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White Collar Crime and Stock Return: Empirical Study from Announcement Effect

Samuel Wei-Siew Liew, Chin-Hong Puah and Harry Entebang
Faculty of Economics and Business, Universiti Malaysia Sarawak,
94300 Kota Samarahan, Sarawak, Malaysia

Abstract: Despite, the move by the government on integrity pledge, a white-collar crime continues to prevail across corporations and organizations in Malaysia. Globally, such a crime remains a serious issue which has undermined the performance of organizations. A share price event study was conducted on a group of public listed companies in Malaysia to examine the announcement effect of white-collar crime on stock return. Stretching from 1996-2010, the study covers both the Asian financial crisis in 1997/98 and the sub-prime mortgage crisis in 2008/09. The results indicate the existence of significant negative abnormal share price reaction on 10 trading days subsequent to the day of announcement. This suggests that the stock market in Malaysia is inefficient. It also implies that the market possesses the power to discipline unethical behavior amongst companies when shareholders drive down the stocks' value by disposing their stocks following the announcement.

Key words: Share price, event study, white-collar crime, unethical behavior, Malaysia

INTRODUCTION

The collapse of large-established organizations globally has motivated researchers to investigate the relationship between corporate governance and share prices. In fact, the string of corporate scandals occurred since the Asian financial crisis in 1997/1998 was due largely to weak corporate governance practices. A closer examination of some of the corporate governance cases reveals that it was a form of corporate crime.

Corporate crime also refers to "white-collar crime" and the term has been defined differently by criminologists at different times. White-collar crime was first popularized in 1939 by Sutherland (1949), who was both a criminologist and a socialist. Edwin argued that a crime is normally committed by a person of respectability and high social status in the course of a person's employment. On the other hand, Edelhertz (1970) another criminologist suggested that a white-collar crime is "an illegal act or series of illegal acts committed by non-physical means and by concealment or guile, to obtain money or property, to avoid the payment or loss of money or property or to obtain business or personal advantage". Given Edelhertz's wider definition of the term, it was used interchangeably with other terms such as "economic crime", "corporate crime", "business crime", "financial crime" and/or "commercial crime". In short, crimes committed against business organization are nothing new (Bressler, 2009) but the cost of crime is significant and costly. For instance, several high-profile cases of fraud include the Madoff investment scandal (US$50 billion) and the Stanford investment scandal (US$20 billion) while Enron and Worldcom financial scandals remain one of the greatest scandals ever recorded in the history of corporate crime.

According to the Global Financial Integrity (GFI), illicit financial flows for the years 2000-2008 from developing countries record an average of US$1.26 trillion outflow annually. The main sources of the illicit money are due to irregularity practices such as corruption, kickbacks, tax evasion and theft of cash. Notably, Malaysia is ranked fifth among all developing countries in the world in terms of the largest cumulative illicit outflows during 2000-2008, recording a total of US$291 billion. In fact, among the developing countries in Asia, Malaysia is ranked second after China (US$2.18 trillion).

As a result of corporate crime, companies like Sime Darby Berhad, Alliance Financial Group Berhad and Kenmark Industrial Co. (M) Berhad have experienced a nose dive in their share prices following the announcement of suspected fraud and abuse of authority. Kenmark, in particular has wiped out of some Ringgit Malaysia (RM) 100 million in market value over merely a week's time. In the case of Sime Darby, the company recorded a loss of RM2 billion in its energy and utilities division in the financial year ended June 30, 2010. Subsequently, the effect of the press announcement of white-collar crime requires serious attention due to the

Corresponding Author: Samuel Wei-Siew Liew, Faculty of Economics and Business, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

potential of adverse effect on the share price of the alleged companies which may eventually lead to possible economic damage of investors.

