ESSAYS ON CORPORATE FRAUD IN MALAYSIAN LISTED COMPANIES

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ORIGINAL LITERARY WORK DECLARATION

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ESSAYS ON CORPORATE FRAUD IN MALAYSIAN LISTED COMPANIES

ABSTRACT

This thesis investigates the causes and consequences of corporate fraud in Malaysia. Three specific issues are examined in the Malaysian context through three interconnected essays. In the first essay, the thesis identifies key factors that elicit the fraudulent behavior of companies in Malaysia. Using enforcement action releases (EARs) issued by Securities Commission Malaysia (SC) and Bursa Malaysia as fraud sample for the period of 1996-2016, the study follows the framework of fraud triangle (*i.e. pressure, opportunity, and rationalization*) and Malaysian International Standards on Auditing (ISA) 240 to identify the factors. The findings of the first essay indicate that among variables proxied for the *pressure* variable, aggressive tax reporting, political connections, and financial distress significantly contribute to the fraud likelihood. The results of the variables used to capture opportunity suggest that dedicated institutional investors, independence of the board, effective audit committee, and presence of a female on the board provide active monitoring on the corporate board and are negatively associated with the likelihood of fraud commission. Moreover, the family firms with pyramidal ownership structure have high chances of fraud commission due to the expropriation of minority shareholders' rights. Finally, regarding rationalization, this study finds that that prior violation, frequent changes of external auditors, and firm's decision to switch to non-Big 4 auditors increase the chances of fraud occurrence. In the second essay, the study examines the changes in the simultaneity of corporate financial decisions (i.e., financing, investment, and dividend payouts) and the strength of interdependence among corporate decisions on fraud revelation. Using simultaneous equations (3SLS and 2SLS), the study documents that financing, investment, and dividends payouts of the fraudulent firms decrease following the revelation of fraud. In conformity with the flow of fund framework, the study provides

evidence on the joint determination of corporate financing, investment, and dividend payouts decisions. Additionally, the study also finds the comprehensive support for the increase in strength of the simultaneity of corporate decisions in the periods following the fraud revelation. In the third essay, the study investigates the post-fraud behavior of fraudulent firms to restore the corporate legitimacy. For the purpose, the study considers the changes in management and governance turnover as ameliorating actions to improve the earnings quality. The results provide little support for the claim that fraudulent firms improve the earnings quality to restore the broken trust. Among various variables used as corrective actions, only the audit committee independence, its effectiveness, and audit quality show a significant effect on earnings quality. Overall, the results seem to indicate that fraudulent firms in Malaysia do not strive to improve the earnings quality which is considered as the significant source of information to signal future prospects of the company.

Keywords: Corporate Fraud; Fraud Triangle, Corporate Financial Triad; Corporate Governance; Earnings Quality; Malaysia

ESEI MENGENAI PENIPUAN KORPORAT DI SYARIKAT TERSENARAI MALAYSIA

ABSTRAK

Tesis ini menyiasat sebab dan akibat penipuan korporat di Malaysia. Tiga isu khusus diperiksa dalam konteks Malaysia melalui tiga esei yang saling berkaitan. Dalam esei pertama, tesis ini mengenal pasti faktor utama yang menimbulkan tingkah laku penipuan syarikat di Malaysia. Menggunakan siaran tindakan penguatkuasaan (EARs) yang dikeluarkan oleh Suruhanjaya Sekuriti Malaysia (SC) dan Bursa Malaysia sebagai contoh penipuan untuk tempoh 1996-2016, kajian itu mengikuti rangka segitiga penipuan (iaitu tekanan, peluang, dan rasionalisasi) dan Piawaian Antarabangsa Malaysia mengenai Pengauditan (ISA) 240 untuk mengenal pasti faktor-faktor tersebut. Hasil esei pertama menunjukkan bahawa antara pembolehubah proksibel untuk pemboleh ubah tekanan, laporan cukai agresif, koneksi politik, dan kesulitan kewangan sangat menyumbang kepada kemungkinan penipuan. Keputusan pembolehubah yang digunakan untuk menangkap peluang menunjukkan bahawa pelabur institusi berdedikasi, kebebasan lembaga, jawatankuasa audit yang berkesan, dan kehadiran seorang wanita di dalam lembaga menyediakan pemantauan aktif di lembaga korporat dan dikaitkan secara negatif dengan kemungkinan komisi penipuan. Lebih-lebih lagi, firma keluarga dengan struktur pemilikan piramid mempunyai peluang yang tinggi untuk komisen penipuan kerana mengambil alih hak pemegang saham minoriti. Akhir sekali, mengenai rasionalisasi, kajian ini mendapati bahawa pelanggaran sebelumnya, perubahan juruaudit luar yang kerap, dan keputusan firma untuk beralih kepada juruaudit bukan Big 4 meningkatkan kemungkinan kejadian penipuan. Dalam esei kedua, kajian ini mengkaji perubahan dalam kesimpulan keputusan kewangan korporat (iaitu pembiayaan, pelaburan, dan pembayaran dividen) dan kekuatan saling ketergantungan antara keputusan korporat terhadap penipuan penipuan. Menggunakan persamaan serentak (3SLS dan 2SLS),

dokumen kajian yang pembiayaan, pelaburan, dan pembayaran dividen firma penipuan menurun berikutan penipuan penipuan. Sejajar dengan aliran rangka kerja dana, kajian ini memberikan bukti mengenai penentuan bersama pembiayaan korporat, pelaburan, dan keputusan pembayaran dividen. Di samping itu, kajian itu juga mendapati sokongan komprehensif untuk peningkatan kekuatan kesedaran keputusan korporat dalam tempoh-tempoh berikut penyataan penipuan. Dalam esei ketiga, kajian itu menyiasat tingkah laku pasca penipuan firma penipuan untuk memulihkan legitimasi korporat. Untuk tujuan ini, kajian ini menimbangkan perubahan dalam perolehan pengurusan dan tadbir urus sebagai tindakan yang lebih baik untuk meningkatkan kualiti pendapatan. Hasilnya memberikan sedikit sokongan untuk tuntutan bahawa firma penipuan meningkatkan kualiti pendapatan untuk memulihkan kepercayaan yang patah. Di antara pelbagai pemboleh ubah yang digunakan sebagai tindakan pembetulan, hanya kebebasan jawatankuasa audit, keberkesanannya, dan kualiti audit menunjukkan kesan yang signifikan terhadap kualiti pendapatan. Secara keseluruhannya, keputusannya menunjukkan bahawa firma penipuan di Malaysia tidak berusaha untuk meningkatkan kualiti pendapatan yang dianggap sebagai sumber maklumat penting untuk menandakan prospek masa depan syarikat.

Kata kunci: Penipuan Korporat; Segitiga Penipuan; Triad Kewangan Korporat; Tadbir urus korporat; Kualiti Pendapatan; Malaysia

DEDICATION

In dedication to my mother (Late) for making me who I am, and my whole family for supporting me all the way!

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All the praise and thanks be to Allah, the Cherisher, and Sustainer of the worlds; and peace and blessings be upon Holy Prophet Muhammad. Allah the Almighty has indeed been very kind and generous towards me throughout my life. He blessed me with loving parents, great and competent teachers, caring and loving friends. It has always been Allah, Who gave me the strength and courage to complete my research thesis. I strongly believe that I alone do not deserve the credit for this work, there is a long list of people who have directly or indirectly contributed to my research. It is not possible to acknowledge all of them by name, but it is hard to move forward without mentioning some.

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Abdul Ghafoor

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LIST OF SYMBOLS AND ABBREVIATIONS

PWC	:	PricewaterCoopers
FFR	:	Fraudulent Financial Reporting
ACFE	:	Association of Certified Fraud Examiners
EY	:	Ernst & Young
SC	:	Securities Commission Malaysia
LOFSA	:	Labuan Offshore Financial Services Authority
CCM	:	Companies Commission of Malaysia
MASB		Malaysian Accounting Standard Board
FTT	:	Fraud Triangle Theory
MCCG	:	Malaysian Code on Corporate Governance
CEO	:	Chief Executive Officer
CLSA	:	Credit Lyonnais Securities Asia
NEDs	:	Non-Executive Directors
(ISA) 240	:	International Standards on Auditing
SAS	:	Statement of Auditing Standard
AICPA	:	American Institute of Certified Public Accountants
IASB	:	International Accounting Standards Board
EARs	:	Enforcement Action Releases
AAERs	:	Accounting and Auditing Enforcement Releases
PN	:	Practice Notes
FD	:	Financial Distress
FOW	:	Family Ownership
Lit	:	Litigation
P(F)	:	Probability of Fraud Commission

P(D)	:	Probability of Fraud Detection
GMM	:	Generalized method of moments
OLS	:	Ordinary Least Squares
3SLS	:	Three-Stage Least Squares
2SLS	:	Two-Stage Least Squares
IV Estimators	:	Instrumental Variable Class Estimators

CHAPTER 1: INTRODUCTION

1.1 Overview of Chapter

This thesis consists of three essays related to a common theme of corporate fraud. Specifically, the thesis presents ex-ante and ex-post behavior of fraudulent firms. Ex-ante, the thesis seeks to identify the factors that elicit the fraudulent behavior of firms. Ex-post, the thesis has further two objectives. First, it examines the behavior of corporate financial policies (financing, investment, and dividends) and the level of interdependence. Second, it examines the ameliorating actions that the companies take to improve earnings quality. This chapter provides the foundation for the study by discussing the problem statements, relevant issues, research questions, and research objectives. Section 1.2 provides an introduction to the financial statement fraud and its prevalence (hereinafter, corporate fraud); Section 1.3 reviews the situation of corporate fraud in Malaysia; Section 1.4 is devoted to a discussion of the problem statement and gaps in the existing literature; Section 1.5 presents research questions and research objectives respectively; Section 1.6 presents the contribution of the study; and finally, Section 1.7 explains the organization of the thesis.

1.2 Fraudulent Financial Reporting

The importance of reliable and transparent financial reports has long been acknowledged by accounting and finance scholars (Balakrishnan, Core, & Verdi, 2014; Francis, LaFond, Olsson, & Schipper, 2005; Rajgopal & Venkatachalam, 2011; Wittenberg-Moerman, 2008). The stakeholders make an informed economic decision based on the public information about the financial performance and position of the companies (Biddle, Hilary, & Verdi, 2009; Chen, Hope, Li, & Wang, 2011; Watts & Zimmerman). Despite the fact that financial reporting quality has been greatly recognized, yet it is startling when latest corporate misconducts suggest that reporting quality requires extra scrutiny (Penman, 2003). Since the start of the twenty-first century,

the corporate world witnessed the extensive wave of corporate scandals (Li, 2010). The case of Enron is the prime example of corporate scandal in this period which revealed that fraudulent financial reporting was able to shake up the US and accounting world (Beasley, Carcello, Hermanson, & Lapides, 2000; Petrick & Scherer, 2003). This scandal ended up with serious damages to the integrity of the accounting profession (Li, 2010).

Corporate businesses are grown extensively and so are the corporate scandals. The fraud that eventually emerges and relates to the businesses is the financial reporting fraud (Kaplan, Pany, Samuels, & Zhang, 2009). Financial reporting fraud[1] involves intentional omissions or misstatements of material information from a company's financial reports. According to ACFE (2014), 9% of total fraud cases are found to be related to fraud in financial statements; but these cases cause the highest losses (i.e. median loss of US$1 million). Financial reporting fraud deceives the users of the financial statements, specifically those who base their decisions on information in financial statements such as shareholders, investors, and capital providers (Rezaee, 2005; Summers & Sweeney, 1998; Zahra, Priem, & Rasheed, 2005). Beasley et al. (2000) reported that the incidence of financial reporting fraud is a continuing concern. Moreover, PricewaterhouseCoopers (PWC) (2014) admits this permanence that of out of every three companies globally, one had been a victim of economic crime. As evident from the survey in Fig 1.1, the global corporate fraud rate has increased from the year 2009 onward.

[1] In the subsequent sections of the thesis, the study uses "Corproate fraud" as the key word for fraudulent financial reporting/financial reporting fraud

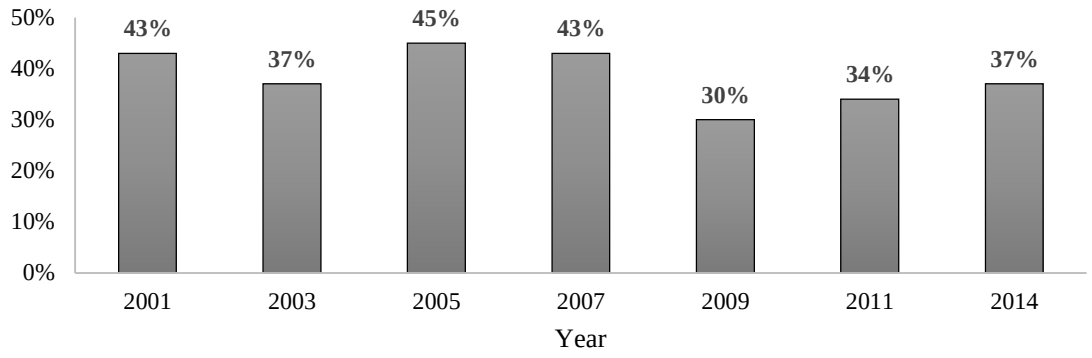

Figure 1.1: Global Fraud Rates

Source: PricewaterhouseCoopers (2014)

Among the consequences, both non-financial and financial acerbity of this problem is recognized by various researchers (Anginer, Warburton, & Yildizhan, 2011; Chen, Zhu, & Wang, 2011; Dyck, Morse, & Zingales, 2013; Goldman, Peyer, & Stefanescu, 2012; Graham, Harvey, & Rajgopal, 2005; Graham, Li, & Qiu, 2008; Kuvvet, 2014; Velikonja, 2012) as well as by different fraud surveys (e.g. PWC's 2014; PKF Littlejohn, 2015; Association of Certified Fraud Examiners (ACFE), 2014; German-Malaysian Institute (GMI) Ratings, 2013). According to ACFE (2014) and Dyck et al. (2013)[2], an organization loses five percent of its revenues each year to fraud, and if it is applied to estimated Gross World Product (GWP) in 2013, this estimates to be a global loss of $3.7 trillion. Similarly, one in three organizations are reported to be hit by fraud (PWC, 2014), and, on average, the cost for a disclosed fraud is reported to be 22 percent of enterprise value (GMI Ratings, 2013). Given the empirical evidence from the prior fraud literature and statistics from the well-reputed global surveys, corporate fraud is a serious threat to the integrity of the companies and economies.

[2] They estimated that a firm experiences a median cost of 22% of enterprise value due to fraud. This estimate comprises both the frauds that are generally detected and those that are not. As the average fraud takes 1.67 years, it puts an annual cost of $380 billion among large US companies.

1.3 Situation of Fraud in Malaysia

Fraud is pervasive in nature and does not discriminate in its occurrence. Though anti-fraud controls can successfully reduce the probability and potential impact of fraud, it is a reality that no entity is exempted to this threat (ACFE, 2014). The prior literature on fraud reveals that most of the work on fraud is centered on developed countries having dispersed ownership structure (Arena & Julio, 2010; Bonini & Boraschi, 2010; Deng, Willis, & Xu, 2014; Dyck et al., 2013; Lin, Song, & Sun, 2013). In fact, Coffee (2005) highlighted that the nature of corporate fraud in dispersed ownership system is different from those in the concentrated system of ownership because both systems are characterized differently based on strength of capital markets, standards of disclosures, market transparency and level of corporate control. Studies are limited in the particular context of Asian countries that are characterized by a concentration of ownership (Chen, Zhu, et al., 2011; Li, Makaew, & Winton, 2014; Yu, Zhang, & Zheng, 2010). Kroll Advisory Solutions' "Global Fraud Report" (2012-13) explicitly states that fraud risk in the Asia-Pacific region remains above the global average.

Within the Asia-Pacific region, Malaysia is reported to have the highest percentage of reported corporate crimes (at 54%)[3] and is above the Asia-Pacific average of 27 percent (see Fig. 1.2). From 2005-2007, an uncommon wave of fraudulent financial reporting was witnessed in Malaysia. The fraudulent cases such as Transmile Berhad, Megan Media Berhad, Repco Holdings, and United U-Li Berhad show that fraud is prevailing in Malaysia. Among these cases, one company overstated its reported revenues by RM 527 million in three successive years. The revelations immediate these cases created an Enron-like implosion to the capital market of Malaysia.

[3] The study refers shortcuts to meet targets by the company as a fraudulent way of doing the business.

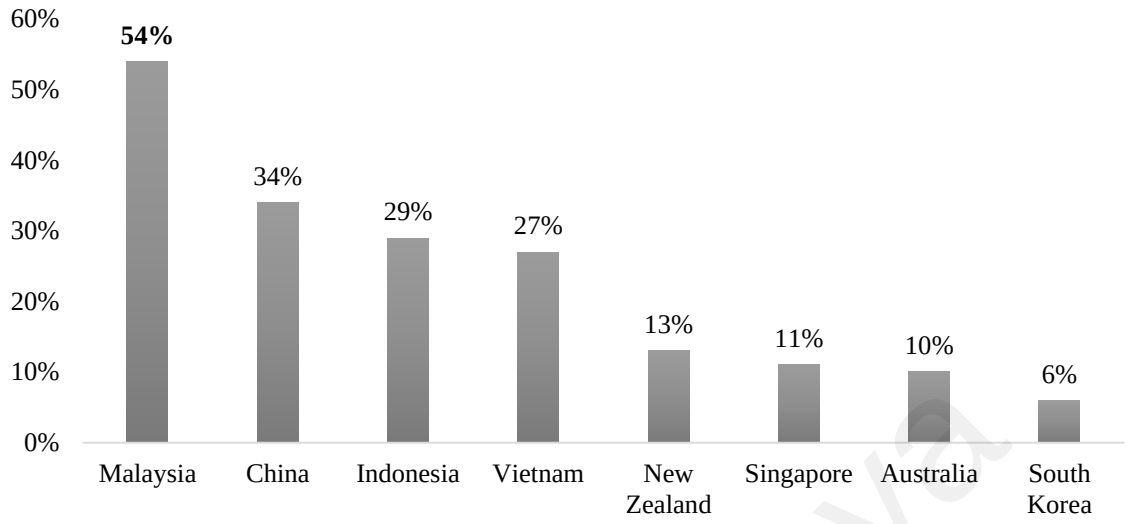

Figure 1.2: Fraudulent Practices of Companies

Source: Ernst & Young Fraud Investigation and Dispute Services Asia-Pacific 2013

In a recent survey, KPMG Malaysia Fraud, Bribery and Corruption Survey (2014) reported that 89% of Chief Executives of Malaysian public listed companies (PLCs) felt that the number of fraudulent practices by companies has increased over the past three years. This increase suggests a strong association between fraud and Malaysian firms. At the same time, 83% of the survey respondents opined that fraud is a major issue for businesses in Malaysia in general, and 94% felt that fraudulent practices have gone into high sophistications (KPMG, 2014). Furthermore, 26% of respondent organizations who had experienced fraud confirmed an average loss of RM 2.407 million (KPMG, 2014). Among the major reasons of fraud, 68% of respondent firms reported that lack internal auditors' skills to identify fraud and poor internal control mechanism are the key factors that prompted fraudulent behavior (KPMG, 2014). KPMG Fraud Surveys of 2012 and 2013 (see Fig.1.3) also report that despite multiple regulatory attempts, fraud stubbornly prevails in Malaysia and is becoming increasingly egregious. According to the survey, 52 % of the respondent organizations feel that fraud is a major problem in their organization,

while 90 % of the respondents believe that fraud is an inevitable cost of doing the business in Malaysia. The survey further reports that Malaysian companies do not have sufficient understanding of the potential aftermath of corporate crimes. They usually ignore the presence of "fraud red flags", and only take actions when frauds are finally detected (and it is too late).

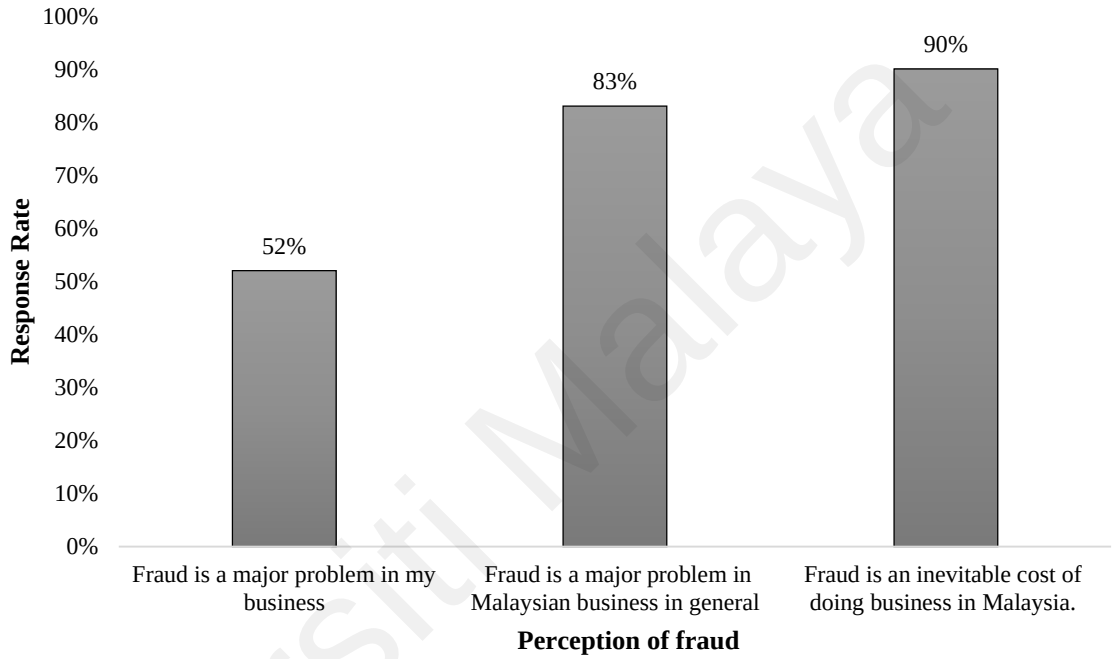

Figure 1.3: Fraud Perception in Malaysia

Source: KPMG Fraud, Bribery and Corruption Survey 2013

To help combat this perception, the survey highlighted the importance of raising awareness about the cost and universal nature of fraud. However, published academic literature on fraudulent financial reporting in Malaysia is limited. A notable study in this regards is by Hasnan, Rahman, and Mahenthiran (2012) who examined key factors that lead to fraudulent financial reporting. This study, therefore, focuses on providing the understanding of fraudulent financial reporting in the specific context of Malaysian public listed companies.

1.4 Problem Statement and Gap Identification

Given their severity and prevalence (discussed in previous Section 1.2 and 1.3), corporate frauds have been given a considerable attention in the accounting and finance literature (e.g. (Abbott, Park, & Parker, 2000; Albrecht, Albrecht, & Albrecht, 2004; Beasley et al., 2000; Chen, Cumming, Hou, & Lee, 2016; Cohen, Ding, Lesage, & Stolowy, 2012; Dyck, Morse, & Zingales, 2010; Khanna, KIM, & Lu, 2015; Lennox, Lisowsky, & Pittman, 2013; Lin, Song, & Sun, 2012; Lin et al., 2013; Wu, Johan, & Rui, 2016; Yuan & Zhang, 2016)). However, in the available fraud literature, this study believes that there are few insufficiencies with respect to context and scope. To elaborate and give a necessary importance to each issue separately, the study divides the problems and gaps identified in the prior literature into five parts. **First,** contextually, most of the literature on fraud is mainly centered on developed countries having dispersed ownership structure (Arena & Julio, 2010; Bonini & Boraschi, 2010; Deng et al., 2014; Dyck et al., 2013; Lin et al., 2013). Coffee (2005) stressed that the nature of corporate fraud in dispersed ownership system varies from those in the concentrated system of ownership because both systems are characterized differently based on strength of capital markets, standards of disclosures, market transparency and level of corporate control. Studies are limited in the context of Asian countries that are characterized by a concentration of ownership (Chen, Zhu, et al., 2011; Li et al., 2014; Yu et al., 2010). Moreover, the traditional agency theory is also criticized for not considering the firms' social and institutional environment (Aguilera, Filatotchev, Gospel, & Jackson, 2008; Otten & Wempe, 2009). This thesis, therefore, considers fraudulent firms reported in the specific context of Malaysia. **Second,** the prior literature identifies various internal and external factors that contribute to fraud. Specifically, these studies examined one of the three aspects of the fraud triangle to identify factors (Dechow, Sloan, & Sweeney, 1996; Gillett & Uddin, 2005; Hernandez & Groot, 2007). For instance, Hernandez and Groot (2007)

report that incentives/pressure and opportunities are associated with the fraudulent behavior of the firm. Lou and Wang (2009) study the fraud factors using fraud auditing standards (i.e. these standards are based on the framework of fraud triangle) to investigate the fraud behavior. Nevertheless, the studies are limited, in general, and in particular to Malaysia, that considers full dimensions of fraud triangle theory. This consideration is important because fraudulent acts could be the result of any of the three conditions (i.e., pressure, opportunity, and rationalization) given by Cressey (1953). **Third,** the studies examining the fraud likelihood often use control sample for the purpose of comparison. However, in implementing comparisons between the fraud sample and control sample, a problem of identification or partial observability is the main concern because we can only observe the detected fraud (i.e., the joint outcome of fraud occurrence and fraud detection). Most of the studies use logit and probit models to identify fraud factors. These models assume perfect detection (P (Detection = 1|Fraud commission = 1) = 1) and may produce higher Type-I and Type-II errors. As such, cross-sectional variables can have opposing effects on the two latent probabilities, assuming perfect detection may lead us to draw incorrect inferences about the determinants of corporate fraud. This problem of partial observability is the main concern in the past studies on fraud that needs a more robust methodology. **Fourth,** ex-post, most of the fraud literature focuses only on adverse impacts of fraud on shareholders' wealth. The concord of the literature is that the fraud revelation results in significantly negative abnormal returns [e.g. (Armour, Mayer, & Polo, 2010; Karpoff, Lee, & Martin, 2008; Murphy, Shrieves, & Tibbs, 2009; Palmrose, Richardson, & Scholz, 2004)]. Still, other scholars have argued that only "injured-shareholder-centric" understandings of the costs and consequences of fraud miss a large part of the story (Velikonja, 2012). In this regard, the studies that examine the effect of fraud revelation on the behavior of corporate financial policies (i.e., investment, financing, and dividends) are limited. This empirical investigation is important because,

given the argument that fraud revelation damages firms' reputation and brings market imperfections and information asymmetry (Karpoff & Lott Jr, 1993), independencies of corporate decisions may not hold as proposed by Modigliani and Miller (1958) and Miller and Modigliani (1961). Therefore, in post-fraud settings, corporate decisions including investment, financing, and payout are likely to be interdependent. This investigation is not examined the established corporate fraud literature. **Finally,** recently, the fraud literature on post-announcement problems has got the attention of the scholars about how fraudulent firms manage to rebuild legitimacy. Following the public revelation of fraud, the firm is advised to take practical measures to signal the work it is doing to lessen the probability of fraud in the future. What actions do companies take to restore the corporate reputation and legitimacy? Farber (2005) answers this question by looking at the changes in governance in the US. However, given the different governance structure of Malaysia from that of the US, this question needs further investigation. Particularly, fraudulent firms should take ameliorating actions (i.e., by management and governance changes) to improve earnings quality as a priority in the post-announcement period. The earnings quality may, therefore, sends a strong signal to the market about the future prospects of the company (Costello, 2011; Toms, 2002). Farber (2005) investigates the relationship between the quality of corporate governance and credibility of the financial reporting system. He suggests that fraudulent firms should pay attention to improve corporate governance to restore an impaired reputation. Investigations in this length are limited in general and in the specific context of Malaysia.

The contemporary circumstances – in other words, the increase of fraudulent practices around the globe and specifically in Malaysia, the insufficient fraud literature in Type-II governance system, the under-contextualized view on the application of agency theory, methodological issues, and the limited scope of prior studies neglecting the firm behavior

in post-fraud period-establish significant practical and academic avenues for the current research.

1.5 Research Questions and Objectives

Based on the problem statement and issues in the previous studies on fraud, this study attempts to fill these gaps by formulating the following main empirical research questions and their respective objectives.

RQ 1: Ex-ante, what factors elicit the fraudulent behavior of companies listed in Malaysia? (Essay 1)

In keeping with this research question, this study aims to investigate the role of different factors in eliciting or restraining the fraudulent environment of listed companies declared as fraud firms in Malaysia. For the purpose of analysis, the study identifies the key factors from prior literature and the "Fraud Triangle Theory" (see the detailed discussion in Section 3.3). To investigate accounting and other frauds, the ACFE suggests that anti-fraud professionals and auditors should use the framework fraud triangle as a standard investigative tool to know the factors that elicit fraud behavior. The study also aims to respond to the common problem of partial observability/identification problem in the existing statistical model by applying a more robust approach (a detailed discussion of issues in current literature is given in Section 3.5.1).

RQ 2: Ex-post, how do fraud revelation affect the changes in the corporate financial trilogy (investment, financing, and dividends) and their independence? (Essay 2)

The thesis aims to investigate this research question by examining the effect of fraud on changes in corporate decisions. Particularly, the aim of this objective is to examine the simultaneous changes in the corporate financial triad. The theoretical

arguments for this investigation are the reputational penalties and existence of severe market imperfections associated with the fraud announcements (see Section 4.3). The existing literature on the simultaneity of corporate decision examines the interdependence in a more general environment and without the incidence of any company-specific event. With respect to fraud, the past studies examine the effect of fraud revelation on corporate decisions separately without considering the endogenous nature of these decisions. Therefore, this thesis examines the implications of fraud on ex-post changes in investment, financing, and dividends and their interdependence in a simultaneous framework.

RQ 3: Ex-post, do fraudulent firms improve the earnings quality by taking ameliorating actions in management and governance structure? (Essay 3)

The purpose of this last objective of the thesis is to examine the ex-post behavior of the fraudulent firms in their attempts to restore the impaired reputation and legitimacy. Specifically, the study considers the changes in management and governance structures as ameliorating actions by the fraudulent companies to restore the broken trust of the stakeholders. In this regard, Farber (2005) opines that fraudulent firms should improve the governance structure to restore the reputation. The study goes one step further by looking at the effect of these changes on earnings quality because the earnings quality is the objective information that signals the future prospects of the company to different users of information. Therefore, considering the changes in management and governance structure as a positive gesture by the company, the objective of the study is to examine whether changes in management and governance structure help in improving the subsequent earnings quality (the detailed discussion is provided in Section 5.2).

1.6 Research Significance and Contribution

The thesis makes contributions to the existing literature in several ways. These contributions are divided into academic, contextual, and practical contributions. The details of this contribution are provided as follows:

1.6.1 Academic Contribution

This thesis contributes by extending the work of Hasnan, Rahman, et al. (2012) who examine the factors associated with fraudulent financial reporting in Malaysia. This is the only comprehensive study on corporate fraud conducted in Malaysia. However, there are few limitations in their work that are addressed in this thesis. First, they used a data period of 1996-2007 and performed the analysis on 52 fraudulent firms. This study, on another hand, uses the data period from 1996-2014 to identify all possible fraud cases. Second, one of the limitations of their study is that they did not examine the consequences of fraud because of the limited availability of the data. Using, the extended time period, this thesis contributes by addressing their limitation and analyze the ex-post behavior of the firms as well. Finally, they used the simple logistic model without considering the partial observability problem/identification problem. These model may create biased results (discussed in Section 3.5). This thesis accounts for the problem of partial observability to generate the results with less Type-I and Type-II errors.

Ex-post, the study contributes to the literature on corporate finance and financial misconduct. It is well established that fraud affects firms' both cost of equity and debt capital (Chava, Agnes Cheng, Huang, & Lobo, 2010; Deng et al., 2014; Sun, Song, & Lin, 2012), capital structure (Bonini & Boraschi, 2010; Chen, Zhu, et al., 2011; Graham et al., 2008), and cash holding (Arena & Julio, 2010; Lin et al., 2013). However, prior research has largely ignored the potential influence of corporate frauds on different financial decisions of the companies. Although some effort has been devoted in

investigating the key set of corporate decisions (e.g., investment, financing, dividend), but these decisions have typically been treated separately and examined in isolation rather than all together. The single equation models employed by previous studies without clearly incorporating the simultaneity of corporate decisions may have severe misspecification problems, which further may lead to biased and incomplete results. Therefore, a simultaneous framework is likely to offer better insight into the potential interrelationship of corporate decisions. As corporate frauds bring market imperfections for firms, making financial decisions more interdependent. Different approaches confirm this interdependency between corporate decisions, for example, Institutional approach (Dhrymes & Kurz, 1967) , Flow-of-funds framework for corporate behavior (Dhrymes & Kurz, 1967), Information approach (Miller & Rock, 1985), Tax approach (Myers, 1974) and Agency approach (Jensen, 1986). It looks, therefore, more reasonable to examine the consequences of corporate frauds on corporate financing, investment, and dividends decisions in a simultaneous framework. To fill this gap in the existing literature, this study contributes by investigating the behavior of these decisions in the presence of corporate frauds.

