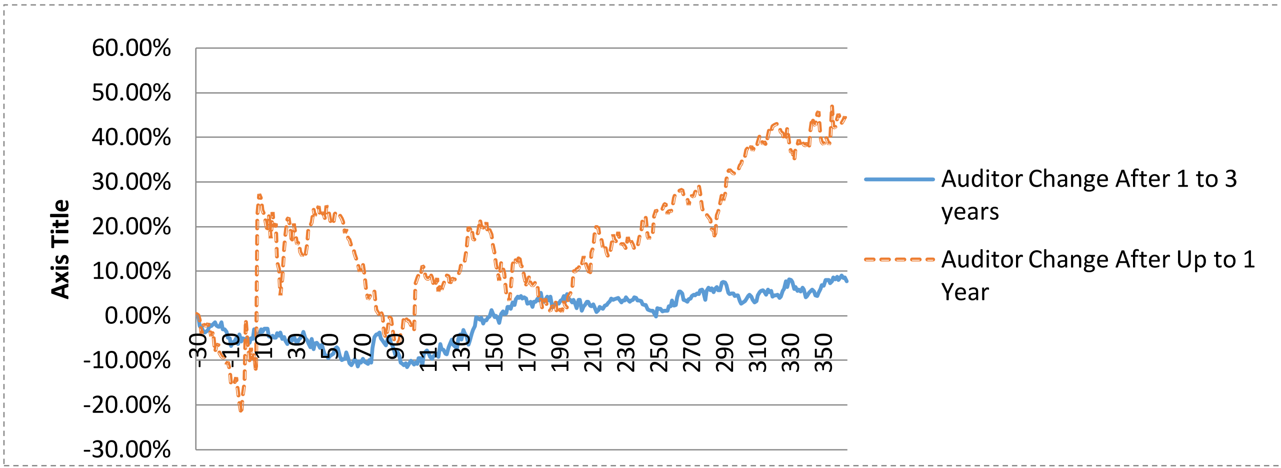
Panel A: Evolution of Mean Cumulative Abnormal Returns around the Announcement of change in CEO



Panel B: Evolution of Mean Cumulative Abnormal Returns around the Announcement of change in CFO



Panel C: A comparison in the evolution of Mean Cumulative Abnormal Returns around the Announcement of change in auditor for two subsamples.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350
Auditor Change After 1 to 3 years
Auditor Change After Up to 1 Year

Figure 3: Evolution in Cumulative Average Abnormal Returns around Trigger event for the fraud and matched samples. This figure shows Market Adjusted Cumulative Average Abnormal returns for the original fraud simple around the trigger event. The figure shows for the window (-30,+30). The trigger event, day 0, is where the fraud firms seperate from the matched firms. The fraud firms face scrutiny from the SEC, thus are exposed to a trigger event.

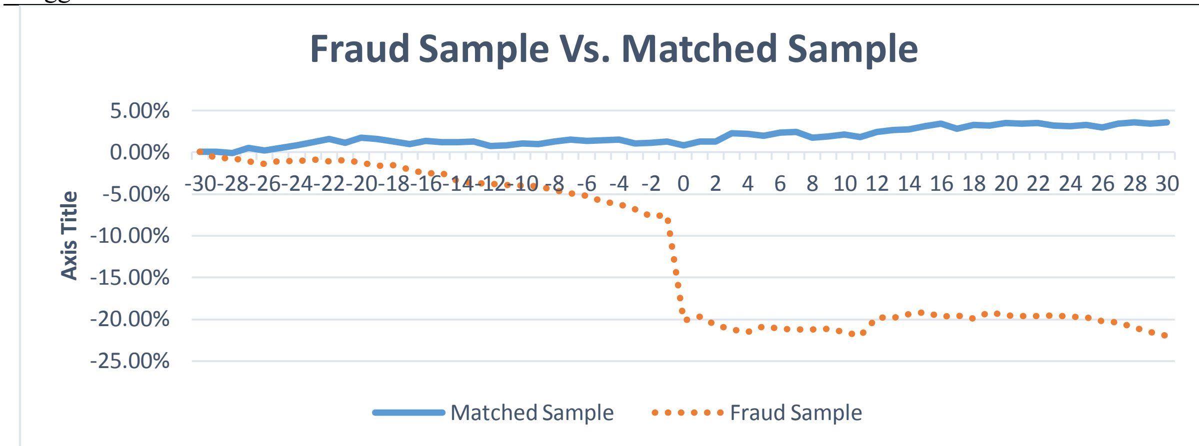
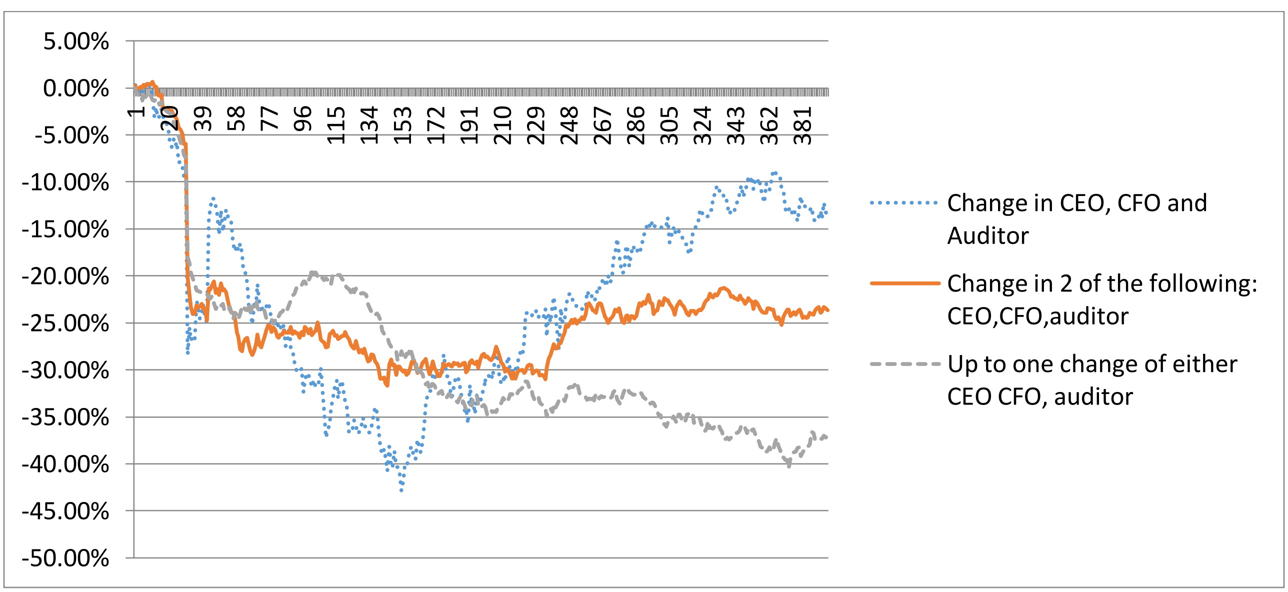