According to the surveyed carried out by KPMG, fraud cases are expected to rise continually for a couple of years. In fact, during more difficult economic times, criminal activity would likely to increase. Findings on crime appear to be harmful to any business entity as investors' confidence become deteriorated each time when a crime is committed. Consequently, crimes committed against business organization can impact profitability and even lead to business failure (Bressler, 2009). Given this, organizations have started to recognize the influence of white collar crime and the extent to which stockholders will drive down the value of the company's stock when the news about a crime is made known to them. The existence of such a reaction would mean that the announcement effect of white-collar crime in Malaysia is deterrent in nature. While past studies have examined the effect of crime against businesses (Mugellini, 2013) but very little research has been directed to assess the potential effects of corporate crime on return of corporate's shares. Thus, the main purpose of the research is to investigate and identify the announcement effect of white-collar crime towards the stock performance of the affected companies in Malaysia. The study found that the share price tends to react negatively following the announcement of a crime. The study concludes the study by discussing the limitations and future recommendations.

Literature review: The survey conducted by Pricewaterhouse Coopers (2009) on white-collar crimes encompassed asset misappropriation, accounting fraud, bribery and corruption, intellectual property infringement, money laundering, tax fraud, illegal insider trading, market fraud involving cartels colluding to fix prices, espionage and others. For the case of Malaysia, Lim (2005) categorized white-collar crime into criminal misappropriation of property, criminal breach of trust, cheating/fraud, forgery/credit/Automated Teller Machine (ATM) card fraud, counterfeiting currency, defamation, product piracy, product counterfeiting, cyber crime, offences of communications and multimedia industries, offences of printing and publication, banking/financial fraud, loan sharking, securities fraud/listing offences/insider trading, commodities fraud, money laundering, insurance fraud, maritime fraud, offences of company, tax evasion, customs and smuggling offences, immigration and human trafficking offences, bribery and corruption, exchange control violations, consumer fraud, pollution offences and occupational offences.

Unlike, Pricewaterhouse Coopers and Lim, classified white-collar crime into four main categories only, namely, corruption, fraud, theft and manipulation. In particular, corruption refers to the giving, requesting, receiving or accepting of an improper advantage due to a position, office or assignment (Gottschalk, 2010). The sub-categories of corruption are in the form of kickbacks, bribery, extortion and embezzlement. On the other hand, the sub-categories of fraud include identity fraud, mortgage fraud and occupational fraud while for theft, it includes theft of cash, intellectual property theft and fraud and for manipulation includes laundering, cyber crime, bid rigging and insider trading. Such classification allows researchers and practitioners to organize their thoughts at ease when mapping crime.

Even though, the literature on the effect of information releases on share returns is well-established (Hines *et al*., 1999; Feroz *et al*. 1991) discovered that a stock market reaction to the announcement of the disputed issue but not to the announcement of the resolved matter at a much later date. In the study, conducted by Hines *et al*. (1999), the results demonstrate no price reaction to press notices because the Financial Reporting Review Panel (hereafter, the panel) did not release any information until the issue was resolved. On the other hand, Rao (1997) and Voon *et al*. (2008) found that the results differ entirely because the information released on the announcement date contains ongoing disputed issues. Consequently, the share price is found to react negatively to the announcement of white-collar crime on the day of the announcement.

Notably, Foster (1978) identified three factors determining whether an announcement has information content, namely, the capital market's expectation as to the content and timing of the release; the implications of the release for the future distribution of security returns and the credibility of the information source. In particular, the press notice issued by the panel in Hines *et al*. (1999) was considered to be highly unexpected because the Panel did not release any information to the public until a resolution has been achieved. The implications of the panel's release towards the future returns of the security in question were somewhat detrimental as it might reduce the public's faith towards the company. As far as, the credibility of the information source is concerned, the panel is a reputable body established by the government. Therefore, if according to the three factors advocated by Foster (1978), the press notice issued by the panel should have high information content and caused a change in share prices. However, the findings of the study demonstrate otherwise. There is no evidence of a price reaction on the day of announcement. Such findings can perhaps be

attributed to the leakage of information as the panel does not have any power to stop others from disclosing any information before an official notice is issued.