Also, the majority of papers regarding corporate fraud are about the market consequences of the misconduct for the accused firm. The consensus of those studies is one: the initial disclosure of corporate fraud causes negative (and significant) abnormal returns for accused companies (Armour et al., 2010; Karpoff et al., 2008; Murphy et al., 2009; Palmrose et al., 2004). However, the return is not the only aspect of decision making in the stock market (Barber & Odean, 2000; Barro, 1990; Brennan, Jegadeesh, & Swaminathan, 1993; Galeotti & Schiantarelli, 1994; Hameed, Kang, & Viswanathan, 2010). Empirical evidence indicates that weak corporate governance is associated with financial reporting fraud (Dechow et al., 1996; Hasnan, Rahman, et al., 2012; Kamarudin, Ismail, & Alwi, 2014; Owens-Jackson, Robinson, & Waller Shelton, 2009). However, as

reported by Farber (2005), little is known about the actions that fraud firms take to improve their weak governance after fraud detection and, perhaps more importantly, how effectively these actions restore investor trust. Given the established relationship between the corporate governance quality and financial reporting system credibility, the empirical literature is not definite about the nature and level of this relation. This thesis, therefore, is significant in a way that it contributes to examine the ameliorating actions taken by the fraudulent firms to improve the earnings quality.

1.6.2 Contextual Contribution

The literature on corporate frauds in Asia is very scarce and limited. Fewer studies on corporate frauds are limited only to fraud motives, its effect on firm value, control and corporate governance aspects (Hasnan, Abdul Rahman, & Mahenthiran, 2012; Hasnan, Rahman, et al., 2012; Kamarudin, Ismail, & Mustapha, 2012; Kwan & Kwan, 2011; Mohamed, 2014; Voon, Puah, & Entebang, 2008; Zaimee, 2007). Coffee (2005) reports that the nature of corporate frauds in concentrated ownership is different from dispersed ownership. The difference in the structure of ownership accounts for different fraud behaviors in companies, in terms of the identity of fraud perpetrators, nature of the fraud, and the apparent discrepancy in the number of fraud cases at any given time. In a dispersed ownership system, managers appear to be the villains of the story, whereas in a concentrated ownership system; the controlling shareholders play the same role. Consequently, governance protection mechanism that fits in one system may not perform in the other. Concentrated ownership offers the myopic extraction of private benefits by controlling owners. In Malaysia, published academic literature relevant to fraudulent financial reporting is limited (e.g. (Abdul Rahman & Haneem Mohamed Ali, 2006; Amran, Manaf Rosli Bin, & Che Haat Mohd Hassan, 2008; Hasnan, Rahman, et al., 2012; Mohd Nor, Ahmad, & Mohd Saleh, 2010; Smith, Haji Omar, Iskandar Zulkarnain Sayd

Idris, & Baharuddin, 2005)). Therefore, the study also contributes to the literature on corporate frauds in the context of Malaysia and other countries that are also characterized by concentrated ownership structure.

1.6.3 Practical Contribution

Fraud is among the seven key National Results Areas (NKRA) in Government Transformation Program (GTP) of Malaysia. Despite the Government Transformation Plan (GTP) and Economic Transformation Plan (ETP), corporate scandals and misbehavior recur as the nation continues to record poor rankings in the Transparency International (TI)'s Corruption Perception Index (CPI), (2012), Bribe Payers Survey [4] (2013), and Global Financial Integrity [5](GFI) (2013) report. As one of the fraud components, fraudulent financial reporting has become a significant white-collar crime in today's business environment (Palshikar, 2014). Many capital market players recognize the potential harm to the business caused by fraud (Yusof, Mohd Nor, & Edward Hoopes, 2014). This phenomenon is not only an increasing trend but also inevitable[6] (KPMG, 2014). As Malaysian companies are not protected from this threat, the country must overcome internal problems involving financial reporting fraud among Malaysian public listed companies. KPMG fraud survey of Malaysia in 2014 has reported that 89% of Chief Executives of Malaysian PLCs felt that the quantum of fraud had increased over the past three years. The increasing trend suggests that there is a strong connection between fraud and Malaysian public listed companies. The findings of this

[4] Malaysia also ranked at the bottom of 30 countries surveyed by Transparency International's Bribe Payers Survey. The survey highlighted that 50 percent of companies surveyed had failed to win a contract or gain new business in Malaysia because a competitor had paid a bribe. The survey also discovered that respondents felt that the abuse of public funds by public servants and politicians is common.

[5] In 2013, Global Financial Integrity's (GFI) Report on illicit financial outflows worldwide, Malaysia ranked 2nd out of 150 countries. According to the report, Malaysia lost RM196.84 billion in funds to tax havens and Western banks in 2010.

[6] KPMG Malaysia (2014) reported that 90% of respondents from Malaysian PLCs believed that fraud (including FFR) is an inevitable cost of doing business.

research will be of significant benefit to regulators, professional associations, corporate governance bodies, and very importantly, the investing public (the detailed discussion in this regard is provided in Section 6.2).

1.7 Organization of the Thesis

The rest of the study is structured as follows. Chapter 2 provides an introduction to the institutional and regulatory environment of Malaysia. Since this thesis is presented in the form of three related essays (i.e. each addressing a specific research objective), the literature review section is not separately provided in the thesis. Each essay contains its detailed section of the literature review. Chapters 3, Chapter 4, and Chapter 5 are respectively dedicated to Essay 1 (1^{st} objective of the study), Essay 2 (2^{nd} objective of the study) and Essay 3 (3^{rd} objective of the study). Each of these three chapters contains separate sections for the introduction, literature review, methodology, results and discussion, and conclusion. Finally, Chapter 6 concludes the study along with a discussion on policy implications and the limitations of the study.

CHAPTER 2: INSTITUTIONAL AND REGULATORY ENVIRONMENT OF MALAYSIA

2.1 Overview of the Chapter

This chapter presents information on the institutional and regulatory environment of Malaysia. Section 2.2 reviews Malaysian reporting environment; Section 2.3 presents an overview of the Malaysian capital market and legislation followed by discussion on Bursa Malaysia and Securities Commission Malaysia ; Sections 2.4 and 2.5 provide an overview of the corporate governance, its types, and effectiveness in Malaysia; and finally, Section 2.6 establishes the importance of Malaysia as a research setting of this thesis.

2.2 Malaysian Reporting Standards

For all listed firms in Malaysia, it is necessary to follow the accounting standards set by the Malaysian Accounting Standard Board (MASB) and publish the annual reports in accordance with the 19th Schedule of the Companies Act 1965. However, the formal framework of financial reporting system was adopted in Malaysia after the Financial Reporting Act of 1997 (FRA). This led to the establishment of two professional bodies, the Malaysian Accounting Standards Board (MASB) and the Financial Reporting Foundation (FRF). The prime objective of the MASB is to set the accounting standards for Malaysian firms, while FRF oversees the operational performance and effectiveness of MASB.

Accounting standards issued by MASB were established as approved accounting standards and adoption of these standards became effective on 1 July 1999 (Abdullah & Sapiei, 2013). Further, for the effective enforcement, these standards were authorized to Securities Commission Malaysia (SC), Companies Commission of Malaysia, and Bank Negara. In an effort to converge to International Financial Reporting Standards (IFRS),

the standards of MASB were renamed as Financial Reporting Standards (FRS). Since 2006, further restructuring of standards took place to make FRS identical to IFRS (MASB, 2007). The whole process to fully converge to IFRS occurred in stages until the full adoption timeline (MASB, 2008). On 19th November 2011, identical to IFRS framework, the MASB issued the Malaysian Financial Reporting Standards (MFRS). These standards were approved and became effective as of 1st January 2012. This framework applies to all Malaysian firms except the private ones.

2.3 Malaysian Capital Market and Legislation

Currently, the following Acts of the Parliament govern the Malaysian Capital market:

- Companies Act 1965
- Offshore Companies Act 1990
- Securities Industry (Central Depositories Act) 1991
- Securities Commission Act 1993
- Labuan Offshore Securities Industry Act 1995
- Capital Market and Services Act 2007

In this regard, Figure 2.1 illustrates the regulatory structure of the Malaysian Capital Market. The Ministry of Finance is responsible for governing the market which is dynamically represented by the Labuan Offshore Financial Services Authority (LOFSA) and the Securities Commission Malaysia (SC). LOFSA is responsible for monitoring the Labuan International Financial Exchange only, while SC governs and actively monitors the Malaysia Stock Exchange (i.e. Bursa Malaysia). It is also responsible for enforcing the rules and regulations of the capital market. Overall, the major regulatory bodies that regulate the efficient and effective working of the capital markets are Bursa Malaysia and Securities Commission Malaysia (SC). In the following section, the study provides the brief introduction of these regulatory bodies.

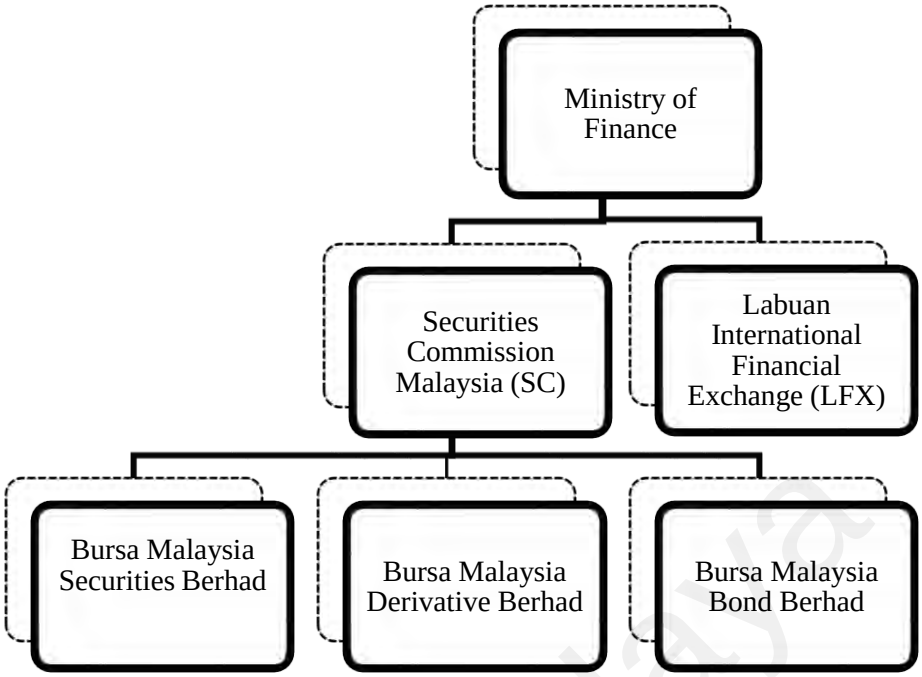

Figure 2.1: Regulatory Bodies of Malaysia

Source: Bursa Malaysia

2.3.1 Bursa Malaysia

Bursa Malaysia is a self-regulatory and fully integrated exchange in Malaysia which was established in 1973 and listed in 2005. The purpose of its establishment was to provide a central place for the trading of various securities of listed companies. The exchange offers a range of products such as equities, forward and options, derivatives, and Islamic and offshore assets. It also includes exchange related services such as listings, trading, clearing, settlement, and depository. Moreover, it also offers investment choices such as Real Estate Investment Trust (REIT), Exchange Traded Funds (ETF), and Sukuk. All listed companies have to follow the listing and disclosure requirements of Bursa Malaysia. In an effort to enforce these standards and to maintain the marketplace quality, the Bursa Malaysia issue Practice Notes (PN) for the financially distressed companies.

Prior to August 3, 2009, Bursa Malaysia had the Main Board, the Secondary Board, and the Malaysian Exchange of Securities Dealing and Quotation Berhad (MESDAQ). However, on August 3, 2009, the Main market was established by merging the Main and Secondary Board, and the MESDAQ Market turned into the ACE market. As a result, the listing process time for the seasoned and primary issues was shortened. In 2014, Bursa Malaysia introduced FTSE 4 Good Bursa Malaysia Index by adopting the FTSE Bursa Malaysia KLCI values as its primary index. Further, in May 2015, Bursa Malaysia joined the initiative of United Nations Sustainable Stock Exchanges (SSE) to promote sustainable strategies among marketplace and issues.

2.3.2 Securities Commission Malaysia (SC)

Under the Securities Commission Act of 1993, the Securities Commission Malaysia (SC) was established on March 1, 1993. The SC is a statutory body and has enforcement and investigative powers. The SC is responsible for rulemaking, authorization, supervisions, and enforcement. However, the ultimate responsibility of the SC is to ensure the investors' protection. The commission is responsible to promote and encourage the effective functioning of the equity and futures markets. It monitors and supervises the actions of the authorized institutions under the Capital markets and Services Act of 2007.

The enforcement and legislation activities of the SC is classified into four sections:

- Criminal prosecutions
- Civil actions
- Administrative actions
- Cases compounded.

Criminal prosecutions and civil actions are serious fraud cases that the commission brings forward to the court. In administration actions, the commission's enforcement

includes revamping, warning or revoking of the license by the SC. Cases compounded includes less serious offenses, where the SC issues warning letters and in some cases, it puts some monetary penalties on the offenders. All the cases being investigated are made public on the SC website through Enforcement Action Releases (EARs). The SC has the key role in combating the corporate frauds such as fraudulent financial reporting, insider trading, market manipulations, and many others.

2.4 Corporate Governance in Malaysia

2.4.1 Agency Theory

The typical relationship between managers (agents) and shareholders (principals) is well explained by Agency theory (1976). An agency relationship is created when principals employ the professional agents to conduct business transactions on their behalf (Jensen & Meckling, 1976; Kirby & Davis, 1998). Nevertheless, the separation of ownership of outside shareholders and the inside management may create the conflict of interest between these two parties (Dey, 2008). For instance, to protect their self-interest, the managers may not always work in the fundamental interests of shareholders. They would prefer their personal interests at the expense of shareholders (Florackis & Ozkan, 2009; Jensen & Meckling, 1976). This problem is called agency problem. There are two sources of this problem: First, the objectives of both the management and shareholders are not well-defined (Gillan & Starks, 2003), and, second, they have poor knowledge of each other's interests and behavior (Gillan & Starks, 2003). Farber (2005) states that cost associated with the agency problem will persist because of the separation mechanism.

To decrease some agency costs, both shareholders and managers have benefits to enter into agreements describing their relationship with the organization (James, How, & Verhoeven, 2008). For instance, these contracts may include management compensation debt covenants (Fields, Lys, & Vincent, 2001). These agreements are often associated

with accounting amounts (Francis & Schipper, 2011). However, agreements alone cannot stop all misconducts of managers (Francis & Schipper, 2011). Particularly, managers may use accounting standards' discretions to lessen the constraints enforced by these agreements, resulting in some accounting information that is not the true reflection of firms' performance (Roychowdhury & Martin, 2013; Warfield, Wild, & Wild, 1995). As a response, shareholders design the corporate governance mechanism to mitigate the agency conflict between shareholders and managers and to reduce some associated agency cost (Jensen & Meckling, 1976).

2.4.2 Application of Agency Theory in the Malaysian Context

The level of ownership concentration determines the nature of the relationship between managers and owners (Fan & Wong, 2002; Yeo, Tan, Ho, & Chen, 2002). Specifically, the nature of the agency conflict shifts from traditional managers-principal conflict (Type-I) to a minority-majority conflict (Type-II) (Fan & Wong, 2002). That is to say, if a small number of shareholders with majority shareholding dominates the control of the firm's management, then the chances of expropriation by these majority shareholders increase (Chen & Zhang, 2014; Jaggi, Leung, & Gul, 2009). Conversely, when the shareholding is dispersed, as in the USA, agency problem is rooted largely in the conflict of interest between managers and shareholders who owns a small fraction of the total shares outstanding of the firm (Fan & Wong, 2002; Jensen & Meckling, 1976).

Depending upon the type of ownership structure, generally, there are two major types of agency problems. Young, Peng, Ahlstrom, Bruton, and Jiang (2008) report the comparison of the characteristics of these agency conflict in Fig.2.2. It can be seen from Fig.2.2 that the principal-agent conflict (Type-I conflict) is more likely in firms with dispersed ownership. On the contrary, managers are affiliated with the majority

shareholders in firms with concentrated ownership. They both may collaborate to take out the private benefits at the cost of minority shareholders.

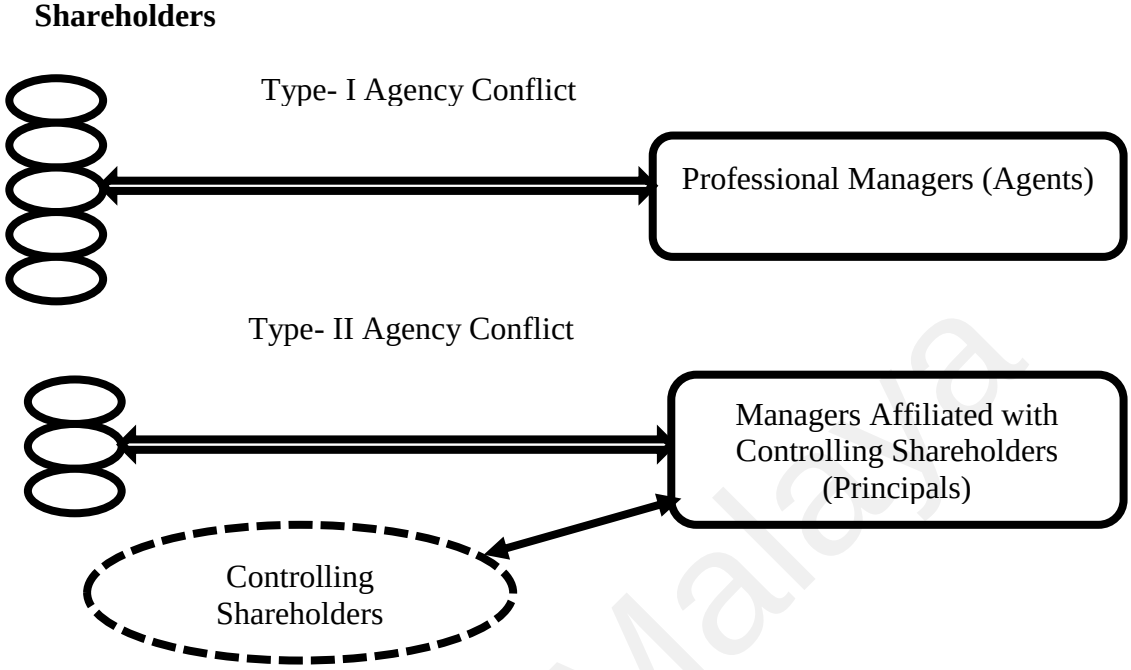

Figure 2.2: Types of Agency Conflicts

Source: Young et al. (2008)

In addition to agency conflicts, there are some other attributes that occur differently in the two ownership systems, which are presented in Fig.2.2. By linking the two types of agency conflicts, distinctions of two systems can be described as follows Fig.2.3. Given that Malaysian firms are characterized by concentrated ownership and the extensive dominance of businesses with family ownership (Liew, 2007; Mustapha & Che Ahmad, 2011), investors are fairly exposed to the Type-II agency problem (Jaggi et al., 2009; Villalonga & Amit, 2006). Hence, corporate governance in Malaysia is generally focused to reduce the conflicts between minority and majority shareholders of the company (Htay, Salman, & Shaugee, 2013).

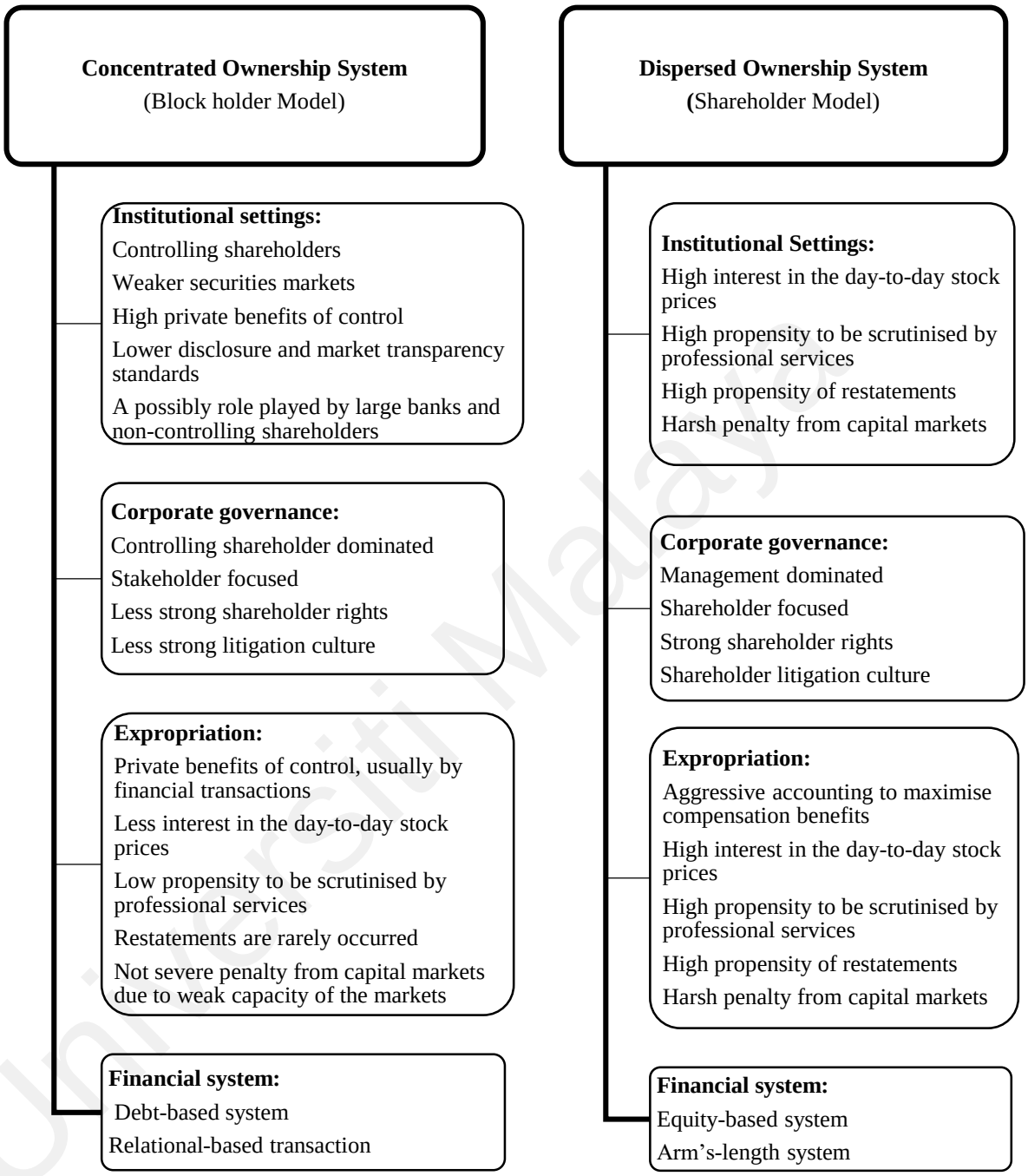

Figure 2.3: Characteristics of Different Governance Systems

Source: Coffee (2001)

2.5 The Effectiveness of Corporate Governance in Malaysia

It is generally believed that codes on corporate governance are significant mechanisms that shareholders to reduce agency conflict and managerial discretion and hence, to improve the financial reporting quality (Alonso-Paulí & Pérez-Castrillo, 2012; Chen & Zhang, 2014). The literature in this regard supports such arguments by documenting empirical evidence that corporate governance codes improve financial reporting quality and increase share price (Chen & Zhang, 2014; Ho, Liao, & Taylor, 2015; Jiang, Lee, & Anandarajan, 2008; Van Tendeloo & Vanstraelen, 2005). In Malaysia, several studies examined the impact of Malaysian Corporate Governance Codes (MCCG) on earnings quality, firm performance, and disclosure quality (Ali, Salleh, & Hassan, 2010; Haniffa & Hudaib, 2006; Har Sani Mohamad, Majdi Abdul Rashid, & Mohammed Shawtari, 2012; Sun, Salama, Hussainey, & Habbash, 2010).

There are several critics and challenges to corporate governance reforms in Malaysia. As discussed earlier, Malaysian firms are characterized by concentrated ownership and the extensive dominance of businesses with family ownership (Liew, 2007; Mustapha & Che Ahmad, 2011). This control is further assisted through cross-holding and pyramid schemes between companies (Chen, 2013). Under these circumstances, the divergence between cash flow right and control is high likely (Ow-Yong & Kooi Guan, 2000). Thus, the objective of the corporate governance framework in Malaysia to prevent majority shareholders from doing activities that are unfavorable to the minority shareholders' best interest (Kun Liew, 2008). Tam and Tan (2007) argue that protecting the minority shareholders' interests is always a critical question to be addressed in Malaysia because majority shareholders continue to exercise their controlling power by ownership concentration.

Additionally, it has been reported that political connections and undue cronyism and nepotism are prevalent in Malaysian firms (Chen, 2013; Vithiatharan & Gomez, 2014). For instance, Liew (2007) argues that special rights and exception from rule of law have been extended to the politically connected firms. When political interference exists in corporate decisions, the interests of minority shareholders are expropriated (Salim, 2006). The obvious implications are that effective enforcement of codes of corporate governance is less likely to happen in an environment of political interference (Liew, 2007).

Among many of the attempts to reform the capital markets in Malaysia, the MCCG emphasizes enhancing the role of non-executive directors on corporate boards. Nevertheless, the effective role of independent non-executive directors (INEDs) is still uncertain. Given the highly concentrated ownership in Malaysia, the control of the board of directors is largely derived from these controlling shareholders. Hence, imagining the board to challenge the decisions of controlling shareholders is rather unrealistic. This, further, will add up to the ineffectiveness of the board members (Rajagopalan & Zhang, 2008). Moreover, many initiatives of corporate governance reforms in Malaysia have been generally based on the Anglo-American system, which is not suitable for the countries with concentrated ownership (Liew, 2007; Vithiatharan & Gomez, 2014). In summary, the nature of the agency problems may differ depending upon the type of ownership structure.

2.6 Malaysia as a Research Setting

Academicians and practitioners have given extensive consideration to the fraud cases in the US (Coenen, 2008; Dyck et al., 2013; Kamarudin et al., 2012; Kedia & Philippon, 2009; Kuvvet, 2014; Lin et al., 2012; Murphy et al., 2009; Murphy & Dacin, 2011; Velikonja, 2012; Wang, Winton, & Yu, 2010; Yu & Yu, 2012). Nevertheless, little considerations have been given to similar fraud cases in the rest of the world. Particularly,

the studies on corporate fraud are very limited in Asia (Chen, Zhu, et al., 2011; Li et al., 2014; Yu et al., 2010). In their study, Cohen et al. (2012) highlight the implications of analyzing the non-US fraud cases because of institutional and regulatory variations in different countries compared to the US. For instance, companies in Malaysia are largely characterized by concentrated ownership system, where controlling shareholder has the sole power in the major decision making of the firms.

As reported by Coffee Jr (2005) that the pattern of corporate fraud in concentrated ownership system is different from the dispersed ownership system. Contrary to dispersed ownership system where managers have more discretion to manage earnings to get personal benefits, managers in concentrated governance system have less motivation to play with corporate earnings. In this governance system, the controlling or majority shareholder does not require indirect control mechanisms such as stock options or executive compensations to mitigate the potential agency conflict. Instead, they monitor the performance of the management through direct command and control framework. The nature of agency conflict in concentrated governance system is horizontal or Type-II[7]. As a result, such a system offers extraction of private benefits to majority shareholders.

Malaysia offers an interesting case for this study, because, according to PricewaterhouseCoopers (2011), the corporate frauds in Malaysia are on the rise. Similarly, KPMG Fraud Survey (2013) also reports that despite several regulatory reforms, fraud continues to increase in Malaysian businesses. Institutional characteristics

[7] Prior studies classify the agency conflicts into Type-I and Type-II. Type-I agency problem refers to the conflict between shareholders and managers where shareholders have very little direct control over the utility maximizing managers' actions. On the other hand, the roots of the Type-II agency conflict are dominant shareholders. The literature on horizontal agency conflict focuses on expropriation of minority shareholders' rights by controlling shareholders (De Cesari, 2012; Gilson & Gordon, 2003; Krishnamurti, Sěvić, & Šević, 2005).

such as concentrated ownership by families and significant political ties differentiate Malaysian listed companies from the US companies (Gul, 2006). Claessens, Djankov, Fan, and Lang (2002) find that in Malaysia, nearly 25 percent of the total market capitalization is controlled by the top 10 families[8]. They find that the leading shareholders in Malaysian public listed companies (PLCs) are the families, followed by the government, financial institutions, and other corporations. Moreover, 85% of PLCs are managed by the owner, where the controlling family members take the positions of Chief Executive Officer or Chairman of the board. Moreover, Tam and Tan (2007) also confirmed this pattern of ownership holding in Malaysian listed companies.

The close ties between the political leaders and business elites are an essential part of several economies, mainly the emerging economies, involving Malaysia. Political connections are a very important part of Malaysian businesses. It is because of the objective of the New Economic Policy (NEP) in 1970[9] to achieve 30 % Bumiputra Malay ownership in the corporate sector by 1990. Nearly one-third of the listed companies are known to have political ties (Faccio, Masulis, & McConnell, 2006). As a result, dominant Malay families received numerous favors including access to capital, government contracts, and other subsidies and allowances (Goldman, Rocholl, & So, 2013; Johnson & Mitton, 2003). Therefore, the ownership structure of Malaysia public listed companies is mainly a result of the government economic agenda (Gomez & Jomo, 1999)[10].

[8] According to Credit Suisse (2017) survey, Malaysia ranks 7th in the top 25 countries with the largest number of family-controlled companies.

[9] Following the ethnic riots in 1969, the NEP was initiated by the government to correct the imbalance between Chinese and indigenous Malay (Bumiputera) in the economy, where the economy was predominantly run by the Chinese to the exclusion of Malays (Gul 2006). The NEP was designed to increase corporate ownership of Bumiputera from 2.4 percent to 30 percent, the share other local nationalities from 34.3 percent to 40 percent, whereas the foreign ownership reduced from 63.3 percent to 30 percent. To achieve this target, it was estimated that the Malaysian (Bumiputera) corporate ownership would have to expand at the rate of 30 percent per year while that of Chinese and Indian had to grow by 15.4 percent per year.

[10] UMNO (United Malay National Organization) was formed in 1946 as a political organization to express Malayan rights (Bumiputera or ''sons of the soil''). It is the largest political party in Malaysia and a founding member of the Barisan Nasional

In Malaysia, it is generally observed that the audit fee is relatively low compared to other Asian economies, such as the Thailand and Philippines (Han, Kang, & Yoo, 2012). Gunasegaram (2007) reveals that due to poor investor protection, a weak judiciary, extant political interference, and lack of resources, various cases of fraud under the investigation of the Securities Commission remain unsolved. Furthermore, in the US, class actions lawsuits by institutional investors have played a key role in the effective implementation of corporate governance (Cheng, Huang, Li, & Lobo, 2010). Nonetheless, these lawsuits are not common in Malaysia due to less considerate civil procedures and high contingent fee (Chan, 2007; Thillainathan, 1999). Moreover, although the Malaysian parliament's laws ensure legal protections to whistleblowers in an effort to deter fraudulent activities of the companies, this phenomenon is not very prominent in Malaysia. Indeed, the statistics of the Malaysian Anti-Corruption Commission (MACC) in 2012 reveal that out of 8953 complaints, only 28 were by whistle-blowers. These statistics indicate that whistle-blowers remain hesitant to disclose wrongdoings of companies in Malaysia.

coalition—along with the Malaysian Chinese Association (MCA) and the Malaysian Indian Congress (MIC)—that has ruled the country without interruption since its independence in 1957 (Funston 1980).

CHAPTER 3: FACTORS ELICITING CORPORATE FRAUD (ESSAY 1)

3.1 Introduction

Despite the established significance of business ethics for firms' future prospects (Chun, Shin, Choi, & Kim, 2013; Donker, Poff, & Zahir, 2008; Hart & Ahuja, 1996; Murphy, 1995; Pae & Choi, 2011; Schlegelmilch & Pollach, 2005; Sirgy, 2002), a recent wave of corporate scandals such as Enron, WorldCom, and many others has increased the sensitivity of the public towards ethical misconduct of firms. Ever since, scholars have given considerable attention to moral deficiency of firms in fraud and business ethics literature (Abbott et al., 2000; Bird, Hall, Momentè, & Reggiani, 2007; Dyck et al., 2010; Lewis, Kay, Kelso, & Larson, 2010; Wang et al., 2010). In most part, these studies have used the agency theory of Jensen and Meckling (1976) to explain the fraudulent act of firms (e.g. (Albrecht et al., 2004; Coffee Jr, 2005; Crocker & Slemrod, 2005; Culpan & Trussel, 2005; Kidder, 2005; Macey, 1991)). However, one of the main critiques of agency theory is that it neglects the social and institutional framework within which companies operate (Aguilera et al., 2008; Otten & Wempe, 2009). The current corporate governance literature is biased towards the application of agency theory to issues moderating management-shareholder interests (Bebchuk, 2009; Khanna, Kogan, & Palepu, 2006; Zajac & Westphal, 1994). The majority of the theoretical and empirical studies on factors contributing to fraud are limited to the US, where dispersed ownership system of corporate governance generates Type-I agency conflict (see for example, (Agrawal & Cooper, 2010; Chidambaran, Kedia, & Prabhala, 2011; Khanna et al., 2015; Peng & Röell, 2008; Wang et al., 2010). We find little evidence of fraud in family ownership system of corporate governance with Type- II agency problem. Researchers suggest that ethical behavior of family-owned firms is different from non-family firms (Blodgett, Dumas, & Zanzi, 2011; Chen, Chen, Cheng, & Shevlin, 2010; Coffee, 2005; Yusof et al., 2014). Few studies, also opined that the nature of fraud is different in

different governance systems, i.e. Coffee (2005). However, published academic papers on this issue are limited (Vazquez, 2016).