Figure 4: A comparison in the evolution of the mean cumulative abnormal return for firms that have made 3 changes, 2 change or upto 1 change from the following: CEO, CFO and auditor. This figure shows a comparison of Market Adjusted Cumulative Average Abnormal returns for the original fraud simple around the trigger event, taking into account the number of management changes. The figure shows for the window (-30,+365). The trigger event is at day 0.



<u>**TABLES:**</u>

Table 1: Industry Table.

This Table Contains the original sample of firms and information regarding their industry and a 2-digit SIC Code. The Frequency and Frequency Percentage (%) of each industry is also shown in the table.

Industry Name	**SIC**	**Frequency**	**(%)**
Oil and Gas Extraction	13	8	3.81%
Building Construction General Contractors	15	1	0.48%
Construction Special Trade Contractors	17	1	0.48%
Food and Kindred Products	20	6	2.86%
Apparel and Other Finished Products made from fabrics and similar materials	23	3	1.43%
Paper and Allied Products	26	2	0.95%
Printing Publishing and Allied Industries	27	3	1.43%
Chemicals and Allied Products	28	10	4.76%
Rubber and Miscellaneous Plastic Products	30	1	0.48%
Primary Metal Industries	33	1	0.48%
Fabricated Metal Products	34	4	1.90%
Industrial and Commercial Machinery and Computer Equipment	35	22	10.48%
Electronic & other Electrical Equipment & Components, excep. Computer Equipment	36	20	9.52%
Transportation Equipment	37	6	2.86%
Measuring, Analyzing, and Controlling Instruments	38	9	4.29%
Motor Freight Transportation and Warehousing	42	1	0.48%
Water Transportation	44	1	0.48%
Transportation by Air	45	1	0.48%
Communications	48	5	2.38%
Electric, Gas and Sanitary Services	49	8	3.81%
Wholesale Trade - Durable Goods	50	4	1.90%
Wholesale Trade-Non Durable Goods	51	8	3.81%
General Merchandise Stores	53	2	0.95%
Food Stores	54	3	1.43%
Automotive Dealers and Gasoline Service Stations	55	1	0.48%
Apparel and Accessory Stores	56	1	0.48%
Eating and Drinking Places	58	3	1.43%
Miscellaneous Retail	59	3	1.43%
Depository Institutions	60	10	4.76%
Non-Depository Credit Institutions	61	4	1.90%
Security and Commodity Brokers, Dealers, Exchanges, and Services	62	3	1.43%
Insurance Carriers	63	5	2.38%
Insurance Agents, Brokers and Service	64	1	0.48%
Holdings and Other Investment Offices	67	4	1.90%
Personal Services	72	2	0.95%
Business Services	73	30	14.29%
Amusement and Recreation Services	79	4	1.90%
Health Servies	80	6	2.86%

Educational Services	82	1	0.48%
Social Services	83	1	0.48%
Engineering, Accounting, Research, Management, and related services	87	1	0.48%

Table 2: Summary Statistics.
Table reports the summary statistics for the studied variables, both independent and dependant. The summary statistics are calculated for both the fraud sample and the matched sample. We look at the difference in means, including the sign of the difference and its significance (p-value). (Mean Difference = Fraud sample - Matched sample).