The findings in the studies by Rao (1997) and Voon *et al*. (2008) are more straightforward in agreement to the three factors identified by Foster (1978). The announcement date of unethical conduct in Rao (1997) is defined as the date when a report is first published in the Wall Street Journal. The date of announcement is highly unexpected to the public and the implications are undoubtedly injurious as it is the first time the public is made known of the conduct in question. In the study by Voon *et al*. (2008), however, the announcement date is set as the date a company is charged for committing corporate crime according to the information in the Securities Commission (SC) Malaysia's official website. The announcement date might not be unexpected and the detrimental nature of the implications might have worn off because the news of the unethical conduct had already spread gradually to the public even before the companies were charged. In such circumstances, it is necessary to test not only the significance of average abnormal returns but also the significance of cumulative abnormal returns.

It is worthwhile to note that Rao (1997), Hines *et al*. (1999) and Voon *et al*. (2008) shared a common limitation. There are relatively few organizations which have been subject to the research due to data availability. Since, the data points for testing market reaction are few, the accuracy of the results may be undermined. Future research relating to the announcement effect of white-collar crime should include more companies to achieve a more accurate result.

MATERIALS AND METHODS

Companies involved in the share price event study are or were listed publicly in Bursa Malaysia. The companies involved are those that have been suspected of committing white-collar crime. The event refers to the day the alleged company is charged with committing white-collar crime. The companies and their respective announcement dates are obtained from the official website of SC Malaysia. The period of study is set to be 1996-2010. The event window in this study is extended from the typical 30 days before and after the event to 40 day before and 30 day after the event to fully capture the effects of the event of interest. Ideally, the announcement date should be defined as the day the media makes known the suspicion of the occurrence of white-collar crime in a public listed company to the public to allow first-hand examination of the share price reaction. However, the limitation of the availability of data makes such examination almost impossible.

The impact of the event study is represented by the abnormal return of the share price due to the announcement of the event. In other words, the abnormal return is the difference between the stock's actual return and the stock's expected return in the absence of the event. Many researchers have used a single-index model to estimate abnormal return (Bodie *et al*., 2009) which is expressed mathematically as Eq. 1:

$$rt = a + brMt + et \tag{1}$$

Where:

rt = Stock return during a given period t
a = The average rate of return the stock would realize in a period t with a zero market return
b = The sensitivity to the market return
rMt = The market's rate of return during a given period t
et = The part of a security's return resulting from firm-specific events

The residual et is the measure of the abnormal performance of stock. It is the stock's return below "what one would predict based on broad market movements in that period, given the stock's sensitivity to the market" (Bodie *et al*., 2009). If et<0 then the actual return rt is less than the estimated return, a+brMt. Rewriting Eq. 1 interprets the definition even clearer as shown in Eq. 2:

$$e_t = r_t - (a + br_{Mt}) \tag{2}$$

Estimating the regression parameters in Eq. 1, the intercept a and slope b is the next task. The estimation must be careful and proper. The data used for estimation has to be sufficiently separated in time from the event in question so that the parameters are not affected by event-period abnormal stock performance. Following Dyckman *et al*. (1984) and Shaheen (2006), the Holding Period Returns (HPRs) of each stock are calculated on a daily basis for 120 day prior to the event date to formulate a benchmark for normal returns. In the studies by Brown and Warner (1985) and Delaney and Wamuziri (2004), however the number of days prior to the event date is bigger which are 244 and 240 day, respectively. As far as, the parameter estimation period is concerned, many researchers advocate that slope b or beta is more stable when the horizon of the estimation period is longer (Ray, 2010). As such, a maximum of 271 daily return observations, starting at day -240 and ending at day+30, is collected for the study (Fig. 1). The 200 earliest

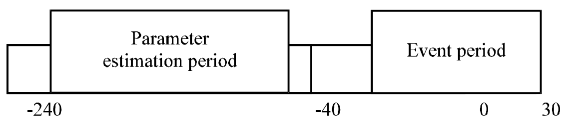

Fig. 1: Illustration of the event study window

observations are then being used to estimate the regression parameters a and slope b for each individual security.