As an Asian country, Malaysia offers a compelling case because of its institutional and structural environment. The concentrated family ownership system (Nahar Abdullah, 2006), political connections (Faccio et al., 2006; Johnson & Mitton, 2003), weak enforcement, and investor protection (Gunasegaram, 2007) are among the features that make Malaysia an interesting research setting. The Asian Financial Crisis (1997) caused East Asian economies to plunge into financial and economic failures, which severely affected investors' trust (Rahman & Haniffa, 2005). In response to the crisis and to restore investors' trust, the Malaysian government introduced key corporate governance reforms[11]. However, the persistent pattern of fraud reported by international surveys questions the effectiveness of these reforms. A survey by KPMG (2013-14) report that fraud is a continuing problem in Malaysian businesses[12]. For instance, the survey reports that 89% of Chief Executives of Malaysian public listed companies (PLCs) felt that the quantum of fraud had increased over the past three years. Meanwhile, 26% of the respondents who experienced fraud agreed that the total loss caused by fraud amounted to RM 2.407 million on average (KPMG, 2014). Moreover, Kroll Advisory Solutions' "Global Fraud Report" 2012-13 and Ernst & Young Fraud Investigation and Dispute

[11] Post-Asian Financial Crisis, the Malaysian government introduced key corporate governance reforms which include, Capital Market Master Plan (CMMP), initiation of the Malaysian Code of Corporate Governance, demutualization of Bursa Malaysia, the Malaysian Institute of Corporate Governance and the Minority Shareholders Watchdog Group, and changes in the composition and role of Boards of Directors. Related measures covered the disclosure rules, strengthening of whistleblowing and restructuring of the government linked corporations (GLCs) in 2005 (World Bank, 2005).

[12] Please refer to https://assets.kpmg.com/content/dam/kpmg/pdf/2016/03/fraud-survey-report.pdf for the detailed discussion of situation of fraud in Malaysia.

Services Asia-Pacific (2013) also confirm that Malaysia is more prone to corporate frauds compared to Indonesia, China, and Singapore[13].

Given the increased prevalence of fraud in Malaysia and lack of corporate fraud research in Type- II governance system, this study identifies the factors that contribute to fraud using fraud triangle model of Cressey (1953)[14] and Malaysian International Standards on Auditing (ISA) 240. Cressy explains several conditions (i.e., *pressure*, *opportunity*, and *rationalization*) under which violators commit fraud. It tests these variables on a set of 76 fraudulent firms and 76 non-fraudulent firms. The study uses four proxies for pressure, five for the opportunity, and two for rationalization. Using a bivariate probit model, the result indicates that three of the four proxies measuring *pressure*, tax aggressiveness, political connections, and financial distress are significant determinants of accounting fraud. However, executive compensation is not found to be significant. By using different proxies for the *opportunity*, the study documents the significantly negative effect of the presence of dedicated investor, board independence, effective audit committee, and presence of a female on board on the occurrence of fraud. Moreover, family firms with pyramidal ownership structure increase the fraud likelihood. The result indicates that the expropriation of minority rights by controlling shareholders (i.e. Type-II agency conflict) elicit the fraud behavior in Malaysian firms. Finally, the results of prior violations and auditor change (proxies for *rationalization*) has a positive and significant effect on the incidence of fraud. For robustness, the study performs a

[13] Ernst & Young Fraud Investigation and Dispute Services Asia-Pacific 2013 reports that reported fraud cases in Malaysia are double the Asia pacific average of 27%.

[14] Studies on risk assessment of financial reporting fraud have mainly focused on examining risk red flags (Hegazy & Kassem, 2010; Nieschwietz, Schultz Jr, & Zimbelman, 2000; Pincus, 1989; Wang, 2010; Zimbelman, 1997). However, several related red flags involve a great level of subjective judgment and nonpublic information that is only available to insiders and auditors of the firms (Hackenbrack, 1993; Persons, 1995). Owusu-Ansah, Moyes, Babangida Oyelere, and Hay (2002) and Hackenbrack (1993) report that fraud red flags are subjective, general and less practical. Moreover, Eining, Jones, and Loebbecke (1997) document that auditors using the logit model performed better than those using only checklist or risk red flags.

simple probit analysis and compare the results to the bivariate probit model. The results of both the models have almost similar coefficients. Further, this study examines the specification and power of both models by calculating the fitness score. The results indicate that the bivariate probit has low Type-I and Type-II errors compared to the simple probit model. This suggests that the bivariate probit model is superior in predicting fraud. The overall results indicate that the fraud triangle is helpful in identifying the fraud risk factors.

The current study contributes to the existing fraud literature in two important ways. First, the application of agency theory is under-contextualized because it neglects the social and institutional framework of companies (Filatotchev & Allcock, 2010; Haubrich & Popova, 1998; Otten & Wempe, 2009). Majority of the studies on fraud literature are limited to the US[15], where the nature of agency conflict is Type-I. The study extends the existing work on the factors exacerbating the fraudulent behavior in a governance system with Type II agency conflict. Markets with these features including Malaysia have received less academic attention to date.

Second, in implementing comparisons between the fraud and control samples, a problem of identification or partial observability is the main concern because we can only observe the detected fraud (i.e. the joint outcome of fraud occurrence and fraud detection). Specifically, the study responds to the calls of a recent study by Amiram et al. (2017) who acknowledges this problem by stating that the existing knowledge on corporate scandals exclusively comes from the fraudulent cases that were caught by the regulatory bodies, and the characteristics of those companies may differ from the ones that commit fraud

[15] See for example, (Abbott et al., 2000; Beasley, 1996; Beasley et al., 2000; Crutchley, Jensen, & Marshall, 2007; Johnson, Kuhn Jr, Apostolou, & Hassell, 2012).

but go undetected. This problem of identification or partial observability-which is either overlooked or considered as a limitation but barely addressed by the scholars-puts severe limitations to the interpretations of some of the former studies found in the fraud literature. Most of the studies use logit and probit models to identify fraud factors that assume perfect detection (P (Detection = 1|Fraud commission = 1) = 1), hence increasing the likelihood of producing higher Type-I and Type-II errors. Since cross-sectional variables can have opposing effects on the two latent probabilities, assuming perfect detection may lead us to draw incorrect inferences about the determinants of corporate fraud. Using a bivariate probit model, the study examines the probabilities of both fraud commission and detection. In doing so, it can control for the un-observability of fraud that is committed but not detected. Furthermore, it helps us to understand the economics of each probability as well as their interactions.

The rest of the study is divided into various sections. Section 3.2 presents the literature review on fraud triangle theory and its components. Section 3.3 is the hypothesis development of the various factors identified through of fraud triangle and their association with fraud occurrence; Section 3.4 discusses the data and sample; Section 3.5 establishes the appropriateness of the estimation technique followed by the results and discussion in Section 3.6; Section 3.7 reports the robustness test; and, Section 3.8 concludes the study.

3.2 Literature Review

3.2.1 Fraud Triangle Theory (FTT)

Corporate fraud is a very troubling and recurring phenomenon. It is pervasiveive in nature and surrounds every country, industry, and companies of all sizes (Clinard & Yeager, 2011; Dyck et al., 2013; Mohamed, 2014). Both financial and non-financial acerbity of this problem is confirmed by various researchers (Anginer et al., 2011; Chen, Zhu, et al., 2011; Dyck et al., 2013; Goldman et al., 2012; Graham et al., 2005; Graham et al., 2008; Kuvvet, 2014; Velikonja, 2012) as well as by various fraud surveys [e.g., PWC's 2014; PKF Littlejohn, 2015; ACFE, 2014; GMI Ratings, 2013]. According to ACFE (2014) and Dyck et al. (2013)[16], an organization loses 5% of its revenues each year to fraud, which is an estimated global loss of $3.7 trillion in terms of Gross World Product (GWP). Similarly, one in three organizations are reported to be hit by fraud (PWC's, 2014), and, on average, the cost for a disclosed fraud is reported to be 22 % of the enterprise value (GMI Ratings, 2013).

Given the social and economic consequences, various scholars emphasize the examinations of factors that lead to fraudulent financial reporting (Ball, 2009; Erickson, Hanlon, & Maydew, 2006; Kedia & Philippon, 2009)[17]. For instance, theoretical literature identifies various factors that lead to fraudulent behavior of firms. These factors include equity-based compensation (Goldman & Slezak, 2006; Peng & Röell, 2008, 2014), uncertainty in managers' reporting objectives (Fischer & Verrecchia, 2000), and

[16] They estimate that the cost of fraud to the median fraudulent firm is 22% of enterprise value. This estimate includes both the frauds that are normally detected and those that are not. Since the average fraud lasts 1.67 years, the annual cost of fraud among large US corporations is $380 billion.

[17] According to Karpoff et al. (2008), firms subject to enforcement actions lose on an average of $381 million. They find that such firms incur $0.36 as a legal penalty and $ 2.71 as a reputational penalty for every one dollar of earnings manipulated. Further, Dechow et al. (1996) report that fraudulent firms experience a decline of 9 percent in the share price, reduced analysts' coverage and liquidity.

monitoring activities (Hertzberg, 2005; Povel, Singh, & Winton, 2007). Moreover, the empirical literature identifies various internal and external factors that exacerbate the fraudulent acts of the companies. In relation to internal factors, the studies identify managers' pay and compensation as an important factor that provides reasons for managers to manipulate the earnings (e.g. (Bergstresser & Philippon, 2006; Burns & Kedia, 2006; Efendi, Srivastava, & Swanson, 2007; Erickson, Hanlon, & Maydew, 2004; Johnson, Ryan, & Tian, 2009; Peng & Röell, 2008). These studies are consistent with the existing theoretical arguments that executive compensations affect fraud propensity (Goldman & Slezak, 2006; Peng & Röell, 2008, 2014). In the same vein, the studies find characteristics of corporate governance mechanisms such as board composition and expertise (Agrawal & Chadha, 2005; Beasley, 1996; Dechow et al., 1996; Klein, 2002), role of executives and social ties with board members and other executives (Chidambaran et al., 2011; Khanna et al., 2015) as significant contributors towards fraud. Among external factors, the research identifies factors related to external mechanisms and channels, such as business conditions (Wang et al., 2010), (Wang & Winton, 2012) industry characteristics and the role of regulators (Agrawal & Cooper, 2010; Kedia & Rajgopal, 2011).

Although the established theoretical and empirical literature on these factors provide a significant understanding of the fraud phenomenon, this study believes that these factors need to be examined in a comprehensive framework. Majority of the above-mentioned studies focus on only a few of the many factors that may potentially escalate the fraudulent behavior. In this respect, the Fraud Triangle Theory (FTT) of Cressey (1953), offers a comprehensive model to understand the fraudulent behavior from a wider perspective. This model is developed on the assertion that fraud likelihood is due to the combination of three elements. First, the theory posits that there has to be pressure or an incentive for committing fraud. In this regards, one should have a financial motivation or

pressure to commit the fraud. Prior studies classify the pressure into financial and non-financial pressure (Albrecht, Albrecht, Albrecht, & Zimbelman, 2011; Fitzsimons, 2009). For non-financial pressure, the literature documents gambling and drug addiction (Kelly & Hartley, 2010), work-related pressure (Holton, 2009), and pressure to achieve a luxurious life (Anderson & Tirrell, 2004; Dellaportas, 2013). On the other hand, financial distress, meeting analysts' forecasts, and the inability to compete within the industry are among many of the financial pressures that provide motivation to commit fraud (Albrecht et al., 2004; Dellaportas, 2013; Power, 2013). The second condition of the fraud triangle posits that there has to be an opportunity in the current system of the company that exacerbates the environment for fraud commission. The prior literature has documented the lack of effective governance mechanism (Beasley, 1996; Dellaportas, Leung, & Cooper, 2012; Hasnan, Rahman, et al., 2012), passive monitoring of institutional investors (Sharma, 2004; Wu et al., 2016), and poor audit mechanism of firms (Hasnan, Rahman, et al., 2012; Power, 2013) as leading fraud contributing factors. Finally, the third element of fraud triangle premises that there has to be justification or rationalization for fraud commission. This is considered as the major factor that creates the culture of fraud (Kula, Yilmaz, Kaynar, & Ali, 2011).

The application of Cressey's fraud triangle (1953) in academia and in professional auditing bodies is well documented (Dellaportas, 2013; Skousen, Smith, & Wright, 2009; Wilks & Zimbelman, 2004). For instance, in practice, it has been used in the rules of Statement on Auditing Standards 99 (SAS 99), Federal Accounting Council, American Institute of Certified Public Accountants 2002, and International Accounting Standards Board (ISA 240). Malaysia also has adopted the guidelines of fraud triangle in International Standards on Auditing (ISA) 240. These standards are similar to the US Statement of Auditing Standard (SAS) No. 99. Given its established significance, this

study uses Cressey's hypothesis (1953) to identify the factors that escalate the fraudulent behavior of firms in Malaysia.

3.2.1.1 Pressure

Pressure is the first element of Fraud Triangle Theory and is also documented as motivation or incentive. It refers to a situation where a stressful personal or professional need persuades the individual to act unethically (Coenen, 2008; Dellaportas, 2013; Singleton, Singleton, Bologna, & Lindquist, 2006). Lister (2007) termed the pressure as "*the source of heat for the fire*", however, to him, pressure does not necessarily mean that someone will always commit fraud. In his interviews, Cressy (1953) found that non-shareable pressures such as maintaining the luxurious lifestyles motivated the fraudulent behavior of individuals. Murdock (2008) maintained that the fraud related pressure might be linked to financial, non-financial, social, and political.

Further, the researchers classified the pressure into financial and non-financial pressures (Albrecht, Albrecht, & Albrecht, 2008; Fitzsimons, 2009; Kassem & Higson, 2012). In financial pressure, the literature documents the loss on the investment and financial distress (Dellaportas, 2013), meeting analysts' forecasts and targets, poor firms' growth, and external financing needs (Crutchley et al., 2007; Dechow, Ge, Larson, & Sloan, 2011; Power, 2013; Rezaee, 2005) as the leading factors of fraud. In another context, studies find that the firm's failure to compete with industry or product market competition may also motivate the individuals to behave unethically (Balakrishnan & Cohen, 2011; Darby & Karni, 1973; Datta, Iskandar-Datta, & Singh, 2013; Luca & Zervas, 2016; Sadka, 2006; Wang & Winton, 2012). For non-financial pressure of fraud, the literature documents gambling and drug addiction (Joyner & Payne, 2002; Kelly & Hartley, 2010), work-related pressure (Holton, 2009; Shafer, 2002), and pressure to

achieve a luxurious lifestyle (Anderson & Tirrell, 2004; Balogun, Selemogwe, & Akinfala, 2013; Dellaportas, 2013; Geldenhuys, 2016).

With this comprehension, corporate executives are extended monetary incentives (i.e., compensation bonuses) to increase the firm's performance (Brick, Palmon, & Wald, 2006; Hastings, Graham, Richie, & Evers, 2010; Mehran, 1995). These incentives, together with the firm's interest to keep share prices high, further add into managers' incentives to misreport the financial information (Andergassen, 2008; Benmelech, Kandel, & Veronesi, 2010; Burns & Kedia, 2006; Erickson et al., 2006). Various studies empirically examined the relationship between executive incentives and fraud motivation (Andergassen, 2008; Benmelech et al., 2010; Burns & Kedia, 2006; Conyon & He, 2016; Efendi et al., 2007; Goldman & Slezak, 2006; Johnson, Ryan, & Tian, 2003; Kim, Roden, & Cox, 2013; Liu & Yu, 2017; Peng & Röell, 2008, 2014). For instance, Goldman and Slezak (2006) report that stock-based compensation schemes encourage executives to misreport corporate earnings and inflate stock prices.

A recent study of Dichev, Graham, Harvey, and Rajgopal (2013) report the CFO's views on fraud motivations. The results indicate that 93.5% of the CFOs believed that influencing the share price is the primary reason of financial misreporting. Outside pressure to commit fraud included pressure to smooth corporate earnings (69.1%) and pressure to meet analysts' forecasts (92.1%). Moreover, inside pressure included the pressure to meet earnings targets (91.0 %), the pressure to influence managers' compensations (88.6%), and career uncertainty (80.4%). In the same vein, Feng, Ge, Luo, and Shevlin (2011) report that among many types of pressure, the CEO and compensation pressure are the significant determinant of fraudulent behavior. They highlight that it is the CEO pressure that instigates the CFOs to manipulate earnings. Moreover, Bishop,

DeZoort, and Hermanson (2016) indicate that due to the obedience and compliance pressure from CEOs, many CFOs are forced to change their primary estimates according to CEOs requirements. They further report that compared to less experienced CFOs, the experienced CFOs are more likely to resist the informal or formal pressure from CEOs.

3.2.1.2 Opportunity

Opportunity is another important condition of the Fraud Triangle Theory, which posits that offender has the technical knowledge about the potential weaknesses in the system, and acquires sufficient information to operationalize the fraud (Singleton et al., 2006). Cressy (1953) show that such information is acquired before the presence of any potential pressure. The individual then uses this information when confronted with some non-shareable problem. Therefore, when a non-shareable problem or pressure is added to opportunity, the likelihood of fraud commission become higher (Singleton et al., 2006).

In accounting literature, several researchers have examined the opportunity within the context of poor internal control mechanism of companies (Agrawal & Chadha, 2005; Albrecht, Holland, Malagueño, Dolan, & Tzafrir, 2015; Doyle, Ge, & McVay, 2007; Kelly & Hartley, 2010; Smith, Tiras, & Vichitlekarn, 2000). Coenen (2008) report that when an individual has certain technical knowledge of company's "*assets, people, information, and computer systems that enable him or her not only to commit the fraud but to conceal it*", then the opportunity to cheat the system is created. In fact, such an opportunity to involve in fraud rises with poor internal control mechanism, less effective corporate governance, and poor audit quality (Abbott, Parker, & Peters, 2004; Abbott, Parker, & Presley, 2012; Abernathy, Beyer, Masli, & Stefaniak, 2014; Badolato, Donelson, & Ege, 2014; Bedard, Chtourou, & Courteau, 2004; Carcello & Nagy, 2004; Hasnan, Rahman, et al., 2012). Moreover, Statement on Auditing Standards (SAS- No.

99) offers some factors that may exacerbate the opportunity to engage in fraudulent financial reporting. These risk factors or red flags include the ineffective monitoring of corporate board, related party transactions, and complex organizational structure.

Several studies have reported that ineffective weak corporate governance is related to a higher probability of fraud. For instance, the literature shows that the likelihood of earnings manipulation and financial misreporting is higher in firms with more executive directors on the board (Dechow et al., 2011; Kim et al., 2013; Pagano & Immordino, 2012; Uzun, Szewczyk, & Varma, 2004). Agrawal and Chadha (2005) investigate the effect of financial expertise of the board on fraud likelihood. They report that fraud probability is lower in a firm whose board has independent non-executive directors with financial knowledge. Likewise, Farber (2005) shows that compared to non-fraud sample, fraud companies have poor corporate governance, fewer board meetings, fewer independent directors, and a higher percentage of CEOs-Chairman duality.

Moreover, the literature also discovers the role of social connections of executives with board members of other companies as the important factors that may potentially contribute to fraud. Chidambaran et al. (2011) show that the professional ties of executives have a negative effect on the fraud likelihood, whereas non-professional ties have a positive effect on fraud propensity. Furthermore, Khanna et al. (2015) find that CEOs social connectedness encourage fraud incentives by deterring fraud detection, decreasing CEO dismissals on fraud revelation, and reducing the coordination cost associated with misconduct.

3.2.1.3 Rationalization

Rationalization is the third condition of the Fraud Triangle Theory. This notion proposes that the offender must frame some kind of moral and acceptable justification before committing fraud. This refers to the reasoning that the immoral behavior of the individual is somewhat other than a crime. This idea is extensively debated by psychologists, sociologists, and psychiatrists. Cressey (1953) observed that offenders justify their illegal behavior as acceptable behavior with the purpose to resolve a non-shareable problem. Hence, rationalization is the way to morally justify the misconduct, bearing in mind that company can absorb the outcomes of the action or that the action has no material impact on any stakeholders (Coenen, 2008; Singleton et al., 2006).

To date, the literature investigating the rationalization is scant (Murphy, 2012). As observed by Murphy and Dacin (2011) and Hogan et al. (2008), rationalization has not received due consideration from accounting scholars. The criminology and social psychology literature both offer some insights into understanding the rationalization. For instance, Sykes and Matza (1957), in their study on neutralization theory, propose that criminals generally use 'the systems of neutralization' to justify their action. According to Sykes and Matza (1957), neutralization procedures are generally applied to protect the individuals from their own internal beliefs covering the existence of guilt. Recently, the psychological process of cleaning someone's conscience was extended by Murphy and Dacin (2011). The offenders possess a specific mindset that permits them to rationalize their fraudulent acts (Hooper & Fornelli, 2010).

As rationalization is difficult to observe, prior studies use various proxies to measure this aspect. For example, Hasnan, Rahman, et al. (2012) used a history of prior violations to measure rationalization in Malaysia. Similarly, Lou and Wang (2011) also

use historical financial restatement times and auditor change to capture rationalization. Moreover, Johnson et al. (2012) and Murphy (2012) measured rationalization through Client Narcissism and Machiavellianism respectively.

3.3 Hypothesis Development

In this section, the study formulates the hypothesis based on the prior literature and Malaysian ISA-240. Specifically, the study identifies the factors to get the parsimonious model for estimation. In the following section, the study describes the variables of the study and their respective hypothesis based on the theoretical and empirical literature.

3.3.1 Pressure/incentive

Based on Malaysian ISA-240 and fraud literature, the study measures pressure by tax aggressiveness, political connections, CEO compensation, and financial distress.

3.3.1.1 Tax Aggressiveness

The past studies provide varied findings on the relationship between financial reporting aggressiveness and tax reporting aggressiveness (Frank, Lynch, & Rego, 2009; Heltzer, Mindak, & Shelton, 2012; Lennox et al., 2013). These studies motivate us to find whether aggressive tax reporting is associated with fraudulent financial reporting. Frank et al. (2009) find that aggressive financial reporting firms are also aggressive in tax reporting. However, the findings of Lennox et al. (2013) indicate that tax aggressive firms are less likely to commit fraud. In a different setting, Heltzer et al. (2012) report no evidence of a relationship between aggressive financial reporting and tax reporting. Given these mixed empirical findings, the study extends prior research by examining the relationship between tax aggressiveness and fraud likelihood in Malaysia. Based on Erickson et al. (2004) argument that firms overpay their taxes to avoid any suspicion arousing from regulatory bodies and investors, the study expects the positive relationship

between tax aggressiveness and the likelihood of fraud and formulate the following hypothesis:

$H_{1\,(a)}$: *Other things being equal, there is a positive association between tax aggressiveness and corporate fraud.*

3.3.1.2 Political Connections

For many emerging economies, political connections between business and political leaders are an important part (Bliss & Gul, 2012; How, Verhoeven, & Wahab, 2014). Malaysia is one such economy that attracted the researchers' attention (Chaney, Faccio, & Parsley, 2011; Faccio et al., 2006; Gomez & Jomo, 1997; Johnson & Mitton, 2003). Nearly one-third of the listed firms are known to be politically connected (Faccio et al., 2006). Prior studies suggest that politically connected firms have poor quality of accounting information (Chen, Ding, & Kim, 2010), less timely process of price discovery (Lim, How, & Verhoeven, 2014), and high information asymmetry (Boubakri, Guedhami, Mishra, & Saffar, 2012). Government protections to connected firms (Chen, Li, & Su, 2005; Faccio et al., 2006) and the imposition of tariffs on competitors (Goldman, Rocholl, & So, 2013) results in higher firms' opacity (Bhattacharya, Daouk, & Welker, 2003). Such conditions enable managers of these firms to hide doubtful practices and avoid scrutiny from regulators (Bushman, Piotroski, & Smith, 2004; Walker & Reid, 2002). Based on these arguments, the study expects that political connections increase the fraud occurrence and formulate the following hypothesis:

$H_{1\,(b)}$: *Keeping other things equal, firms having political connections have a high probability to commit fraud.*

3.3.1.3 Executive Compensation

The role of corporate governance has serious criticism in determining executive compensation structure (Fahlenbrach & Stulz, 2011; Kirkpatrick, 2009). The compensation structure of executives has been considered a key tool to curb agency conflict (Dalton & Daily, 2001; Demsetz & Lehn, 1985; Jensen & Meckling, 1976; Shleifer & Vishny, 1997). Several studies in accounting and finance literature test whether equity-based incentives of CEOs have a relationship with financial statement fraud. Allegedly, equity-based incentives result in myopic actions of managers to maintain earnings at artificially high possible levels in the short run. Though the literature on this issue is ongoing, the overall evidence is inconclusive with few studies reporting a positive relation (Bergstresser & Philippon, 2006; Burns & Kedia, 2006; Efendi et al., 2007; Harris & Bromiley, 2007), and others finding no such relation (Armstrong, Jagolinzer, & Larcker, 2010; Baber, Kang, Liang, & Zhu, 2009; Erickson et al., 2006). In the view that the majority of Malaysia's executives have a high equity interest in firms. The study expects a positive relationship of compensation with fraud by developing the following hypothesis:

$H_{1(c)}$: *CEO's compensation is positively associated with the probability of committing fraud.*

3.3.1.4 Financial Distress

The performance of the fraudulent firms is important to be known especially if the firms are suffering financially. These financial difficulties may bring reputational loss (Anginer et al., 2011) and a loss of investors' trust (Giannetti & Wang, 2014). Prior literature suggests that fraud occurrence is high in financially distressed firms (Habib, Uddin Bhuiyan, & Islam, 2013; Hasnan, Abdul Rahman, et al., 2012; Liou, 2008; Spathis, 2002). Several other studies document that avoiding the penalties associated with violations of debt covenants bring motivations for companies to commit fraudulent acts

(Sweeney, 1994). These studies imply that financial distress can increase firms' incentives to misreport. Therefore, this study formulates the following hypothesis:

$H_{1(d)}$: *The probability of committing fraud is high in financially distressed firms.*

3.3.2 Opportunity

Opportunity is the situation or condition that allows people to commit fraud. The literature and auditing standards suggest that absence of various monitoring mechanisms create an opportunity for managers to commit fraud. The study uses institutional investors (i.e., dedicated and transient) and corporate governance mechanism (i.e., Independent board, independent audit committee, family ownership, pyramidal ownership structure, and presence of a female on board) in this regard to proxy opportunity.

3.3.2.1 Institutional Investors

In Malaysia, the market for institutional investors is largely dominated by government's investment institutions (Hutchinson et al., 2009; Wahab, How, & Verhoeven, 2008; Wahab, How, & Verhoeven, 2007). Studies suggest that monitoring mechanism of institutional investors helps in mitigating the earnings management (Abdul Jalil & Abdul Rahman, 2010; Burns, Kedia, & Lipson, 2010; Chen, Chen, et al., 2010; Cornett, Marcus, & Tehranian, 2008; Hsu & Koh, 2005; Koh, 2003), particularly when they have large equity stakes. They inhibit managers from carrying out earnings management practices, such as decreasing or increasing the firm's profit according to their desires (Chung, Firth, & Kim, 2002). However, prior studies show that institutional investors differ in their investment horizons. Investors with long-term investment horizon (i.e., dedicated investors) actively monitor managers' decision (Brickley, Lease, & Smith, 1988; Bushee, 2001; Chen, Harford, & Li, 2007; Koh, 2007; Ramalingegowda & Yu, 2012; Sahut & Gharbi, 2010). The active monitoring by dedicated investors may restrain the opportunistic behavior of managers and may decrease the fraud likelihood. In contrast,

investors with a short investment horizon (i.e., transient investors) are less likely to monitor managers because they only care about their returns. Gaspar, Massa, and Matos (2005) argue that transient investors allow managers to make value decreasing decisions at the expense of shareholders' benefits. Further, studies document that intensive trading of transient investors on earnings news create opportunities for a manager to manipulate earnings (Koh, 2003). So, one may expect transient investors to increase fraud likelihood. The study formulates three hypothesis related to institutional investors and the likelihood of fraud.

$H_{2\,(a)}$: *The presence of institutional investors reduces the likelihood of the fraud.*

$H_{2\,(b)}$: *Ceteris paribus, dedicated institutional ownership has a negative impact on the likelihood of fraud.*

$H_{2\,(c)}$: *Ceteris paribus, transient institutional ownership has a positive impact on the likelihood of financial statement fraud.*

3.3.2.2 Family Ownership

The prior literature defines family firms as companies where founding members are key shareholders, directors, and executives (Anderson, Mansi, & Reeb, 2003; Bardhan, Lin, & Wu, 2015; Chen, Chen, et al., 2010; Vazquez, 2016). There are two competing arguments about financial reporting quality of family firms: alignment theory and entrenchment theory (Wang, 2006). Alignment theory predicts less likelihood of fraud in family firms because of strong monitoring by founding family members. Various studies find the presence of alignment effect in family firms (Ali, Chen, & Radhakrishnan, 2007; Anderson & Reeb, 2003; Chen, Chen, et al., 2010; Ghosh & Tang, 2015). In contrast, entrenchment theory suggests that conflict between family and minority shareholders offers opportunities to family shareholders to expropriate the wealth of minority shareholders. Literature also provides support for the entrenchment effect in family firms

(Bardhan et al., 2015; Burkart & Panunzi, 2006; Wang, 2006; Yoong, Alfan, & Devi, 2015). Given the empirical support for both competing arguments, one may expect the presence of any of these effects in fraud likelihood. Therefore, the study formulates the following hypothesis:

$H_{2\,(d)}$: *Family ownership has an influence on the likelihood of fraudulent financial reporting.*

3.3.2.3 Pyramidal Structure

This study considers the pyramidal structure of the firm as a proxy for the Type-II error. A pyramidal structure shows the affiliation of a firm to a group of the firm which generates a top-down chain of control Attig (2007). In this chain of control, the controlling shareholders are located at the top of the pyramid with the successive level of companies below. This structure results in divergence between cash flow rights and voting rights for firms placed at the bottom level of this structure (Claessens, Djankov, & Lang, 2000). The difference between cash flow and control rights results in agency conflict between minority shareholders and ultimate controlling shareholders. Since the controlling owners have significantly higher control rights than cash flow right in this structure, they opt to expropriate minority shareholders' rights for their private benefits Cronqvist and Nilsson (2003). The divergence between the two rights (i.e. control vs cash flow) is a largely used proxy for the expropriation of minority shareholders' rights or Type-II agency problem (Chu, Liu, & Tian, 2015; Demsetz & Lehn, 1985; Fan & Wong, 2002; Lemmon & Lins, 2003).

This study argues that the detrimental effect of this divergence (i.e. Type-II agency problem) on financial statement fraud may be higher among companies with a pyramidal structure. The controlling shareholders may exert their control through the pyramidal structure to misreport the reported earnings. The study, therefore, formulates the following hypothesis:

$H_{2\,(e)}$: *The firms with pyramidal ownership structure have a high probability of committing financial statement fraud.*

3.3.2.4 Poor Corporate Governance

(a) ***Board's independence***

Outside directors provide a strong monitoring mechanism and ensure the quality of earnings (Dimitropoulos & Asteriou, 2010; Klein, 2002; Peasnell, Pope, & Young, 2005). Studies suggest that the independence of outside directors reduce the likelihood of earnings management (Dechow & Dichev, 2002; Peasnell, Pope, & Young, 2000). Aishah Hashim and Devi (2008) report that 13.2 percent of Malaysian listed companies do not fulfill the requirement of Malaysian Code on Corporate Governance (MCCG) of having one-third of total board members as independence members. This confirms the lack of board independence. In this regard, Johari, Saleh, Jaffar, and Hassan (2009) find that this composition is not adequate to prevent fraudulent activities. Keeping the view that adequate board independence provides strong oversight function, it is expected that fraud likelihood is lower in firms with an independent board. The stud formulates the following hypothesis in this regard:

$H_{2\,(f)}$: *Probability of fraud commitment is higher in firms with lower board independence.*

(b) ***Effective Audit Committee***

The importance of an audit committee for reporting quality has been mentioned in many earlier studies (Klein, 2002; Lin, Li, & Yang, 2006; Vafeas, 2005). One of the characteristics of an effective audit committee is its independence. Beasley (1996) suggests that fraud occurrence is less in firms with the independent audit committee. However, the issue of independence is of no interest because stock exchange rules require all members of an audit committee to be independent. Menon and Williams (1994) suggest that independence alone is not enough for effective monitoring. The literature

emphasizes the importance of audit committee's meetings (Abbott et al., 2000; Nowland & Johnston, 2017; Owens-Jackson et al., 2009) and financial expertise (DeFond, Hann, & Hu, 2005; Ghafran & O'Sullivan, 2017; Yu, Xu, & Zhang, 2016) as prerequisites for an effective audit committee. Abbott et al. (2000) report that firms with an independent audit committee and meeting frequency of at least two times per year have lower chances of fraud. Moreover, DeFond et al. (2005) argue that the market reacts positively to the presence of a financial expert in audit committee. Therefore, this study posits that an audit committee which has at least two meetings in a year and minimum one financial expert reduces the likelihood of fraud.