	FRAUD SAMPLE				MATCHED SAPMLE				Mean Difference	P value
Variable	Mean	Std Dev	N	Median	Mean	Std Dev	N	Median		
Total Assets	33264.881	135920.04	214	1397.91	33608.913	134853.83	214	1497.74	-344.032	0.979
C. Shares Outstanding	240.960	881.662	191	45.435	233.694	663.623	192	45.978	7.266	0.927
EBIT	522.698	2568.420	192	63.175	776.135	3831.083	189	60.411	-253.437	0.448
Total Liabilities	28829.427	125683.41	214	726.859	29837.748	127338.30	214	817.876	-1008.321	0.934
Retained Earnings	2147.185	9783.472	214	108.412	1749.651	6375.143	214	72.096	397.534	0.619
Stockholde's Equity	4185.611	15017.502	214	530.512	3551.787	9729.779	214	391.825	633.824	0.605
Deferred Taxes	284.429	1403.394	196	0.454	413.496	2289.597	171	0.277	-129.067	0.510
Working Capital	388.858	1264.589	214	73.945	254.824	1687.840	214	1.872	134.034	0.353
Close price	28.881	24.917	214	21.633	28.270	26.110	212	24.125	0.610	0.805
Book Equity	4370.755	16059.753	214	549.793	3782.385	10474.130	214	401.393	588.370	0.654
Market Equity	9228.451	36746.805	191	971.915	9424.311	37030.174	192	781.352	-195.860	0.959
Market-to-Book	4.435	11.348	191	2.327	4.435	11.662	192	2.281	0.000	1.000
Altman_Z	5.821	14.426	191	3.079	4.998	9.574	189	2.235	0.823	0.513
Current Assets	1989.231	4706.998	146	491.486	1406.427	4403.510	109	145.798	582.804	0.316
Depreciation and Amortization	304.762	1010.538	154	50.237	183.202	609.142	107	16.213	121.560	0.267
Current Liabilities	1470.851	3858.248	148	239.716	1434.331	4117.744	81	147.738	36.520	0.947
Property, plant and equipment	1619.898	4630.793	152	239.818	1914.661	6178.362	108	89.347	-294.762	0.661
Total Receivables	2329.139	18193.463	154	164.282	669.183	1859.100	92	138.733	1659.956	0.384
Sales (Net)	6203.259	15254.552	154	1097.59	5729.060	25899.434	93	674.929	474.199	0.856

Table 3: Market Model, Value Weighted Index: Market Adjusted Returns for full original fraud sample.

Table shows the Mean Cumulative Abnormal Returns for the original fraud sample, for the windows around the trigger event (day 0). Test of significance include Positive:Negative test, Generalized Sign Z and portfolio Time-series T-test.

Days	N	Mean Cumulative Abnormal Return	Positive: Negative	Portfolio Time-Series (CDA) t	Generalized Sign Z
(-30,-2)	207	-0.0752	67:140	-5.805***	-4.698***
(-5,-1)	207	-0.0253	81:126	-4.696***	-2.751**
(-1,+1)	207	-0.1343	47:160	-32.226***	-7.479***
(0,+1)	202	-0.136	37:165	-39.968***	-8.636***
(0,+7)	202	-0.1546	43:159	-22.719***	-7.791***
(+10,+30)	201	-0.0199	92:109	-1.803**	-0.827
(-2,+2)	207	-0.1555	51:156	-28.896***	-6.923***
(+1,+5)	200	-0.0193	93:107	-3.584***	-0.619
(+5,+10)	201	-0.0012	94:107	-0.202	-0.545
(+1,+15)	201	-0.0034	93:108	-0.368	-0.686

The symbols,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively, using a generic one-tail test.

Table 4: Market Model, Value Weighted Index: Market Adjusted Returns for full original fraud sample.
Table shows the Mean Cumulative Abnormal Returns for the original fraud sample, for the windows around the announcement of change in CEO (month 0). Test of significance include Positive:Negative test, Generalized Sign Z and portfolio Time-series T-test.

Months	N	Mean Cumulative Abnormal Return	Positive: Negative	Generalized Sign Z
(-6,-2)	123	-12.00%	51:72	-1.692**
(-1,0)	118	-6.13%	47:71	-2.012**
(0,0)	116	-4.51%	48:68	-1.661**
(0,+1)	116	-3.79%	57:59	0.01
(0,+6)	117	-7.49%	53:64	-0.82
(+6,+12)	108	5.65%	61:47	1.536*
(+12,+18)	103	5.83%	53:50	0.48
(+18,+24)	103	5.41%	54:49	0.677

The symbols ,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively, using a generic one-tail test.

Table 5: Market Model, Value Weighted Index: Market Adjusted Returns for full original fraud sample.

Table shows the Mean Cumulative Abnormal Returns for the original fraud sample, for the windows around the announcement of change in CFO (month 0). Test of significance include Positive:Negative test, Generalized Sign Z and portfolio Time-series T-test.

Months	N	Mean Cumulative Abnormal Return	Positive: Negative	Portfolio Time-Series (CDA) t	Generalized Sign Z
(-6,-2)	128	-15.43%	42:86	-4.174***	-3.793***
(-1,0)	122	-6.80%	50:72	-2.908***	-1.898**
(0,0)	121	-2.46%	56:65	-1.488*	-0.724
(0,+1)	121	0.15%	63:58	0.064	0.548
(0,+6)	121	1.99%	52:69	0.454	-1.452*
(+6,+12)	113	-2.90%	51:62	-0.664	-0.944
(+12,+18)	106	4.32%	58:48	0.987	1.059
(+18,+24)	104	9.72%	57:47	2.222**	1.068

The symbols ,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively, using a generic one-tail test.

Table 6: Market Model, Value Weighted Index: Market Adjusted Returns for full original fraud sample.

Table shows the Mean Cumulative Abnormal Returns for the original fraud sample, for the windows around the announcement of change in auditing firm (day 0). Test of significance include Positive:Negative test, Generalized Sign Z and portfolio Time-series T-test.