The estimated parameters and the actual returns of each security are then substituted into Eq. 2 to calculate the residual, et or the Abnormal Returns (ARs). The ARs can be analyzed separately for each security but this may not be very informative because some of the movement in stock prices are caused by unrelated information to the event under investigation. Therefore, the Average Abnormal Returns (AARs) over the sample companies N, at each trading day must be considered using the following Eq. 3:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{3}$$

On average, the unrelated information to the event is cancelled out because the abnormal returns are all centered surrounding the event in question and the effect of the event should be reflected on average.

It should be noted that the computation of AAR is not sufficient in this study as the date the public is first made known of the allegedly unethical company cannot be ascertained exactly due to the question of data availability. Most studies often take this into account by summing all the ARs over the time period of interest to find the Cumulative Abnormal Returns (CARs). The CAR is a better indicator of the total impact of information release (Bodie *et al*., 2009). Again, in event studies, the average of CARs is considered over the sample companies, N, at each trading day. The average of CARs is known as the Cumulative Average Abnormal Return (CAAR) and it can be calculated using the following Eq. 4:

$$CAAR = \sum_{t=t_1}^{t_2} AAR_t \tag{4}$$

Subsequently, the AARs and CAARs have to be tested on their statistical significance. The null hypothesis that suggested there is no negative abnormal return needs to be tested using a simple t-test. The null hypothesis is as follows:

$$H_0 : E(AR_{it}) \geq 0 \tag{5}$$

The simple t-test for AARs is the ratio of AARt to its estimated standard deviation, "σ", $\hat{\sigma}$" (AARt)". The standard deviation has to be estimated from the time series of AARs in the parameter estimation period to ensure its stability and reliability. The t-test for AARs is as follows:

$$t(AAR_t) = \frac{AAR_t}{\hat{\sigma}(AAR_t)} \tag{6}$$

For the CAAR shown in Eq. 4, the test statistic is simply:

$$t(CAAR) = \frac{CAAR(t_1,t_2)}{\hat{\sigma}(t_1,t_2)} \tag{7}$$

Where:

$$\hat{\sigma}(t_1,t_2) = \sqrt{1}\hat{\sigma}(AAR_t) \tag{8}$$

The estimation of standard deviation for CAAR is applied in many studies (Kothari and Warner, 2007; Rao, 1997; Shaheen, 2006; Voon *et al*., 2008). The l is the horizon length of the event period which can be calculated from t_2-t_1+1. In this study, the l is 71 trading days.

In view of the small number of sample companies (N = 14) and the nature of the null hypothesis, the critical value for the t-test has to be taken from the t-distribution table under one tail probabilities. It must also be noted that, in the estimation of "σ", $\hat{\sigma}$" (AAR_t)", the degree of freedom, N-1, is taken into account to eliminate the bias of taking deviations from the sample arithmetic average, AAR_t, instead of the unknown, true expected value, E (AAR_t) (Bodie *et al*., 2009). Once, the critical value has been determined at 5% level of significance, if t is less than the critical value, the null hypothesis of no negative abnormal return is rejected and vice versa. The critical value is -1.771 at 5% level of significance.

RESULTS AND DISCUSSION

The initial search of companies from 1996-2010 via the SC's official website returns a total of 38 announcements from a total of 34 companies. During the filtering process, 4 companies have been found or suspected of committing white-collar crime on two occasions within the time window of study. Apart from the reason of data availability, a handful of the companies have been suspended from trading in the market. As such, it is not possible to include these companies in the share price event study. Table 1 depicts the final sample of 14 announcement dates on white-collar crime from 14 targeted companies.

Table 1: Final sample of target companies with their announcement dates

Target company	Announcement date
Kim Hin industry	20-Nov-96
Repco holdings	29-Nov-96
Seal incorporated	5-Jan-01
Pilecon engineering	8-Feb-01
Chase Perdana	16-Mar-01
Idris Hydraulic	28-Jun-02
Fountain View	27-Jun-05
Nasion Com holdings	28-May-07
Transmile group	Transmile group
Multi-Code electronics	13-Mar-09
Mems technology	16-Apr-09
United U-Li corporation	28-Apr-09
LFE corporation	24-Jun-10
Inix technologies	23-Sep-10

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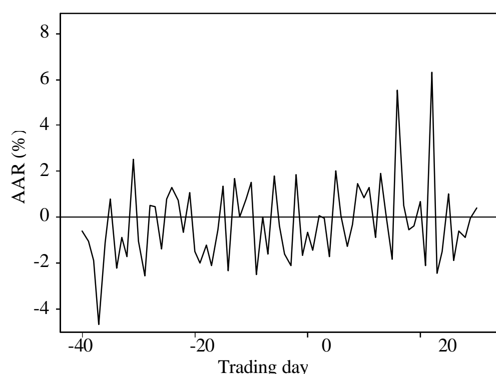

Fig. 2: Graph of AAR against trading day (%)

Figure 2 sets out a graph of percentage AARs on the y-axis against the trading day on the x-axis. The announcement date is indicated by 0 on the x-axis. Before any inspection of the graph, it is important to note that AARs must be <0 to indicate abnormal performance in relation to the announcement of white-collar crime as they show that the "stock prices decreased more than expected" (Rao, 1997; Voon *et al*., 2008).

Upon inspection of the graph, the AAR on the day of the announcement is very close to 0 and it is recorded to be -0.664% (Table 2). The fact that the AARs surrounding the day of information release are close to 0 implies no significant abnormal performance in relation to the announcement of white-collar crime. The statistical test for significance also confirms the findings as the t-values are not significant at all (Table 2). Therefore, in terms of AARs, the null hypothesis of no negative abnormal return (H_0: $E(AR_{it})$ "≥" 0) cannot be rejected.

Figure 3 shows the graph of percentage CAARs on the y-axis against the trading day on the x-axis. Inspection of the graph clearly depicts the gradual decrease in CAARs from Day 40 to a few days after t = 0. To be exact, the day the CAARs hit the lowest point is on day 4 (Table 2), after which the CAARs start to increase

Table 2: The AARs and CAARs% with their respective t-values

Trading day relative to announcement date	AAR (%)	t-values for AAR (%)	CAAR (%)	t-values for CAAR (%)
0	-0.664	-0.427	-22.895	-1.749
1	-1.466	-0.944	-24.361	-1.861**
2	0.049	0.031	-24.312	-1.857**
3	-0.075	-0.048	-24.387	-1.863**
4	-1.709	-1.100	-26.096	-1.993**
5	2.023	1.302	-24.073	-1.839**
6	0.047	0.030	-24.026	-1.835**
7	-1.271	-0.818	-25.297	-1.932**
8	-0.334	-0.215	-25.631	-1.958**
9	1.473	0.948	-24.158	-1.845**
10	0.847	0.545	-23.311	-1.781**

A sterisks (**) denote significant at 5% level

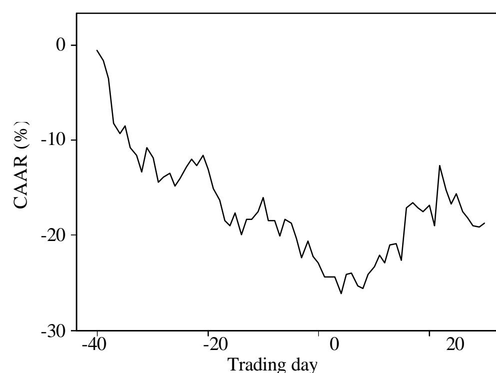

Fig. 3: Graph of CAAR against trading day (%)

steadily. The dramatic decrease after the announcement day reflects significant abnormal returns on the subsequent days. The statistical test also confirms the visual inspection of the graph. As shown in Table 2, all the CAARs from day 1-10 are significant at 5% level. As a result, one can reject the null hypothesis and conclude that there is a negative abnormal return following the announcement of white-collar crime amongst organizations in Malaysia for the period under study.

In addition, the difference in outcome of the two graphs could have arisen from "leakage of information". In this context, the leakage refers to the period of time when the public is made known of the unethical behavior of companies until the day the companies are officially charged in court. During the leakage, the stock price has started to decrease weeks before the day the companies are charged. The AAR on the announcement day is thus a poor indicator of the total impact of the information release. The CAARs, however capture the total stock movement for the entire period and reflect the impact of the information release on the announcement day or in this case, the subsequent days.

CONCLUSION

The investigation of the announcement effect of white-collar crime in Malaysia, using share price event study, concludes that share price reacts negatively following the announcement. A significant negative of CAARs is found continuously in the subsequent 10 trading days which equates to a period of 2 weeks. The findings indicate that most of the announcements are indeed news and contain information to the market and that the information has not been completely reflected in the share prices.

Results of the investigation are consistent to those found in Feroz *et al*. (1991), Rao (1997) and Voon *et al*. (2008) but they differ from the results found in Hines *et al*. (1999). The outcome is not at all surprising as the former deals with ongoing disputed issues and the latter with resolved matters. The announcements in this research are announcements of ongoing disputed issues as the dates are set to be the day the companies are charged or prosecuted. For this reason, the results demonstrate evidence of negative price reaction throughout the days subsequent to the day of announcement.

Upon a more detailed inspection, the announcement effect of this research is slightly different from that of Rao (1997). In the study conducted by Rao (1997), a significant abnormal performance is found on the day of announcement and none is found on subsequent days. In contrast, it is discovered in this study that there is no evidence of share price reaction on the day of announcement but on the subsequent days.

The distinction can perhaps be explained by the nature of the market in which the respective study is carried out. The emerging market that are less intensively analyzed and where the accounting disclosure requirements are less rigorous may be less efficient than US markets (Bodie *et al*., 2009). The event studies conducted by Rao (1997) and in this research are based in markets that are not efficient. If the market is efficient, significant negative abnormal return would not be discovered on the day of announcement or subsequently because the share prices would react almost spontaneously to the announcement. The distinction, therefore, lies in the degree of efficiency. It may indicate that the US market in which the study carried out by Rao (1997) is more efficient because the share prices react more immediately in response to the bad news. As a result, there is no evidence of significant abnormal performance following the day of announcement in Rao (1997).

Notably, markets that are less efficient come with other implications. According to Bodie *et al*. (2009), the key to successful technical analysis is the sluggish response of stock prices to fundamental supply-and-demand factor. Apart from predicting patterns in share prices, more importantly, Malaysia market may have the power to discipline unethical companies. The fact that significant negative CAARs are found for 10 continuous trading days imply that shareholders do react significantly to the announcement of white-collar crime. They are worried that the company may be suspended from trading and can never recover from the incident. Consequently, the shareholders will drive down the company's equity value by disposing their shares immediately after the news is made known to them. However, the question would be how strong the deterrence effect of announcement is in Malaysia. Future studies can investigate whether or not market discipline is efficient in deterring companies from committing white-collar crime in Malaysia.

In the process of conducting the research, one of the limitations is regarding the determination of the announcement date may not be a suitable one. The question of data availability does not permit the day of announcement to be set as the day the public is made known of the alleged unethical behavior by companies. Otherwise, returns from the share price event study can be more informative and representative of the announcement effect of white-collar crime in Malaysia.

The other limitation is that the number of target companies may be too small for the results of event study to be representative of the market reaction in Malaysia. About 14 public companies are far from sufficient to capture the true effect of the announcement of white-collar crime. Future studies, therefore should strive to gather more companies to compensate the lacking in this study. In addition, future studies may consider the preventive measures that should be taken to reduce the incidence and severity of white-collar crime.

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