$H_{2\,(g)}$: *Probability of fraud commitment is lower in firms with the effective audit committee.*

(c) ***Female on Board***

Recent literature on board compositions highlights the importance of gender diversity on board [see for example. (Campbell & Mínguez-Vera, 2008; Chapple & Humphrey, 2014; Erhardt, Werbel, & Shrader, 2003; Low, Roberts, & Whiting, 2015; Sun, Liu, & Lan, 2011)]. On one hand, one strand of literature finds no significant difference in ethical judgments of gender (Arun, Almahrog, & Aribi, 2015; Darmadi, 2013; Gavious, Segev, & Yosef, 2012), other studies find a significant role of female in reducing earnings management and improving firm performance (Broadbridge, Hearn, Huse, & Grethe Solberg, 2006; Campbell & Mínguez-Vera, 2008; Srinidhi, Gul, & Tsui, 2011). For instance, Srinidhi et al. (2011) report that female presence on the board improves earnings quality of companies. They argue that women offer diversification in the boardroom, demand a diverse perspective, and help informed decisions. These aspects improve overall monitoring and oversight function of the board resulting in lower opportunities for fraudulent acts. Based on these arguments, the study expects that female presence on

board reduces the likelihood of fraud in Malaysia. It leads to the development of the following hypothesis:

$H_{2\,(h)}$: *Fraud commitment is lower in firms that have females on their boards.*

3.3.3 Attitude/ Rationalization

Audit Standards and fraud literature provide a comprehensive insight into the presence of pressure and opportunity. However, the studies on rationalization are limited. For example, Johnson et al. (2012) and Murphy (2012) measured rationalization through Client Narcissism and Machiavellianism respectively. However, the nature of their study was experimental which is different from this study. This study identifies prior violations and change of auditors as a proxy for rationalization.

3.3.3.1 Prior Violations

The management integrity and attitude are not directly observable. We tend to examine this aspect by a number of times a company violated the rules and regulations. If a firm has a higher number of prior violations, then we may query the management integrity and accounting information. Prior studies also document that alleged firms have a high frequency of regulation violations (Baucus, 1994; Davidson, Worrell, & Lee, 1994). Finney and Lesieur (1982) report that the nature of criminal actions is developmental. This is in line with Pfeffer (1982), who states that repeated use of policies and procedures become acceptable social behaviors. Moreover, Geriesh (2003) suggests that firms with prior violation history are more likely to commit fraud. All these studies indicate that illegal activities start small and then develop into a culture that finally leads to fraud. So, this study expects a positive relationship between the history of prior violations and the occurrence of fraud.

$H_{3\,(a)}$: *The firms with a prior history of violations are more inclined to commit fraud.*

3.3.3.2 Change of Auditor

Independence external auditor is an essential monitoring tool to assure the quality of financial reporting. Management- auditor relationship is crucial in determining the rationalization in companies. When management has not good relationship with auditors, a firm is more likely to encounter fraud. Sorenson, Grove, and Selto (1983) argue that management could change auditors to reduce fraud detection. This is documented by Loebbecke and Willingham (1988), who find that nearly 36 percent of their sample had fraud allegation in the first two years of auditors' change. Shu (2000) finds a positive association between auditors' resignation and the probability of litigation. With a number of auditor switch as a proxy for rationalization, one may expect that changes in auditor are positively associated with the fraud likelihood. The hypothesis is formulated as follows:

$H_{3\,(b)}$: *Ceteris paribus, the firms with auditor change have a higher tendency of committing fraud than firms with no auditor change.*

Moreover, the quality of auditor also determines the fraudulent behavior of the firms (Carcello & Nagy, 2004; Lennox & Pittman, 2010; Persakis & Iatridis, 2016). If the firm's auditor shift is towards the auditors with less reputation such as non-big 4 auditors, there are high chances that firm may commit fraudulent financial reporting. Therefore, the study expects a positive relationship between a firm's shift to non-big 4 auditors and accounting fraud. The following hypothesis is established in this regard:

$H_{3\,(c)}$: *Ceteris paribus, the firms with a non-big 4 auditor shifts tend to have a higher chance of committing fraud than firms with big 4 auditor shift.*

3.4 Data and Sample

3.4.1 Enforcement Action Releases (EARs) as Fraud Proxy

The fraud revelation or lawsuit damage the firm's reputation because it shows that the firms did not maintain its end of an implicit contract with stakeholders (Agrawal, Jaffe, & Karpoff, 1999). Keeping this perspective of fraud, we define fraud sample as those companies against which regulatory bodies took enforcement actions. Past research carried out in the US [see for example., ((Dyck et al., 2010; Dyck et al., 2013; Farber, 2005; Fich & Shivdasani, 2007; Johnson et al., 2003; Khanna et al., 2015)] use sample of fraudulent companies obtained from the Securities Commission Accounting and Auditing Enforcement Releases. This study also identifies the fraud sample of 76 firms from enforcement action releases (EARs) of Securities Commission Malaysia, and Bursa Malaysia for the period of 1996-2016.

Compared to other potential sample selection methods such as the modified Jones abnormal accruals model, using enforcement action releases (EARs) as a fraud sample offers various advantages. First, EARs are consistent and straightforward because they avoid potential bias of the researcher's personal classification scheme and can be used by other researchers as well. Second, because of their limited budget, security commission pursue those cases that are economically significant and are serious in nature. As a result, the type I error is expected to be low in these cases. Despite several advantages, there are caveats of using EARs as fraud proxy. Many fraudulent firms may go unidentified, and there could be section bias in cases selected by regulatory bodies. This is called partial observability or identification problem. For instance, the Securities Commission may be more likely in pursuing those cases where losses incurred to investors are higher. It may limit the generalizability of findings to other study settings. However, the selection bias is a general concern in financial misconduct studies, thus not unique to enforcement action releases.

The process of sample selection is given in Panel A of Table 3.1. The study identifies primary sample from Securities Commission Malaysia (SC) and Bursa Malaysia enforcement releases. From 113 fraud cases identified from SC, the study excludes financial institutions, private limited companies, and companies that are not involved in financial statement fraud (i.e., it includes insider trading, share manipulation). Similarly, from Bursa Malaysia, a total of 1121 enforcement releases are identified. Out of 1096 EARs, financial institutions and non-fraud cases are excluded. Moreover, 18 cases are dropped because they were found to be redundant in both SC and Bursa Malaysia enforcement releases. Further, 31 companies are excluded from the sample because of incomplete information on study variables and missing fraud commission dates. This leaves with a final sample of 76 firms where 54 companies are identified from the Security Commission of Malaysia while remaining companies are identified from Bursa Malaysia.

Panel B of Table 3.1 presents the distribution of fraud in different industries. Industrial products are more involved in fraudulent financial reporting. They account for 38.2% of all frauds from 1996-2016. Firms in the consumer product industry make up 19.7% of the fraud followed by trading and services industry that constitute 11.8% of the fraudulent sample. Plantations firms constitute 10% of the total sample. The mining industry is the one which has the least number of fraudulent firms. In total, industrial products and consumer products account for 58% of the sample in this study.

Panel C of Table 3.1 presents the classification of the sample according to the nature of the offense. Improper recognition of revenue is the most common one and account for 53.9% of the sample. Overstatement of assets such as account receivable, other assets and inventory account for 25% of the overall offenses. Understatement of different items such as reserves, liability, and operational expenses make 17.1% of the sample. Non-recurring

items appeared in 2 firms that is 2.6% of the sample. The other offenses only form 1.3% of the total fraud cases.

Table 3-1: Sample Selection Criteria and its Characteristics

Panel A: Identification of financial statement fraud firms (FFR) from 1996-2016			
Firms Identified from Securities Commission Malaysia			
Number of fraud cases in SC enforcement releases			113
Fraud cases reported in SC press releases			13
Minus:	Financial Institutions	(12)	
	Private Listed Companies	(31)	
	Non-fraud cases	(29)	
Total number of Fraud cases identified by SC			**54**
Firms Identified from Bursa Malaysia			
Number of firms in Bursa Malaysia enforcement releases			1096
Minus:	Financial institutions/ Banks	(20)	
	Non-fraud cases	(1005)	
Total number of fraud firms identified by Bursa Malaysia			**71**
Total Cases from SC and Bursa Malaysia			**125**
Minus:	Redundant Fraud cases reported in both SC and Bursa Malaysia	(18)	
	Incomplete data	(31)	
Final Financial Statement Fraud Sample			**76**

Panel B: Industrial Classification of Sample		
Industry	**Number of Firms (n)**	**Percentage (%)**
Property	5	6.58
Consumer Products	15	19.74
Industrial Products	29	38.16
Plantation	8	10.53
Trading & Services	9	11.84
Technology	8	10.53
Mining	2	2.63
Total	**76**	**100%**

Panel C: Nature of Offence		
Offence	**Number of Firms (n)**	**Percentage (%)**
Improper Revenue Recognition	41	53.95
Overstatement of Account Receivable	6	7.89
Overstatement of other Assets	9	11.84
Overstatement of Inventory	4	5.26
Understatement of Allowances/Reserves	4	5.26
Non-recurring Items	2	2.63
Understatement of Liability	2	2.63
Understatement of Expenses	7	9.21
Others	1	1.32
Total	**76**	**100%**

Source: SC and Bursa Malaysia

3.4.2 Selection of Control Sample

Following Beasley (1996), each fraudulent company is matched with the non-fraudulent companies based on the various criteria. First, non-fraudulent companies have the same industry as the fraudulent ones. Second, the first year of fraud, year (t) for non-fraudulent companies, is determined by the fraudulent companies 'first year of fraud. Third, the non-fraudulent companies are selected based on their similarity in size to the fraudulent companies. The study retains companies whose size is within a standard deviation of 30% of fraudulent companies. The study uses total assets as the size measurement. Furthermore, for the control sample, the whole population of companies listed on Bursa Malaysia is selected by excluding those that do not have any record of being investigated for commercial crime either by the Securities Commission or any other regulatory bodies. Also, the non-fraudulent companies must not be in financial distress (not listed in the PN4[18] or PN17[19] listing).

3.5 Estimation Technique

3.5.1 Partial Observability Problem

When the latent variable is unobserved, or a binary dependent variable, the model cannot be estimated using ordinary least squares. In this situation, logit and probit models are widely used and are members of the family of generalized linear models. The existing studies extensively use a standard probit model to assess the occurrence of unethical behavior in companies (Dechow et al., 2011). However, simple probit model assumes perfect detection, so while assessing the probability of fraud commission, the problem of

[18] Practice Notes No. 4, also known as PN4 (PN4, 2001), are conditions where a company is facing financial difficulty (distress) and does not meet the Bursa Malaysia listing requirements. Such companies are also known as financially distressed companies.

[19] In 2005, PN4 was replaced by Practice Notes No. 17, widely known as PN17 (PN17, 2005) in dealing with financially distressed companies.

identification or partial observability (shown in Fig. 3.1) arises since we only can observe detected fraud by regulatory bodies.

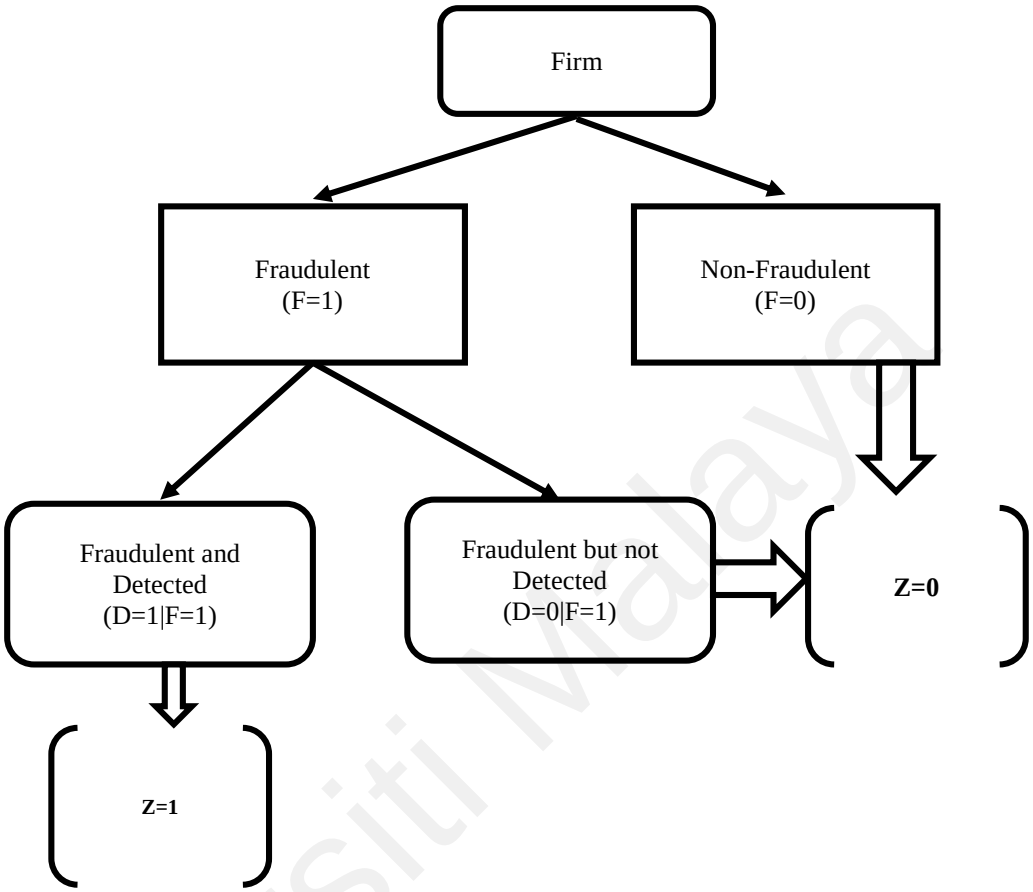

Figure 3.1: Partial Observability Problem

Source: Wang (2004)

This phenomenon offers two critical implications: First, the outcomes we observe rest on the product of fraud commission and detection probabilities. Second, if the fraud detection is not perfect, then the probability of detected frauds might be different from the expected probability of fraud. In such situations, the simple probit model is not an adequate option. Instead, one needs to follow the bivariate probit model.

3.5.2 Bivariate Probit Model

To address the problem of partial observability, the study uses a bivariate probit model suggested by Poirier (1980) and Wang et al. (2010). For every firm i, F_i^* represents the probability of fraud commission, and D_i^* is its probability of detection provided firm has committed fraud. The reduced form of the model is given as below:

$$F_i^* = x_{F,i}\,\beta + \mu_i; \tag{3.1}$$

$$D_i^* = x_{D,i}\,\gamma + \nu_i, \tag{3.2}$$

Where $x_{F,i}$ shows a number of variables that affect firm i's fraud propensity, and $x_{D,i}$ contains factors that affect the probability of fraud detection. μ_i and ν_i are zero-mean disturbance terms with a bivariate normal distribution.

For fraud commission, the study does the transformation of F_i^* into the dichotomous variable F_i, where: $F_i = 1 \quad if\ F_i^* > 0, \quad and \quad F_i = 0$ otherwise. For fraud detection, the study converts D_i^* into D_i, where: $D_i = 1 \quad if\ D_i^* > 0, \quad and \quad D_i = 0$ otherwise. Instead of directly observing the F_i and D_i, one can observe $Z_i = F_i D_i$, Where $Z_i = 1$ if the company has committed fraud and has also been detected, and $Z_i = 0$ if firm i has or has not committed fraud but has not been detected. Let ϕ denote the bivariate standard normal cumulative distribution function. The empirical model for Z_i is

$$P(Z_i) = 1 \quad P(F_i\ D_i = 1) = \phi\ (x_{F,i}\ \beta, x_{D,i}\ \gamma, \rho) \tag{3.3}$$

$$P(Z_i) = 0 \quad P(F_i\ D_i = 0) = 1 - \phi\ (x_{F,i}\ \beta, x_{D,i}\ \gamma, \rho) \tag{3.4}$$

The log-likelihood function can be described as

$$L(\beta\ ,\gamma\ ,\rho)=\sum_{z_i=1}\log\left(P(Z_i=1)+\sum_{z_i=0}\log\left(P(Z_i=0)\right)\right. \tag{3.5}$$

$$=\sum_{i=1}^{N}\{Z_i\log[\,\phi\,(x_{F,i}\ \ \beta,x_{D,i}\ \ \gamma,\rho]+(1-Z_i)\log[1-\phi\,(x_{F,i}\ \ \beta,x_{D,i}\ \ \gamma,\rho)]\}$$

The maximum-likelihood method can be used to estimate the above model. As suggested by Poirier (1980), full identification of the model requires two conditions: (1) $x_{F,i}$ and $x_{D,i}$ must not contain exactly the same set of factors; and (2) the explanatory variables exhibit substantial variation in the sample. In what follows, the study specifies the left-hand-side variable (Z) and the right-hand-side variables in each of the two probit equations (vectors x_F and x_D respectively). So, compared to simple probit model which assumes perfect detection of fraud $P(D_i=1|F_i=1)=1$, bivariate probit model takes two separate equations: (3.1) Fraud Commission (F); and (3.3) Fraud Detection (D).

3.5.2.1 Fraud Commission (F) Equation

The study defines the following equations for fraud commission:

$$F_{it}^{*}=\alpha_F+x_{F,i}\beta_F+x_{D0,i}\gamma_F+\mu_{i,t} \tag{3.6}$$

The vector x_F contains factors from the fraud triangle that affects the firm's likelihood of fraud. x_{D0} is the set of ex-ante detection variables. These are included in the fraud commission equation because they affect the expected cost of committing fraud, and their effects can be anticipated at the time the decision to commit fraud is made. This incorporates detection's deterrence effect on fraud commission. Like Wang and Winton (2012), the ex-ante detection variables include institutional monitoring (INS), firm size (SIZE), and firm age (Age). The extended form of equation (3.6) using study variables from pressure, opportunity, and rationalization can be written as follows:

$$
\begin{aligned}
F_{it}^{*} = {} & \alpha_0 + \beta_1 CETR_{i(t-1)} + \beta_2 PCD_{i(t-1)} + \beta_3 IncenRatio_{i(t-1)} + \beta_4 FD_{i(t-1)} + \beta_5 INS_{i(t-1)} \\
& + \beta_6 Ded_{i(t-1)} + \beta_7 Tran_{i(t-1)} + \beta_8 BI_{i(t-1)} + \beta_9 EAC_{i(t-1)} + \beta_{10} OWN_{i(t-1)} + \beta_{11} PYR._{i(t-1)} \\
& + \beta_{12} OWN*PYR_{i(t-1)} + \beta_{13} FOB_{i(t-1)} + \beta_{14} PRV_{i(t-1)} + \beta_{15} ACH_{i(t-1)} + \beta_{16} Non.Big\ 4_{i(t-1)} \\
& + \beta_{17} ACH*NonBig\ 4_{i(t-1)} + \beta_{18} Age_{t-1} + \beta_{19} Size_{t-1} + \varepsilon_{i(t-1)}
\end{aligned} \tag{3.7}
$$

Where *CETR* is Cash Effective Tax Rate, *PCD* is an indicator variable for political connections that equals one if the insider (i.e., the CEO or chairman of the board) has political connections, and zero otherwise, *IncenRatio* is incentive ratio to measure CEO compensation, and *FD* is financial distress. These variables measure pressure variable of fraud triangle.

For opportunity, *INS.* shows institutional investors, *Ded* shows dedicated investors, *Tran* shows transient investors, *BI* is board independence, *EAC* is effective audit committee, *OWN* is family ownership, *PYR* shows pyramid structure of the firm, and *FOB* is the presence of a female on board. For rationalization, *PRV* is the prior violations, and *ACH* is auditor change. *Non-Big 4* is the dummy variable which equals to 1 if the firm shifts to non-big 4 auditor firms, 0 otherwise. *Size* is firm size, and, *Age* is the firm's age. These variables are ex-ante detection factors. The measurement of these variables is provided in Table 3.2.

3.5.2.2 Fraud Detection (D) Equation

The baseline specification for the latent fraud detection equation is as follows:

$$
D_i^{*} = \alpha_D + x_{D0,i}\delta_D + x_{D1,i}\lambda_D + \nu_i . \tag{3.8}
$$

The vector x_{D0} is the set of ex-ante detection variables and x_{D1} is the set of ex-post factors whose effects on the probability of detection cannot be anticipated at the time fraud is committed. The ex-ante detection variables are measured as of year (t-1) (discussed in fraud commission equation), and the ex-post detection variables are

measured as of year (t+1). Because fraud detection occurs after fraud is committed, some factors that are unpredictable when the fraud decision is made can influence the probability of detection ex-post. These ex-post determinants of fraud detection, x_{D1}, are important in this analysis because they provide a natural set of variables for identification between the fraud commission equation and the fraud detection equation.

The litigation literature (Arena & Julio, 2011; Field, Lowry, & Shu, 2005; Xie, 2015) suggests that stock returns, return volatility, and stock turnover is related to a firm's litigation risk. Firms that experience substantial negative returns and high return volatility are likely to be sued because shareholders are unhappy about their investment losses. High stock turnover implies that more investors are affected by the company's stock price. Note that these factors can trigger both merited and false fraud detections. Thus, including these variables in the detection equation helps control the potential bias arising from frivolous lawsuits. These factors are also used in the framework of Wang et al. (2010).

The extended equation form of equation (3.8) is given by the following equation:

$$D_{it}^{*} = \alpha_0 + \beta_1 INS_{i(t-1)} + \beta_2 Size_{i(t-1)} + \beta_3 Age_{i(t-1)} + \beta_4 Rt_{i(t+1)} + \beta_5 Vol_{i(t+1)} + \beta_6 TO_{i(t+1)} + \varepsilon_{it} \quad (3.9)$$

Where, *INS*. shows institutional investors, *Size* is firm size, and, *Age* is the firm's age. These variables are used as ex-ante detection variables. For ex-post variables, *Rt* shows stock return, *Vol* shows return volatility, and *TO* is share turnover. The measurement of all the variables is provided in Table 3.2.

Table 3-2: Variable Measurement

Variables	Acronym	Measurement	Prior Studies
Incentive/Motive/Pressure			
Cash Effective Tax Rate	CETR	CETR is computed as the ratio of cash tax expense to pre-tax income.	(Chen, Chen, et al., 2010; Lennox et al., 2013)
Political Connections	PCD	PCD is an indicator variable that equals one if the insider (i.e. the CEO or chairman of the board) has political connections, and zero otherwise.	(Hasnan, Rahman, et al., 2012; Wang, Chen, Chin, & Zheng, 2017)
Financial Distress	FD	The study uses leverage to measure financial distress. Leverage is calculated as the ratio of long-term and short-term debt to total assets.	(Li, 2005; Wang, 2004)
Executive Compensation	IncenRatio	The study captures CEO equity-based incentives following Bergstresser and Philippon (2006), as measured by the dollar change in the value of a CEO's stock and options holdings that would come from a one percentage point increase in the company stock price.	(Bergstresser & Philippon, 2006)
Opportunity			
Dedicated Investors	Ded	Sum of a total number of shares held by Pension funds, government-managed unit trust funds (PNB) and government-managed pilgrims fund (LTH) to the total number of shares outstanding.	(Bushee, 1998; Lin, 2016; Liu & Peng, 2008; Njah & Jarboui, 2013)
Transient Investors	Tran	Sum of a total number of shares held by Banks, private managed mutual funds, and insurance companies to a total number of shares outstanding.	(Bushee, 1998; Lin, 2016; Liu & Peng, 2008; Njah & Jarboui, 2013)
Board Independence	BI	The percentage of Independent Non-Executive Directors on board.	(Beasley, 1996)
Effective Audit Committee	EAC	A dichotomous measure of audit committee effectiveness. EAC has a value of one if the audit committee meets at least two times a year and has minimum one financial expert; zero otherwise.	(Abbott et al., 2004; Beasley, 1996; Geraldes Alves, 2011)

Family Ownership	OWN	The percentage of family ownership among the top ten largest shareholders.	(Hasnan, Rahman, et al., 2012)
Pyramidal Structure	PYR	A dummy variable if the firm is controlled through a pyramid structure.	(Claessens et al., 2000; Sue, Chin, & Chan, 2013)
Female on Board	FOB	Indicator variable with the value of 1 if there is at least one female director on the board, 0 else.	(Abbott et al., 2012)
Rationalization			
Prior Violations	PRV	Dummy variable that takes the value of 1, if the firm has made some prior violations revealed by Bursa Malaysia or Security Commission of Malaysia, 0 otherwise.	(Hasnan, Rahman, et al., 2012; Lou & Wang, 2011)
Auditor Change	ACH	The study uses a dummy variable (ACH) to capture any change in the auditor before the fraud year. ACH is equal to 1, if there is any change in auditor 2 years prior to fraud commission, 0 otherwise	(Lou & Wang, 2011)
Non-Big 4	Non-Big 4	A dummy variable if the firm shifts to a non-big auditor 2 years prior to fraud commission, 0 otherwise.	
Other Variables			
Size	Size	Log of Assets (Book)	(Wang & Winton, 2012)
Firm Age	Age	Number of Years since incorporation.	(Wang & Winton, 2012)
Turnover	TO	The annual share turnover	(Wang et al., 2010)
Return	Rt	The annual buy and hold return.	(Wang et al., 2010)
Volatility	Vol	The standard deviation of daily stock returns	(Wang et al., 2010)

3.6 Results and Discussion

3.6.1 Descriptive Statistics

Table 3.3 presents the descriptive statistics and univariate analysis of the fraud triangle variables. The average of *CETR* in the fraudulent sample is less than the average of a control sample which shows that on average fraudulent companies are more tax aggressive compared to control sample. The means of political connections (*PCD*), financial distress (*FD*), and compensation (*IncenRatio*), are high in fraudulent companies compared to non-fraudulent companies. The univariate comparison shows that among the variables used as a proxy for incentives/pressure, the means of *CETR, PCD*, and *FD* for fraudulent companies are statistically different from non-fraudulent companies. However, the mean of compensation variable (*Incen.Ratio*) is statistically insignificant in two groups.

The variables proxied for opportunity show that the average percentage of institutional investors, dedicated investors and transitional investors in fraudulent firms is low compared to the control sample. The univariate analysis shows that the difference is statistically significant at 1%. In corporate governance variables, board independence (*BI*), effective audit committee (*EAC*), and female on board are less in fraudulent firms compared to non-fraudulent firms. However, the univariate analysis shows that the difference of female representation on board is statistically insignificant. Family ownership (*OWN*) is higher in fraud sample compared to control, and the difference is statistically significant at 5%. Moreover, the percentage of firms with pyramidal structure (*PYR*) is not significantly different between the two groups. Among variables used for rationalization, the mean prior violations and auditor change are higher in fraudulent firms compared to control firms. The univariate comparison shows that prior violations and auditor change are significantly different at 1%. The average size and stock turnover are not significantly different in both groups.

Table 3-3: Descriptive and Univariate Analysis

Panel A: Comparison of Mean			
Variable	**Fraud Mean**	**Control Mean**	**Difference p-value**
CETR	0.201	0.371	0.000***
PCD	0.481	0.288	0.000***
Incen. Ratio	0.160	0.147	0.820
FD	31.934	26.755	0.000***
INS	0.110	0.193	0.000***
Ded	0.074	0.126	0.000***
Tran	0.049	0.079	0.000***
BI	0.453	0.655	0.000***
EAC	0.364	0.633	0.000***
OWN	25.584	21.371	0.000***
PYR	0.334	0.318	0.764
FOB	0.184	0.220	0.435
PRV	0.462	0.195	0.000***
ACH	0.514	0.224	0.000***
Non-Big 4	0.692	0.599	0.091*
Rt	-0.071	0.004	0.066*
Vol	71.082	56.185	000***
TO.	1021.459	1282.056	0.198
Size	3.107	3.379	0.266
Age	8.801	9.766	0.881
Panel B: Comparison of Median			
Variable	**Fraud Median**	**Control Median**	**Difference Mann-Whitney U P value**
CETR	0.189	0.407	0.000***
Incen. Ratio	0.160	0.147	0.1184
FD	29.628	24.45206	.0331**
INS	0.094	0.211	0.000***
Ded	0.081	0.121	0.000***
Tran	0.051	0.123	0.000***
BI	42.857	72.727	0.000***
OWN	26.444	20.083	0.000***
Rt	-0.793	0.005	0.029**
Vol	68.141	57.777	0.000***
TO.	1034.762	1199.257	0.474
Size	3.006	3.193	0.189
Age	7.596	9.034	0.558

Note: In Panel A of the above table, the study compares the means of continuous variables using t-statistics, while z-statistics is used to compare the proportions of the binary variables. The p-values of both the test statistics are reported in the last column of the table. In Panel B, the study applies the Mann-Whitney U Test for the comparison of medians of study variables. However, the basic assumption of the statistics is that the scale of measurement should be ordinal, interval or ratio. Therefore, the study only reports the comparison of median for continuous variables in the Panel B of this table. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

However, the average stock return in the fraudulent sample is low compared to the control sample and is significantly different at 10%. Moreover, the stock volatility in fraud sample is higher than the non-fraud sample and the difference is statistically

significant at 1%. The difference between a firm's age of fraudulent firms and control firms is insignificant.

3.6.2 Bivariate Probit Estimates

Results of the bivariate probit model are reported in Table 3.4. Cash effective tax rate *(CETR)* loads negatively in bivariate probit models at 5% level of significance. It shows that fraudulent firms are more tax aggressive in financial reporting. This result is in contrast to Chen, Chen, et al. (2010) and Lennox et al. (2013) who report that fraudulent firms are less tax aggressive in the US.

Table 3-4: Results of Bivariate Probit Model

			P(F)		P(D|F)
Variables	**Acronym**	**Coefficients**	**Robust S.E**	**Coefficients**	**Robust S.E**
Tax Aggressiveness	(CETR)	-0.807**	(0.342)		
Poltitical Connections	(PCD)	0.566*	(0.300)		
Executive Compensation	(IncenRatio)	0.373	(0.285)		
Financial Distress	(FD)	0.012**	(0.005)		
Institutional Investors	(INS)	-2.045**	(0.888)	6.079*	(3.266)
Dedicated Investors	(Ded)	-9.529***	(2.785)		
Transient Investors	(Tran)	2.009	(2.385)		
Board Independence	(BI)	-0.049***	(0.012)		
EffectiveAudit Committee	(EAC)	-3.025**	(1.310)		
Family Ownership	(OWN)	0.007	(0.014)		
Pyramidal Structure	(PYR)	0.295	0.566		
	(OWN*PYR)	0.953**	0.421		
Female on Board	(FOB)	-0.587**	(0.260)		
Prior Violations	(PRV)	0.979***	(0.367)	0.486**	(0.230)
Auditor Change	(ACH)	0.571*	(0.322)		
Non-Big 4 Auditors	(Non-Big 4)	0.294	(0.189)		
	(ACH*Non-Big4)	0.067**	(0.032)		
Ex-ante Detection Factors					
Size of the Firm	(Size)	-0.024	(0.076)		
Age of the Firm	(Age)	0.044	(0.128)		
Ex-post Detection Factors					
Volatility	(Vol.)			0.019***	(0.004)
Return	(Rt.)			0.075*	(0.043)
Turnover	(TO)			0.037*	(0.021)
Constant		7.146***	(1.526)	3.338*	(1.719)
Observations		152		152	
Logpseudo likelihood			-104.306		
χ^2 (d.f.)			54.10 (22)		

Notes: Huber-White-Sandwich robust standard errors clustered by the company are reported in parentheses. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

The coefficient of political connections *(PCD)* is positive at 10 % level. The results suggest that fraud behavior is higher in firms with higher political links. These findings are different with Hasnan, Rahman, et al. (2012) who find an insignificant relationship between political connections and fraud incidence in Malaysia. CEO compensation (*IncenRatio*) is insignificant and positive. These results are not consistent with previous studies; for example, Conyon and He (2016) in China found a statistically significant relationship between CEO compensation and fraud. Contrary to the predictions of the optimal contracting theory that relating CEO's compensation with firm performance reduces the agency conflict between managers and owners, the CEOs compensation in the family firm may not reduce the agency conflict. McConaughy (2000) reports that in family firms, the interests of owners and managers are aligned through family ties which do not warrant the pay for performance sensitivity of managers. Furthermore, Berrone, Cruz, and Gomez-Mejia (2012) also suggest that family firms are often interested in the benefits of control or entrenchment, even if they are not rewarded financially. Therefore, compensation may not be a motivation for family managers to misreport corporate earnings. Financial distress *(FD)* positively affects the likelihood of fraud at a significance level of 5%. The results confirm the findings of Lou and Wang (2011) who document the significant and positive relationship of financial distress in Taiwan.

The coefficient of institutional ownership *(INS)* is negative and significant in fraud commission equation, and positive and significant in fraud detection equation. The results suggest that institutional investors provide monitoring mechanisms to control fraud and helps in detection. Among the types of institutional investors, the results of dedicated investors *(Ded)* are negative and statistically significant at 1%.

However, the transient investors' *(Tran)* coefficient loads positively and is insignificant. Although the relationship is not significant it points to the literature that, compared to dedicated investors, these institutions are passive and are characterized by adopting a short investment horizon and indexing objectives (Elyasiani & Jia, 2010; Jarboui & Olivero, 2008). In fact, Liu and Peng (2008) report that these investors provide opportunities to the manager to manipulate earnings. The results of dedicated investors are more prominent compared to total institutional investors and transient investors. It confirms the prior literature that these investors have a long-term investment horizon and effectively monitors the firms' irregularities (Bushee, 1998; Chen et al., 2007; Ramalingegowda & Yu, 2012).

The coefficient of board independence *(BI)* is negative and statistically significant at 1 percent. The results show that if there are more independent non-executive directors on the board, the reporting quality will be high, and the likelihood of fraud will be low. The findings are consistent with previous literature (Kim et al., 2013; Razali & Arshad, 2014). Like board independence, the coefficient of the effective audit committee *(EAC)* is also negative and statistically significant at 1%. It confirms the study hypothesis that effective audit committee reduces the likelihood of fraud occurrence. Family ownership *(OWN)* is not significant. Hasnan, Rahman, et al. (2012) also report the insignificant relationship between family ownership and fraud in Malaysia.