Days	N	Mean Cumulative Abnormal Return	Positive: Negative	Portfolio Time-Series (CDA) t	Generalized Sign Z
(-30,-2)	110	-4.61%	46:64	-2.463***	-1.292*
(-5,-1)	108	-0.38%	44:64	-0.492	-1.504*
(-1,+1)	107	1.42%	58:49	2.353***	1.291*
(0,+1)	107	0.85%	57:50	1.722*	1.097
(0,+7)	107	4.02%	61:46	4.084***	1.871**
(+10,+30)	106	-5.26%	51:55	-3.298***	0.029
(-2,+2)	107	1.37%	57:50	1.764**	1.097
(+1,+5)	107	-0.57%	54:53	-0.738	0.517
(+5,+10)	106	2.39%	52:54	2.801***	0.224
(+1,+15)	107	-0.69%	51:56	-0.512	-0.064

The symbols ,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively, using a generic one-tail test..

Table 7: Market Model, Value Weighted Index: Market Adjusted Returns for full original fraud sample.

Table shows the Mean Cumulative Abnormal Returns for the original fraud sample, for the windows around the announcement of name change (day 0). Test of significance include Positive:Negative test, Generalized Sign Z and portfolio Time-series T-test.

Days	N	Mean Cumulative Abnormal Return	Positive: Negative	Portfolio Time-Series (CDA) t	Generalized Sign Z
(-30,-2)	55	3.47%	31:24	1.044	1.189
(-5,-1)	55	0.14%	27:28	0.098	0.11
(-1,+1)	55	0.59%	27:28	0.551	0.11
(0,+1)	55	0.77%	30:25	0.882	0.919
(0,+7)	55	0.13%	22:33	0.075	-1.239
(+10,+30)	53	5.80%	29:24	2.051**	0.927
(-2,+2)	55	1.42%	31:24	1.027	1.189
(+1,+5)	53	1.30%	22:31	0.946	-0.997
(+5,+10)	53	-1.38%	17:36	-0.912	-2.371***
(+1,+15)	53	1.95%	26:27	0.818	0.103

The symbols ,*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively, using a generic one-tail test..

Table 8: Market Model, Value Weighted Index: Market Adjusted Returns for full original fraud sample.

Table shows the Mean Cumulative Abnormal Returns for the original fraud sample, for the windows around the class action announcement (day 0). Test of significance include Positive:Negative test, Generalized Sign Z and portfolio Time-series T-test.

Days	N	Mean Cumulative Abnormal Return	Positive: Negative	Portfolio Time-Series (CDA) t	Generalized Sign Z
(-30,-2)	107	-12.92%	26:81	-6.730***	-5.047***
(-5,-1)	106	-8.43%	41:65	-10.577***	-2.062**
(-1,+1)	106	-5.75%	43:63	-9.322***	-1.673**
(0,+1)	106	-2.45%	44:62	-4.860***	-1.479*
(0,+7)	106	-4.10%	47:59	-4.068***	-0.896
(+10,+30)	106	0.92%	61:45	0.561	1.825**
(-2,+2)	106	-8.90%	35:71	-11.167***	-3.228***
(+1,+5)	106	-2.08%	46:60	-2.607***	-1.09
(+5,+10)	106	0.47%	53:53	0.544	0.27
(+1,+15)	106	-0.71%	62:44	-0.512	2.019**

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively, using a generic one-tail test.

Table 9: Information Asymmetry. Table shows Mean cumulative abnormal spread around the announcement of CEO (1) and CFO(2) change. T-stat is available to test significance of sample around the announcement of the CEO (1) and the CFO (1). Estimation period used is (-290,-45)

Windows (in Months)	(1)					(2)				
	N	Mean cumulative Abnormal Spread	Standard Deviation	T-stat	p-value	N	Mean cumulative Abnormal Spread	Standard Deviation	T-stat	p-value
(-1,+1)	125	0.00213	0.0217	8.59***	<.0001	128	0.00322	0.0298	9.75***	<.0001
(-1,0)	125	0.00239	0.0216	7.05***	<.0001	128	0.00322	0.0263	7.94***	<.0001
(0,+1)	125	0.0019	0.0219	5.31***	<.0001	128	0.00328	0.0329	6.33***	<.0001
(0,+2)	122	0.00237	0.0246	8.24***	<.0001	127	0.00297	0.0309	8.51***	<.0001
(+1,+3)	122	0.00317	0.0331	8.09***	<.0001	127	0.00269	0.0344	6.87***	<.0001
(+3,+6)	121	0.00297	0.0253	12.11***	<.0001	125	0.00258	0.0327	8.48***	<.0001

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Table 10: Information Asymmetry. Tables shows Mean Cumulative abnormal spread: Comparison between fraud (1) and matched (2) samples. Estimation period used is (-290,-45). T-stat for columns (1) and (2) test the significance of the fraud and matched samples, respectively, relative to the estimation period. T-stat (Mean difference) in column (3) shows whether both samples are significantly different.

	(1)					(2)					(3) Difference Test (1) – (2)		
Windows	N	Mean cumulative Abnormal Spread	Standard Deviation	T-stat	p-value	N	Mean Abnormal Spread	Standard Deviation	T-stat	p-value	Differnece in Means	T-stat (Mean Difference)	P-Value (Mean Difference)
(-30,-2)	140	0.00123	0.0264	3.81***	0.0001	80	0.000025	0.0268	0.06	0.9555	0.001205	2.183**	0.0292
(-5,-1)	142	0.00317	0.0424	2.52**	0.0117	77	0.000131	0.0218	0.15	0.8829	0.003039	1.977***	0.0482
(-1,+1)	142	0.00385	0.0404	2.42**	0.016	75	-0.00031	0.02	-0.28	0.7784	0.00416	1.7578*	0.0791
(0,+1)	142	0.00278	0.0316	1.81*	0.0717	75	-0.00046	0.0213	-0.32	0.7514	0.00324	1.3758	0.1694
(0,+7)	140	0.004	0.03	5.49***	<.0001	74	-0.00064	0.0205	-0.92	0.3553	0.00464	4.1119***	<0.0001
(+10,+30)	137	0.00298	0.0239	8.36***	<.0001	74	-0.00204	0.0176	-5.57	<.0001	0.00502	8.5595***	<0.0001
(-2,+2)	142	0.00467	0.0412	3.73**	0.0002	75	0.000027	0.0207	0.03	0.9751	0.004643	2.512**	0.0121
(+1,+5)	141	0.00618	0.0311	6.48***	<.0001	75	-0.0001	0.0221	-0.11	0.9146	0.00628	4.2169***	<0.0001
(+5,+10)	140	0.00335	0.0272	4.42***	<.0001	76	-0.00217	0.0168	-3.32	0.001	0.00552	4.7669***	<0.0001
(+1,+15)	139	0.00375	0.0268	7.93***	<.0001	72	-0.00145	0.0187	-3.13	0.0018	0.0052	7.0473***	<0.0001

The symbols*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and, respectively.

Table 11: Accrual Models

This table shows results for the the Dechow, Sloan and Sweeney (1995) Model, the Total Current Accruals Jones and Modified Jones Models, the Non-Discretionary Current Accruals – Jones and Modified Jones Models, The Discretionary Current Accrual-Jones and Modified Jones Models for year -2. Year 0 is the year of the occurrence of the trigger event. For each of the models, the results are shown for both the faud sample in column (1) and the Matched sample, shown in column (2). The Mean Difference is calculated by Mean (2)- Mean (1)
In order to test whether the two samples are significantly different, a Difference in means is included.

	(1)						(2)							
Accrual Models	N	Mean	Std Dev	Min	Median	Max	N	Mean	Std Dev	Min	Median	Max	Mean Difference	p-value
Total Current Accruals - Dechow, Sloan, and Sweeney (1995)	144	-0.023	0.219	-1.579	-0.033	1.141	72	0.003	0.352	-0.267	-0.034	2.821	0.026	0.5053
Total Current Accruals - Jones (1991)	144	-0.023	0.219	-1.579	-0.033	1.141	72	0.003	0.352	-0.267	-0.034	2.821	0.026	0.5053
Nondiscretionary Current Accruals - Jones (1991)	150	-0.046	0.1	-0.429	-0.045	0.492	77	-0.027	0.071	-0.142	-0.028	0.48	0.019	0.1388
Discretionary Current Accruals - Jones (1991)	144	0.021	0.19	-1.319	0.029	0.648	71	-0.009	0.078	-0.221	-0.007	0.175	-0.03	0.1855
Total Current Accruals - Modified Jones (1991)	144	-0.023	0.219	-1.579	-0.033	1.141	72	0.003	0.352	-0.267	-0.034	2.821	0.026	0.5053
Nondiscretionary Current Accruals - Modified Jones (1991)	150	-0.046	0.1	-0.465	-0.045	0.494	76	-0.035	0.077	-0.315	-0.032	0.449	0.011	0.3624
Discretionary Current Accruals - Modified Jones (1991)	144	0.021	0.19	-1.258	0.03	0.685	70	-0.008	0.078	-0.23	-0.002	0.15	-0.029	0.1156

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Table 12: Accrual Models. This table shows results for the the Dechow, Sloan and Sweeney (1995) Model, the Total Current Accruals Jones and Modified Jones Models, the Non-Discretionary Current Accruals – Jones and Modified Jones Models, The Discretionary Current Accrual-Jones and Modified Jones Models for year -1. Year 0 is the year of the occurrence of the trigger event. For each of the models, the results are shown for both the faud sample in column (1) and the Matched sample, shown in column (2). The Mean Difference is calculated by Mean (2)- Mean (1)
In order to test whether the two samples are significantly different, a Difference in means is included.

	Fraud Sample						Matched Sample							
Accrual Models	N	Mean	Std Dev	Min	Median	Max	N	Mean	Std Dev	Min	Median	Max	Mean Difference	p-value
Total Current Accruals - Dechow, Sloan, and Sweeney (1995)	145	-0.046	0.247	-2.128	-0.04	0.923	72	-0.042	0.079	-0.303	-0.038	0.127	0.004	0.893
Total Current Accruals - Jones (1991)	145	-0.046	0.247	-2.128	-0.04	0.923	72	-0.042	0.079	-0.303	-0.038	0.127	0.004	0.893
Nondiscretionary Current Accruals - Jones (1991)	151	-0.02	0.075	-0.189	-0.024	0.439	78	-0.008	0.029	-0.188	-0.004	0.064	0.012	0.192
Discretionary Current Accruals - Jones (1991)	145	-0.028	0.237	-2.125	-0.006	0.796	71	-0.034	0.077	-0.244	-0.034	0.217	-0.006	0.8291
Total Current Accruals - Modified Jones (1991)	145	-0.046	0.247	-2.128	-0.04	0.923	72	-0.042	0.079	-0.303	-0.038	0.127	0.004	0.893
Nondiscretionary Current Accruals - Modified Jones (1991)	151	-0.02	0.07	-0.201	-0.022	0.452	77	-0.009	0.027	-0.18	-0.005	0.057	0.011	0.0876
Discretionary Current Accruals - Modified Jones (1991)	145	-0.028	0.237	-2.109	-0.01	0.866	70	-0.034	0.079	-0.246	-0.034	0.209	-0.006	0.8291

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 13: Accrual Models. This table shows results for the the Dechow, Sloan and Sweeney (1995) Model, the Total Current Accruals Jones and Modified Jones Models, the Non-Discretionary Current Accruals – Jones and Modified Jones Models, The Discretionary Current Accrual-Jones and Modified Jones Models for year 0, which is the year of the occurrence of the trigger event. For each of the models, the results are shown for both the faud sample in column (1) and the Matched sample, shown in column (2). The Mean Difference is calculated by Mean (2)- Mean (1)
In order to test whether the two samples are significantly different, a Difference in means is included.