The coefficient pyramidal structure *(PYR)* has no significant effect on the fraud likelihood, suggesting that the difference of control and cash flow right is not exacerbating the fraudulent behavior. However, the interaction of family ownership and pyramidal structure (*OWN*PYR*) is statistically significant and positive at 5 percent. The results indicate that the incremental effect of expropriation of minority shareholders due to the pyramidal structure is significant for family firms. The presence of a female *(FOB)*

on the board is statistically significant and negative at 10%. The results are in conformity with the findings of Abbott et al. (2012) who find that the presence of a female on board reduces the likelihood of fraud.

Among the variables proxied for rationalization, prior violations *(PRV)* and auditor change *(ACH)* are significant at 1 and 10 percent respectively. Prior violations and auditor change load positively, which confirms the hypotheses that prior violations and frequent changes in auditors increase the likelihood of fraud. Hasnan et al. (2012) and Kedia, Luo, and Rajgopal (2016) also report that a history of prior violations increases the incidence of fraud. Prior violations also load positively on fraud detection, which means that the Securities Commission pays more attention to firms who have a history of prior violations. Furthermore, the coefficient of *non-Big 4* auditor is insignificant and positive. However, the interaction of auditor change with non-big 4 auditor (*ACH*Non-Big 4*) is statistically significant and positive at 5 percent. The result indicates that if the firm changes auditor and shifts to non-Big auditors, then the probability of fraud commission increases.

Out of the five variables used for ex-ante detection, the study found institutional investors and prior violations to be significantly positive with fraud detection. However, the variables size and age are insignificant. Finally, among ex-post detection factors, return *(Rt)*, stock volatility *(Vol)* and turnover *(TO)* are reported to be significant. These results are consistent with the findings of Wang and Winton (2012).

3.7 Robustness Test

3.7.1 Comparison with Probit Model

To check the robustness of our results, the study performs simple probit regression. Simple probit model means that we ignore the detection effect and Pr(Zi = 1) = $\phi(x_{F,i}\ \beta_F)$ The study uses the following probit model equation.

$$
\begin{aligned}
F_{it}^{*} = {} & \alpha_0 + \beta_1 CETR_{i(t-1)} + \beta_2 PCD_{i(t-1)} + \beta_3 IncenRatio_{i(t-1)} + \beta_4 FD_{i(t-1)} + \beta_5 INS_{i(t-1)} \\
& + \beta_6 Ded_{i(t-1)} + \beta_7 Tran_{i(t-1)} + \beta_8 BI_{i(t-1)} + \beta_9 EAC_{i(t-1)} + \beta_{10} OWN_{i(t-1)} + \beta_{11} PYR._{i(t-1)} \\
& + \beta_{12} OWN{*}PYR_{i(t-1)} + \beta_{13} FOB_{i(t-1)} + \beta_{14} PRV_{i(t-1)} + \beta_{15} ACH_{i(t-1)} + \beta_{16} Non.Big\ 4_{i(t-1)} \\
& + \beta_{17} ACH{*}NonBig\ 4_{i(t-1)} + \beta_{18} Age_{t-1} + \beta_{19} Size_{t-1} + \varepsilon_{i(t-1)}
\end{aligned}
\tag{3.5}
$$

This framework is similar to the fraud commission equation of the bivariate probit model. As probit takes the assumption of perfection detection that is why the study is using only one equation. The variables used in the probit model are the same as in equation (3.2). The results of the probit model are reported in Table 3.5. The results of the probit regression are almost similar to those of the bivariate probit regression. All the variables proxied for pressure/incentive, opportunity, and rationalization have the same coefficient as reported in the bivariate probit model results in Table 3.

The only difference in the results is that in probit estimates, the prior violations (*PRV*) is examined to be insignificant. For further comparison between the efficiency of probit and bivariate probit model, the next section calculates the performance of these models based on F-Score.

Table 3-5: Probit Regression Results

		P(F)	
Variables	**Acronyms**	**Coefficient**	**Robust S.E**
Tax Aggressiveness	(CETR)	-0.757**	(0.346)
Poltitical Connections	(PCD)	0.717*	(0.422)
Executive Compensation	(IncenRatio)	0.463	(0.375)
Financial Distress	(FD)	0.020**	(0.009)
Institutional Investors	(INS)	-3.347**	(1.525)
Dedicated Investors	(Ded)	-11.090***	(3.159)
Transient Investors	(Tran)	3.284	(4.076)
Board Independence	(BI)	-0.084***	(0.021)
EffectiveAudit Committee	(EAC)	-3.023**	(1.276)
Family Ownership	(OWN)	0.004	(0.008)
Pyramidal Structure	(PYR)	0.361	0.407
Type-II agency Proble	(OWN*PYR)	0.816**	0.346
Female on Board	(FOB)	-1.041**	(0.456)
Prior Violations	(PRV)	0.798	(0.660)
Auditor Change	(ACH)	0.612**	(0.261)
Non-Big 4 Auditors	(Non-Big 4)	0.522	(0.494)
	(ACH*Non-Big 4)	0.114**	(0.051)
Size of the Firm	(Size)	0.029	(0.444)
Age of the Firm	(Age)	-0.051	(0.071)
Constant		5.358***	(1.490)
Observations		152	
Log pseudo likelihood		-106.341	
χ^2 (d.f.)		111.97 (18)	

Notes: Huber-White-Sandwich robust standard errors clustered by the company are reported in parentheses. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

3.7.2 Performance of the prediction models (within-sample) and Predictive Power of models

Both the models produce almost similar results; the study further evaluates the models' ability to predict fraud when it occurs and reject when it does not occur (i.e., the power and specification of the model). Following Das, Shroff, and Zhang (2011) and Dechow et al. (2011), the study calculates the fitness score (F-score) as the predicted probability of detected fraud divided by the unconditional probability of the detected fraud. An F-score equal to one show that predicted the probability of fraud is equal to the unconditional probability of fraud. Value of F-score greater than one indicates a higher probability of fraud and value lower than one shows a lower chance of fraud. Based on F-score, the study divides the firms into four portfolios (i.e., normal risk, above normal,

substantial risk, and high risk). Table 3.6 groups firms based on the F-score into four portfolios.

Table 3-6: Classification of F-score

		Probit		Bivariate Probit	
Classification of F-score	Risk Level	Fraud Sample	Control Sample	Fraud Sample	Control Sample
F-score <1	Normal Risk	0.361	0.784	0.307	0.822
F-score >1, and <1.95	Above Normal	0.311	0.117	0.336	0.101
F-score >1.95, and <2.95	Substantial Risk	0.206	0.052	0.228	0.046
F-score >2.95	High Risk	0.122	0.047	0.129	0.031
		1.000	1.000	1.000	1.000

In all these groups, results confirm the superiority of the bivariate probit model to the probit model. For example, for fraud sample, bivariate probit model classifies more firms in groups with an F score greater than 1 compared to the probit model. For F-score less than 1, probit model specifies a higher number of firms as normal risk firms compared to the bivariate probit model. It suggests that there is a higher type-1 error in the probit model compared to the bivariate probit model. Next, following the methodology by Das et al. (2011), the study examines the predictive power of both the models. Specifically, it computes the ratio of the probability of detected fraud based on the bivariate probit model and the probability of detected fraud based on the probit model. If the predictive ability of the bivariate probit model is superior to that of the probit model, the mean ratio is expected to be greater than one for the fraud sample and less than one for control. In other words, the study expects both Type I and Type II errors to be smaller for the bivariate probit model estimation results. Based on the predicted probabilities calculated from bivariate probit model and probit model, the results in Table 3.7 indicate the mean ratio to be significantly greater than one for the fraudulent firms (1.047) and significantly less

than one for the control sample (0.893). Overall, the results provide evidence that the bivariate probit model obtains lower Type I and Type II prediction errors and hence provides a better fit relative to the simple probit model.

Table 3-7: Predictive Power of Models

	Mean
Fraud Sample	1.047
Control Sample	0.893

3.8 Conclusion

This study uses a sample of 76 fraud firms identified from SC and Bursa Malaysia from 1996 to 2016 to determine the factors associated with fraudulent financial reporting. The results indicate that tax aggressiveness elicits fraudulent behavior in Malaysian firms. Consistent with Erickson et al. (2004), results suggest that alleged firms overpay corporate taxes to avoid any suspicion arousing from regulatory bodies and investors. Moreover, the results indicate that firms are more likely to commit fraud when they face financial difficulties and have political connections. The study findings also show that the presence of institutional investors particularly dedicated investors provide an oversight function and help in reducing the likelihood of fraud. Among the variables used for corporate governance, the results suggest that independent board and an effective audit committee are vital in fraud prevention. The results also provide support that family firms with a pyramidal structure have a higher probability of committing fraud due to the opportunistic behavior of controlling shareholders. Also, the presence of a female on board provides diversity amongst the board members and may reduce the likelihood of fraud commission. Finally, the results for rationalization are statistically significant. Both the variables, history of prior violations and regular switching to auditors have a positive

effect on fraud occurrence. Overall, the results indicate that the fraud triangle is relevant in determining the factors that elicit fraudulent behavior in Malaysian companies.

To assess the robustness of the results and the performance of the bivariate probit model, this study estimates the coefficients using a probit model. The simple probit model yields similar results compared to the bivariate probit model. However, the study believes that the results from the bivariate probit framework are more reliable because it controls the possible identification problem. For the purpose, this study calculates the fitness score (F-score) for classification accuracy for the fraudulent firms and the control sample. The results show that relative to the simple probit model, the bivariate probit framework has lower Type-I and Type-II errors. The study findings suggest that there is a need to control for the probability of detection to minimize the potential risk of misclassification when estimating the likelihood of fraud or any related studies. Ignoring this may result in incorrect inferences about the factors that may predict fraud. This study has implications for investors and policymakers. Crime prevention is one of the seven critical National Results Areas (NKRA) in Government Transformation Program (GTP) of Malaysia. This study that has focused on the fraudulent behavior of firms in Malaysia, thus, offers possible insights to auditors, managers, regulators and enforcement authorities in the prevention, detection, and reaction to fraud. Specifically, the study highlights the specific factors that may exacerbate the fraudulent intentions of firms, particularly in regards to financial reporting misconduct.

This study offers some additional implications for future research. Given the existing state of the fraud literature, there are a number of ways that scholars may conduct further investigations. As stated by Trompeter, Carpenter, Desai, Jones, and Riley Jr (2012)[20],

[20] Please refer Trompeter et al. (2012) for the detailed discussion on areas of future research on fraud.

the clear distinction between the pressure and motivation, the conditions or extent to which incentives and pressure might lead to fraud and earnings management, and structured transaction are the interesting areas for future investigations. Recently, scholars have argued on the importance of collusion, rationalization by fraud offenders, and the role of whistleblowers as the significant and effective mechanisms for understanding the fraud phenomenon (Dorminey, Fleming, Kranacher, & Riley Jr, 2012; Free, 2015; Free & Murphy, 2015; Trompeter et al., 2012). Although these areas have a susceptibility to analysis through a variety of methodologies, however, instead of using cross-sectional statistical approaches, the direct interactions using field studies might be helpful in the direct understanding of the fraud behavior (Free, 2015).

The study has several limitations. First, the sample size used in this study is relatively small compared to similar studies in the US. One possible reason is that enforcement in Malaysia is weak compared to the US. Gunasegaram (2007) documents that many fraud cases stay unresolved due to the weak judicial system, poor investor protection, political connections, excessive state interference, and insufficient resources of the prosecutor. A dichotomous measure of fraud is another limitation of our study because we cannot measure the size of fraud. Once the fraud cases are settled, the Securities Commission Malaysia would seal the agreements and the facts of the resolutions. Therefore, it is difficult to get the amount of settlement since this information is not made public.

CHAPTER 4: FRAUD AND CORPORATE FINANCIAL TRIAD (ESSAY 2)

4.1 Introduction

This study examines the implications of fraud revelation on the financial triad (e.g., financing, investment, and dividends) of fraudulent firms. Following the reputational hypothesis of Karpoff and Lott Jr (1993) and several empirical findings (e.g., (Alexander, 1999; Armour et al., 2010; Deng et al., 2014; Desai, Hogan, & Wilkins, 2006; Karpoff & Lott Jr, 1993)), fraud discovery damages the firm's reputation and results in higher information asymmetry[21]. In such an environment of information asymmetry, investors revise their estimation risk and increase the required rate of return due to uncertain future cash flows of firms (Armstrong, Core, Taylor, & Verrecchia, 2011; Kaplanski & Levy, 2012; McLaughlin, Safieddine, & Vasudevan, 1998). These revisions of estimation risk and beliefs of market participants may, in turn, affect the fraudulent firms' corporate financial policies. Prior studies in this length document adverse consequences of fraud on cost of equity and debt capital (Chava et al., 2010; Deng et al., 2014; Sun et al., 2012), capital structure decisions (Bonini & Boraschi, 2010; Chen, Zhu, et al., 2011; Graham et al., 2008), and cash holding (Arena & Julio, 2010; Lin et al., 2013) of alleged firms. However, the available fraud literature with respect to corporate finance is very limited and focuses only a few of the corporate decisions. Moreover, one of the limitations of

[21] Following the fraud revelation, increased information asymmetry and reputational damages force firms to face legal and reputational penalties from the market (Gande & Lewis, 2009; Karpoff et al., 2008). It is also associated with operational uncertainty and loss of competitive position due to changing terms of trade with customers and suppliers, which in turn, create uncertainty about future cash flows and performance (Dyck et al., 2013; Wang & Winton, 2012). Outside fund providers become more careful and vigilant of provided information by fraudulent firms, and takes into account other aspects to scrutinize firm performance, thus increasing the estimation of risk of future profitability (Graham et al., 2008). The resulting operational uncertainties and increased estimation risk by fund providers put fraudulent firms to an environment of higher information asymmetry, which in turn may affect firms to reconsider their corporate policies to deal with this new environment .

these studies is that they treat corporate decisions as independent decisions and empirical analysis is done separately for each decision.

Given the argument that fraud revelation damages firms' reputation and brings market imperfections and information asymmetry[22] (Karpoff & Lott Jr, 1993), independencies of corporate decisions may not hold as proposed by Modigliani and Miller (1958) and Miller and Modigliani (1961). Therefore, in post-fraud settings, corporate decisions including investment, financing, and payout are likely to be interdependent and must be determined jointly. The single equation frameworks used by prior research without explicitly accounting for the interdependence among corporate decisions may be misspecified, which potentially leads to incomplete and biased results. A simultaneous framework, therefore, is likely to provide greater insight into the inter-relationships that may exist among the set of corporate decisions, improving our knowledge of corporate decision-making processes in the context of fraud. This study, therefore, aims to investigate the effect of fraud on the corporate financial triad of financing, investment, and dividend decisions in the Malaysian context.

This study contributes to the existing fraud literature by linking the literature of corporate misconduct and corporate finance. DeFond (2010) calls for more research on accounting fraud and more earnings quality research that can affect policy. The literature in this regard finds that corporate fraud revelation leads to valuation declines for sued firms (Gande & Lewis, 2009), reputation damages for outside directors (Fich & Shivdasani, 2007), and increases in cost of capital (Chava et al., 2010; Deng et al., 2014), and cash holding level (Arena & Julio, 2011). This study, therefore, employs

[22] These market imperfections and information asymmetry resulting due to fraud may include strict loan contracting (Graham et al., 2008), costly bank borrowings (Chen, Zhu, et al., 2011), increased cost of equity capital (Hribar & Jenkins, 2004) and decrease in the stock liquidity (Anderson & Yohn, 2002).

simultaneous framework to jointly determine corporate decisions and the strength of their interdependencies in the context of fraud. Although the literature provides considerable support for the interdependence of corporate decisions[23], however, with specific context of fraud, there is little evidence from the established theoretical and empirical literature.

To investigate the effect of fraud on the corporate financial triad, the study identifies fraudulent firms from enforcement actions releases (EARs) of the Security Commission of Malaysia. The rest of the study is organized as follows. Section 4.2 discusses the literature review by providing the brief overview of theories of investment, financing, and dividend; Section 4.3 presents hypothesis development; Section 4.4 discusses the sample selection, justification of estimation methods, preliminary diagnostic tests, and results; and finally, Section 4.6 is the conclusion.

4.2 Literature Review

The literature review of this study entails the various themes related to corporate finance and fraud. First, the literature discusses the prevalent theories of investment, financing, and dividends and the simultaneity of these decisions. Second, the study relates to corporate fraud and corporate decisions literature to build the study hypothesis. In doing so, the study establishes the possible effect of fraud on subsequent changes in the corporate decisions as well as its effect on the joint determination of these decisions.

4.2.1 Investment Theories

The basic concept of corporate investment theories goes back to the pioneering work of Fisher (1930) and Keynes (1936). They proposed that investment is worthwhile up to

[23] The interdependence among corporate financial policies is well established in the empirical literature (e.g.,(Fama, 1974; Fama & French, 2001; Harford, Klasa, & Maxwell, 2014; McCabe, 1979)) as well as in different theoretical models such as information approach (Miller & Rock, 1985), institutional approach (Dhrymes & Kurz, 1967), flow of fund structure for corporate behavior (Dhrymes & Kurz, 1967), tax approach (Myers, 1974), and agency approach (Jensen, 1986).

the point when the present value of future cash flows is equal to the initial investment. The estimated return on investment is equal to the internal rate of return of the Fisher theory and the marginal efficiency of the capital of Keynes' model. However, these models are tools to evaluate the investment of a firm. In the following section, the study provides a discussion on various investment theories starting from oldest accelerator theory. This is then followed by the expected profit theory, cash flow/liquidity theory, neo-classical theory, Tobin's Q theory of investment, and financial constraint model.

4.2.1.1 Accelerator Theory

The accelerator theory is considered as the oldest theory of investment presented by Clark (1917), which assumes an instantaneous and complete adjustment of the actual capital to the desired capital. This simple accelerator model later developed into the flexible accelerator model due to several criticisms and limitations (Chenery, 1952; Koyck; Tinbergen, 1938). The first limitation of this model was the unrealistic instantaneous and complete adjustment assumption of the capital stock. The second limitation of the model was based on the findings of the econometricians that expected parameters are smaller than the actual ratio of capital to output. Finally, the criticism of the simple accelerator model was that it failed to incorporate taxes, wages, and interest rates (Baddeley, 2002).

Given these limitations of the simple accelerator model, Chenery (1952) proposed the flexible accelerator model. Particularly, Chenery (1952) developed the model by adjusting capital stocks with the reaction lags. This lag adjustment in the capital stock of flexible accelerator model is more realistic and practical compared to instantaneous adjustment assumption of the simple accelerator model.

4.2.1.2 Expected Profit Theory

This theory appeared as a supplementary proposition under the framework of accelerator theory. Major work to the expected profit theory was made by the various scholars (Grunfeld, 1958; Klein, 1951; Tinbergen, 1939). This model was based on the premise that the present value of expected profits is key considerations for the investment decisions. Nevertheless, Grunfeld (1958) future developed the model by adjusting the flexible accelerator model with the current profit. In Grunfeld (1958)'s model, the targeted capital stock is proportionate to the firm's market value in the capital market. The application of the expected profit model in business models offers some advantages and disadvantages. The primary advantage of this model is the consideration of the expected profit in making investment decisions. Moreover, this is considered the initial model which used the idea of market value in investigating the investment behavior of the firm and laid down the foundation of Q theory.

4.2.1.3 Liquidity Theory

This theory was proposed by various scholars (Anderson, 1964; Duesenberry, 1958; Meyer & Kuh, 1957) as a response to the criticisms of the previous accelerator and expected profit models. The theory argues that firm's cash flow determines the investment level, and when the internal funds are used, then the supply of funds increases to maintain the desired level of capital (Jorgenson & Siebert, 1968). In this theory, the targeted capital is related to liquidity. The cash flow-liquidity model shows both the firm's profits and the level of internal funds (Kuh, 1963). This model is not a substitute for the expected profit model, instead, it might be understood as the extension of the expected profit model that includes the cost of investment funds. Nevertheless, the major limitations of the liquidity model are that it fails to take transaction costs, prices of machinery and equipment, and interest rates into account.

4.2.1.4 Neoclassical Theory

This theory is built on the concept of optimal accumulation of capital which is determined by relative prices of factors of production (Jorgenson & Siebert, 1968). This model offers several key advantages over the previous models. First, this model of investment recognized the user cost of capital, which the prior models failed to incorporate. Second, this model incorporates interest rates, output level, and tax rates; making it smooth to analyze their impact on investment behavior. Despite several advantages, the model has some limitations as well. First, relative to the modest relationship of the user cost of capital on investment, output variable has quite a significant relationship with the investment behavior of a firm (Chirinko, 1993). Second, instead of being static, the process of investment decision is considered as a dynamic process (Kuh, 1963). Although, Jorgenson (1971) endeavored to transform the neoclassical model considering the dynamic optimization, nevertheless, the optimal level of the capital remained static due to first order conditions employed.

4.2.1.5 Tobin's Q Theory of Investment

This theory was proposed by Tobin (1969) to take into account some fundamental limitations of neoclassical and accelerator models. According to this model, investment expenditures have a positive relationship with Q, which is calculated as the ratio of a firm's financial value to the replacement cost of its current capital (Chirinko, 1993). The first limitation of the accelerator model was the adjustment process of capital stocks, which was first considered as complete and instantaneous. The neoclassical and Q models described the adjustment cost as a convex function. The second problem was the unaddressed role of expectations in potential investment opportunities. In response, the Q model proposed that investment activities are carried out up to the point where the market value of a firm's assets become equal to the replacement cost (Eklund, 2010).

According to the Q theory, high marginal values of Q (i.e. Q>1) indicate that firms should expand or carry out new investments and vice versa. The optimal level of investment is attained when the marginal value of Q is equal to one.

Despite of its significance in various studies (Aktas, Croci, & Petmezas, 2015; Francis, Hasan, & Wu, 2015; Maury, 2006; Sun, Tong, & Tong, 2002; Wernerfelt & Montgomery, 1988), the Q theory has always been questioned by various scholars because of its poor explanatory power (Bond & Van Reenen, 2007) and measurement issues of Q (Erickson & Whited, 2000; Lensink & Murinde, 2006).

4.2.1.6 Financial Constraint Model

Considering the limitations of prior investment models developed under the assumption of perfect capital markets, a recent wave of studies have emphasized the role of financial constraints in determining the investment behavior of a firm (Almeida & Campello, 2007; Buch, Kesternich, Lipponer, & Schnitzer, 2014; Fazzari, Hubbard, & Petersen, 1987; Guariglia, 2008; Levy, 2015). Using a wide range of specifications such as accelerator model and Tobin's Q, Fazzari et al. (1987) investigated the impact of financial constraints on firm's investment decision. They found that investment-cash flow sensitivity of low dividend paying firms (i.e. high constrained firms) was higher compared to high dividend payer firms (i.e. less constrained firms). They reported that capital market perfections inflict financial constraints on investment decisions.

Moreover, Guariglia (2008) compared the difference between external and internal financial constraints and examined their separate and joint effect on investment decision. The results revealed that investment cash flow sensitivity increased with the level of external financial constraints. On the other hand, for internal financial constraints, this

relationship of investment and cash flow becomes a U-shaped curve. Although the question of whether investment cash flow sensitivity as the true indicator of financial constraints is still debatable, the empirical evidence confirm the argument that financial constraints affect the investment behavior of companies (Almeida & Campello, 2007).

4.2.2 Corporate financing theories

Corporate financing theories have provided considerable insights into how companies structure debt and equity in financing their investments. Considering the fact that recent finance literature has not yet established a single valid universal theory of corporate finance, this study sheds light on the way financing theories evolved with time. In their pioneering work, Modigliani and Miller (1958) proposed that the value of the firm is independent of its mix of debt and equity. In particular, they posited that debt to equity ratio and firm's leverage has no significant impact on the firm's value and weighted average cost of capital respectively. This theory of capital structure irrelevance was based on some unrealistic assumptions such as no corporate taxes, transaction costs, and no capital market imperfections. Despite several criticisms on its perfect market assumptions, this theory laid down the foundation of the modern corporate finance literature.

Subsequent work on the corporate finance theories can be grouped into trade-off theory, agency theory, pecking order theory, and market timing theory.

4.2.2.1 Trade-off theory

The trade-off theory was presented by Kraus and Litzenberger (1973) who posited that the optimal capital structure of a firm represents a trade-off between bankruptcy cost of equity and tax-shield benefit of the debt capital. Later, Myers (1984) argued that firms operating under the trade-off framework set a target debt to equity ratio which is achieved

by balancing the bankruptcy cost and interest tax shield. Subsequently, Scott (1977) developed the theory by stating that theory is useful if only employed to larger firms because a higher level of debt increases the cost of financial distress. On the contrary, Pettit and Singer (1985) argued that to a lesser extent, the trade-off theory is applicable to small companies.

Later, two alternative theories (e.g. the static trade off-theory and dynamic trade-off theory) emerged continuing the work to maximize the value of a firm with debt financing. According to the static trade-off theory, a firm increases debt up to the degree at which marginal utility of the debt is equal to the cost of debt capital and financial distress. Consequently, the firm attempts to attain this desired capital structure or optimal static point (Bradley, Jarrell, & Kim, 1984). On the other hand, dynamic trade-off theory argues that due to changes in endogenous and exogenous variables, the capital structure of the firm is a dynamic process of adjustments to these factors. In particular, the studies have highlighted various factors that bring adjustment in the capital structure such as transaction cost (Fischer, Heinkel, & Zechner, 1989), contingent claims (Ju, Parrino, Poteshman, & Weisbach, 2005), equity returns (Leary & Roberts, 2005), and size of investment (Bris & Welch, 2005). In the similar vein, Frank and Goyal (2007) reported that the optimal level of debt ratio is achieved in two steps in the firm's life. In the first step, the firm initially starts with the static phase of trade-off theory for a specific period of time. The second step is the dynamic trade-off phase where capital structure is adjusted with endogenous and exogenous factors with time to achieve optimal ratio of debt to equity.

4.2.2.2 Agency theory

The agency theory of Jensen and Meckling (1976) argued that the optimal level of capital structure is the outcome of a trade-off between agency cost of increased debt capital and benefits of converging the interests of managers. Later, Harris and Raviv

(1988) opined that disagreements on whether to continue the current operations of the firm may also generate agency conflict. For instance, when cash flows of the firm are not adequate to continue the current operations, the debt holders and shareholders may decide to liquidate the firm, whereas the managers will opt to continue the operations.

Moreover, Stulz (1990) reported that conflict between the interests of outside and inside investors also shape the firm's capital structure. It is because managers opt to invest all the internal funds at disposal, assigning a secondary role to debt financing. Subsequent developments in the theory, considering the firms as a set of heterogeneous interests, showed that separation of ownership, management, and finance are the sources of conflicts between stakeholders' interests. From this viewpoint, the existence of corporate governance determines the capital structure of the firm. While most of the studies in this domain has explored conditions in the developed countries (Kochhar, 1996; Leland, 1998), investigations have also considered emerging and developing countries where the effective corporate governance framework has been revealed to be nearly absent (Chen, 2004; Delcoure, 2007; Pandey, 2001).

4.2.2.3 Pecking order theory

The traces of pecking order theory date back to the work of Donaldson (2000) who reported that the order of financing method is more important than their weight. The pecking order theory was established on the premise that companies cannot set their target debt ratio. The extended version of this model was introduced by Myers (1984) where the information asymmetry between investors and managers causes the problem of adverse selection. Myers and Majluf (1984) showed that under information asymmetry, the managers prefer internal funds, followed by debt, and equity as a last choice.

The originality of this theory is the incorporation of asymmetric information as the determinant of the capital structure. The subsequent studies, such as Halov and Heider (2011) stated that the size of the firm affects the adverse selection cost. In particular, they reported that compared to smaller firms, larger firms have smaller adverse selection cost. Based on the argument that smaller firms have less transparent financial disclosures, Pettit and Singer (1985) and Psillaki (1995) stated that these firms face a higher cost of information asymmetry. In developed economies, Delcoure (2007) introduced a new pecking order theory which posits that firms finance their investment first with internal funds, followed by equity and debt capital as a last resort.

Further development in capital structure introduced the role played by non-financial stakeholders ("the stakeholder theory" and firm's strategic management, and industrial organization (Caves, 1980; Istaitieh & Rodríguez Fernández, 2003). Theoretical investigations in this area have also revealed that there are conflicts of interest not only between the managers and shareholders but also between outside stakeholders such as consumers and competitors (i.e. (Chevalier, 1995; Guney, Li, & Fairchild, 2011; Wanzenried, 2003)).

4.2.2.4 Market Timing Theory

Market timing theory of capital structure argues that market conditions determine the financing pattern of the firm. That is firm repurchase shares at low price and issues at a higher. These conditions dismiss the idea of a target capital structure presented by trade-off theory, rather capital market conditions appear to shape the capital structure (Baker & Wurgler, 2002). In this regard, market to book ratio has been employed to analyze the set of market timing opportunities. The common inference of these studies is that the preference of the firm to issue shares over debt when the market value of equity is high

puts a positive long-term effect on the capital structure. Equity issuance – in conditions where the market valuation of firm's equity is high – is characteristic of unlevered firms; on the contrary, levered firms prefer to issue shares when their market value is low. The theory features a key role to corporate managers who must time the capital structure of the firm to the market conditions in order to maximize the shareholders' wealth by issuing overvalued securities (Hovakimian, Opler, & Titman, 2001; Huang & Ritter, 2004). Deserting his former assertions, Hovakimian et al. (2001) stated that the long run effect of market timing on the capital structure of the firm is not significant.

4.2.3 Dividend payout theories

Dividend payout decision is one of the important decision of corporate finance. Since the development of the firm, the debate on dividend payout remained of a greater importance among scholars. Corporate managers recognized early the significant role of dividends in meeting the expectations of the shareholders. They felt reluctant to reduce the dividend stream to shareholders and often made an adjustment in dividend payout ratio to prevent any value minimizing the effect of decreases in dividends. Hence, managers used dividend as a signal to convey future prospects of the firm. The formal debate on the effect of dividends on firm value started in the early 1950's. Since then various important developments in the dividend policy literature were made by the scholars.

In this regard, the literature identifies three contradictory views on the effect of dividends on firm's value. The first view holds that that increase in dividends has a positive effect on share value. The second view argues that increasing the dividend payout has a negative effect on share value. Finally, the third view posits that changes in dividend are irrelevant to the firm's value. These views established three key theories such as bird in hand theory, tax preference theory, and irrelevance theory. However,

further developments in understanding the complex and puzzling dividend policy generated several other theories such as signaling theory and the life cycle theory. These theories are briefly presented in the following section.

4.2.3.1 Dividend Irrelevance Theory

In their work, Miller and Modigliani (1961) (henceforth M&M) presented that dividend policy is irrelevant to the firm's value under perfect market assumptions. In particular, they reported that shareholders are indifferent to the returns they receive in either form (i.e. dividends or capital gains). This is because shareholders wealth is maximized by earnings power and cash flows generated by the firm's investment decisions, not by its way of distribution of profits. M&M based their theory on several assumptions which include: (1) there are no differences between taxes on capital gains and dividend income; (2) there is no floatation and transaction costs in the capital market; (3) equal and costless information is easily available to all stakeholders; (4) there is no agency conflict between insiders and outsiders; and (5) investors are price takers. The idea that a dividend payout policy should be irrelevant in perfect capital markets is a rational extension of the neoclassical hypothesis of perfect competition in financial economics. The sophistication and easiness were acknowledged by Miller and Modigliani (1961). For example, in their primary work, they observed that "*Like many other propositions in economics, the irrelevance of dividend policy, given investment policy, is 'obvious, once you think of it"* (Miller & Modigliani, 1961).

However, the issues of dividend policy become more complex as we depart from the perfect world of M&M. Relaxing the M&M's assumptions such as market imperfections might create a new debate about the relevance of dividends. The subsequent theories relax some of these assumptions to show the relevance of dividends for the firm's value.

4.2.3.2 Bird in Hand Hypothesis

This hypothesis posits that an increase in dividend payouts have a positive effect on the firm's value. This is considered the older view of firms paying higher dividends in order to meet the shareholders' expectation. In an imperfect world of uncertainty, both the returns (divided and capital gains) are priced differently by the investors. Particularly, investors like current short-term gains (bird in hand) than uncertain future capital gains. Paying current dividends reduces the uncertainty about future cash flows of the firm, which subsequently lead to a reduction in the total financing cost and the increase in the share value. In this regard, Graham and Dodd (1934) and Diamond (1967) reported that a dollar of dividend earned by investors has four times the impact of a dollar earned through capital gains. Various scholars provided the support for this hypothesis (Gordon & Shapiro, 1956; Lintner, 1962; Walter, 1963).

However, Miller and Modigliani (1961) criticized the bird in hand theory by arguing that operating cash flow determines the firm' level of firm's risk is determined by the operating cash flows, not the method of the earnings distribution. They called this hypothesis as the bird in hand fallacy. Moreover, Bhattacharya (1979) also supported the fallacious view of bird in hand hypothesis by arguing that firm' risk level affect the dividend pay-outs not the other way around. The argument that companies facing uncertainty in their expected cash flow opt to pay lower dividend comes to be theoretically reasonable (Friend & Puckett, 1964). Various empirical studies found this negative relationship between firm's level risk and dividends proving that dividend payments decrease with the increase in uncertainty in operating cash flows of the companies (Jensen, Solberg, & Zorn, 1992; Rozeff, 1982).

4.2.3.3 Tax-Effect Hypothesis

One of the assumptions of M&M theory was a tax-free market for the companies. However, the existence of taxes is a real phenomenon in the securities market and has a significant effect on the dividend payout policy and the value of the firm. In reality, capital gains and dividends have differential tax rates which affect the demand of investors for dividends. The tax effect hypothesis posits that higher dividends decrease the share value by increasing the cost of capital due to higher tax rates on dividends than capital gains. Moreover, there is an immediate tax on the dividend payments, whereas taxes on capital gains can be deferred until the shares are finally sold out. The hypothesis that higher dividend payouts decrease the firm value is quite opposite to the bird in hand hypothesis which favors higher dividend payouts. In many economies, dividends are generally taxed higher than the capital gains. As a result, high tax bracket investors prefer capital gains than dividends. In this regard, Brennan (1970) introduced an after-tax model of the capital asset pricing model to empirically examine the relationship between tax-adjusted returns of investors and dividend yield. They maintained that pre-tax return of a stock should have a positive and linear relationship with dividend the yield and its market risk. Overall, it can be argued that lower dividend paying stock will trade at higher prices due to high taxes on dividend income.