	Fraud Sample						Matched Sample						Mean Difference	p-value
Accrual Models	N	Mean	Std Dev	Min	Median	Max	N	Mean	Std Dev	Min	Median	Max		
Total Current Accruals - Dechow, Sloan, and Sweeney (1995)	140	-0.049	0.174	-0.336	-0.052	1.766	75	-0.062	0.091	-0.455	-0.051	0.083	-0.013	0.5466
Total Current Accruals - Jones (1991)	140	-0.049	0.174	-0.336	-0.052	1.766	75	-0.062	0.091	-0.455	-0.051	0.083	-0.013	0.5466
Nondiscretionary Current Accruals - Jones (1991)	145	-0.029	0.119	-0.394	-0.026	0.944	79	-0.051	0.056	-0.261	-0.04	0.051	-0.022**	0.0674
Discretionary Current Accruals - Jones (1991)	140	-0.022	0.13	-0.389	-0.025	0.822	75	-0.01	0.078	-0.342	-0.015	0.238	0.012	0.4578
Total Current Accruals - Modified Jones (1991)	140	-0.049	0.174	-0.336	-0.052	1.766	75	-0.062	0.091	-0.455	-0.051	0.083	-0.013	0.5466
Nondiscretionary Current Accruals - Modified Jones (1991)	145	-0.029	0.099	-0.386	-0.021	0.632	78	-0.052	0.053	-0.272	-0.041	0.012	-0.023**	0.0576
Discretionary Current Accruals - Modified Jones (1991)	140	-0.021	0.146	-0.335	-0.024	1.135	74	-0.009	0.081	-0.342	-0.015	0.249	0.012	0.513

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 14: Accrual Models. This table shows results for the the Dechow, Sloan and Sweeney (1995) Model, the Total Current Accruals Jones and Modified Jones Models, the Non-Discretionary Current Accruals – Jones and Modified Jones Models, The Discretionary Current Accrual-Jones and Modified Jones Models for year +1. Year 0 is the year of the occurrence of the trigger event. For each of the models, the results are shown for both the faud sample in column (1) and the Matched sample, shown in column (2). The Mean Difference is calculated by Mean (2)- Mean (1)
In order to test whether the two samples are significantly different, a Difference in means is included.

	Fraud Sample						Matched Sample							
Accrual Models	N	Mean	Std Dev	Min	Median	Max	N	Mean	Std Dev	Min	Median	Max	Mean Difference	p-value
Total Current Accruals - Dechow, Sloan, and Sweeney (1995)	137	-0.054	0.084	-0.418	-0.045	0.296	73	-0.085	0.363	-3.078	-0.043	0.221	-0.031	0.3356
Total Current Accruals - Jones (1991)	137	-0.054	0.084	-0.418	-0.045	0.296	73	-0.085	0.363	-3.078	-0.043	0.221	-0.031	0.3356
Nondiscretionary Current Accruals - Jones (1991)	143	-0.041	0.036	-0.198	-0.035	0.054	76	-0.04	0.047	-0.154	-0.035	0.221	0.001	0.8642
Discretionary Current Accruals - Jones (1991)	137	-0.014	0.084	-0.379	-0.012	0.318	72	-0.003	0.061	-0.136	-0.007	0.206	0.011	0.3268
Total Current Accruals - Modified Jones (1991)	137	-0.054	0.084	-0.418	-0.045	0.296	73	-0.085	0.363	-3.078	-0.043	0.221	-0.031	0.4744
Nondiscretionary Current Accruals - Modified Jones (1991)	143	-0.041	0.033	-0.194	-0.032	0.031	75	-0.039	0.046	-0.151	-0.032	0.213	0.002	0.8218
Discretionary Current Accruals - Modified Jones (1991)	137	-0.014	0.085	-0.393	-0.011	0.314	71	-0.003	0.062	-0.138	-0.006	0.208	0.011	0.2878

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 15: Accrual Models. This table shows results for the the Dechow, Sloan and Sweeney (1995) Model, the Total Current Accruals Jones and Modified Jones Models, the Non-Discretionary Current Accruals – Jones and Modified Jones Models, The Discretionary Current Accrual-Jones and Modified Jones Models for year +2. Year 0 is the year of the occurrence of the trigger event. For each of the models, the results are shown for both the faud sample in column (1) and the Matched sample, shown in column (2). The Mean Difference is calculated by Mean (2)- Mean (1)
In order to test whether the two samples are significantly different, a Difference in means is included.

	Fraud Sample						Matched Sample							
Accrual Models	N	Mean	Std Dev	Min	Median	Max	N	Mean	Std Dev	Min	Median	Max	Mean Difference	p-value
Total Current Accruals - Dechow, Sloan, and Sweeney (1995)	141	-0.039	0.088	-0.317	-0.034	0.411	75	-0.105	0.523	-4.501	-0.037	0.328	-0.066	0.1509
Total Current Accruals - Jones (1991)	141	-0.039	0.088	-0.317	-0.034	0.411	75	-0.105	0.523	-4.501	-0.037	0.328	-0.066	0.1509
Nondiscretionary Current Accruals - Jones (1991)	147	-0.033	0.026	-0.17	-0.027	0.006	78	-0.168	0.244	-1.402	-0.105	0.121	-0.135***	0.0001
Discretionary Current Accruals - Jones (1991)	141	-0.006	0.087	-0.281	-0.005	0.475	75	0.066	0.434	-3.099	0.045	1.296	0.072	0.1596
Total Current Accruals - Modified Jones (1991)	141	-0.039	0.088	-0.317	-0.034	0.411	75	-0.105	0.523	-4.501	-0.037	0.328	-0.066	0.1509
Nondiscretionary Current Accruals - Modified Jones (1991)	147	-0.033	0.026	-0.17	-0.027	0.004	77	-0.183	0.255	-1.536	-0.117	0.11	-0.15***	<0.0001
Discretionary Current Accruals - Modified Jones (1991)	141	-0.006	0.087	-0.281	-0.005	0.476	74	0.083	0.422	-2.965	0.076	1.135	0.089*	0.0736

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 16: Logit and Probit Regressions Results: Bankruptcy binary variable as dependent variable. This table presents the coefficient and t-statistics of Logit (1) and Probit (2) regressions having as dependent variable the Bankruptcy binary variable that takes a value of 1 when the firm has gone bankrupt, and 0 when it is not the case. Panel A presents a test for the explanatory variables for the model which include debt-to-asset ratio, Operating income to total assets, retained earnings to total assets, current assets to current liabilities, Logarithm of sales, as well as dummy variables for CEO (1 when there is change of CEO, 0 otherwise), CFO (1 when there is change of CFO, 0 otherwise) and Auditor (1 when there is change of auditor, 0 otherwise). Panel B is represents the significance of the whole model and includes the Chi-Squared and p-value for Logit and Probit models, for both All years and (-1,1).

Panel A. A test of significance for the explanatory variables in the model

	All years		-1 to +1	
	(1)	(2)	(1)	(2)
Intercept	-2.2693***	-1.4793***	-3.9636	1.7303
χ^2	15.565	24.6001	0.5545	0.7198
Debt Ratio	1.1982	0.4233	5.5605	2.2953
χ^2	1.8805	0.94	1.9278	1.632
Op. Income/ Total Assets	-1.5517*	-0.6959*	0.439	1.1474
χ^2	3.3824	3.65	0.0014	0.054
Retained Earnings/Assets	0.7414**	0.3299**	2.4808	0.8487
χ^2	4.586	5.08	0.4153	0.37
Current Ratio	-0.9191***	-0.4007***	-1.5279	-0.6424
χ^2	22.5913	22.62	1.4574	1.35
Log of Sales	0.0552	0.0212	0.0408	-0.0141
χ^2	0.5523	0.4306	0.0043	0.037
CEO dummy	0.4586	-0.1452	1.598	0.501
χ^2	1.8918	0.9062	0.8797	0.46
CFO dummy	-13.357	-3.984	-9.065	-2.80
χ^2	0.0008	0.0002	0.0002	0
Auditor dummy	-12.746	-3.8868	-9.579	-3.15
χ^2	0.0024	0.0007	0.006	0.001

Panel B. A test of significance for the model

Likelihood Ratio (χ^2)	62.6137	62.7937	5.8828	5.3412
p-value	*<.0001*	*<.0001*	*0.6604*	*0.7206*
Score (χ^2)	25.0510	25.0510	4.6647	4.6647
p-value	*0.0015*	*0.0015*	*0.7927*	*0.7927*
Wald (χ^2)	32.6990	30.5825	4.0827	3.0659
p-value	*<.0001*	*0.0002*	*0.8496*	*0.9302*

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 17: Logit and Probit Regressions Results: Mergers and Acquisitions binary variable as dependent variable. This table presents the coefficient and t-statistics of Logit (1) and Probit (2) regressions having as dependent variable the M&A binary variable that takes a value of 1 when the firm has merged or has been acquired, and 0 when it is not the case. Panel A presents a test for the explanatory variables for the model which include debt-to-asset ratio, Operating income to total assets, retained earnings to total assets, current assets to current liabilities, Logarithm of sales, as well as dummy variables for CEO (1 when there is change of CEO, 0 otherwise), CFO (1 when there is change of CFO, 0 otherwise) and Auditor (1 when there is change of auditor, 0 otherwise). Panel B is represents the significance of the whole model and includes the Chi-Squared and p-value for Logit and Probit models, for both All years and (-1, 1).