4.2.3.4 Signaling Hypothesis

M&M in their hypothesis assumed that insiders and outsiders have equal, instantaneous, and cost-free information about the future prospects of the firm. However, in the real world, the phenomenon of information asymmetry exists between managers and other market participants. Managers have superior information compared to investors because they look after the daily operations of the firm and have the knowledge of the subsequent future projects. This information asymmetry affects the fair pricing of the

stock and results in share mispricing. Therefore, the share price may not always truly reflect the actual value of the firm. To bridge this information gap, managers use dividends as a signal to inform the outside investors about the true value of the firm. In other words, dividends contain the implicit information about the firm's future prospects. This proposition is known as "*information content of dividends*" hypothesis or signaling hypothesis. Nevertheless, to hold this hypothesis, corporate managers must first possess some private information about the future earnings' potential and have financial motivations to share this information with the investors. Second, the signal must be real as well as costly for other firms to mimic. If these conditions are met, the dividend announcement is considered as a quality information signal about the financial position and performance of the firm (Ang, 1987; Koch & Shenoy, 1999). Various scholars have modeled this information content hypothesis of dividend in their studies (Bhattacharya, 1979; John & Williams, 1985; Miller & Rock, 1985). However, one of the major criticism on the signaling hypothesis of the dividend is that there are other less costly alternatives mechanisms available (i.e. share repurchase) that can be used to signal the firm's potential (Allen & Michaely, 2002).

4.2.3.5 Life Cycle Model

DeAngelo, DeAngelo, and Stulz (2006) presented the life cycle model to explain the dividend paying behavior of firms. They argued that dividend-paying choices depend on the trade-off between retention ratio and distribution of income which develops over the different life cycle stages of a firm as profits accumulate and future investment opportunities decline. In the early stages, companies are growing and have relatively high investment opportunities, so they opt to retain more profits and pay fewer dividends. The decision to retain more funds and pay fewer dividends helps companies to cut the flotation and information cost of external financing. Companies in the maturity stage have less

growth potential, therefore they tend to pay higher dividends to reduce the agency problems associated with cash flows. Hence, as the firm reaches maturity, the incentives to pay higher dividends overweight their costs, resulting in higher dividend payouts. DeAngelo et al. (2006) discovered that a firm's propensity of paying dividends increases with the relative amount of retained earnings in its capital. Their findings offer direct evidence in support of the life cycle model of dividends. Brockman and Unlu (2011) further confirmed the life cycle theory in an international setting. Moreover, Denis and Osobov (2008) investigated the firms' probability of paying dividends in various developed financial markets. Their findings provide significant support for the agency problem-based life cycle theory.

4.2.4 Some Theoretical Arguments on the Simultaneity of Corporate Decisions

In the established corporate finance literature, various theoretical models offer the rationale for the simultaneity of the corporate financial decisions. The first one is the "Flow-of Fund" model of Dhrymes and Kurz (1967) which argues that corporate decisions (investment, financing, and dividends) are interrelated within a framework of flow of funds. It opines that debt and equity financing are sources of funds for a firm. Meanwhile, the firm has funds outflow in the form of investment, dividends, taxes, and variable and fixed costs. The flow of fund identity requires that the uses of funds must be equal to the sources of funds. In an imperfect capital market, firms are expected to have a clear dependence on internally generated funds and a greater aversion to external financing. In such an environment, firms need to contemplate their fundraising and spending choices. Consequently, corporate decisions such as investment, financing, and dividends look to be interdependent and should be examined in a simultaneous framework (McCabe, 1979).

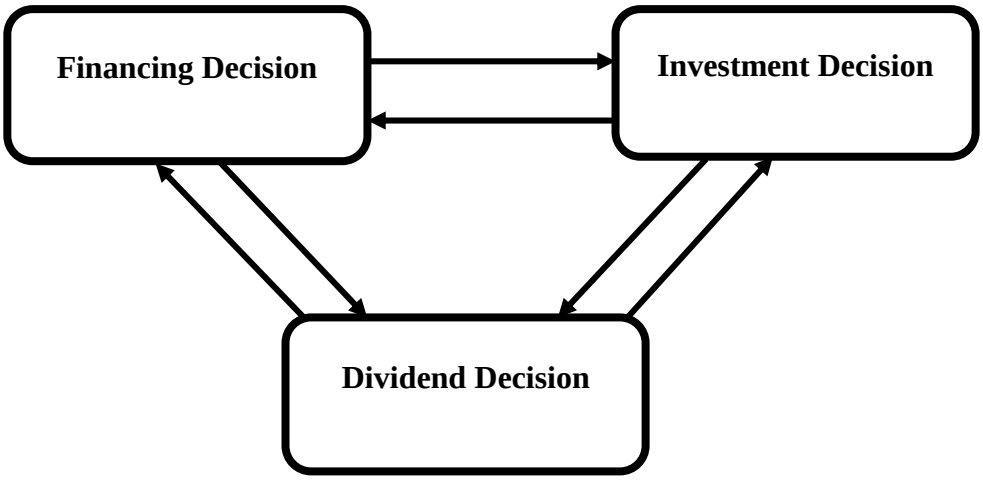

Figure 4.1: Interdependence of Corporate Financial Triad

Source: Flow of Fund Framework

In case that the flow-of- fund contentions about the interactions of corporate decisions are valid, the simultaneous determination of corporate decisions must have a significant interdependence (Dhrymes & Kurz, 1967). Although the proposition of flow-of-funds model is apparently appealing, however, the model is criticized for overlooking the direction of the interdependence (Ravid, 1988).

Subsequent models (information asymmetry and agency approach) on the interdependence of corporate decisions address these issues in detail. The asymmetric information approach argues that the information gap between outsiders and insiders constrains firms' investment by decreasing the elastic supply of internally generated funds along with access to external financing, hence raising the interdependence between corporate financial triad.

In an environment of information asymmetry, an imperfect elastic supply of internal finance is created for capital expenditures by limiting the access to the firm's retained earnings. Managers may have an incentive to signal the private information of the firm using dividends (Miller & Rock, 1985). Keeping the information content view

of the dividends, firms are less likely to cut dividends in an attempt to avoid the potential adverse market reaction. At the same time, they feel hesitant to increase the level of dividends unless they make sure that cash inflows are sufficient to support the increase in dividends. As dividends are sticky in nature, therefore, under information asymmetry the firms' flexibility to use internal funds for investment is greatly reduced. Since the changes in capital expenditures of the firms cannot be absorbed freely by their retained earnings, investment is therefore expected to be constrained by internal funds. Consequently, firms may be either forced to raise external funds to keep up the desired level of dividends or forego investment projects with low net present value.

Gugler (2003) reports the empirical evidence on the competing uses of funds between investment and dividends and argues that dividend payout decision of the firm should be considered as an independent decision instead of a residual decision that has a significant effect on other corporate decisions. Generally, information asymmetry limits firms' ability to raise internal funds by its effect on dividends and restraints access to external capital through its effect on their issuance of securities. As a result, corporate managers are expected to make corporate decisions (i.e. financing, investment, and dividends) simultaneously, with full consideration of competing uses for funds and their alternative sources.

Tax approach is the next model for understanding the simultaneity of corporate decisions. Since the perfect capital market assumption of Modigliani and Miller was criticized for not incorporating the taxes, Modigliani and Miller (1963) revised their original assumption by incorporation the tax. The revised assumption stated that, since interest payments are differently treated from capital gains and dividends for tax purposes, corporate managers might be able to increase firm value through debt financing.

Specifically, as interest expenses are tax-deductible, debt financing has a tax-shield benefit which results in an increase in shareholders' wealth of the firm. However, tax deductibility is not unique only to debt financing. The resulting depreciation allowances from the investment made by a firm also offer a non-debt tax-shield. Myers (1974) contends that in valuing an investment project, one must consider its tax-shield benefit for the firm. From this viewpoint, taxes could offer a significant link between financing and investment decisions. DeAngelo and Masulis (1980) show that both financing and investment decisions generate tax-shield benefits. However, debt financing could be significantly expensive if the underlying investment creates sufficient depreciation-related tax-shields to render the interest related tax-shields useless. Likewise, the investment may also be extensively less profitable if its depreciation tax-shield cannot be utilized to its full advantage (Ravid, 1988). Keeping the substitutability of interest and depreciation related tax shield of financing and investment decisions, the tax planning model concludes that debt financing and investment decision should be simultaneously determined, hence lower level of investment should be financed by more debt, and vice versa.

Tax considerations also offer implications for companies' dividend decisions. As dividend income is taxed higher than the capital gains, high dividend payouts may generate a considerable burden to shareholders in the form of personal taxation. Furthermore, taxes on dividend income are immediately paid and cannot be deferred, whereas capital gains are not taxed until the shares are finally sold out. Nevertheless, it must be understood that corporate decisions are, certainly, not determined exclusively by tax considerations, and hence, the tax approach can only offer a framework to analyze the relationship among corporate decisions in such a specific way.

The agency approach also explains the interconnectedness between the set of key corporate decisions. Jensen (1986) argues that corporate managers' (agents) inherent incentives to build a larger empire rather than paying out free cash flows create an overinvestment problem. The overinvestment problem is expected to be more severe in firms with large free cash flow. Therefore, the internal control mechanism and the market for corporate control are significant for such companies to make sure that managers are in spirit pursuing the goals of shareholders. In this context, it is required to set up an agency-cost control mechanism that provides managers an incentive to work as better agents of shareholders. The established literature on agency theory argues that both dividend payouts and debt financing can work as control mechanisms to keep managers disciplined and act in the best interest of the shareholders (Jensen, 1986).

4.3 Theoretical Justification

4.3.1 Fraud and Simultaneous Determination of Corporate Decisions

In this section, the study reviews different pieces of empirical evidence on the simultaneity of corporate decisions in different settings. As there is no direct literature on the interdependence of corporate decisions in the context of fraud. The study takes the support of the literature that examines the corporate decisions in an environment of information asymmetry. So, to establish the understanding of the potential interdependencies of corporate decisions, this study believes that revelation of fraud suggests a breach of the agent-principal relationship of trust. Moreover, fraud discovery also brings information asymmetry and severe market imperfections for fraudulent firms due to reputational damages (Gande & Lewis, 2009; Karpoff et al., 2008). Therefore, the subsequent discussion of literature approaches the understanding of interdependencies of corporate decisions from various theoretical and empirical models such as perfect market

hypothesis, agency theory, financial constraints models, the flow of fund model, and many others.

In the framework of Modigliani and Miller (1958), financial decisions are independent in a perfect market. However, capital provides revise the estimation risk and require higher return due to the presence of agency conflict and costly monitoring of managers (Jensen & Meckling, 1976). Various other scholars highlight the problems of market imperfection due to information asymmetry in equity markets (Myers, 1984; Myers & Majluf, 1984). Additionally, the literature shows that agency cost increases the premium on the cost of external financing as borrowers' net worth declines (Bernanke & Gertler, 1989; Gertler, 1992). In such an environment, the sensitivity of firms' investment to internal funds increases because of its cost advantage to costly external financing. As a result, we see the level of interdependence of investment with choice of external financing. Moreover, many studies highlight the importance of financial constraints for corporate decisions (see for example.,(Fazzari et al., 1987; Lamont, 1997; Shen & Lin, 2016). They report that under financial constraints, investment of the companies is sensitive to internally generated funds. In the same vein, Aggarwal and Zong (2006) report that firms facing financial constraints follow pecking order to finance the capital funds. Guariglia (2008) further indicates that investment-cashflow sensitivity is stronger in firms with limited access to external finance. Overall, these findings suggest that under market imperfection and information asymmetry, we may observe the interaction between financing and investment decisions of firms.

Moving forward with dividends, Miller and Modigliani (1961) propose that dividends are independent of investment decisions. However, under asymmetrical environment and market imperfections, one may expect the dependence of firms' investment decisions on their dividends and financing decisions. The dividend signaling hypothesis argues that

companies use dividends as a signal to minimize information asymmetry (Bhattacharya, 1979; Li & Zhao, 2008; Miller & Rock, 1985). For example, Akhigbe and Madura (1996) report that firms experience a favorable effect on the share price on dividend initiation compared to firms that cut dividends. Following the work of Dhrymes and Kurz (1967) on the simultaneity of corporate decisions, several studies test the interdependence of financing, investment, and dividends. Sarig (2004) finds that the investment decision of the firm leads the dividend payout decision. However, he finds no significant effect of dividends on investment. DeFuscoa, Dunhamb, and Geppertc (2007) report that dividends and investment are related in the short term. However, the association gets weaker in the long run. DeAngelo, DeAngelo, and Skinner (2004) on the other hand provide the support that dividends and investment are related. About the association of dividends and financing, there is considerable support from theoretical and empirical literature. The pecking order theory predicts the positive association between dividends and financing. Baskin (1989) and Adedeji (1998) provide empirical support for the positive association between dividend and financing. Similarly, about financing and investment, several studies document a significant negative association between financing and investment decisions of firms in the US (see for example. (Baker & Wurgler, 2002; Hovakimian et al., 2001; Smith & Watts, 1992). While the pecking order theory suggests that investment decisions of firms lead the financing decisions, capital rationing theory predicts another way round (Myers, 1984). The studies of Baskin (1989) and Adedeji (1998) provide evidence in the support of pecking order theory and capital rationing theory respectively.

Given the empirical and theoretical support of the interdependencies of corporate decisions, there are also few studies that find an insignificant association between corporate decisions. For instance, Fama (1974) and Pruitt and Gitman (1991) report that investment and dividend decisions are independent. Overall, there are mixed empirical findings on the possible simultaneity of financing, investment, and dividends.

Following the prior literature (Dhrymes & Kurz, 1967; Gatchev, Pulvino, & Tarhan, 2010; Meng, 2013), this study follows the flow of funds framework under information asymmetry to establish the possible interaction of the corporate decisions triad. The rationale to follow this model is because of the established fraud literature that suggests that fraud revelation brings information asymmetry. So, based on the flow of fund framework, the study expects the negative relationship between investment and dividend payouts; a positive relationship between investment and financing; and, positive relationship between dividends and financing. Further, the study expects that level of these relationships increases in post fraud period.

4.4 Data and Sample Selection

Similar to the sample selection criteria used in the first essay (Section 3.4.2), the study also identifies the fraud sample of 34 firms from enforcement action releases (EARs) of Securities Commission Malaysia, and Bursa Malaysia for the period of 1996-2014. In this study, the sample period is reduced from 1996-2016 to 1996-2014. This is due to the reason that the study uses the window of 6 years comprising of 3 years before and after the fraud revelation. The sample size of 34 firms in this study is comparably small than used in the first essay. The reason being that data availability of the corporate finance-related variables in the post-fraud period is very limited. However, the 6-year event window (i.e. pre-fraud period and post-fraud period) generates sufficient observations to apply the statistical methodology and validate the results of the study.

Panel A of Table 4.1 presents the distribution of fraud in different industries. Industrial products are more involved in fraudulent financial reporting. They account for 38 % of all frauds from 1996-2014. Firms in the consumer product industry make up 21 % of the fraud. Plantation, trading and services, and technology comprise 36% of the total sample size.

Table 4-1: Sample Characteristics

Panel A: Industrial Classification of Sample

Industry	Number of Firms (n)	Percentage (%)
Property	2	5.88
Consumer Products	7	20.59
Industrial Products	13	38.24
Plantation	4	11.76
Trading & Services	4	11.76
Technology	4	11.76
Total	**34**	**100%**

Panel C: Nature of Offence

Offence	Number of Firms (n)	Percentage (%)
Improper Revenue Recognition	18	52.94
Overstatement of Account Receivable	5	14.71
Overstatement of other Assets	4	11.76
Overstatement of Inventory	2	5.88
Understatement of Allowances/Reserves	2	5.88
Understatement of Expenses	3	8.82
Total	**34**	**100%**

Source: SC and Bursa Malaysia

Property constitutes 6% of the total sample. Panel B presents the classification of the sample according to the nature of the offense. Improper recognition of revenue is the most common one and account for 53% of the sample. Overstatement of assets such as account receivable, other assets and inventory account for 33% of the overall offenses. Finally, understatement of reserves and expenses make 15% of total offenses.

4.4.1 Descriptive Statistics

In Table 4.2, the study presents a univariate analysis of the main research variables. For the purpose, the study finds the averages of financing, investment, and payout of fraudulent firms 3 years before and after fraud discovery. The results for financing indicate that financing is reduced by almost 57.5% after fraud. The results for investment and dividends also show a significant decline of 81.3% and 33.3% respectively in post fraud period. Overall, the results provide a preliminary support for adverse effects of fraud on corporate decisions.

Table 4-2: Univariate Analysis

Panel A: Univariate Analysis of Corporate Financial Triad

		Pre-fraud		Post-fraud			
Variables	**Acronyms**	**Mean**	**Median**	**Mean**	**Median**	**Mean Diff**	**Median Diff**
Financing	Fin.	0.087	0.081	0.037	0.033	-0.054**	-0.114**
Investment	Inv.	0.049	0.053	0.009	0.008	-0.041***	-0.045***
Dividend	Div.	0.018	0.016	0.012	0.013	-0.006*	-0.003*

Panel B: Descriptive Statistics of Control Variables

Variables	**Acronym**	**Mean**	**S.D**	**Min.**	**Max.**
Cash Flow	CF	0.045	0.969	-11.924	4.242
Market to Book	MTB	1.092	0.969	0.461	7.004
Firm Size	Size	6.147	1.469	2.793	8.422
Tangibility	Tang.	0.397	0.236	0.003	0.965
Retained Earnings	RE/TE	0.115	0.418	-0.952	0.576
InsideOwn	INOW	28.463	18.333	0.000	88.353

Note: In Panel A of the above table, the study compares the means using t-statistics while the Mann-Whitney U Test is used for the comparison of medians. The Panel B presents the descriptive statistics of the control variables.

Table 4-3: Correlation Coefficient Matrix

	Fin	Inv	Div	CF	MTB	Size	Tang	INOW	R.E/T.E
Fin	1								
Inv	0.2813***	1							
Div	0.3193**	-0.0301*	1						
CF	-0.4443**	-0.2989***	0.0689	1					
MTB	-0.0317	-0.0145	-0.0737	0.0277	1				
Size	0.2376***	0.2914**	-0.066	0.3765	-0.0431	1			
Tang	-0.0965**	0.108	-0.0265**	0.1231	-0.0247	0.1708**	1		
INOW	-0.0603	-0.0564	0.0491	0.073	0.0449**	-0.1302	0.0386	1	
R.E/T.E	-0.0691	0.112**	-0.3174	0.0139*	0.0434***	0.0189**	-0.3122	0.0693***	1

Notes: The reported figures present pairwise Pearson correlation coefficients. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

4.4.2 Multivariate Analysis

The study furthers the examination of the effect of fraud on changes in corporate decisions by using multiple regressions, which allows controlling for more factors that potentially affect corporate decisions. For the purpose, the following equations are specified for the analysis:

4.4.2.1 Financing Equation

Based on the argument that fraud revelation brings information asymmetry, this study specifies the financing equation on the basis of pecking order theory (Frank & Goyal, 2003). The model is estimated as follows:

$$Fin._{it} = \beta_1 + \beta_2 PostFraud + \beta_3 Fin_{it-1} + \beta_4 Inv_{it} + \beta_5 Div_{it} + \beta_6 Size_{it} + \beta_7 Tang_{it}. +$$

$$\beta_8 MTB_{it} + \beta_9 CF_{it} + \sum_i Firm_i + \sum_t Year_t + \eta_{it}, \qquad (4.1)$$

Fin is the dependent variable for net financing measured as the change in the book value of long-term debt deflated by total capital. Fin_{it-1} is the lagged dependent variable. It is used in the equation because firms' prior years' financing affects their future financing. *Inv* is investment measured as the sum of the changes in book value of the net property, plant and equipment and depreciation expenses deflated by total capital. *Div.* is the reported total dividends paid on common stock, including extra and special dividends deflated by total capital. We scale the financing, investment, and dividend variables on capital to reduce any potential heteroskedasticity. *Postfraud* is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. Based on the pecking order theory, the study controls for size measured as the natural logarithm of total sales as an indicator of firm size (*Size*). The pecking order theory predicts a negative relationship between firms' size and external financing. Asset tangibility (*Tang*) is measured as fixed assets divided by total assets and

is expected to have a positive effect on external financing. Growth opportunities are measured by the market to book ratio (*MTB*). Like Yuan and Zhang (2014), we have no clear prediction of growth opportunities on external financing. The relationship could be positive because firms with high growth require external funds to support the investment. However, it may also have a negative effect on investment because of the higher estimation risk of investors. Firm and year capture firm- and time-specific effects, respectively.

4.4.2.2 Investment Equation

To measure the effect of fraud on changes in investment, the study extends the simple Q-model of investment as below:

$$Inv_{it} = \alpha_1 + \alpha_2 PostFraud + \alpha_3 Inv_{it-1} + \alpha_4 Fin_{it} + \alpha_5 Div_{it} + \alpha_6 MTB_{it} + \alpha_7 CF_{it} + \sum_i Firm_i + \sum_t Year_t + \varepsilon_{it} \quad (4.2)$$

Where *Inv* is the investment, *Fin* and *Div* are financing and investment used as endogenous variables. *Postfraud* is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. The study includes a one-year lag of investment because of the lumpy nature of the investment. Growth opportunities are measured as a market to book ratio (*MTB*). *CF* represents the available internal funds. As Fazzari et al. (1987) reported, the cash flow shows the financial position of the firm and is expected to have a positive effect on investment. Firm and year capture firm- and time-specific effects, respectively.

4.4.2.3 Dividend Equation

For changes in dividends, it is argued that fraud revelation brings information asymmetry, therefore, the study follows the signaling hypothesis of dividend under information asymmetry. The dividend equation is estimated as below:

$$Div._{it} = \gamma_1 + \gamma_2 PostFraud + \gamma_3 Div_{it-1} + \gamma_4 Inv_{it} + \gamma_5 Fin_{it} + \gamma_6 Size_{it} + \gamma_7\ MTB_{it} +$$

$$\gamma_8 INOW_{it} + \gamma_9\ CF_{it} + \gamma_{10} R.E/TE_{.it} + \sum_i Firm_i + \sum_t Year_t + \zeta_{it}. \qquad (4.3)$$

Where Div is the dividend payout. *Postfraud* is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. The study includes the lag of dividend because of the sticky nature of dividends and expects its positive relationship with future dividends. *Fin* and *Inv* are the endogenous variables for financing and investment. As suggested by Fama and French (2001), large firms are expected to pay more dividends than small firms, the study controls for the size in the estimation of dividends and expect the positive effect of size on dividend payouts. Firms with high growth opportunities have smaller dividend payouts (Fama & French, 2001; Fuller & Blau, 2010), therefore, growth opportunities (*MTB*) are used as an important control variable. Following the signaling hypothesis of dividends that firms use dividends as a signal to convey private information in the capital market, we use cash flow variable for this purpose. Moreover, inside owners have incentives to closely monitor the management actions, therefore, insider ownership *(INOW*) is included in the estimation equation. It is expected to have a negative relationship with dividends (e.g., (Schooley & Barney, 1994; Shleifer & Vishny, 1986)). Finally, using the life cycle effect of dividends (DeAngelo et al., 2006), retained earnings (*R.E/TE*) are used to total common equity in the dividend equation. The measurement of the variables is provided in Table 4.4.

Table 4-4: Variable Measurement

Variable	Acronyms	Measurement	Prior Studies
Fraud	Postfraud	Postfraud is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement.	(Lin et al., 2013; Yuan & Zhang, 2016)
Financing	Fin	The change in the book value of long-term debt.	(Hutton, Peterson, & Smith, 2014; Meng, 2013)
Investment	Inv	The sum of the changes in the book value of the net property, plant and equipment, and depreciation expenses	(Meng, 2013; Wang, 2004)
Dividends	Div	The reported total dividends paid on common stock.	(DeAngelo et al., 2006; Meng, 2013)
Size of the firm	Size	Natural logarithm of total assets	(Yuan & Zhang, 2016)
Tangibility	Tang	The ratio of the book value of the net property, plant, and equipment to the book value of total assets	(Yuan & Zhang, 2016)
Growth opportunities	MTB	The ratio of total assets minus the book value of equity plus the market value of equity to total assets, where the market value of equity equals price per share times the total number of shares outstanding	(Lin et al., 2013; Yuan & Zhang, 2016)
Cash flow	CF	Net income plus non-cash expenses	(Lin et al., 2013; Meng, 2013; Yuan & Zhang, 2016)
Inside ownership	INOW	The percentage of common share outstanding that are held by insiders	(Hasnan, Rahman, et al., 2012; Meng, 2013)
Retained earnings	RE/TE	The ratio of retained earnings to total equity	(DeAngelo et al., 2006; Meng, 2013)
Capital stock	K	The book value of tangible fixed assets	(Meng, 2013)

4.4.3 Preliminary Diagnostics and Estimation Technique

This study uses panel data estimation to examine the research problem. Although the empirical literature provides support for the endogeneity of corporate decisions, the study tests the hypothesis for endogeneity before proceeding to the main analysis. For the purpose, Durbin and Wu–Hausman tests (Hausman, 1978; Wu, 1974) is applied to the corporate decision variables. Both the tests assume variables under consideration as exogenous in their null hypotheses. The test results in Table 4.5 for endogeneity for financing, investment, and dividend equations are highly significant, which suggests that corporate decisions should be treated as endogenous variables.

Table 4-5: Endogeneity Test

Equations	**Endogenous**	**Durbin (score) chi2**	**Wu-Hausman F**
Financing [a]	Div, Inv.	98.6247 (0.000)	81.326 (0.000)
Investment [b]	Fin, Div	77.143 (0.000)	69.781 (0.000)
Dividend [c]	Inv, Fin	58.620 (0.060)	50.444 (0.000)

Notes: (a) Instrument variables in the regression include: Postfraud, Fin $_{t-1}$, Size, Tang, MTB, CF.
(b) Instrument variables for investment equation include: Postfraud, Inv $_{t-1}$, MTB, CF.
(c) Instrument variables for dividend equation include: Postfraud, Div $_{t-1}$, Size, MTB, INOW, CF, and RE/TE.

After establishing the endogeneity of corporate decisions, one cannot proceed with OLS regression. Dhrymes and Kurz (1967) show that when variables are interdependent, OLS regression provides misleading results. Moreover, they suggest that one should only include the variables that are truly exogenous in OLS regression. However, the study does not aim to exclude the corporate decisions variables in the estimation because they are key study variables.

4.4.3.1 Justification of Estimation Technique (IV Estimators or GMM Estimator)

The study uses equation (4.1), (4.2), and (4.3) to carry out simultaneous equations analyses. There are three alternative approaches, 2SLS, 3SLS and GMM estimations to estimate a simultaneous equations system. Both 2SLS and 3SLS belong to instrumental variable (IV) class estimators. Hansen (1982) proposed a generalized method of moments (GMM) estimator that simplifies the linear and non-linear IV estimators of Sargan (1958). Compared to IV estimators, the GMM estimators are based on a weighting matrix that takes into account the heteroskedasticity, temporal dependence, and autocorrelation. In the majority of the previous studies, the selection between IV estimators and GMM was arbitrary.

In order to decide between IV estimators and GMM, this study follows Lee, Liang, Lin, and Yang (2016) by estimating the presence of weak instruments and heteroskedasticity. Wang (2015) and Lee et al. (2016) test the weakness of instruments by looking at the F-statistics or R^2 of the first stage regression. If the F-statistics is greater than 10, then instrument variable estimators (2SLS & 3SLS) are reliable (Stock, Wright, & Yogo, 2002). Moreover, if errors are homoscedastic, it is suggested to use IV estimators. The study performs the first-stage F-statistic to test the weakness of instruments and Pagan and Hall (1983)'s test to detect heteroskedasticity.

Table 4.6 shows the results of weak instruments and heteroskedasticity. The value of adjusted R-square for financing, investment, and dividends show the significant strength of the instruments. The F-statistics for all the three variables is more than 10. These results indicate that instruments are strong. The p-values of PH-test for financing, investment, and dividends indicate that the errors are not heteroskedastic.

Table 4-6: Test for Weak Instruments and Heteroskedasticity

Equations	Adj.R2	Average F-stat	PH-test (p-value)
Financing	0.9996	136.11	0.180
Investment	0.9919	129.69	0.268
Dividends	0.7575	99.53	0.209

Notes: The study used Ivreg2 for each equation separately for heteroskedasticity test by estimating "ivhettest" in STATA. The null hypothesis of Pagan and Hall (1983)'s test is that errors are homoskedastic. In all the equations, the null hypothesis is accepted. The p-values are reported in the last column.

The results for both the weak instrument and heteroskedasticity tests indicate that IV estimators are preferable to GMM estimators. Additionally, one of the concerns of this study is small sample size. However, Lee et al. (2016) suggest that in studies with smaller sample size, IV estimation is preferred over GMM estimation.

At this stage, the results have established the validity of IV estimators over GMM estimator. Next, to decide between 3SLS and 2SLS, Chen and Lee (2010) points out that the 2SLS is limited information method. Since the system of equations in this study involves endogenous variables from other equations, the study prefers full information method (3SLS). This is because 3SLS takes into account both cross-equation correlation of errors and simultaneous bias. Moreover, the 3SLS estimation is the combination of 2SLS and SUR (seemingly unrelated regression). Therefore, the study uses 3SLS as its main estimation method. The first stage regression of 3SLS estimation is provided in Appendix A.

4.5 Results of Three-Stage Least Square Model (3SLS)

Table 4.7 reports the results of 3SLS. In Panel A, the results for financing (Fin) show that fraud has a negative and significant impact on external financing. The results are consistent with the findings of Lin et al. (2012), Yuan and Zhang (2014), and Hutton et al. (2014) who report the negative effect of fraud on corporate external financing. On the interaction of corporate decisions, the results indicate that investment has a significantly positive impact on financing decisions. The results support the prediction of agency theory and pecking order theory. For the effect of dividends on financing, the argument of Jensen (1986) that dividends and debts are perfect substitute to signal the market does not hold in this study. Instead, it is found that dividends have a significant and positive effect on financing. Moreover, cash flow (CF) has a negative and significant effect on financing. Consistent with prior studies (Jensen et al., 1992; Lee et al., 2016; McCabe, 1979; Meng, 2013), the results support the pecking order theory of Myers (1984) that under information asymmetry, firms follow financing hierarchy.

Among the control variables, the results for size are statistically significant and negative at 1 percent. The results confirm the prediction of pecking order theory. The results for asset tangibility (*Tang*) is significant and positive which suggests that tangible assets serve as collateral for external financing (Bae & Goyal, 2009). Growth opportunities (*MTB*) has a positive and significant effect on financing. This suggests that firms with high growth require external funds to support the investment (Yuan & Zhang, 2016). For changes in the investment decision in Panel B of Table 4.7, the results find statistically significant and negative effect of fraud on investment. Similar to financing, the results also indicate the adverse shocks of fraud on firms' investment decisions.

Table 4-7: 3SLS Results of Simultaneity of Financing, Investment, and Dividend Payouts

	Panel A Financing (Fin)		Panel B Investment (Inv)		Panel C Dividend (Div)	
Variables	**Coefficient**	**S.E**	**Coefficient**	**S.E**	**Coefficient**	**S.E**
Postfraud	-0.156**	(0.073)	-0.248***	(0.078)	-0.0071**	(0.003)
Fin $_{t-1}$	-0.0044	(0.0061)				
Inv $_{t-1}$			0.0009	(0.0084)		
Div $_{t-1}$					0.242***	(0.0821)
Inv.	0.024***	(0.005)			-0.0110***	(0.003)
Fin.			1.538***	(0.0115)	0.0029**	(0.0014)
Div.	6.999***	(2.010)	-0.861**	(0.392)		
Size	-0.416**	(0.194)			0.106**	(0.0472)
Tang	2.396***	(0.590)				
MTB	0.834***	(0.216)	0.327**	(0.163)	-0.112	(0.176)
CF	-0.903***	(0.224)	0.928**	(0.416)	0.102	(0.076)
INOW					0.0002	(0.0007)
RE/TE					0.037**	(0.017)
Company dummy	Yes		Yes		Yes	
Year dummy	Yes		Yes		Yes	
Observations	204		204		204	
R-Square	0.9951		0.9926		0.6098	

Notes: This table presents the results of 3SLS. Postfraud is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. Fin t-1, Inv t-1, and Div t-1 are the lagged variables of financing, investment, and dividends. Size, Tang, MTB, CF, INOW and RE/TE show the size of the firm, asset tangibility, market to book ration, cash flow, inside ownership and retained earnings respectively. The study controls for the firm and year effects using the company and year dummies. Standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

The coefficient of financing has a significant and positive impact on investment decision. These results are consistent with the prior studies e.g., (Lee et al., 2016; McCabe, 1979; McDonald, Jacquillat, & Nussenbaum, 1975; Meng, 2013) and confirm the capital-rationing theory, which predicts that financing decision leads investment decision. Moreover, the coefficient of the dividend has the significant and negative impact on investment decision and is in conformity with (McCabe, 1979; McDonald et al., 1975; Meng, 2013). The result suggests that dividend and investment are competing uses of funds and fraudulent firms do the tradeoff between dividend payouts and investment outlays while allocating the scare funds. The lagged investment variable on future investment of firm is insignificant and positive. The cash flow (*CF*) has a positive and significant effect. The results imply that investment decisions of fraudulent firms are constrained by internal cash flows as well as external finance.

Finally, for dividend equation in Panel C of Table 4.7, the results indicate that the effect of fraud on dividends is statistically significant and negative. On the interaction of corporate decisions, the results for 3SLS show that financing has a positive and statistically significant effect on dividends while investment has a negative and significant effect at 1 percent. Moreover, the coefficient of investment on dividends is statistically significant and negative. The results imply that dividend payout is not a residual or independent decision, instead, it is made simultaneously with financing and investment decisions. Contrary to the findings of Pruitt and Gitman (1991) who report dividends payouts as independent decisions, this study establishes the simultaneity of dividends with financing and investment.

The results for growth opportunities (*MTB*) and insider ownership (*INOW*) are insignificant in the model. The cash flow (*CF*) is also statistically insignificant. The results do not support the signaling hypothesis of dividends that firms use dividends as a

signal about the future firms' profitability. Consistent with Lifecycle theory, the effect of retained earnings (*RE/TE*) on dividends is significant and positive. Overall, the results from 3SLS indicate that fraud revelation has adverse consequences on the corporate financial triad. The corporate decisions become interdependent following the fraud discovery.

4.5.1 Strength of Interdependence among Corporate Financial Triad

In the previous test, the study examines the effect of fraud on the corporate financial triad and established the adverse effect of fraud and interdependencies among the corporate decisions. In this section, it examines the strength of interdependence of the corporate financial triad in the post-fraud period. For the purpose, it interacts each corporate decision variable with a Postfraud dummy in the respective equations. If the interaction effect is significant, one can interpret the coefficient as the decrease or increase in interdependencies. The 3SLS results are reported in Table 4.8.

First, the study discusses the financing equation. The interaction term Postfraud*Inv is statistically significant and positive which shows that strength of interdependence of financing and investment increases in post fraud period. The coefficient of investment is also statistically significant and positive. The coefficient of *Postfraud*Div* is statistically significant at 10 which imply that while making financing decisions, management pays considerably less attention to dividend decisions compared to investment decisions.

In the investment equation, the coefficient of *Postfraud*Fin* is positive and significant. The results confirm the increase in the simultaneity of investment and financing decisions. The coefficient of *Postfraud*Div* is also statistically significant and negative. The results are in conformity with competing uses of funds for dividends and investment. Overall, the results for investment indicate that investment sensitivity to financing and dividends increases in post fraud period. The results for dividend equations show that

sensitivity of dividends to both financing (*Postfraud*Fin*) and investment (*Postfraud*Inv*) increases following the fraud discovery. Both financing and investment interaction terms with Postfraud are significant. The evidence for financing, investment, and dividends analyses reinforces the assertion that the revelation of fraud imposes adverse impacts on the corporate financial triad.

4.6 Robustness Tests

In the previous analysis, the study used 3SLS to examine the simultaneity of the corporate financial triad. Although 3SLS is asymptotically more efficient, yet it is subject to high specification errors than the limitation information model. Therefore, to check the robustness of the results, the study estimates the results using 2SLS. The results of the 2SLS are reported in Table 4.9.

The results for financing, investment, and dividend equation are quite similar despite some variations in the significance level of the few variables. The coefficients of corporate financial triad variables in the respective equations bear the similar sign of the relationship. Moreover, the control variables also show similar behavior as evidenced in the 3SLS results. In Table 4.9, the study reports the results for strength of interdependence in post fraud period using 2SLS. These results are also similar to those reported in Table 4.7. The only difference is shown in the insignificant coefficient of dividend in financing equations which is shown to be significant in Table 4.7. Overall, the results provide consistent estimates using both 3SLS and 2SLS.

Table 4-8: 3SLS Results of Strength of Interdependence

	Panel A Financing (Fin)		Panel B Investment (Inv)		Panel C Dividend (Div)	
Variables	**Coefficient**	**S.E**	**Coefficient**	**S.E**	**Coefficient**	**S.E**
Postfraud	-0.026**	(0.011)	-0.180***	(0.058)	0.004*	(0.0022)
Postfraud*Inv	0.510***	(0.029)			-0.016**	(0.007)
Postfraud*Div	0.541*	(0.311)	-14.44*	(7.643)		
Postfraud*Fin			1.950**	(0.856)	0.136*	(0.0764)
Fin $_{t-1}$	-0.0002	(0.002)				
Inv $_{t-1}$			0.0004	(0.0093)		
Div $_{t-1}$					0.2085***	(0.0744)
Inv	0.107**	(0.047)			-0.0017*	(0.0009)
Fin			3.493***	(0.838)	0.187**	(0.078)
Div	0.604*	(0.322)	-5.196	(6.885)		
Size	-0.0173*	(0.009)			0.105***	(0.0189)
Tang	1.650***	(0.322)				
MTB	0.088***	(0.024)	0.298**	(0.127)	-0.118	(0.1487)
CF	-0.043**	(0.019)	0.432***	(0.068)	0.103*	(0.058)
INOW					0.0002	(0.0007)
RE/TE					0.032***	(0.009)
Company dummy	Yes		Yes		Yes	
Year dummy	Yes		Yes		Yes	
Observations	204		204		204	
R-square	0.9992		0.9877		0.644	

Notes: This table presents the results of 3SLS. Postfraud is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. Post*Inv, Post*Div, and Post* Fin are the interaction terms to see any increase or decrease in the interdependene of investment, finance, and dividend variables in the post fraud period. Fin t-1, Inv t-1 and Div t-1 are the lagged variables of financing, investment, and dividends. Size ,Tang, MTB, CF, INOW and RE/TE show the size of the firm, asset tangibility, market to book ration, cash flow, inside ownership and retained earnings respectively. The study controls for the firm and year effects using company and year dummies. Standard errors are reported in the parenthesis. Standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

Table 4-9: 2SLS Results of Simultaneity of Financing, Investment, and Dividend Payouts

	Panel A		Panel B		Panel C	
	Financing (Fin)		Investment (Inv)		Dividend (Div)	
Variables	**Coefficient**	**S.E**	**Coefficient**	**S.E**	**Coefficient**	**S.E**
Postfraud	-0.163**	(0.0696)	-0.247***	(0.051)	-0.0044*	(0.0024)
Fin $_{t-1}$	-0.0048	(0.0075)				
Inv $_{t-1}$			0.0004	(0.010)		
Div $_{t-1}$					0.233**	(0.101)
Inv	0.0068***	(0.0021)			-0.0082***	(0.0027)
Fin			1.538***	(0.0131)	0.0087**	(0.0036)
Div	7.020***	(2.281)	-1.421**	(0.6497)		
Size	-0.416*	(0.220)			0.111***	(0.0202)
Tang	2.406*	(1.302)				
MTB	0.848***	(0.246)	0.323	(0.457)	-0.107	(0.131)
CF	-0.915***	(0.255)	0.935*	(0.545)	0.0981	(0.0722)
INOW					0.0002	(0.0008)
RE/TE					0.0372**	(0.0186)
Company dummy	Yes		Yes		Yes	
Year dummy	Yes		Yes		Yes	
Observations	204		204		204	
R-square	0.9994		0.9740		0.5947	

Notes: This table presents the results of 2SLS. Postfraud is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. Fin t-1, Inv t-1, and Div t-1 are the lagged variables of financing, investment, and dividends. Size, Tang, MTB, CF, INOW and RE/TE show the size of the firm, asset tangibility, market to book ration, cash flow, inside ownership and retained earnings respectively. The study controls for the firm and year effects using the company and year dummies. Standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

Table 4-10: 2SLS Results of Strength of Interdependence

	Panel A Financing (Fin)		Panel B Investment (Inv)		Panel C Dividend (Div)	
Variables	**Coefficient**	**S.E**	**Coefficient**	**S.E**	**Coefficient**	**S.E**
Postfraud	-0.0219*	(0.0116)	-0.0828**	(0.0339)	-0.0029*	(0.0016)
Postfraud*Inv.	0.587***	(0.0396)			-0.0159**	(0.0074)
Postfraud*Div	0.917*	(0.4936)	-1.334	(9.078)		
Postfraud*Fin			11.40**	(4.873)	0.142*	(0.0792)
Fin $_{t-1}$	-0.00017	(0.0021)				
Inv $_{t-1}$			0.0002	(0.0113)		
Div $_{t-1}$					0.216**	(0.0914)
Inv	0.0302**	(0.0126)			-0.0066**	(0.0032)
Fin			12.93**	(6.171)	0.129**	(0.0641)
Div	0.929	(0.876)	-1.039	(8.212)		
Size	-0.0091*	(0.0053)			0.109***	(0.0219)
Tang	4.653***	(1.760)				
MTB	0.0836***	(0.0278)	0.188**	(0.0854)	-0.117	(0.1095)
CF	-0.0476**	(0.0237)	1.638**	(0.688)	-0.104	(0.1216)
INOW					0.00023	(0.0008)
RE/TE					0.0552***	(0.0118)
Company dummy	Yes		Yes		Yes	
Year dummy	Yes		Yes		Yes	
Observations	204		204		204	
R-square	0.999		0.974		0.609	

Notes: This table presents the results of 2SLS. Postfraud is a dummy variable that equals 1 for the 3 years following the fraud revelation and zeroes for the 3 years before fraud announcement. Post*Inv, Post*Div, and Post* Fin are the interaction terms to see any increase or decrease in the interdependence of investment, finance, and dividend variables in the post-fraud period. Fin t-1, Inv t-1, and Div t-1 are the lagged variables of financing, investment, and dividends. Size, Tang, MTB, CF, INOW and RE/TE show the size of the firm, asset tangibility, market to book ration, cash flow, inside ownership and retained earnings respectively. The study controls for the firm and year effects using the company and year dummies. Standard errors are reported in the parenthesis. Standard errors are reported in the parenthesis. Standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

4.7 Conclusion

This study develops a model that reflects the interdependent nature of corporate financial triad while accounting for the effect of fraud revelation. For the purpose, it conducts the simultaneous analysis of these decisions to aid our understanding of the complex relations that bind these policies together in an environment of fraud that brings higher information asymmetry and market imperfections. To investigate the interdependencies of the corporate financial triad, the study performs a full information model (3SLS) as the main estimation method as well as limited information method (2SLS) for robustness. The results seem to substantiate the claim that due to resulting information asymmetry and market imperfections of fraud discovery, corporate investment, financing, and payout decisions are indeed inextricably linked and jointly determined as implied by the flow-of-funds framework.

Consistent with the prediction of agency theory and pecking order theory, the investment decision of the firm has a positive effect on financing. Similarly, the financing decisions are also driven by the dividend decisions implying that dividend payout is not a residual policy of financing. In line with the prediction of pecking order theory, internally generated funds have a negative effect on financing suggesting that firm prefer to use internal funds over external funds under information asymmetry. As fraud revelation bring information asymmetry, these results confirm the theoretical prediction of the pecking order theory. The results of investment decision show that financing has a positive effect on corporate investment. The results are in line with the prediction of capital rationing theory that investment decisions are driven by financing decisions. Dividends, on the other hand, have a negative effect on investment suggesting that investment and dividends are two competing uses of corporate funds. The firm has to make an adjustment in funds allocation for investment and dividends. Finally, in dividend equation, the results indicate that financing has a positive while investment has a negative

effect on dividend payouts. These results again imply that dividend payout is not a residual policy of financing, and investment expenditures are competing uses of funds with dividends.

Furthermore, to estimate the strength of interdependence, the study interacts each decision with a Postfraud dummy to test whether the interdependencies of corporate decisions is increased or decreased in post fraud period. Results provide the comprehensive support of the increase in strength of the simultaneity of corporate decisions. Specifically, the results find that capital investment and dividend payout, as competing uses of limited funds, are negatively interrelated, but both are positively related to the new debt issued.

Overall, the results establish that in post fraud period, corporate financial triad becomes interdependent and the strength of interdependence increases due to the resulting market imperfections of fraud. The study findings provide new insights that fraud revelation brings severe market imperfections that subsequently increase the simultaneity among corporate financing, investment, and payout decisions, and reduces managerial flexibility in adjusting those corporate decisions in response to resulting market penalties of fraud.

CHAPTER 5: FRAUD, AMELIORATING ACTIONS AND EARNINGS QUALITY (ESSAY 3)

5.1 Introduction

Corporate fraud revelation proves to be an event of crisis for a fraudulent company because it damages the firm's reputation (Gande & Lewis, 2009; Jarrell & Peltzman, 1985; Karpoff et al., 2008; Klein & Leffler, 1981), and put them to operate in a totally new environment of high market imperfections and information asymmetry (Campello, Graham, & Harvey, 2010). Prior studies on fraud can be broadly categorized into pre-announcement issues and post-announcement issues. The former probes into the causes and determinants of fraudulent financial reporting (e.g., (Beasley et al., 2000; Dunn, 2004; Hasnan, Rahman, et al., 2012; Kaplan et al., 2009; O'Connor, Priem, Coombs, & Gilley, 2006; Owens-Jackson et al., 2009; Razali & Arshad, 2014; Wang et al., 2017)). Post-announcement issues primarily relate to investigations of the financial consequences of fraud. The argument is that fraudulent firms bear heavy costs both from legal and market perspectives. These costs include increase in cost of capital (Hribar & Jenkins, 2004), negative market reactions (Palmrose et al., 2004), higher frequencies of bankruptcy or delisting (Palmrose et al., 2004), decrease in future earnings (Ahmed & Goodwin, 2007), and decrease in information content of earnings (Wilson, 2008).

Research on post-announcement issues has recently turned to how firms work to restore their impaired reputation. When the fraud is publicly revealed, the firm is better advised to take substantive measures to signal the effort it is making to reduce the likelihood of fraud occurring in the future. This study conjectures that fraudulent firms should take ameliorating actions to improve earnings quality as a priority in the post-announcement period. The earnings quality may, therefore, send a strong signal to the market about the future prospects of the company (Costello, 2011; Toms, 2002). Farber

(2005) investigates the association between the credibility of the financial reporting system and the quality of corporate governance. He argues that fraud firms should improve corporate governance to restore a damaged reputation. Therefore, the study argues that companies tend to improve the financial reporting quality by taking "cleaning the house"[24] actions at top management and board level (D'Onza & Rigolini, 2017).

This study, therefore, examines the post-fraud behavior of fraudulent firms in restoring the reputational damage. Particularly, the study considers changes in top management and corporate board turnover as ameliorating actions to improve the earnings quality. To investigate this, it identifies fraudulent firms from enforcement actions releases (EARs) of the Security Commission of Malaysia. This study makes several contributions. First, it contributes to the ongoing debate about the consequences of governance failure and actions undertaken to repair legitimacy (Boivie et al. 2012; Marcel and Cowen 2014; Hillman and Dalziel 2003). Farber (2005) and Cheng and Farber (2008) find that fraudulent firms rebuild their impaired reputation by improving corporate governance or contracts. The study takes the research one step further by linking these ameliorating actions with subsequent earnings quality. Second, the study examines the reporting behavior of fraudulent firms before and after the fraud announcement and depicts the change in discretionary accrual patterns following the fraud.

The rest of the paper is organized as follows. Section 5.2 is the literature review of the study; Section 5.3 presents the sample selection followed by variable measurement, estimation technique, and result discussion in Section 5.4; Section 5.5 and 5.6 report the

[24] Several studies (Farber 2005; Srinivasan 2005; Richardson 2005; Marciukaityte et al. 2006) have found that board turnover increases following the revelation of fraud. Departure from the board might be the result of a company decision or a director's choice, or both. The literature on governance changes after fraud assumes that a firm might be the instigator of board turnover or merely a bystander to it, although these situations are not mutually exclusive (Srinivasan 2005). When the company is the decision-maker, studies have labeled director departure as a form of cleaning house, while voluntary departure by a director is known as jumping ship (Marcel and Cowen 2014).

results from alternative methods as robustness tests; and finally, Section 5.7 is the conclusion.

5.2 Literature Review

This section presents the literature review of the study. Particularly, it covers the discussion on ameliorating actions of the company and its relationship with the earnings quality. The prior literature has focused on the effect of fraud on management and governance turnover. For example, Farber (2005) examined the effect of fraud on governance turnover in the US. However, this study furthers the discussion by examining the effect of management and governance turnover on earnings quality. The study believes that financial reporting quality offers objective information to the market about the future prospects of the company. After fraud revelation, enhancing the quality of financial statements should be firms' priority and a more direct way to restore financial statement credibility. Therefore, the study considers the changes in management and governance structure as the actions taken to improve the earnings quality. In the following section, the study reviews the prior literature to find the association between governance and earnings quality.

5.2.1 Ameliorating Actions and Earnings Quality

Anecdotal evidence suggests that companies subject to financial statement fraud announcements perform certain actions in an attempt to restore their company's credibility. Extant research provides support that certain types of these actions effectively improve earnings quality and/or deter future frauds from occurring. In either case, these actions are expected to improve the perceived validity of financial disclosures following a fraud announcement. Arguably, the occurrence of financial statement fraud is indicative of a breakdown in the corporate governance structure of the company. A large amount of research has examined different types of corporate governance functions and their effect

on earnings quality. Much of this research focuses on the following governance functions: external auditor, board of director composition, audit committees, and management compensation contracts. As previously discussed, anecdotal evidence suggests that companies recently subject to financial statement fraud announcements perform actions purportedly to restore their credibility. Based on the extant literature, the following actions performed by these companies are expected to improve their perceived disclosure validity, and thus are considered for examination: changing top management (CEO and CFO), increasing the board and audit committee independence, increasing the frequency of board meeting, improving the audit quality, and changing the CEO duality role.

5.2.2 Management Turnover

One of the main responsibilities of the executive leadership is to establish and maintain the organization's legitimacy as perceived by stakeholders (Selznick, 2011). One of the ways they accomplish this is by serving as symbols of the organization and its successes and failures (Pfeffer & Salancik, 2003). When organizations thrive, we celebrate the power of leadership to affect organizational outcomes. When organizations falter, executives make convenient scapegoats whose removal appears to "fix" the problem. Disassociating executives from the firm communicates the organization's willingness to accede to external demands. In fact, the mere intent to comply, as signaled by executive turnover, may itself be enough to relieve the pressure on the organization (Pfeffer & Salancik, 2003).

In the prior literature, companies use management turnover as a signal to convey their efforts for improving financial reporting quality (Arthaud-Day, Certo, Dalton, & Dalton, 2006; Daily, Dalton, & Cannella, 2003; Kryzanowski & Zhang, 2013). Furthermore, companies also change the management to reduce their liability exposure (Agrawal et al., 1999), which in turn signals about their future performance (Daily & Dalton, 1995).

In the given empirical literature, the studies show conflicting results on the impact of management turnover on a market reaction. For instance, Bonnier and Bruner (1989) report a positive impact of management turnover on market reaction. At the same time, Mahajan and Lummer (1993) opine that changes in power nexus determine the relationship between changes in management and market reaction.

Meanwhile, the studies also find the association between management turnover and future performance of the firms (Denis & Denis, 1995; Huson, Malatesta, & Parrino, 2004; You & Du, 2012). Huson et al. (2004) show that companies with CEO turnover experience significant improvement in performance. Still, other scholars report a decline in firms' performance following any changes in management (Dahya, Lonie, & Power, 1998; Grusky, 1960; Kesner & Dalton, 1994). Moreover, Kesner and Dalton (1994) report that management turnover may not improve the subsequent performance of the firms if the new executives prove as "scapegoat". In this context, firms may experience a decline in performance due to employees' job security concerns, power, and status.

Past studies show that management turnover generates instability in the organizations (Kesner & Dalton, 1994). In fact, management turnover offers potential changes in an organizational strategy and creates doubts about the performance of the new executives (Clayton, Hartzell, & Rosenberg, 2005). Meanwhile, Dess and Shaw (2001) show that voluntary turnover breaks firms' social networking resources, which consequently leads to poor performance in the subsequent periods. Similarly, management turnover is also linked with a firm's abandonment of institutionalized goals, practices, and structures (Kraatz & Moore, 2002). Consequently, management turnover is likely to have a material impact on the corporate culture. In this regard, studies show that financial and operational problems may distract executives from fixing or improving weaknesses in financial reporting (Files, Sharp, & Thompson, 2014). Hudaib and Cooke (2005) report that the

unfamiliarity of new executives due to management turnover increases the chances for firms to receive qualified audit opinions. In addition, the regulatory bodies such as Securities Exchange Commission are more likely to monitor fraudulent firms with CEO changes (Land, 2010), because such firms are more likely to misstate the financial reports in the future.

Management turnover also creates incentives for the new managers to manage the earnings due to significant pressure from various stakeholders (Pourciau, 1993; Wang & Chou, 2011). For instance, Pourciau (1993) report that firms with non-routine executive turnover have higher chances of managing the earnings than the firms with a routine executive turnover. Particularly, the new management attempts to carry income-decreasing accruals in the period of management turnover and income increasing accruals in the subsequent periods. Likewise, Krieger and Ang (2013) find that new CEOs tend to engage in earnings manipulation due to high-performance expectations.

While previous studies have examined the impact of management turnover on firm performance (Coughlan & Schmidt, 1985; Coughlin & Schmidt, 1985; Farrell & Whidbee, 2003; Jenter & Kanaan, 2015; Kato & Long, 2006; Lausten, 2002; Xu, Dai, Hitt, & Batjargal, 2016), there is limited empirical literature on the changes in earnings quality subsequent to the management turnover. As stated earlier, on one hand, management turnover adversely affects the organizations in various ways such as, changes in policies and structural instability (Files et al., 2014; Grusky, 1960; Kesner & Dalton, 1994; Kraatz & Moore, 2002), performance related pressure and distraction among new managers due to financial and operational problems (Files et al., 2014; Hudaib & Cooke, 2005; Krieger & Ang, 2013), changes in organizational culture for financial reporting (Hayes, Oyer, & Schaefer, 2006; Wang & Chou, 2011), and poor employees' performance due to job security fears (Kesner & Dalton, 1994), therefore,

one may argue that management turnover in fraudulent firms may not improve their earnings quality.

On the other hand, management turnover (i.e. CEO and CFO) is also regarded as an effective mechanism for firms with financial reporting issues (Arthaud-Day et al., 2006; Chung & Luo, 2013; Daily & Dalton, 1995; Feldmann, Read, & Abdolmohammadi, 2009). Since CFOs and CEOs are directly responsible for the financial reporting process, any change to these positions is considered to be an adequate strategy to improve firm's performance, restore organizational reputation and legitimacy, and regain investors' trust in fraudulent firms. Therefore, the study believes that changing the top management is one of the ameliorating actions of the fraudulent companies to improve the subsequent earnings quality.

5.2.3 Governance Changes

Board of directors provide an effective monitoring mechanism in the company to improve the earnings quality (Alves, 2014; Chen, Cheng, & Wang, 2015; Gul & Leung, 2004; Hashim & Devi, 2008; Peasnell et al., 2005; Sarkar, Sarkar, & Sen, 2008; Xie, Davidson III, & DaDalt, 2003). While management turnover provides a case of legitimacy and reputation restoration of companies by disassociation, changing the board structure illustrates reputation rebuilding through changes in monitoring mechanism (Suchman, 1995). Boards of directors are generally considered as the first line of defense against any management misconduct. As posited by agency theory, the board of directors is responsible for effective oversight function of a firm's management (Jensen & Meckling, 1976). In a public listed company, where management and ownership are separate, corporate managers may have both the tendency and opportunity to seek their own interests at the shareholders' expense.

The empirical fraud literature has established that fraudulent firms possess several weaknesses in their corporate governance mechanisms (Beasley, 1996; Chen, Firth, Gao, & Rui, 2006; Gavious et al., 2012; Hasnan, Rahman, et al., 2012; Lou & Wang, 2011; Skousen et al., 2009). These weaknesses include boards with lower percentages of outside directors (Alves, 2014; Hashim & Devi, 2008), a higher proportion of firms with the combined CEO/COB position (Dechow et al., 1996; Hashim & Devi, 2008; Ndofor, Wesley, & Priem, 2015), a lower proportion of firms with audit committees, fewer audit committee meetings, less outside directors in the audit committee and presence of financial expert (Abbott et al., 2004; Badolato et al., 2014; Haniffa, Abdul Rahman, & Haneem Mohamed Ali, 2006; Klein, 2002; Mohd Saleh, Mohd Iskandar, & Mohid Rahmat, 2007; Mustafa & Ben Youssef, 2010; Sun, Lan, & Liu, 2014; Thiruvadi & Huang, 2011). Empirical studies indicate that improvements in internal control mechanisms are costly to the companies in terms of the time and necessary efforts to improve governance mechanism (Agrawal, Jaffe, & Karpoff, 1999; Klein, 2002). Furthermore, there are also prohibitive costs associated with creating internal controls that would entirely eliminate the likelihood of potential frauds (Jensen, 1993).

Economic theory recommends that efforts to repair the financial reporting system should essentially include major improvements in its monitoring mechanisms. Particularly, agency theory advocates that the demand for monitoring is positively associated with the occurrence of agency costs (Fama & Jensen, 1983). Since fraud is a phenomenon of severe agency costs, the study expects that fraud firms will experience greater changes in the governance structure to improve the earnings quality. Similar to the work of Fabre (2005), this study expects: (i) increase in board independence, (ii) increase in audit committee independence, (iii) separation of dual role of chairman, (iv) presence of financial expert in an audit committee, (v) increase in audit quality, and (vi) increase in board meetings. Since the corporate governance variables are associated with

financial reporting quality (Baxter & Cotter, 2009; Dimitropoulos & Asteriou, 2010; Hashim & Devi, 2008; Niu, 2006), the study considers these changes in governance as ameliorating actions to improve the financial reporting quality of the fraudulent firms.

5.3 Data and Sample Selection

Similar to the sample selection procedure in Essay 1 and 2, this study also adopts the sample selection criteria to identify fraudulent companies the Securities Commission Accounting and Auditing Enforcement Releases and Bursa Malaysia. The study identifies the fraud sample of 31 firms from enforcement action releases (EARs) of Securities Commission Malaysia, and Bursa Malaysia for the period of 1996-2014. This process involves the same criteria discussed in Table 3.1 of the first essay by excluding the financial institutions, private limited companies, companies not involved in financial statement fraud (i.e., it includes insider trading, share manipulation), and companies with missing data. The whole process results in a total sample of 31 companies. The relatively small sample size is due to the fact that companies go delisted after fraud revelation and data availablity of such companies becomes a major issue. For instance, Hasnan, Rahman, et al. (2012) report that in Malaysia many accused companies do not continue by which 28% of these companies go out of business (largely due to financial difficulties) and 26% of them are taken over by other firms.

Panel A of Table 5.1 presents the distribution of fraud in different industries. Industrial products are more involved in fraudulent financial reporting. They account for 39 % of all frauds from 1996-2014. Firms in the consumer product industry make up 19 % of the fraud. Plantation, trading and services, and technology comprise 36% of the total sample size. Property constitutes 6% of the total sample.

Panel C presents the classification of the sample according to the nature of the offense. Improper recognition of revenue is the most common one and account for 55% of the sample. Overstatement of assets such as account receivable, other assets and inventory account for 29% of the overall offenses. Finally, understatement of reserves and expenses make 16% of total offenses.

Table 5-1: Sample Characteristics

Panel A: Industrial Classification of Sample		
Industry	**Number of Firms (n)**	**Percentage (%)**
Property	2	6.45
Consumer Products	6	19.35
Industrial Products	12	38.71
Plantation	4	12.90
Trading & Services	3	9.68
Technology	4	12.90
Total	**31**	**100%**
Panel B: Nature of Offence		
Offence	**Number of Firms (n)**	**Percentage (%)**
Improper Revenue Recognition	17	54.84
Overstatement of Account Receivable	3	9.68
Overstatement of other Assets	4	12.90
Overstatement of Inventory	2	6.45
Understatement of Allowances/Reserves	2	6.45
Understatement of Expenses	3	9.68
Total	**31**	**100%**

Source: SC and Bursa Malaysia

5.4 Variable Measurements

5.4.1 Measurement of Earnings Quality

This study follows the Modified Jones Model with Book-to-market and Cash flows to measure earnings quality. Larcker and Richardson (2004) reported that adding the book-to-market ratio (*BM*) and operating cash flows (*OCF*) in the Modified Jones model mitigates the measurement error associated with the discretionary accruals. *BM* controls for expected growth in operations and if left uncontrolled, growth will be picked up as discretionary accruals. *CFO* controls for current operating performance. Controlling for performance is important because Dechow, Sloan, and Sweeney (1995) find that discretionary accruals are likely to be misspecified for firms with extreme levels of performance.

Larcker and Richardson (2004) note that their model is superior to the modified Jones model in several ways: it has far greater explanatory power, identifies unexpected accruals that are less persistent than other components of earnings, the estimated discretionary accruals detect earnings management identified in SEC enforcement actions, and identifies discretionary accruals that are associated with lower future earnings and lower future stock returns. The model is described as below:

$$TA_{it}^{CF} = \beta_0 + \beta_1(1/ASSET_{it-1}) + \beta_2(\Delta REV_{it} - \Delta Ac.R_{it}) + \beta_3 PPEQ_{it} + \beta_4 BTM_{it} + \beta_5 OCF_{it} + \varepsilon_{it} \quad (5.1)$$

Where TA_{it}^{CF} shows total accruals. *BTM* equals the book value of common equity over the market value of common equity, *OCFO* is operating cash flows, ΔREV is the change in revenue from year *t-1* to *t;* and *PPEQ* is gross property, plant, and equipment, and $\Delta Ac.R$ is the change in accounts receivable from year *t-1* to *t.* Following Hribar and Collins (2002), the study estimates total accruals by:

$$TA_{it}^{CF} = \frac{(EBXI_{it} - OCF_{it})}{ASSET_{it-1}}$$

Where EBXI is the reported earnings before extraordinary items and discontinued operations, and OCF is the operating cash flow. The study uses this measure, which it calls TA_{it}^{CF} because it is based on data from the statement of cash flows. This measure is conceptually similar to the balance-sheet accruals measure (Total Accrual= the difference between net operating assets at the end and the beginning of the period compared to the average net operating assets over the period) in that it captures the difference between earnings and cash flows, but it is computed based on data from the income statement and the statement of cash flows and is therefore not subject to the non-articulation problem.

The estimated coefficients are then used to construct nondiscretionary accruals[25] according to the following equation:

$$\overbrace{NDA_{it}}^{Estimated} = \overbrace{\beta_0}^{Estimated} + \overbrace{\beta_1}^{Estimated}(1/ASSET_{it-1}) + \overbrace{\beta_2}^{Estimated}(\Delta REV_{it} - \Delta Ac..R_{it}) + \overbrace{\beta_3}^{Estimated} PPEQ_{it} + \overbrace{\beta_4}^{Estimated} BTM_{it} + \overbrace{\beta_5}^{Estimated} OCF_{it} \quad (5.2)$$

From the estimated Non-Discretionary Accruals (NDA), we may finally get the Discretionary Accruals:

$$\overbrace{DA_{it}}^{Estimated} = TA_{it}^{CF} - \overbrace{NDA_{it}}^{Estimated} \quad (5.3)$$

Finally, the study uses the absolute value of discretionary accruals (Abs (DA_{it})) as a measure of the earnings quality.

[25] Following Dechow et al. (1995), this study removes components of accruals that are ''nondiscretionary'', or beyond the control of the CEO.

5.4.2 Estimation Technique

To examine the effects that fraud announcements and the ameliorating actions have on earnings quality, the study employs a regression model on the entire sample (pre- and post-fraud) using interaction variables. In particular, we introduce *Postfraud* as a dummy variable that assumes a value of 1 for the two years following the fraud announcement set and 0 for two years before fraud revelation. The model is specified as follows:

$$\begin{aligned} Abs(DA_{it}) = \beta_0 + \beta_1 Postfraud + \beta_2 \Delta CEO_{it} + \beta_3 \Delta CFO_{it} + \beta_4 BI_{it} + \\ \beta_5 ACI_{it} + \beta_6 EAC_{it} + \beta_7 \Delta CEOD_{it} + \beta_8 BM_{it} + \beta_9 AUQ_{it} + \\ \beta_{10} Size_{it} + \beta_{11} ROA_{it} + \beta_{12} Lev_{it} + \varepsilon_{it} \end{aligned} \quad (5.4)$$

Where $Abs(DA_{it})$ is the discretionary accruals. In our independent variables, the study uses changes in both management and corporate governance as ameliorating actions to improve the earnings quality (i.e., reduced discretionary accruals). For management turnover, we use turnover of CEO (ΔCEO) and CFO (ΔCFO) following the fraud announcements. Next, for improvements in governance, we use board independence (*BI*), audit committee independence (ACI), the effectiveness of audit committee (*EAC*), separation of the dual role of the chairman ($\Delta CEOD$), number of board meetings (*BM*), and an increase in audit quality *(AUQ*). The study uses these variables based on the data availability and from prior literature suggestions of effective governance.

The study also controls for other variables that may potentially affect earnings quality. Bedard et al. (2004) suggest that the size of the firm is negatively related to earnings management. They justify this association by stating that greater supervision is required from the company's stakeholders. On the contrary, Pincus and Rajgopal (2002) notice that larger companies are more willing to match forecasted earnings and are therefore more attracted to earnings management. As a result, firm size is included in the study because of its suggested influence on the level of earnings management.

The study controls the firms' financial performance using return on assets (*ROA*). Dechow et al. (1995) show that extreme financial performance may be related to a high level of discretionary accruals (*DA*). Baxter and Cotter (2009) find that the financial performance of the firm has a positive effect on the quality of financial statements. In the study by Gong, Louis, and Sun (2008) managers are shown to have greater incentives to reduce firms' earnings when potential benefits from downward earnings management are higher. Peasnell et al. (2005) emphasize that firms that are constrained to match specific financial indicators are more likely to manage their earnings.

Management may be motivated to adjust firms' earnings to comply with debt covenants. Further, Sercu, Vander Bauwhede, and Willekens (2006) conducted a study on a sample of Belgian non-listed companies and report that earnings management is positively related to leverage. On the contrary, firms with a very high leverage are subject to more supervision from lenders, which could reduce the level of earnings management (Piot & Janin, 2007). As a result, leverage plays a role and is included in the study. The description of the main variables used in this study is provided in Table 5.2.

5.4.3 Descriptive Statistics

Table 5.3 presents some descriptive statistics on the ameliorating action variables examined in this study. Results indicate that on average 31.4 percent of the sampled companies changed CEOs sometime during the measurement period of two years following the fraud announcement. The percentage of firms with changes in CFO is 45.7 percent, which is slightly higher than changes in CEOs. Overall, the percentage changes in top management do not seem to be high. It could be due to several reasons, for instance, in a family-controlled firm, significant top positions are held by the family members which may offer some problems in replacing the member of the family from their positions.

Table 5-2: Description of the Study Variables

Variables	Acronym	Measurement	Prior Studies
Discretionary Accruals	Abs(DA_{it})	Modified Jones model with Book to Market and operating cash flow	(Larcker & Richardson, 2004)
Fraud	Postfraud	A dummy variable equaling 1 for the post-fraud period, and 0 for the pre-fraud period.	(Farber, 2005; Yuan & Zhang, 2016)
CEO turnover	ΔCEO	A dummy variable. For post-event periods, this variable equals 1 if the company changed CEO and 0 otherwise. For pre-event periods this variable equals 0.	(Baum, Bohn, & Chakraborty, 2016; Clayton et al., 2005; Li, Sun, & Ettredge, 2010; Niehaus & Roth, 1999)
CFO turnover	ΔCFO	A dummy variable. For post-event periods, this variable equals 1 if the company changed CFO and 0 otherwise. For pre-event periods this variable equals 0.	(Baum, Bohn, & Chakraborty, 2016; Clayton et al., 2005; Li et al., 2010; Niehaus & Roth, 1999)
Board independence	BI	The percentage of Independent Non-Executive Directors on board.	(Hashim & Devi, 2008; Hasnan, Rahman, et al., 2012)
Audit committee independence	ACI	The percentage of Independent Non-Executive Directors in the audit committee.	(Abbott et al., 2004; Klein, 2002; Malik, 2014)
Change in duality	$\Delta CEOD$	A dummy variable. For post-event periods, this variable equals 1 if the company changed the dual role of chairman and 0 otherwise. For pre-event periods this variable equals 0.	(Agrawal et al., 1999)
Audit committee effectiveness	EAC	A dichotomous measure of audit committee effectiveness. EAC has a value of one if the audit committee meets at least two times a year and has minimum one financial expert; zero otherwise.	(Abbott et al., 2004; Beasley, 1996; Geraldes Alves, 2011)
Board meetings	BM	A total number of board meetings in one year.	(Jackling & Johl, 2009; Vafeas, 1999)
Audit quality	AUQ	The ratio of audit fees to total assets.	(Hasnan, Rahman, et al., 2012)
Size of the firm	Size	Log of Assets (Book)	(Wang & Winton, 2012; Yuan & Zhang, 2016)
Financial Performance	ROA	The ratio of net income to total assets.	(Yuan & Zhang, 2016)
Leverage	Lev	Leverage is calculated as the ratio of long-term and short-term debt to total assets.	(Yuan & Zhang, 2016)

Table 5-3: Management Turnover

Management Turnover	Mean
% of firms with CEO changes after fraud	31.4
% of firms with CFO changes after fraud	45.7

Moreover, as reported by Agrawal et al. (1999), the cost of replacing top managers will be particularly high when there are no close substitutes, for example, if the manager has unique skills especially suited to this firm. Holding other things constant, this implies that managerial turnover will occur less frequently following frauds in firms that require greater managerial investments in firm-specific human capital. The reputational benefit to changing top managers may be small, particularly if incumbent managers are not directly linked to the fraudulent activities. The benefits to replacing managers following the revelation of fraud can be smaller than the costs. In such cases, the fraud is unlikely to be associated with managerial change.

For the changes in governance, Table 5.4 reports the pre and post changes in variables. For pre-announcement, we take two years before the fraud event, and two years after the fraud announcement. The results show that fraudulent firms increase the board (BI) and audit committee (ACI) independence in post fraud period. The mean difference between pre and post-fraud period of these variables is statistically significant at 1 percent. The percentage of firms with effective audit committee (EAC) increased in post fraud period.

Table 5-4: Changes in Governance

Variable	Pre-fraud	Post-fraud	Mean diff.
BI	0.487	0.531	-0.044***
ACI	0.447	0.5211	-0.074***
% of firms with EAC	45.1	58.1	-13**
% of firms with $\Delta CEOD$	77.4	71.1	3. 3
Board meetings	3.0342	5.36	-2.325***
Audit quality	0.00042	0.00051	-0.0000

Note: The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

However, the difference is not statistically significant. Similarly, in post fraud period, we can observe a very negligible decrease in the proportion of firms with the dual role of chairman, but this decrease is not statically significant. The results of board meetings indicate that fraudulent firms significantly increase the number of board meetings following the fraud announcement. Finally, the mean difference for audit quality is not significant as well. Overall, the univariate analysis suggests some efforts from the management to improve the management and governance quality.

5.4.4 Regression Results

After analyzing the variables descriptively, it is necessary to apply tests to help measure the linear relationship between the dependent variable ‘‘absolute value of discretionary accruals (Abs(DCA $_{it}$)’’ and the independent and control variables of the firms. The explanatory development is based mainly on determining the level of influence that management and governance turnovers have on absolute discretionary accruals. In order to determine which model is best suited to our data, (the fixed effects based on groups estimator or random effects based on generalized least squares (GLS)), the study performs the Hausman (1978)’s test, which determines whether the differences are systematic and significant between the two models. In all cases, the result of this test

rejects the null hypothesis of no systematic differences between the regressors' and unobserved heterogeneity, therefore assuming the fixed effects as the most appropriate for our analysis. The result of the Hausman Test is given in Table 5.5.

Table 5-5: Hausman Test

Test: Ho: difference in coefficients not systematic
= (b-B)'[(V_b-V_B)^(-1)](b-B)
= 67.871
Prob>chi2 = 0.000

Table 5.6 shows the results obtained from the linear regression of the panel data.

Table 5-6: Regression Results

VARIABLES	**Acronyms**	**Abs (DA)**
Post fraud	(Postfraud)	0.0156
		(0.0129)
Change in CEO	(ΔCEO)	-0.0208
		(0.0164)
Change in CFO	ΔCFO	-0.0115
		(0.0141)
Board Independence	(BI)	-0.283
		(0.667)
Audit Committee Independence	(ACI)	-0.270*
		(0.1519)
Effective Audit Committee	(EAC)	-0.0309*
		(0.01720)
Change in CEO duality	($\Delta CEOD$)	-0.0178
		(0.0377)
Board Meetings	(BM)	-0.0942
		(0.0929)
Audit Quality	(AUQ)	-0.427**
		(0.336)
Size of the Company	(Size)	-0.101
		(0.0853)
Return on Asset	(ROA)	-0.00309**
		(0.0014)
Leverage	(Lev)	0.00243**
		(0.0011)
Constant		0.0725
		(0.587)
Observations		124
Year and Firm fixed effect		Yes
R-Square		0.178

Notes: Robust standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

With regard to the management turnover, it is observed that changes in CEOs and CFOs have insignificant negative relation with the absolute value of discretionary accruals. Given the management turnover in univariate analysis, the results indicate that the new management is less focused on resolving operating problems to improve weaknesses in the financial reporting. The results do not support the view that CEO/CFO turnover is an appropriate strategy to improve firm performance, restore organizational legitimacy and regain investor confidence in fraudulent and/or distressed firms (Daily & Dalton, 1995; Feldmann et al., 2009). The insignificant results suggest that operating problems lead to managers being distracted from fully addressing weaknesses in financial reporting (Files et al., 2014).

The results for the effect of changes in corporate governance on earnings quality show that improvements in board independence (BI) has no effect on absolute discretionary accruals. Audit committee independence (IAC) and its effectiveness (EAC) have a negative effect on discretionary accruals. However, the results are not sufficiently strong and are significant at 10 percent level. Moreover, the results also show the negative and insignificant effect of changes in CEO duality ($\Delta CEOD$) and board meeting (BM) on discretionary accruals. Finally, the audit quality (AUQ) has a significant and negative effect on discretionary accruals.

Overall, the results for both management and turnover indicate that, despite the improvements in management and governance quality, the financial reporting quality of fraudulent firms is still a credibility concern. The improvements in management and corporate governance do not seem sufficient to rectify financial reporting problems. The findings are inconsistent with the recent literature stating that stronger governance and board oversight is associated with more conservative accounting (Lobo & Zhou, 2006; Ramalingegowda & Yu, 2012).

Among control variables, leverage has a positive effect on discretionary accruals. Leveraged firms usually try to increase income and use real-based earnings management to reduce the cost of debt, and meet debt covenants (DeFond & Jiambalvo, 1994). In case of default of debt contracts, the firm may have difficulties to access to new loans, and the interest expenses of the existent ones may increase. Therefore discretionary increases with leverage (Alves, 2012). Return on asset has a negative effect on discretionary accruals. Gill, Biger, Mand, and Mathur (2013) found that earnings management is negatively related to performance. Finally, the firms' size has a negative and insignificant effect on discretionary accruals.

5.5 Additional Robustness Analyses

The relatively poor findings on the relationship of corporate ameliorating actions and earnings quality in the previous section compel us to further investigate the relationship for robustness. For the purpose, the study conducts the analysis in two ways. First, the study performs the analysis using a different model of discretionary accruals. Second, the study uses a matched-sample approach to examine any difference in the results from the study model.

5.5.1 Robustness with Different Discretionary Accrual Models

The study first runs the analysis on different other models of discretionary accruals. In a recent survey on earnings quality, Dechow, Ge, and Schrand (2010) argue that there is no superior measure of earnings quality and that alternative measures cannot be treated as substitutes. Therefore, the study uses the Jones model, the original Modified Jones model, and performance matched the discretionary accrual model to see any difference in the results.

5.5.1.1 Results

In Table 5.7, the study reports the results of the Jones, original Modified Jones, and Performance matched models. It is observed that all the models show similar results to those obtained through the Larcker and Richardson (2004), so demonstrating the robustness of the tests.

Table 5-7: Robustness of Different Models of Discretionary Accruals

VARIABLES	Acronyms	Jones	Modified Jones	Performance matched
Post fraud	(Postfraud)	0.0166	0.0176	0.0166
		(0.0129)	(0.0128)	(0.0129)
Change in CEO	(ΔCEO)	0.0185	0.0158	0.0184
		(0.0164)	(0.0161)	(0.0164)
Change in CFO	ΔCFO	0.0128	-0.0139	-0.0127
		(0.0161)	(0.00167)	(0.0155)
Board Independence	(BI)	-0.286	-0.325	-0.286
		(0.665)	(0.656)	(0.665)
Audit Committee Independence	(ACI)	-0.246*	-0.285*	-0.245**
		(0.137)	(0.164)	(0.114)
Effective Audit Committee	(EAC)	0.0258	-0.0346	-0.0256*
		(0.0721)	(0.0719)	(0.0135)
Change in CEO duality	($\Delta CEOD$)	-0.0181	-0.0220	-0.0181
		(0.0374)	(0.0364)	(0.0374)
Board Meetings	(BM)	-0.372**	-0.281*	-0.370**
		(0.163)	(0.148)	(0.171)
Audit Quality	(AUQ)	-0.0905	-0.0836	-0.0903
		(0.0924)	(0.0921)	(0.0923)
Size of the Company	(Size)	-0.0875	-0.0999	-0.0876
		(0.0843)	(0.0818)	(0.0843)
Return on Asset	(ROA)	-0.0026**	-0.0025**	-0.0031**
		(0.0012)	(0.0011)	(0.0013)
Leverage	(Lev)	0.0023**	0.0024	0.0023**
		(0.001)	(0.0011)	(0.001)
Constant		0.0209	-0.0260	0.0189
		(0.584)	(0.578)	(0.584)
Observations		124	124	124
Year and Firm fixed effect		Yes	Yes	Yes
R-Square		0.142	0.150	0.142

Notes: Robust standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

5.6 Matched-Sample Analysis and Robustness Checks

The previous analysis consists of only fraudulent companies and study used the *Postfraud dummy* variable for pre and post period of the fraudulent firms. To provide a benchmark using non-fraudulent firms, I select a control sample for each company in the primary sample of fraudulent firms. The non-fraudulent companies are selected from public listed companies on Bursa Malaysia.

The companies are selected based on their similarity to the fraudulent companies in the time period, industry type and size. Each fraudulent company is matched with the non-fraudulent companies based on the various criteria. First, non-fraudulent companies have the same industry as the fraudulent ones. Second, the first year for non-fraudulent companies is determined by the fraudulent companies 'first year of fraud. Third, the non-fraudulent companies are selected based on their similarity in size. The study retains companies whose size are within a standard deviation of 30% of fraudulent companies. There are many ways to measure a company's size, such as through total assets, market valuation and market capitalization; this study used total assets as well as market capitalization for the size measurement.

For the non-fraudulent company sample, the whole population is selected by excluding those that do not have any record of being investigated for fraud either by the Securities Commission or any other regulatory bodies. Also, the non-fraudulent companies must not be in financial distress (not listed in the PN44 or PN175 listing).

5.6.1 Results and Discussion

5.6.1.1 Descriptive and Univariate Analysis

In Table 5.8, the results indicate that fraud and control sample are similar in size (i.e., measured as market value (MV) and total assets) and age. However, fraudulent firms have high leverage and lower return on assets compared to the control sample and the difference is statistically significant at 10 percent and 1 percent respectively.

Table 5-8: Descriptive Statistics

	Fraud Sample		Control Sample			
Variables	**Mean**	**Median**	**Mean**	**Median**	**t-stat.p value**	**W.p-value**
MV of equaity	871.407	98.034	714.770	89.803	0.607	0.764
Total Assets	1189.701	89.024	984.257	100.840	0.696	0.639
Leverage	0.240	0.201	0.195	0.144	0.109	0.074
Return on Assets	-0.055	0.032	0.027	0.121	0.062	0.004
Firm Age	91.534	49.000	86.116	43.500	0.722	0.851

Notes: t-stat. p-value shows the p-value of t-statistics for the comparison of means. W.p-value is the p-value for the Wilcoxon Signed-Rank test for the comparison of median

In Table 5.9, the study reports the results of percentage changes in management in both fraud and control sample. The results indicate that the percentage of firms with changes in CEO and CFO is high in fraud firms compared to the control sample. However, the p-value of Z-statistics calculated for the difference in proportions shows that the difference is insignificant for firms with CEO changes. The p-value of the percentage difference in firms with CFO changes is significant at 5 percent.

Table 5-9: Management Turnover

	Fraud	**Control**	**p-value of Z-stat.**
% of firms with CEO changes after fraud	31.4	17.1	0.1628
% of firms with CFO changes after fraud	45.7	20.0	0.0221**

Note: The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

Moreover, in Table 5.10, the study reports the results of the univariate analysis. In the pre-fraud analysis, the board independence, audit committee independence of fraud fraudulent firms is lower than the control sample. The difference is highly significant. While the difference for a percentage of firms with effective audit committee (EAC) and CEO duality is insignificant. The results of board meetings show that fraudulent firms have significantly lower board meetings compared to control firms in pre fraud period. The firms are not different in their audit quality. In the post-fraud period, although the board independence and audit committee independence of fraudulent firms increases compared to the pre-fraud period, it is still significantly lower than the control firms. The results of the effective audit committee and CEO duality are insignificant in post fraud period as well. However, the fraudulent firms increased a great deal of board meetings in post fraud period. The difference in board meetings between two samples is insignificant in the post-fraud period. Finally, the difference in the audit quality is examined to be insignificant.

Table 5-10: Univariate analysis of governance changes

	Pre-fraud period			Post-fraud period		
Variables	**Fraud**	**Control**	**Mean diff.**	**Fraud**	**Control**	**Mean diff**
Board Characteristics						
BI	0.487	0.591	-0.104***	0.531	0.605	-0.074***
ACI	0.447	0.539	-0.092***	0.5211	0.549	-0.028*
% of firms with EAC	0.451	0.677	-0.226	0.581	0.709	-0.128
% of firms with $\Delta CEOD$	0.774	0.645	0.129	0.711	0.742	-0.031
Board meetings	3.0342	5.771	-2.73***	5.36	5.61	-0.25
Audit quality	0.0004	0.0004	-0.000	0.00051	0.00054	-0.000

Note: The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

5.6.1.2 Multivariate Analysis

For multivariate analysis, the study estimates the main model by introducing a dummy variable "Fraud" which takes the value of 1 for fraudulent firms and 0 for control firms. Rest of the model is similar to the equation 5.4 of the main model of the study. Table 5.11 presents the regression results.

Table 5-11: Regression results with control sample

Variables	Acronyms	Study model	Jones	Modified Jones	Perf. Matched
Fraud vs Control Firm	(Postfraud)	-0.0117	0.0114	-0.0111	-0.0113
		(0.0110)	(0.0109)	(0.0108)	(0.0109)
Change in CEO	(ΔCEO)	-0.0203	-0.0205	-0.0192	-0.0205
		(0.0200)	(0.0199)	(0.0200)	(0.0199)
Change in CFO	ΔCFO	-0.0084	-0.0062	-0.00613	-0.0064
		(0.0165)	(0.0161)	(0.0157)	(0.0161)
Board Independence	(BI)	-0.100	-0.0766	-0.0286	-0.0710
		(0.375)	(0.377)	(0.375)	(0.377)
Audit Committee Independence	(ACI)	-0.179**	-0.163*	-0.147*	-0.163*
		(0.085)	(0.091)	(0.086)	(0.089)
Effective Audit Committee	(EAC)	-0.0708*	-0.0450*	-0.0454*	-0.0450*
		(0.0381)	(0.0260)	(0.0261)	(0.0258)
Change in CEO duality	($\Delta CEOD$)	-0.0817	-0.0785	-0.0669	-0.0769
		(0.180)	(0.182)	(0.185)	(0.182)
Board Meetings	(BM)	-0.0164**	-0.0169**	-0.0172**	-0.0171**
		(0.0081	(0.0079)	(0.0082)	(0.0082)
Audit Quality	(AUQ)	-0.0714	-0.0695	-0.0666	-0.0695
		(0.0479)	(0.049)	(0.0494)	(0.0491)
Size of the Company	(Size)	-0.0306	-0.0515	-0.0626	-0.0511
		(0.137)	(0.137)	(0.138)	(0.137)
Return on Asset	(ROA)	-0.0062***	0.0045***	-0.005***	-0.0044***
		(0.0016)	(0.0016)	(0.0016)	(0.0016)
Leverage	(Lev)	0.0030**	0.00297**	0.0030**	0.0029**
		(0.0014)	(0.0014)	(0.0014)	(0.0013)
Constant		0.117	-0.196	0.271	-0.209
		(0.602)	(0.608)	(0.612)	(0.608)
Observations		248	217	217	217
Year and Firm fixed effect		Yes	Yes	Yes	Yes
R-Square		0.083	0.076	0.076	0.079

Notes: Robust standard errors are reported in the parenthesis. The *, **, *** indicate significance at the 0.1, 0.05, 0.01 levels.

Similar to the findings in Table 5.6, the results for the effect of management turnover on earnings quality have an insignificant effect. The study also documents the similar results for the effect of changes in governance on absolute discretionary accruals. Finally, the control variables are also showing consistent results with our study model. Overall, the results indicate that improvements in management and corporate governance do not seem sufficient to rectify financial reporting problems. The findings are inconsistent with the recent literature stating that stronger governance and board oversight is associated with more conservative accounting.

5.7 Conclusion

This study examines the effect of fraud and certain ameliorating corporate actions on the earnings quality of fraudulent firms. To restore the reputational damages after fraud announcement and signal about the future prospects, the study posits that fraudulent firms taking some corrective actions to improve the earnings quality measured by discretionary accrual models. Using enforcement actions releases (EARs) issued by Security Commission Malaysia and Bursa Malaysia as fraud sample, the study takes changes in top management and governance as ameliorating actions. For changes in management, the study uses CEO and CFO turnover. Similarly, for governance, the study focuses on board independence, audit committee independence, the effectiveness of the audit committee, changes in board meetings, changes in CEO duality, and audit quality. The earnings quality is measured by Larcker and Richardson (2004) model of discretionary accruals.

The results indicate that ex-post earnings quality of the fraudulent firms does not increase despite the changes in management and governance turnovers. Although, the univariate analysis of changes in management and governance provide some support for the improvement of these mechanisms. However, these are not sufficiently strong to decrease discretionary accruals (increase earnings quality).

To assess the robustness of results and model performance, the study also conducts additional checks if the results are not contaminated by the choice of earnings quality measure and statistical methodology. For the purpose, the study uses different other discretionary accruals models as well as adopts matched sample approach. The findings also provide weak evidence of the improvement in earnings quality. The improvements in management and corporate governance do not seem sufficient to rectify financial reporting problems. Our findings are inconsistent with the recent literature stating that stronger governance and board oversight is associated with more conservative accounting (Lobo & Zhou, 2006; Ramalingegowda & Yu, 2012). Overall, in the Malaysian context, these results provide weak support for the view that after fraud announcements, companies improve the earnings quality to restore the broken trust of the investors and corporate legitimacy. The management turnover and changes in governance are not sufficient mechanisms in improving the financial reporting quality after fraud revelation.

CHAPTER 6: CONCLUSION AND IMPLICATIONS

6.1 Conclusion of the Study

The 21st century is an era where materialistic postures drive both corporate and personal life in the society. These materialistic tendencies deflate corporate wellbeing and put enormous pressure on personal resources in a manner that creates an insatiable hunger for more economic resources to sustain an individual modern social status as against the 18th-century values such as integrity, probity and good character in general terms. This contemporary menace has snowballed into pressure for fraudulent activities in the corporate world, even in our entire society. Financial reporting fraud and other forms of financial reporting misconduct (hereafter, financial reporting misconduct) are a significant threat to the existence and efficiency of capital markets. This misconduct impairs the trust between corporations, gatekeepers, and market participants that are required to engage in commerce. It also undermines capital markets' core role in efficiently allocating resources. Although research on financial reporting misconduct faces challenges, those challenges provide significant opportunities to advance the literature, as the answers to many questions on financial reporting misconduct remain unsettled.

Given these challenges in theoretical and empirical fraud literature, this study presented three essays on corporate frauds in listed companies of Malaysia. In the first essay, the study examines the factors that exacerbate fraudulent behavior in companies. The next two essays are related to the post-fraud behavior of firms. In the second essay, the study examines the effect of fraud revelation on changes in corporate financial policies, particular, on their simultaneity. The third essay attempts to look into the firms' efforts to restore the reputation and legitimacy after fraud revelation. Specifically, it examines the effect of ameliorating actions on subsequent earnings quality of the firm.

For the first essay, the study uses a sample of 76 fraud firms from SC and Bursa Malaysia from 1996 to 2016. Using the fraud triangle as a baseline framework to identify the factors, the results for the variable pressure show that tax aggressiveness elicits fraudulent behavior in Malaysian firms. Consistent with Erickson et al. (2004), results suggest that alleged firms overpay corporate taxes to avoid any suspicion arousing from regulatory bodies and investors. Moreover, the results for financial distress indicate that firms are more likely to commit fraud when they face financial difficulties. Further, the results for variable opportunity indicate that the presence of institutional investors especially dedicated investors provide an oversight function and help in reducing the likelihood of fraud. Among variables, used for corporate governance, the results show that independent board and effective audit committee are vital in fraud prevention. Also, the presence of a female on board gives diversity on the board and may reduce the fraud likelihood. Finally, the results for rationalization are statistically significant. Both the variables, history of prior violations and regulator switching the auditor, have a positive effect on fraud occurrence. Moreover, the results also show that relative to the probit model, the bivariate probit framework has lower Type-I and Type-II errors. Overall, the results indicate that the fraud triangle is relevant in determining the factors that elicit the fraudulent behavior in Malaysian companies.

In the second essay, the study uses a sample of 34 fraudulent firms to investigate the effect of fraud on the joint behavior of corporate financial triad. For the simultaneous determination of corporate decisions, the study performs a full information model (3SLS) and limited information model (2SLS). The results support the predictions of the flow of fund framework. Particularly, the level of interdependence increases in the post-fraud period compared to pre-fraud period. The results find that capital investment and dividend payout, are competing uses of funds and their negative relationship increases in the periods following the fraud revelation. Moreover, the strength of the positive relationship

of financing with both investment and dividend also significantly increases in the fraud revelation period. These results confirm that fraud revelation offers a totally new environment for the fraudulent companies to operate in. Therefore, while making one decision, the managers have to consider the consequences to other decisions as well. What these results add up to our understanding is strong evidence of interdependence of the spending (investment and dividend) decisions and the fund-raising decision (new debt).

In the third and final essay, the study uses a sample of 31 fraudulent firms to investigate the subsequent earnings quality of these firms. The earnings quality is considered for the investigation because it provides objective information to the market participants. Therefore, the study looks at the efforts of the company to improve the earnings quality. In doing so, management turnover, and governance turnover are considered as ameliorating actions by the company to improve its information environment. The results provide little support for the increase in earnings quality of the fraudulent firms. Despite some improvements in management and governance quality, the study argues that these mechanisms are not sufficiently strong to counter earnings quality problems. The results are robust to different earnings quality models and alternative estimation method.

Table 6-1: Overall Research Framework

Pre- Fraud	Post Fraud	
First Essay	**Second Essay**	**Third Essay**
Objective: To identify the factors that elicit the fraudulent behavior of companies in Malaysia using the Fraud Triangle Model.	**Objective:** To investigate the effect of fraud revelation on the simultaneity of the corporate financial triad (i.e. Financing, Investment, and Dividends).	**Objective:** To investigate the effect of fraudulent firms' ameliorating actions on subsequent change in the earnings quality.
Dependent Variable: ▪ Fraud Commission Dummy- P(F) ▪ Fraud Detection Dummy-P(D)	**Dependent Variables:** ▪ Financing ▪ Investment ▪ Dividends	**Dependent Variables:** ▪ Discretionary accruals using Modified Jones Model with Book-to-market and Cash flows.
Underlying Model/Theory • Fraud Triangle Theory	**Underlying Model/Theory** • Flow-of-Fund Theory	**Underlying Model/Theory** • Legitimacy Restoration
Independent Variables: Identified from Fraud Triangle Model. ▪ Incentive/Pressure ▪ Opportunity ▪ Rationalization	**Independent variables:** ▪ Postfraud dummy variable for fraud revelation. ▪ Control Variables	**Independent Variables:** ▪ Changes in top management: CEO and CFO turnover ▪ Changes in governance: change in board and audit committee independence, change in CEO duality, board meetings, and audit quality.

Statistical Method Used: ▪ Bivariate Probit Model ▪ Probit Model ▪ F-Score Classification	**Statistical Methods Used:** ▪ Three-Stage-Least Square (3SLS) ▪ Two-Stage-Least Square (2SLS)	**Statistical Methods Used:** ▪ Pooled regression ▪ Difference in difference
Findings: ▪ ***Incentive/Pressure***: Tax aggressiveness, political connections, and financial distress are the significant contributor to fraud. ▪ ***Opportunity:*** Institutional investors, board independence, effective audit committee, and presence of a female on board help in reducing the fraud behavior. Family firms with pyramidal structure have high fraud risks. ▪ ***Rationalization:*** Prior violations and the firm's auditor shifts to non-big 4 auditors increase the likelihood of fraud. ***Bivariate vs probit models:*** ▪ Bivariate probit model generates low Type-I and Type-II errors.	**Findings:** ▪ The fraud revelation has a negative effect on financing, investment, and dividends. ▪ The interaction exists between corporate financial triad. ▪ The strength of interaction increases in the post-fraud period. ▪ Investment and dividends have a positive effect on financing. Investment and dividends are competing uses of funds. ▪ The results are in conformity with the flow-of-funds model.	**Findings:** ▪ The univariate analysis provides some evidence on the improvement in corporate governance and management turnover, especially CFO turnover. ▪ However, the effect of these ameliorating actions on improving subsequent earnings quality is not significant. ▪ Only the effective audit committee is shown to improve the earnings quality.

6.2 Study Implications

First, the findings of the first objective offer several implications for different stakeholders. For policymakers such as the Malaysian Government, they should delve into the implications of a prevalent culture of corporate governance to prevent the political involvement in the Malaysian businesses. It is possible for the government to allow the positive aspects of the Asian corporate governance framework with correct managerial practices on the way to achieve a working environment that is free from any political involvement. Moreover, Bursa Malaysia and Securities Commission Malaysia (SC) should revisit 'Listing Requirements' and related acts or regulations with regard to the independence of outside directors. In specific, the regulators should evaluate the 33 percent minimum condition of outside directors in the companies' boards. This involves the tangible relationships between the outside directors and the other board members in defining the independence in its "spirit" and independence in its "appearance" (Olazabal & Almer, 2001). Further, the results for institutional investors in this study offers implications for banks and financial institutions to pay an extra attention to material transactions in financial reports that are normally used for the application of bank loans.

From the second objective, the study offers implications for managers and investors. The simultaneity of corporate financial triad observed in this thesis has an important implication for management and the firm. While making decisions, management must know the interactions which exist between corporate decisions and must pay the due consideration to the effect of one decision on the other. In a particular context of fraud revelation, the firm has to pay a significant attention to this interaction. This will help these firms in avoiding the underinvestment problem and at the same time keeping the total cost of financing as low as possible.

For investors, the interaction of the corporate financial triad shows that firms' dividend payout policy is neither independent nor residual, instead, it is taken with reference to financing and investment decisions. It is a general practice that investors prefer higher dividends as they think it as a signal that companies are making efforts to maximize their wealth. Nevertheless, investors may not have an understanding of the interaction of dividends that exists between financing and investment. In fact, dividend policy has a direct effect on firms' investment and financing decisions. For instance, if investors persistently put a high premium on firms paying dividends, it is quite likely that these firms take investment projects with low net present value or raise external capital through a catering mechanism, resulting in higher flotation cost or underinvestment losses. Therefore, the results offer important implications for the investing people that higher dividends are not always in their best interests. They must consider the dividend policy of the company with reference to its financing abilities and investment opportunities.

The third objective has implications for both firms and investors. The established finance literature apprehends that financial reporting quality affects the cost of equity of firms through two channels, i.e. market liquidity channel and information risk exposure of investors. On one hand, financial reporting quality increases the stock liquidity by reducing the transactions cost or increasing the demand for the stock (Amihud & Mendelson 1986; Diamond & Verrecchia 1991). On the other hand, rational investors largely base their decisions on the available information of the firm, they generally incorporate the information risk in their required return that ultimately leads to higher cost of equity financing (Easley & O'Hara 2004; Leuz, C. & Verrecchia 2004). Companies must realize the importance of improving the earnings quality during the period of crisis to signal the market participants about their future prospects. Further,

investors should not only take management and governance turnover into account in their decision making. They should differentiate between the true and false signal from the company. For instance, changes in management and governance by companies might be made only in letters, not in spirit.

6.3 Study Limitations

Despite the several key implications, the study has some limitations as well. In the first objective, the selection of variables is arbitrary with a purpose to achieve a possible parsimonious set of variables. Second, the sample size used is low compared to similar studies conducted in the US. This is because enforcement in Malaysia is weak compared to the US. Gunasegaram (2007) documents that many fraud cases stay unsolved due to the weak judicial system, weak investor protection, political connections, excessive state interference, and insufficient resources of the prosecutor. A dichotomous measure of fraud is another limitation of our study because the study cannot measure the size of fraud. For settled cases, the Securities Commission Malaysia seals the agreements and facts of resolutions are not made public. Therefore, it is difficult to get the amount of settlement.

In the second essay, this study does not intend to build theoretical models and validate issues of corporate finance. By employing various statistical methods for hypothesis testing, one can merely discover some proofs to support or reject the theoretical expectations posited by the existing theories of corporate finance, rather proving them. Hence, theoretical issues of corporate finance are not directly addressed in this study. Additionally, albeit that this study tries to investigate the simultaneity of the corporate financial triad, few key issues concerning corporate governance, initial public offerings, and secondary issues are not examined due to lack of data availability. Particularly, firms' financing through external equity is not taken in the flow of fund approach due to missing

data problem. Therefore, the significance of equity financing in firms' total financing is overlooked.

Finally, in the third essay, the sample size is relatively small due to the unavailability of the data. It might affect the generalizability of this study. This problem is also acknowledged by Hasnan, Rahman, et al. (2012) who report that many accused companies do not continue by which 28% of these companies go out of business (largely due to financial difficulties) and 26% of them are taken over by other firms. However, in the given literature on corporate governance, various studies have also been observed using a small sample (Chevers & Chevers, 2014; Ettredge, Johnstone, Stone, & Wang, 2011; Farber, 2005). Moreover, as the nature of the data in this study is panel data, the single biggest advantage of panel data is that it "pools" information, thereby shrinking the error. Therefore, despite the sample size constraint, the study believes that the interpretation of the study results is not significantly affected by small sample size bias. Second, the studies use a few variables for management turnover and changes in governance. The variable selection was decided on the availability of data. The study opines that fraudulent firms may also take some other ameliorating actions together with the ones used in this study.

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