Panel A. A test of significance for the explanatory variables in the model

	All years		-1 to +1	
	(1)	(2)	(1)	(2)
Intercept	0.5668**	0.3434**	0.3715	0.2144
χ^2	9.9192	10.12	0.214	0.19
Debt Ratio	0.7906*	0.4881**	2.1380	1.3218
χ^2	6.5207	6.75	0.1354	2.44
Op. Income/ Total Assets	0.4042*	0.2301*	0.9197	0.508
χ^2	3.8201	3.7	0.9794	0.837
Retained Earnings/Assets	-0.00398	-0.002	-0.4319**	-0.245**
χ^2	0.3192	0.23	4.2269	4.3009
Current Ratio	-0.0294	-0.0193*	-0.0552	-0.0331
χ^2	2.3748	2.912	0.3699	0.404
Log of Sales	-0.2395***	-0.1461***	-0.2013*	-0.1217**
χ^2	103.1206	110.82	3.7183	3.848
CEO dummy	0.169	0.1168*	0.0220	0.0305
χ^2	2.2437	2.99	0.0026	0.0137
CFO dummy	0.554**	0.3379***	0.7146	0.4214
χ^2	5.2242	5.28	0.5586	0.512
Auditor dummy	-1.4474***	-0.8318***	-1.3863	-0.8277
χ^2	34.8416	41.0252	1.6115	2.03

Panel B. A test of significance for the model

Likelihood Ratio (χ^2)	163.3480	168.6884	18.9574	18.9956
p-value	*<.0001*	*<.0001*	*0.0151*	*0.0149*
Score (χ^2)	154.4132	154.4132	18.8593	18.8593
p-value	*<.0001*	*<.0001*	*0.0156*	*0.0156*
Wald (χ^2)	143.0154	157.3468	14.3779	15.9215
p-value	*<.0001*	*<.0001*	*0.0724*	*0.0435*

The symbols*,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 18: Logit and Probit Regressions Results: Dropped binary variable as dependent variable. This table presents the coefficient and t-statistics of Logit (1) and Probit (2) regressions having as dependent variable the Delist binary variable that takes a value of 1 when the firm has been dropped, and 0 when it is not the case. Panel A presents a test for the explanatory variables for the model which include debt-to-asset ratio, Operating income to total assets, retained earnings to total assets, current assets to current liabilities, Logarithm of sales, as well as dummy variables for CEO (1 when there is change of CEO, 0 otherwise), CFO (1 when there is change of CFO, 0 otherwise) and Auditor (1 when there is change of auditor, 0 otherwise). Panel B is represents the significance of the whole model and includes the Chi-Squared and p-value for Logit and Probit models, for both All years and (-1, 1).

Panel A. A test of significance for the explanatory variables in the model

	All years		-1 to +1	
	(1)	(2)	(1)	(2)
Intercept	-1.2666***	-0.8086***	0.6827	0.4146
χ^2	16.2191	26.1816	0.7524	0.7570
Debt Ratio	0.2660	0.0963	2.9976*	1.8399*
χ^2	0.1793	0.0987	3.5151	3.8359
Op. Income/ Total Assets	-0.2235	-0.1574	0.1567	0.0656
χ^2	0.9644	1.4946	0.0323	0.0150
Retained Earnings/Assets	0.0155	0.00979	-0.1239	-0.0719
χ^2	1.2517	1.7955	0.5706	0.5098
Current Ratio	0.0311	0.0116	0.0295	0.0182
χ^2	1.5493	0.7304	0.1583	0.1571
Log of Sales	-0.2945***	-0.1421***	-0.2628**	-0.1607**
χ^2	41.0168	41.3043	6.2817	6.6716
CEO dummy	0.0920	0.0240	0.0357	0.0332
χ^2	0.1665	0.0499	0.0071	0.0169
CFO dummy	-13.7244	-3.8398	0.6214	0.3661
χ^2	0.0007	0.0499	0.408	0.3778
Auditor dummy	-0.7383	-0.2519	-0.8556	-0.5332
χ^2	3.3204	1.9932	0.9429	1.1149

Panel B. A test of significance for the model

Likelihood Ratio (χ^2)	73.3305	74.8541	15.3532	15.6026
p-value	*<.0001*	*<.0001*	*0.0526*	*0.0484*
Score(χ^2)	78.9360	78.9360	15.1056	15.1056
p-value	*<.0001*	*<.0001*	*0.0571*	*0.0571*
Wald (χ^2)	65.0234	64.4684	13.0628	14.3375
p-value	*<.0001*	*<.0001*	*0.1097*	*0.0734*

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively

Table 19: OLS Regressions Results: 3-year CAARs as dependent variable. This table presents the coefficient and t-statistics for OLS regression having as dependent variable 3-year CAARs. Using two-dimension cluster standard errors, taking into account correlations amongst different firms in the same year, and different years for the same firm. Panel A presents a test for the explanatory variables for the model which include debt-to-asset ratio, Earnings before Interest and Taxes to Assets(ROTA), retained earnings to total assets, current assets to current liabilities, Total Accruals Model, Discretionary Jones Model, Discretionary modified Jones Model, Non-discretionary Jones model Logarithm of sales, as well as dummy variables for CEO (1 when there is change of CEO, 0 otherwise), CFO (1 when there is change of CFO, 0 otherwise) and Auditor (1 when there is change of auditor, 0 otherwise). Panel B

Panel A. A test of significance for the explanatory variables in the model

Intercept	11.48 *
t-stat	1.78
Debt Ratio	1.201
t-stat	1.40
Retained Earnings/Assets	-0.133
t-stat	-1.54
Current Ratio	.0126
t-stat	0.42
ROTA	1.513***
t-stat	2.91
Log of Sales	0.0053
t-stat	0.07
Total Accruals Model	6.298
t-stat	1.49
Discretionary Jones Model	-7.062 *
t-stat	-1.84
Discretionary Modified Jones Model	-1.1420
t-stat	-0.50
Non-Discretionary Model	-9.794 *
t-stat	-1.77
CEO dummy	-0.0398
t-stat	-0.12
CFO dummy	0.8663 *
t-stat	1.81
Auditor dummy	0.0413
t-stat	0.20

Panel B. A test of significance for the model

N	165
F-statistic	1.54
Prob > F	0.11
R-squared	0.099

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively