

**DIRECTORS' COMPENSATION, CORPORATE GOVERNANCE AND FINANCIAL
STATEMENT FRAUD: A COMPARATIVE STUDY OF CHINA AND THE US**

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ABSTRACT

Financial statement fraud (FSF), generally committed by personnel in high ranks commanding substantial power, is regarded as one of the costliest corporate frauds which has affected both developed and developing nations. One of the reasons for the occurrence of FSF is the divergence in interests of the management (agents) and shareholders (principals). Agency theory propounds implementation of adequate compensation for achieving the alignment of interests of agents and principals. However, compensation is a double-edged sword, which may control or aggravate the incidence of FSF. Existing research has, primarily, focused on earnings management/restatement/FSF and its linkages with executive compensation. However, such analysis does not give a full picture, as directors (acting as agents of shareholders) are key monitors of the management and if they are effective in their monitoring function, then the incidence of FSF can be controlled. Hence, it is imperative that the directors' interests are well aligned with those of the shareholders. Thus, this research attempts to view the incidence of FSF from the perspective of directors. Herein, an attempt is made to examine the causal relationship between FSF, corporate governance, and directors' compensation and shareholding.

The main objective of this study is to find out if there are any elements within the compensation packages of directors which may induce FSF. Using matched pairs methodology, this study examines the association between directors' compensation and shareholding, corporate governance, and FSF in two of the worlds' largest economies, China and the US as these two economies are diametrically opposite in their cultural make-up and in their institutional, political, legal, and governance orientation. China is a collectivist society whereas the US is individualistic. US follows the American corporate governance model whereas Chinese corporate governance paradigm is influenced by the German governance system. Further, in US the private sector plays a key role in the corporate sector whereas in China the state owned enterprises (SOEs) are still a dominant player in the corporate sector.

This research contributes to literature on corporate governance, agency theory, institutional theory, and fraud. The results show that stock-based compensation can

induce FSF. Directors' shareholding in China and directors' stock-based compensation in the US both have a significant positive association with the incidence of FSF, thereby implying that directors' shareholding and stock-based compensation can induce fraud. This research finding has implications for practice as it questions the packaging of directors' compensation and provides evidence against the use of stock-based compensation and shareholding for directors. On the governance front, the results indicate that type of auditor, CEO duality, and frequency of board meetings also influence the incidence of FSF. This research also points out that measures of good corporate governance are vital for all economies irrespective of their cultural and governance orientations. Additionally, the results of this study can be extended to other developed and developing economies operating within the same corporate governance paradigms as that of China and the US.

From a theoretical perspective, this thesis provides additional evidence on agency theory, institutional theory, and the theory of fraud triangle. The results of the study indicate that monitoring mechanisms rather than compensation (specifically stock-based compensation and shareholding) are more effective in controlling the incidence of fraud as effective monitoring curbs the opportunity for fraud. Further, the efficacy of firm level monitoring/ governance holds irrespective of the institutional setting of a country.

This thesis consists of three introductory chapters, three empirical essays, and a concluding chapter. Chapter 1 gives the background of the research enquiry and discusses the research agenda, research objectives, and research contribution. Chapter 2 provides a detailed review of literature covering literature on compensation, corporate governance, and financial statement fraud. Chapter 3 discusses in detail the research methodology including research philosophy, sample selection, and data analysis techniques used. Chapter 4 (Paper 1) conducts an analysis of the incidence of financial statement fraud in China using a sample of 903 fraud firms and 903 control firms during the period from 2005 to 2018. The findings indicate that directors' shareholding is positively associated with FSF. The results also suggest that firm performance (i.e. return on assets (ROA)), board attributes (such as chief executive officer (CEO) duality, independence, and frequency of board meetings), leverage,

auditor type, and ownership structure (i.e. shareholding of the top 10 shareholders) have a significant influence on FSF. Chapter 5 (Paper 2) investigates the incidence of FSF in the US using a sample of 387 fraud firms and 387 control firms during a 15 year-period from 2005 to 2019. The findings suggest that there is a positive association between the incidence of FSF and directors' stock-based compensation, and a negative association between FSF and the average age of directors. Additionally, CEO duality, institutional ownership, firm performance (ROA), size of board of directors, size/type of auditor, frequency of board meetings, and firm size also have a significant influence on the incidence of FSF. Chapter 6 (Paper 3) undertakes a comparative analysis of China and the US in terms of their corporate governance orientation, institutional and cultural background, legal orientation and systems, and compensation practices. It also compares the fraud firms in US and China apart from identifying factors that affect the incidence of FSF in the two countries. The results suggest that firm-level variables and governance measures such as leverage, independent directors, CEO duality, frequency of board meeting, Big-4 auditor, institutional ownership, firm performance (ROA), and firm valuation (MV/BV) have a significant impact on the incidence of FSF whereas country-level variables such as culture, education, income disparity, and rule of law do not affect the incidence of FSF. The last chapter (Chapter 7) concludes the thesis by reflecting upon the key research findings, contributions of the research, and answers the research questions. It also discusses the implications, limitations, and recommendations of the research and also provides direction for future research.

EXPECTED PUBLICATIONS FROM THIS THESIS

S. No.	Research Paper	Targeted Journal	Submission date
1.	Paper 1 (China): <i>Directors and financial statement fraud in China</i>	<ul style="list-style-type: none"> Review of Quantitative Finance and Accounting (RQFA) 	23 August, 2022
2.	Paper 2 (US): <i>Does directors' compensation induce financial statement fraud?</i>	<ul style="list-style-type: none"> International Review of Financial Analysis 	26 August, 2022
3.	Paper 3 (US Vs China): <i>Do fraud firms differ? A comparative study of the United States and China</i>	<ul style="list-style-type: none"> International Journal of Accounting 	8 September, 2022

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DEDICATION

I dedicate this research work to my Spiritual Guru, Sai Baba.

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List of Abbreviations

S. No.	Abbreviation	Full Form
1.	AoA	Articles of Association
2.	BoD	Board of Directors
3.	CEO	Chief Executive Officer
4.	CG	Corporate Governance
5.	2CGM	2 corporate governance models namely American and Chinese
6.	CPA	Certified Public Accountant
7.	CSRC	China Securities Regulatory Commission
8.	EM	Earnings Management
9.	ESOP	Employee Stock Option Plans
10.	FSF	Financial Statement Fraud
11.	GSM	General Shareholder Meeting
12.	LTIP	Long Term Incentive Plans
13.	MB	Management Board
14.	NASDAQ	National Association of Securities Dealers Automated Quotations
15.	NYSE	New York Stock Exchange
16.	OECD	Organisation for Economic Co-operation and Development
17.	RPT	Related Party Transaction
18.	SASAC	State-owned Assets Supervision and Administration Commission
19.	SB	Supervisory Board
20.	SEC	Securities Exchange Commission, USA
21.	SOE	State Owned Enterprises
22.	WTO	World Trade Organization

1. Introduction

1.1 Chapter introduction

This is the first chapter of this thesis and it introduces and provides a brief background about the research topic. It also discusses the motivations of the present study; identifies the research aims and objectives; and presents the structure of this thesis.

This research is about financial statement fraud (FSF) and its linkages with directors' compensation, particularly about the interaction between these two factors in two different corporate governance (CG) settings (specifically China and the US). This thesis engages, critically, with literature on corporate governance, financial statement fraud, and compensation (both executive compensation and directors' compensation). It assesses the importance of directors' compensation in inducing financial statement fraud and delves into theories on corporate governance along with theories on fraud and examines their linkages with compensation practices. Focus of this study is on financial statement fraud in listed companies in China and the US.

1.2 Background

White-collar crime is a bane for the development and growth of any society. Sutherland (1949, p. 13) states that 'White-collar crimes violate trust and therefore create distrust; this lowers social morale and produces social disorganization... Ordinary crimes, on the other hand, produce little effect on social institutions or social organization'. Given this background, historically efforts have been made to prevent fraud and to bring those guilty to the book. Kerwin (1995) further elucidates on this issue and states that the cost of fraud is ten times more than the cost of traditional crime. He argues that greatest loss occurs when the management is itself involved in the perpetration of fraud. However, corporate fraud can assume various facets. O'Gara (2004, p. 1) defines corporate fraud and states that "Fraud encompasses an array of irregularities and illegal acts characterized by intentional deception. It can be perpetrated for the benefit of or to the detriment of the organization and by persons outside as well as inside the organization". Thus, corporate fraud can include corruption/internal misappropriation; bribery; money laundering; external frauds like

credit card fraud; or financial statement fraud (O'Gara, 2004). Of these, FSF is the costliest kind of corporate fraud. Though FSF may be present in just 10% of corporate fraud cases, its median cost can be as much as USD 2.0 million (Coenen & ProQuest, 2008). The high cost and magnitude of this crime emanates from the fact that those who commit FSF tend to be in positions of power, generally senior-level managers/executives, who have access to assets, information, and systems. Further, this access can be easily used by them to carry out the fraud (Coenen & ProQuest, 2008). Thus, FSF, which is a deliberate crime, can cause excessive harm to all stakeholders of a business including shareholders, employees, auditors, bankers, creditors, and pensioners. FSF erodes the confidence of the market participants in audited accounting statements. Further, it also has an adverse impact on security prices and the cost of capital, as the market participants associate low quality of financial statements with high information risk. As per some estimates, FSF has caused losses of approximately USD 500.0 billion over the last few years (Rezaee, 2005). The present estimation of loss may be even higher on two accounts – firstly, the figure of USD 500.0 billion is only for the US market and secondly, the estimate dates back to 2002 (Rezaee, 2005). Further, substantial enforcements costs have to be incurred in investigating white collar crimes (Nguyen, 2021).

FSF is committed with an intent to deceive and has a wide connotation. According to Rezaee (2005, p. 279) it can encompass several schemes such as: '(1) falsification, alteration, or manipulation of material financial records, supporting documents, or business transactions; (2) material intentional misstatements, omissions, or misrepresentations of events, transactions, accounts or other significant information from which financial statements are prepared; (3) deliberate misapplication, intentional misinterpretation, and wrongful execution of accounting standards, principles, policies and methods used to measure, recognize, and report economic events and business transactions; (4) intentional omissions and disclosures or presentation of inadequate disclosures regarding accounting standards, principles, practices, and related financial information; (5) the use of aggressive accounting techniques through illegitimate earnings management; and (6) manipulation of accounting practices under the existing rules-based accounting standards which have

become too detailed and too easy to circumvent and contain loopholes that allow companies to hide the economic substance of their performance'. Beasley (1996) adds to the above definition of FSF and considers it to also include the misappropriation of assets. Coenen and ProQuest (2008) also define FSF on similar lines and state that FSF can include intentional misstatement of numbers or intentional misapplication of accounting norms.

The extent of damage caused by FSF can be gauged from the statements released by the U.S. Securities Exchange Commission (SEC) from time to time on various cases of financial statement fraud that have plagued the US economy. For instance: SEC (2002a) states that 'Mr. Fastow's actions, along with the actions of others at Enron and elsewhere, have undermined investor confidence in our markets and our system of financial reporting'. In another statement on Adelphia, SEC (2002b) states that 'This case presents a deeply troubling picture of greed and deception at a large, publicly-held company'. With respect to Xerox, SEC (2002c) states 'Xerox used its accounting to burnish and distort operating results rather than to describe them accurately. For Xerox, the accounting function was just another revenue source and profit opportunity. As a result, investors were misled and betrayed'. SEC's views on Waste Management are summed up as follows 'Our complaint describes one of the most egregious accounting frauds we have seen. For years, these defendants cooked the books, enriched themselves, preserved their jobs, and duped unsuspecting shareholders' (SEC, 2002d). In another release related to a financial statement fraud by a Chinese company namely Luckin Coffee Inc., the SEC stated that 'Public issuers who access our markets, regardless of where they are located, must not provide false or misleading information to investors. The SEC's complaint alleges that Luckin's disclosures to investors about its revenues were false' (SEC, 2020).

Fraud (including corporate fraud, and FSF) and fraud related topics such as earnings management (EM) have been widely examined and existing research has attempted to view these topics from different perspectives (Hogan, et al., 2008) such as strength/weakness in internal controls (Bell & Carcello, 2000; Farber, 2005; McMullen & Raghunandan, 1996); auditors' fees, tenure and type (Lennox & Pittman, 2010; Pyzoha & Jenkins, 2019; Patterson, et al., 2019; Markelevich & Rosner, 2013;

Mukhlisin, 2018); external funding pressure (Shi et al., 2017); gender diversity (Wang et al., 2022; Liao et al., 2019; Liu et al., 2016), external monitoring pressure (Shi, et al., 2017; Chen, et al., 2016), insider trading (Summers & Sweeney, 1998); personal gain/compensation (Harris & Bromiley, 2007; Laux & Laux, 2009; Conyon & He, 2016).

With respect to compensation (including equity incentives) and fraud, erstwhile research has focused primarily on executive compensation. Further, the empirical evidence from this research remains inconclusive with respect to the nature of association between these two variables with some studies claiming absence of any robust relationship (as directors will increase their oversight efforts in light of higher CEO compensation (Laux & Laux, 2009)) and others claiming a positive relationship between compensation and fraud (Jiang, et al., 2010; Harris & Bromiley, 2007; Hsieh, et al., 2016) and yet some others claiming a negative relationship (Alkebsee, et al., 2021; Zhou, et al., 2018; Conyon & He, 2016; Erickson et al., 2006; Armstrong et al., 2010).

Considering only executive compensation, however, represents a limited view of the issue as from the perspective of financial statements, three parties namely the directors, the management, and the auditors are the key actors involved in the preparation of financial statements. Further, the role of the directors gains more credence as directors are instrumental in setting the right 'tone at the top', which in turn has a bearing on the effectiveness of internal controls, the truthfulness of financial statements, the oversight of management, and the level of vigilance within the control environment (Brennan & McGrath, 2007; Brandes et al., 2016).

Directors also play an important role in corporate governance. Weisbach (1988; p. 431) considers directors to be the 'shareholders' first line of defence' in wake of management incompetence. Further, in cases of firms performing poorly, the turnover of CEOs is highest when the board of directors (BoD) has a higher percentage of outside directors. Donelson et al. (2022) contend that directors have fiduciary duties towards the firm and the shareholders. Bravo et al. (2018) associate lower cost of capital with better composition of the BoD. Better boards result in better risk disclosures, which result in the lowering of the cost of capital. Fama and Jensen (1983; pp. 313, 314)

regard the BoD to have the 'ultimate control over internal agents' and to be the 'the top-level court of appeals of the internal agent market'.

According to Bainbridge (2012, p.43) as per Delaware General Corporation Law a firms' affairs and business 'shall be managed by or under the direction of a board of directors'. Shivdasani and Yermack (1999) contend that protecting shareholders' interest is the fiduciary duty of the directors and that the BoD is the pivotal monitoring mechanism. Thus, the directors are appointed by the shareholders to monitor and guide the management with a view to maximise shareholders' wealth. Hence, directors act as agents of the shareholders (Pereira, 2015).

According to Zalewska (2014, p. 1), the corporate scandals of the 20th and early 21st century 'exposed a high level of mismanagement', and 'resulted in unprecedented loss of money'. These scandals not only pulled down the corporates perpetrating the fraud but also the entire sector/industry and economies. Thus, there is heightened focus on avoiding such scandals from being committed in future. Agency issues have been identified as being at the heart of these corporate scandals and managerial incentive has been argued to be a solution to agency problems. However, Bebchuk and Fried (2003, 2004a) contend that remuneration can also result in agency problems.

According to Adams et al. (2010), corporations have a significant share in economic activity and hence the cost of their agency problems is very significant. Therefore, the role of BoD/ directors in governance is of vital importance, as the directors are a key internal control mechanism through which the shareholders exercise control over the top management. Further, the directors also play a significant role in setting an ethical tone at the top. Hamdani and Kraakman (2007) argue that the directors are duty-bound to guard the shareholders against misconduct by the managers which includes manipulation of financial data.

Given the pivotal role played by directors in corporate governance, it is of vital importance that the interests of the directors (as agents) are well aligned with the interests of the shareholders (as principals). This relationship brings to fore the

significance of compensation in tackling the apparent agency problem¹ in the relationship between the directors and the shareholders and in the alignment of their goals (Pereira, 2015). Jensen and Meckling (1976) support this view and state that the establishment of appropriate incentives for the agents can limit the divergence between the interests of the principal and the agent.

However, constituents of compensation packages such as 'stock options' have been found to result in the compromise of the independence and objectivity of executives (Rose et al., 2013; Aboody & Kasznik, 2000; Yermack, 1997; Bebchuk et al., 2002; Goldman & Slezak, 2006). Further, stock options can also be employed to inflate earnings. Jeffrey Skilling, former CEO of Enron testified that 'essentially what you do is you issue stock options to reduce compensation expense, and therefore increase your profitability' (Hitt & Schlesinger, 2002).

Thus, it is vital to examine whether there are any elements within the compensation packages of the directors which can induce them into conniving in FSF and thus have an adverse impact on their ability to set the tone of 'truthfulness' at all levels within the organisation. Further, such an enquiry into directors' compensation needs to be made within the paradigm of the various corporate governance (CG) models as the CG mechanisms vary across nations, as each nation's institutional setting and legal framework govern the mechanisms that the stakeholders adopt to govern management behaviour. For instance, the American governance model is characterised by liquid capital markets and an active market for corporate control. These result in the efficient use of agency contracts as a disciplinary mechanism. Private households/investors tend to be the largest group of shareholders. Further, the focus is on the maximisation of shareholders' wealth and hence from a governance perspective, the shareholders' benefit is superior to that of a company's managers. On the other hand, the German/Continental governance model is characterised by high ownership concentration, resulting in a less active capital market and a low-profile market for capital control. These characteristics hold true for China as well (Bhabra et

¹ Agency problems arise as the pay-off structures of different stakeholders of a firm are different and also the alignment of the interests of different stakeholders with the interests of agents is different (John & Senbet, 1998)

al., 2008; Ma et al., 2018). Further, non-financial enterprises tend to be the most significant group of shareholders. From a management compensation perspective, the American model relies heavily on bonus plans and stock options, whereas the German/Continental governance model has traditionally relied less on performance-linked compensation (Dietl & Ebrary Inc., 1998; García-Sánchez et al., 2015; John & Senbet, 1998). The Chinese governance model, on the other hand, has elements of both the American and the German/Continental systems in that China has a dual board system (with both a board of directors and a supervisory board) and has been slow in adopting stock-based compensation.

In this research, a comparative study of China and the US is undertaken to examine the impact of directors' compensation, and corporate governance on the incidence of FSF. China and US have been chosen for several reasons. Firstly, both the countries are, presently, two of the largest economies of the world. In terms of gross domestic product (GDP), US reported a GDP of USD 20.95 trillion² in 2020 whereas China reported a GDP of USD 14.72 trillion³ for the same year. Secondly, these countries are also home to the world's largest stock markets. Shanghai Stock Exchange is in China whereas National Association of Securities Dealers Automated Quotations (NASDAQ) and New York Stock Exchange (NYSE) are in the US⁴. Thirdly, in terms of culture, the two nations are diagonally opposite. China represents a collectivist culture whereas the US is marked by individualism (Hofstede Insights, 2021; Wang, et al., 2021) and as argued by Franke and Richey (2010) in case of country comparisons, choosing countries which considerably vary in cultural dimensions can be helpful in identifying relationships. Fourthly, China and US follow different corporate governance paradigms. China is influenced by the German governance system and follows the dual board model whereas the US follows the American governance model with a single board. Fifthly, the two countries are at different levels of corporate governance maturity with US being a front-runner in corporate governance and China still evolving with respect to corporate governance. For instance: in China, company law was

² Source: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

³ Source: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

⁴ <https://www.statista.com/statistics/270126/largest-stock-exchange-operators-by-market-capitalization-of-listed-companies/>. Accessed on 8th September 2021

introduced only in 1994 (Fleckner et al., 2013). Further, China Securities Regulatory Commission (CSRC) was formed in 1992 whereas the U.S. Securities and Exchange Commission (SEC) was established way back in 1934. Sixthly, the role of the government is limited in the corporate sector in case of the US while in case of China the state owned enterprises still play a dominant role especially in strategic industries such as banking, petrochemicals, telecommunications, and raw material (Ralston, et al., 2006; Wang & Song, 2019). Seventhly, investor protection and the legal system in China are weak as compared to the western world (Allen, et al., 2005; Conyon & He, 2016; Jiu, 2021). According to Ding et al. (2010), in China punishment to fraudulent firms is not very severe. Further, such punishment is meted out by the CSRC or the stock exchanges and not by the court. Lastly, the two countries also exhibit differences in their compensation practices. In the US there is wide acceptance of stock and option-based compensation for directors (Gordon, 2007). On the other hand, China has exhibited reluctance in use of stock/option-based compensation (Adithipyangkul et al., 2011), which was permitted by CSRC only from December 2005 (Jiang et al., 2017). Further, according to Jin et al. (2022), the significant differences in executive pay in China and US can be attributed to the Confucian culture in China as opposed to an individualistic culture in the US which promotes economic awards for high levels of risk bearing and individual effort.

Most of the existing literature has been focused on executive compensation and financial statement fraud in the US. Further, little attention has been paid to role of directors' compensation in inducing fraud. However, globalisation of investment and business necessitates that such examination be carried out in respect of other countries as well. Therefore, in this study, we provide additional empirical evidence on directors' compensation & FSF in China and the US.

This study is related to that of Kim, et al. (2013), Cullinan, et al. (2008), and Cullinan, et al. (2010), though these papers focus on the US market. Kim, et al. (2013) focuses on corporate fraud (including bribery, embezzlement, option back-dating) and its association with directors' compensation & composition. Further, this study has a smaller sample size (128 fraud firms) and uses Accounting and Auditing Enforcement Releases (AAERs) for the period from 2003 to 2010 to identify firms that have been

implicated of corporate fraud. On the other hand, Cullian, et al. (2008) focus on independent directors' option based compensation and misstatements in revenue. Using GAO databased over the period from 1997 and 2002, this study also has a smaller sample 105 misstating firms. Cullinan, et al. (2010) using a sample of 243 firms, examine the association between stock options grants to audit committee members and weakness internal controls. Other pertinent studies include Persons (2012) which focuses on independent directors' cash & stock-based compensation and violation of Rule 10(b)-5 of the 1934 Securities Exchange Act in relation to purchase and sale of securities. Bebchuk, et al. (2010) which looks at opportunistic timing of option grants to independent directors. Alkebsee, et al. (2021) focuses on the Chinese market and examines the association between likelihood of corporate fraud and independent directors' cash compensation. Archambeault, et al. (2008) examines the effectiveness of audit committee in wake of stock-option grants to audit committee members, using a sample of 153 firms in the US which restated their financial statements. Ye (2014) which examines the linkage between independent directors' cash-based compensation and earnings management, in China.

The present study differs from the above research efforts in several ways. Firstly, we use a larger sample of 903 fraud firms for China and of 387 fraud firms for the US. Secondly, this study focuses on a different kind of fraud i.e. financial statement fraud. Also, this study uses a broader definition of financial statement fraud by including cases of fraud both in the financial statements and in offering documents (for the US market). Further, it may be noted that a mere misstatement in financial statements doesn't necessarily imply that a fraud has been committed (Hamilton & Smith, 2021). Thirdly, this study uses different databases for identification of fraud firms [CSMAR (China Stock Market & Accounting Research) for China and SCAC (Securities Class Action Clearinghouse) for the US] which provide a larger sample for study. Fourthly, the present research takes a comprehensive look at directors' compensation by investigating the effect of both cash-based and stock/option-based compensation. Further, it also bifurcates the directors into three sub-categories namely executive, independent, and non-executive & non-independent directors (as applicable) and analyses each of them separately. Lastly, the sample period of this study is longer and

more recent (2005-2018/19). Thus, this study complements the few studies conducted on the subject and provides another lens to view the impact of directors' compensation, and corporate governance on financial statement fraud.

From a theoretical lens, theories from the fields of fraud and corporate governance are of relevance to this research project. As people are at the centre of any fraud, both as victims and as perpetrators, an understanding of the motivations and avenues which provide opportunities for committing fraud are vital to understand why it occurs and to devise mechanisms to reduce its occurrence. Many theories have attempted to explain the incidence of fraud. A key theory among them is the theory of the Fraud Triangle, formulated by Cressey (1953). As per the theory, occurrence of fraud is explained by the co-existence of three elements: perceived opportunity, perceived pressure, and rationalisation. Rationalisation deals with the fraudster's justification of the fraudulent behaviour. Perceived pressure deals with the motivation to commit the fraud, and perceived opportunity relates to weakness in controls, availability of a target, or the remote likelihood of fraud detection.

With respect to FSF, Brennan and McGrath (2007) find that in 43%⁵ of the cases of FSF studied by them, the key motivation was personal gain and most of those involved were guilty of either obtaining bonuses, which were unlawful, or of insider trading. Taking a cue from personal gain/ self-interest being at the heart of FSF, this research examines the role of compensation as a motivating/demotivating factor for FSF and uses the agency theory, institutional theory, and the theory of fraud triangle. The agency theory has a wide applicability and it is the most important theory for research on executive compensation (Pepper & Gore, 2015). This theory argues that the agents may indulge in self-serving behaviour to protect/ promote their interests when their interests are not aligned with those of the principals. 'Compensation' is regarded as one of the tools to achieve alignment of these divergent interests (Eisenhardt, 1989; Jensen & Meckling, 1976).

This brings us to the research agenda for this research project.

⁵ 6 out of 14.

1.3 Research agenda, aims, and contribution

Research agenda

Drawing upon studies on compensation, corporate governance, and fraud, the main research question for this study is identified as:

1. Whether the quantum and structure of directors' compensation packages, under the two corporate governance models, namely the American and the Chinese, (2CGM) has a role to play in tempting the directors to either connive in or overlook FSF. Sub-research questions/areas are:
 - (a) Does the level of directors' stock ownership in the corporation influence FSF?
 - (b) Does the design of directors' compensation package such as the proportion of stock-based compensation affect FSF?
 - (c) Do BoD characteristics such as independence and diversity influence the incidence of FSF?
 - (d) What role do CG and firm-specific factors play in influencing the incidence of FSF?
 - (e) Despite the overarching influence of culture & legal/institutional structures on the different CG systems, are there any best practices with respect to directors' compensation which can be adopted under the 2CGM to combat FSF? Also, is there an optimal structure of directors' compensation, or if not, what type of compensation is good enough?

Research aim

The aim of this research is to examine, empirically, the influence of policies related to directors' compensation, and corporate governance under the 2CGM, on FSF. Directors' compensation is significant, as directors are a key mechanism in the CG structure and remuneration has always been regarded as a potent tool in corporate governance literature for aligning divergent interests. At a granular level, this research seeks to gauge whether the structure and composition of directors' compensation have an influence on the incidence of FSF, and further, whether the CG model adopted by a corporation affects the composition and quantum of directors' compensation.

The research objectives are as follows:

- To review literature on corporate governance, financial statement fraud, and compensation and analyse the interactions between them.
- To undertake an analysis of directors' compensation and CG mechanisms, including those related to compensation, under the 2CGM;
- To use the approach of matched pairs (fraud vs. no fraud firms) to analyse if there exists a causal relationship between directors' compensation and FSF under the 2CGM; and
- To offer recommendations towards the effective design and packaging of directors' compensation based on analysis of the data gathered.

Research contribution

There has been extensive research on management compensation and earnings management/ restatements/ fraud. Studies have also been conducted on corporate governance and its role in preventing financial statement fraud. In fact, new laws like the Sarbanes–Oxley Act of 2002 (US) have been passed to bolster CG mechanisms and to combat FSF. However, there have not been many studies which specifically study directors' compensation under each of the 2CGMs and then relate those findings to the occurrence of FSF. This research will fill that gap and enhance the understanding of the interaction between CG models, directors' compensation, and FSF. Further, prior research on directors' compensation (including Alkebsee et al., 2021; Archambeault et al., 2008; Bebchuk et al., 2010; Cullinan et al., 2008; Cullinan et al., 2010; Kim et al., 2013; Persons, 2012; and Ye, 2014) has either examined frauds other than FSF (bribery, embezzlement, option back-dating, and securities fraud) or have looked at earnings management, restatements, and opportunistic timing of option grants. Further, the evidence provided by these studies is divided on the impact of directors' compensation on fraud/earnings management/ restatements. For instance: Archambeault, et al. (2008), Bebchuk et al. (2010), Kim et al. (2013), Ye (2014) document a positive association whereas Alkebsee et al. (2021) document a negative association. On the other hand, Persons (2012) does not document any association between directors' compensation (cash and stock) and fraud. This inconclusive evidence has created a gap in research and has necessitated that more empirical evidence be produced on this topic. The present thesis addresses this gap in research.

This research contributes to literature, methodology, policy, practice, and theory. It explores literature on agency theory, institutional theory, and on the theory of fraud. It examines how these three theories supplement each other in case of financial statement fraud and provides additional evidence on these theories. Further, the study delves at length on the literature on different corporate governance systems and also compares and contrasts two very different corporate governance paradigms - American and Chinese. It provides additional evidence on the association between directors' compensation and FSF, the results of prior research on which remain inconclusive. The study contributes to practice by providing inputs on design and packaging of directors' compensation such that the incidence of financial statement fraud can be reduced. The results of this study indicate that stock-based compensation and shareholding to the directors should be avoided in practice. This research also brings to fore-front the importance firm level governance factors (such as CEO duality, BoD independence, frequency of board meetings, institutional ownership, and type of auditor) in dealing with FSF. On the policy front, this research cautions regulators on the inefficacy of stock-based compensation and shareholding to directors in addressing agency issues, which holds true under different institutional settings and thus points that such compensation aggravates agency problems. With respect to methodology, the present thesis uses wider source of data to identify fraud firms and also uses a broader definition of FSF by including companies/firms that have made misstatements in their offer documents (in case of US).

Larger implication of this study is the outcome in form of identification of best practices with respect to directors' compensation which are relevant and adaptable in each of the 2CGMs. The results indicate that there can be some level of harmonisation in designing of directors' compensation packages, across China and the US, by exclusion of stock-based compensation and shareholding from directors' pay structure with a view to combat/reduce the incidence of FSF.

1.4 Thesis structure

Described in the section below is the structure of this thesis along with the broad description of each of the individual chapters.

Chapter 2. Literature review

Chapter two marks the beginning of this thesis and presents a review of the relevant literature. This chapter discusses research on corporate governance covering the various corporate governance theories, different CG systems, impact of culture on corporate governance, Chinese and American corporate governance models, and the challenges to corporate governance.

This is followed by examination of research on compensation including executive and directors' compensation, models of determining compensation, compensation practices in China and the US, and the role of compensation in corporate governance. Presented next is a review of literature on financial statement fraud covering the various theories of fraud and the challenges presented by financial statement fraud. Finally, literature on the linkages between financial statement fraud, corporate governance, and compensation has been reviewed.

The above review of literature forms the basis for the identification of the research gap, and the primary and secondary research questions. It also sets the scope of the research that is carried out in this thesis.

Chapter 3. Research philosophy and methodology

The research philosophy and the methodology used in the thesis are covered in chapter three. It describes the ontological basis of this research as one reality which is external and universal and the epistemology of this research is that knowledge is quantifiable and observable. The chapter describes that 'positivist' epistemology has been adopted and quantitative methods have been used. Research design, sample selection process, and data analysis techniques have also been covered in this chapter. The chapter also covers the ethical considerations relevant to this research.

Chapter 4. Paper 1 – Directors and financial statement fraud in China

Chapter four is the first empirical chapter and explores financial statement fraud and its relationship with directors' compensation and corporate governance in China. Using quantitative methods, this chapter examines secondary data on FSF, corporate governance, and directors' compensation to assess, if there is a causal relationship

between these factors. The results are validated using several robustness checks. The impact of state owned enterprises and of politically connected directors has also been examined.

Chapter 5. Paper2 - Does directors' compensation induce financial statement fraud?

Chapter five, the second empirical chapter, examines the causal relationship between directors' compensation, corporate governance, and financial statement fraud in the US. Using hand-collected data, from SEC filings, on directors' compensation and several other control variables, this chapter employs several quantitative methods and scenarios analysis which reconfirm the results of the initial analysis.

Chapter 6. Do fraud firms differ? A comparative study of the United States and China

The comparison of the US and China is covered in the third empirical chapter which is chapter six. Using the fraud triangle theory, this chapter first compares the two countries on the various variables representing the three legs of the fraud triangle and then undertakes a detailed analysis of the combined data from the US and China.

Chapter 7. Conclusion

The summary of the findings, methodology, and the research background are presented in chapter seven. The overall conclusions and recommendations of the study have been laid down in this chapter. The chapter also attempts to answer the reach questions and discusses the limitations and the contributions of this study.

1.5 Chapter summary

This chapter provided an introduction to the thesis by discussing the research topic, the research aims and objectives as well as the research contributions. In the next chapter, literature on corporate governance, compensation, and fraud has been reviewed. Also, discussed in detail are theories on corporate governance and fraud along with the various corporate governance systems and the extant research on the association between compensation, corporate governance, and fraud.

2. Literature review

2.1 Chapter introduction

This chapter lays down a discussion on the literature relevant to the topic of this thesis. Specifically, the chapter reviews existing literature on corporate governance (CG) (*covering theories on CG; different CG systems; the American and Chinese CG models; impact of culture on CG; and challenges to CG*), compensation (*including compensation under the Chinese and American CG models; linkages between compensation and agency theory and those between compensation and CG; and efficacy of stock-based compensation*) and financial statement fraud (*including theories of crime; and consequences of FSF*). The chapter also explores the link between compensation, corporate governance, and FSF.

2.2 Corporate governance (CG)

Iliev et al. (2021, p.2) define corporate governance as ‘the set of firm practices that seek to minimize’ frictions owing to monitoring of the management ‘and thereby mitigate agency costs.’ According to the Cadbury report (1992, p. 14) corporate governance is ‘the system by which companies are directed and controlled’. John and Senbet (1998) state that the reason for existence of CG is the separation between ownership and management of corporations and the resulting agency problems. As per their study, corporate governance is a means for the owners to exert control over a corporation, thereby exercising the rights accorded to them by the corporate bylaws, and by the legal and regulatory frameworks. On the other hand, Demb and Neubauer (1992, p. 9) define CG as ‘the process by which corporations are made responsive to the rights and wishes of the stakeholders’. Further, according to them there are four mechanisms that can be employed to attain corporate accountability by influencing corporate behaviour, namely board structures, social pressure, ownership, and regulations. Shleifer and Vishny (1997, p. 737), on the other hand, state that corporate governance deals with mechanisms by ‘which suppliers of finance to corporations assure themselves of getting a return on their investment. How do the suppliers of finance get managers to return some of the profits to them? How do they make sure that managers do not steal the capital they supply or invest it in bad projects? How do

suppliers of finance control managers?'. Naciti et al. (2022, p. 56) quoting Du Plessis et al. (2018) state that 'corporate governance is a set of rules and organizational structures that are the basis for correct business operation, understood as compensation for the interests-sometimes divergent-of stakeholders'. Thus, 'the concept of the CG of a company includes all those rules and processes through which decisions are made; it also indicates the path to follow to achieve corporate objectives and consequently the means of achieving them as well as measuring results achieved' (Naciti et al. 2022, p. 56).

According to Zaman et al. (2022) the traditionally CG implied a set of rules that gave a formal structure to the relationship between the BoD, management, and the shareholders with the objective of resolving conflicts between the agents and the principals. However, according to the current view, CG encompasses the effect of corporate decision-making on other stakeholders as well. Similarly, Nadeem (2021) argues that traditionally CG regarded the BoD as monitors of the management and as the guardians of shareholders' interests. However, the modern definition of CG is more inclusive and takes into consideration BoD's duties towards other stakeholders as well. Aligning with this view, Scherer, et al. (2016) argue that mainstream literature regarded CG as a system focusing on the economic interests of the shareholders. However, there are alternative perspectives which are more inclusive and conceive CG as a system seeking to create balance between social and economic objectives. On the other hand, Li et al. (2020, p.44), regard CG as 'the set of mechanism that define powers and influence decisions of the chief executive' and thus according to them, CG covers the BoD, management, and the shareholders.

The above definitions reflect the divergence of viewpoints with respect to corporate governance. Demb and Neubauer (1992) propound the stakeholders' view of CG, whereas Shleifer and Vishny (1997) focus chiefly on the shareholders' view. On the other hand, Claessens and Yurtoglu (2012) argue that two views of CG prevail. The behavioural view focuses on behavioural patterns as measured by efficiency, growth, financial structure, performance, and treatment of shareholders and other stakeholders. On the other hand, the normative view is concerned with the rules under which firms operate, with the rules coming from such sources as the legal system,

financial markets, and factor (labour) markets. Larcker, Richardson, and Tuna (2007, p. 964) state that 'corporate governance refers to the set of mechanisms that influence the decisions made by managers when there is a separation of ownership and control'. On the other hand, Armstrong, Guay and Weber (2010, p. 181) define CG as 'the subset of a firm's contracts that helps align the actions and choices of managers with the interests of shareholders'. Brickley and Zimmerman (2010) contend that there are diverse definitions of CG and there is no general consensus on the definition of the term. However, according to them, it is better to have a broader definition of corporate governance which encompasses all the top three decisions makers of a firm namely the directors, shareholders, and the top managers. They argue that centring attention on the separation of ownership and control at the level of the top management and the shareholders ignores the conflicts that may arise between different classes of shareholders (such as majority and minority shareholders). They recommend the following definition of corporate governance 'corporate governance is the system of laws, regulations, institutions, markets, contracts, and corporate policies and procedures (such as the internal control system, policy manuals, and budgets) that direct and influence the actions of the top-level decision makers in the corporation (shareholders, boards, and executives)' (Brickley & Zimmerman, 2010, p. 236).

According to Hart (1995), corporate governance issues arise under two situations. Firstly, in the presence of conflict of interest/ agency issues. Secondly, when contracts are not comprehensive and fail to deal with such agency issues owing to transaction costs. The divergent viewpoints on what CG is has led to the development of different theories on corporate governance, which are discussed in greater detail in the subsequent sections.

2.2.1 Corporate governance – theoretical frameworks

The divergence in definitions of corporate governance can be traced back to various theoretical frameworks. These frameworks are discussed below.

Agency theory

Agency theory postulates that governance is needed in any situation where a 'principal' (an owner of an asset) delegates use of the asset to an 'agent', whose performance cannot be completely observed by the principal (Buchanan et al., 2014). Agency theory uses the term 'contract' to define this relationship between the agent and the principal (Eisenhardt, 1989).

According to Jensen and Meckling (1976), agency theory demonstrates the principal–agent relationship that exists between the shareholders (principals) and the management (agent). The shareholders appoint the management and entrust it with the task of running the business. However, the management may become opportunistic and pursue its own self-interest, which may conflict with the interest of the shareholders, thereby creating the agency conflict/problem (Albrecht et al., 2004). Thus, the basic premise of agency theory is that there exists an inherent conflict between the interests of the management and the interests of the owners (Kiel & Nicholson, 2003). The theory is concerned with aligning of these conflicting interests and is based on the premise that managers/agents, on account of their superior expertise and knowledge, pursue self-serving behaviour to advance their interests as opposed to the interests of the shareholders/principals. The implication of this theory for corporate governance is that it necessitates institution of monitoring mechanisms to safeguard shareholders' interests (Nicholson & Kiel, 2007).

In similar vein, Shapiro (2005), argues that the agency theory directs the bridging of information asymmetry between the principals and the agents by institution of appropriate monitoring mechanisms. The theory also seeks alignment of divergent interests of agents and the principals by instituting appropriate incentives and compensation.

Eisenhardt (1989) claims that, agency theory can be used to resolve two issues that are encountered in agency relationships viz. (a) divergence in objectives/goals of agents and principals along with the issue of high costs related to verification of the behaviour of agents; and (b) sharing of risk between agents and principals who may have different attitudes towards risk. The former ('a') is the positivist approach, which seeks to devise

governance methods to restrict the self-serving conduct of the agents and to align the goals of the agents and the principals. Contracts based on outcome, and reduction of information asymmetry between the agents and the principals, are two mechanisms for reducing the agency problem under this approach. The latter ('b') forms the core of the principal–agent approach.

With respect to the positivist approach, Fama and Jensen (1983) studied the role of adequate information in controlling self-serving conduct, whereas Jensen and Meckling (1976) explored the use of stock ownership as a mechanism to align the divergent interests of owners and managers.

On the principal–agent front, behaviour-based contracts can be used as they do not transfer the risk on to the agent, who is considered to be risk-averse. Further, to control agency problems with respect to moral hazards (agent not putting in the right effort) and adverse selection (the agent not having the skills that it proclaimed to have at the time of being hired), information systems such as budgeting and reporting can be used (Eisenhardt, 1989).

Theoretical contributions of agency theory have been well established. This theory has provided a conceptual framework for research on varied topics including efficacy of internal governance in terms of BoD independence, BoD size, BoD competence, managerial ownership, institutional ownership (Acharya et al., 2011; Tosun & Senbet, 2019; Wu, 2008; Filatotchev & Wright, 2011; Ali et al., 2022); moral hazard and adverse selection due to information asymmetry between agents and principals and their mitigation through compensation (Armstrong et al., 2010b); external governance such as rating agencies, disclosures, market for corporate control (Chen et al., 2015; Katmon & Farooque, 2017), institutional ownership (Chang et al., 2016; Sharma, 2004), misstatements, earnings management, and fraud (Jiraporn et al., 2008; Efendi et al., 2007; Chen et al., 2016); and takeovers (Chatterjee et al., 2003; Shleifer & Vishny, 1991). Solomon et al. (2021) apply the agency framework to entrepreneurship to gauge how enterprises (as agents) can provide for the society (as the principal). They conclude that interaction between social spending and market freedom spurs entrepreneurship. Fayezi et al. (2012) contend that the agency theory can be and has

been applied to diverse settings in case of supply chain management. Dong, et al. (2021) integrate the agency theory with the behavioural theory of the firm to examine what drives investment in information technology (IT) and the outcome of such investments. They find that corporates increase IT investments in wake of poor performance (behavioural theory perspective). Further, such investments are subject to agency issues which may result in over-investment in IT. However, corporate governance reduces such over-investment in information technology. Davis et al. (2021) apply the agency theory to social entrepreneurship to examine whether role ambiguity, conflict, and duality faced by social entrepreneurs can threaten the mission of their organisations.

Buckley (2022) regards the agency theory to be the basis of shareholder theory. On the other hand, according to Grøgaard et al. (2019, p. 1313), agency theory which is an economic theory of corporate governance allows 'for owners to have non-economic motivations and for managers to have private motivations that deviate from those of the owners'. However, the agency theory has also been criticised for failure to find concrete support for the agency construct of relationship between pay and performance (Jensen & Murphy, 1990, Roberts, 2010, Tosi, et al., 2000). Acero and Alcalde (2020) also do not find any support for agency theory and conclude that there is no relationship between directors' compensation and firm performance. Further, corporate governance mechanisms make no contribution towards moderating directors' compensation.

The present research is concerned with the agency problems between directors (as agents) and shareholders (as principals). It examines the efficacy of directors' compensation in aligning the divergent of interests the directors and shareholders. In doing so, this study takes a 'positivist' approach to agency theory (Eisenhardt, 1989; Pepper & Gore, 2015).

Stakeholder theory (SHT)

Freeman and Reed (1983) propound the stakeholder theory and argue that the term 'stakeholder' should be used in a wider sense (to include any individual or identifiable group which can affect the attainment of an organisation's objectives) to understand

its implication for corporate governance. SHT provides a context for the development and analysis of policy alternatives to balance the interests of all participants.

Freeman (2010, p. 25) provides the stakeholder view of the firm and states that this view 'takes into account all of those groups and individuals that can affect, or are affected by, the accomplishment of organizational purpose. Each of these groups plays a vital role in the success of the business enterprise in today's environment. Each of these groups has a stake in the modern corporation, hence, the term, "stakeholder", and "the stakeholder model or framework"... each category of stakeholder groups can be broken down into several useful smaller categories'. According to Freeman, the key stakeholder groups for a corporation include competitors, consumer advocates, customers, employees, environmentalists, governments, local community organisations, media, owners, special interest groups, and suppliers. Similarly, John and Senbet (1998) state that the stakeholders in a corporation include creditors, consumers, employees, equity holders, the government, and the suppliers or other claimants who supply capital. Further, corporations cannot formulate organisational objectives for their continued survival unless the concerns and needs of all stakeholder groups are understood (Freeman, 2010).

Thus, SHT suggests that a business owes duties to various stakeholder groups. Hence, in case of a conflict of interest between the interests of different stakeholders, interests of some stakeholders have to be compromised to meet the basic commitments to others. From a governance perspective, the theory deals with how different stakeholders should oversee the management to protect their interests (Heath & Norman, 2004).

Kaufman and Englander (2011, p. 421) focus on the role of directors in managing stakeholders and contend that the BoD 'has the legal authority to distinguish among these stakeholder groups and to distribute rights and obligations among these stakeholder groups'.

SHT has been increasingly applied to the field of corporate social responsibility (CSR). Research by Abreu, David, and Crowther (2005); Longo, Mura, and Bonoli (2005); and Uhlaner van Goor-Balk and Masurel (2004) employs the stakeholder approach to

examine CSR. Dmytriiev et al. (2021, p. 1442), argue that SHT and CSR 'provide major theoretical frameworks that confront the shareholder-primacy view that inhibits managers' attention to social issues'. O'Riordan and Fairbrass (2008) propose a model which provides a comprehensive approach to decision-making with respect to CSR and to stakeholder dialogue aimed at enabling the managers to meet the CSR expectations of their stakeholders. Ayuso et al. (2014) study two dimensions of the stakeholder perspective, namely CSR at board level and stakeholder engagement. They conclude that dealing with CSR issues at the BoD level results in positive association/engagement with various stakeholders, which translates into better results for the corporation. Waheed and Zhang (2022), employing the stakeholder theory, find that sustainable performance can be achieved by incorporating strategic tools such as ethical practices and CRS practices.

Freudenreich et al. (2020) apply the stakeholder theory to the value creation process and argue that stakeholders are both value creators and receivers. They propose a framework for stakeholder value creation and contend that business models, rather than being just devices for value creation, are devices that facilitate stakeholder relationships and related value exchanges. Marcon Nora et al. (2022) argue that stakeholder theory along with actor network theory can provide a basis for research on sociotechnical transitions, for sustainable development, in the energy sector. Tallberg et al. (2022) expand the stakeholder perspective by including non-human actors/non-traditional actors as stakeholders. According to them nonhuman actors play a vital role in business and have an influence on organisational operations. Amis et al. (2020) argue that it is time for governance of relations between a corporate and its multiple stakeholders to be considered and not just those between the firm and its shareholders.

However, Heath and Norman (2004) argue that the stakeholder perspective which considers shareholders as 'just another stakeholder' should be viewed with caution as shareholders have incentives to act as watchdogs over the managers. Further, in a stakeholder governance system, profit-consuming CSR strategies are likely to be abused by managers who may be motivated to promote their self-interest as opposed to acting in the interest of the stakeholders. The stakeholder theory perspective has

also been criticised for having failed to provide a practical and viable alternative to the shareholder perspective (focused at safeguarding shareholders' interests), which has flourished even in stakeholder-oriented nations such as Japan, Germany and Korea (Hendry, 2001).

This study adopts the stakeholders' view to corporate governance as it is concerned with financial statement fraud which is argued to have adverse consequences for all stakeholders of a firm.

Stewardship theory

Derived from sociology and psychology, this theory views managers as stewards of their employers, who act in the best interest of the shareholders. The theory proposes that the managers will choose the interest of the shareholders over self-interest, despite personal motivations. According to the theory, stewards derive satisfaction from excelling in their work and fulfilling their duties even when these duties conflict with their personal interests. Therefore, this theory seeks to enable managers rather than to control them. Thus, this theory is based on two premises. Firstly, that the managers/agents are trustworthy. Secondly, that agency costs will be minimal as management will not undertake self-serving behaviour as they are concerned about losing their reputation (Nicholson & Kiel, 2007).

Further, as opposed to the agency theory, this theory does not view the motivations of the stewards with scepticism and thus the duality of role, with one person acting both as the CEO and as chairman of the BoD, is acceptable (Albrecht et al., 2004). In a similar vein, Davis et al. (1997, p. 24) argue that stewardship theory is based on collectivistic behaviours which are pro-organisation and hence have higher utility as compared to self-serving individualistic behaviours. Thus, even when the interests of the principal and the steward are divergent, 'the steward places higher value on cooperation than defection'. Thus, in contrast to the agency theory, the proponents of stewardship theory recommend the BoD comprising majorly of inside directors and CEO duality (same individual acting as the CEO and as the chair of the BoD) (Kiel & Nicholson, 2003). Sundaramurthy and Lewis (2003, p. 398) contend that stewardship theory 'stresses managers' tendencies to be collectively oriented and intrinsically

motivated'. Schillemans and Bjurstrøm (2020, p. 651) are of the view that stewardship theory 'assumes unselfish behaviours from stewards involved in the same supra-individual cause as their principals'. Thus, this theory contrasts with and provides an alternative approach to the agency theory.

Stewardship theory has been applied to various fields. For instance, Snippert, et al. (2015) apply the theory to infrastructure services and advocate stewardship relation between Dutch Highways Agency (client) and the vendor. On the other hand, Mills et al. (2021) argue that stewardship behaviour is essential for service delivery by organisations in urban water services. Song, et al. (2017) conclude that in conformance with the stewardship theory, inside directors are instrumental in better long-term/market-based performance of restaurants firms in the US. Alternatively, Eddleston and Kellermanns (2007) apply the stewardship theory framework to the effect of family relationships on the performance of family-run firms and conclude that participative strategy processes and altruism have a positive impact on performance. On the other hand, Dicke (2002) contends that stewardship-theory-based methods can help fill some accountability gaps in contracted human services. Similarly, Rouault and Albertini (2022) promote stewardship theory to enhance accountability in case of non-profit organisations. Erikson et al. (2022) find support for stewardship theory and argue that stewardship combined with CEO duality augurs well for new venture development. Azizi et al. (2022) argue that stewardship is vital to family businesses and is significantly higher in family firms as compared to non-family firms. Further, stewardship behaviour in family firms confers competitive advantage and results in higher performance in such firms. McLeod et al. (2021) find support for stewardship theory and argue that stewardship theory along with the resource dependence theory provide an effective lens to understand role of the BoD in Scottish football clubs.

This study doesn't concur with the stewardship view of corporate governance and contends that the directors may place their self-interest above the interests of the firm/stakeholders of the firm.

Power perspective theory

This theory is concerned with the conflicts that may exist between three parties, namely the top management, the BoD, and the shareholders. Theoretically, the directors are the most powerful in a corporation, however the CEOs can command more power owing to several factors. For instance, CEOs' greater involvement in the day-to-day affairs of the company can lead them to exercise greater influence over the BoD (Albrecht et al., 2004; Daily et al., 2003).

The relationship between the CEO and the BoD has been viewed from several perspectives. For instance, Shivdasani and Yermack (1999) provide evidence of CEOs involvement in director appointment. According to them, powerful CEOs may use director selection process, by appointing gray outside directors, as a mechanism to reduce aggressive monitoring by the BoD. Daily and Johnson (1997) argue that the CEOs may influence the BoD and use structural power to control the information that the BoD receives. Alternatively, Finkelstein and Daveni (1994) contend that CEO duality and BoD vigilance are positively related. However, when the CEO has high informal power, then the BoD seeks to avoid CEO duality. Wang, et al. (2019) in a meta-analysis suggest that BoD characteristics (such as BoD independence, stock-ownership) and the country of origin determine the appropriateness of CEO duality. Less independent boards prefer separation of the position of the CEO and chair of the board whereas independent boards are more confident of their monitoring effectiveness and hence may prefer CEO duality. Similarly, countries with low managerial discretion (e.g. Japan) are more likely to implement policies restricting CEO duality. However, in case of countries with high managerial discretion, it is vital to consider how to enhance the benefits of CEO duality and to restrict the costs associated with it as in such countries other checks on the CEOs may be put in place.

This theory has affected the present research in that CEO duality is considered as a control variable as CEO duality may be one of the factors that can affect the likelihood of financial statement fraud.

Resource dependence theory

The resource dependence theory is based on the premise that external resources such as capital investment, labour skills, and raw materials determine the behaviour and performance of a corporation (Marashdeh et al., 2021). Further, according to this theory, the BoD, rather than being a controlling body, is a provider of access to resources for the CEO of a corporation (Albrecht et al., 2004). According to Nicholson and Kiel (2007), and Kiel and Nicholson (2003) the central premise of the resource theory is that the board of directors (BoD) serves as the fundamental link between a firm and the resources required by the firm to maximise its performance. Further, a BoD that is well connected with the external environment is expected to have higher access to the requisite resources. McLeod et al. (2021, p.41) contend that the central tenet of the resource dependence theory is that 'access to and control over resources is key to organisational success'.

However, this theory has been criticised due to its focus on only the external environment, as it fails to take a holistic view of the value addition of the BoD, as the value brought in/added by it also includes activities such as monitoring, giving advice, and strategy formulation (Kiel & Nicholson, 2003).

With respect to the present research, resource dependence view of corporate governance is not relevant as the research topic is concerned with the agency issue that might be present between the directors and the shareholders.

Institutional Theory

Meyer and Rowan (1977) presented the first work on institutional theory. According to them, institutional rules affect organisational structures. Further, these rules 'function as myths which organizations incorporate, gaining legitimacy, resources, stability, and enhanced survival prospect' (Meyer & Rowan, 1977, p.340).

According to O'Connell, et al. (2005) institutional theory maintains that the attitude prevailing in the society coupled with the views of its vital constituents influence many aspects of procedures, policies, and organisation structures. Vadasi et al. (2020) assert that the institutional theory suggests that corporates should not focus on profits alone

but should also adhere to the social rules that are regarded as acceptable behaviours. On the other hand, DiMaggio and Powell (1983) contend that institutional isomorphism is the reason for organisations becoming exceedingly similar. Thereby, implying that formal organisational structures may be unrelated to operating efficiency (Tolbert, et al. 2011). Burdon and Sorour (2020, p.65) analyse the compliance culture among the financial institutions in the UK, in the backdrop of the institutional theory. They find that mimetic isomorphic pressure entices violating firms to issue similar statements to protect their reputation and to maintain their legitimacy in the market place. Further, instead of being in a state of 'compliance culture', the UK financial institutions are in a state of 'evolutionary compliance'. Kumar et al. (2021) draw upon the institutional theory and find that the institutional context of a country determines which CSR activities do the firms in that country prioritize. For instance: in the US priority is given to 'good citizenship' related stakeholder engagement activities (SEA) whereas in Japan, due to predominance of consensual managerialism, priority is given to SEA activities targeted at transforming value chain. Brower and Dacin (2020), basing their argument on institutional theory, contend that during the early stages of institutionalization of corporate social performance (CSP), adopters/firms experience both increased profitability and increased stock market valuation due to high CSP levels as also higher idiosyncratic risk. However, with institutionalisation of CSP, it becomes a weak driver of profitability and valuation.

On the corporate governance front, Aguilera, et al. (2018) draw upon the institutional theory and conclude that a firm may deviate from the corporate governance logic prevailing in the nation (by under or over conformity with the prevailing governance practices) owing to the entrepreneurial identity of the firm. Entrepreneurial identity generates governance discretion within a firm resulting in deviance. Thus, the research explains why, despite being in the same institutional framework, firms differ in their conformity to the national governance logic. Nakpodia and Adegbite (2018) employ the institutional theory to examine the role of elites in corporate governance. They find that in a weak institutional environment the intervention of elites can weaken the effectiveness of corporate governance mechanisms. In another research Okike et al. (2015) argue that variations in the institutional environment should be taken into

consideration while responding to any international pressure for a change in accountability and corporate governance.

In another research, Krenn (2016), drawing upon the institutional theory argue that a firm's corporate governance is based on three institution pillars namely coercive, mimetic, and normative. The coercive or regulatory pillar represents the constraining aspect of institutions which results in conformance due to politics, power, or resource dependence. The mimetic pillar is concerned with cultural-cognitive patterns wherein firms imitate peers or rely on routines whereas the normative pillar is concerned with obligatory or prescriptive aspect of institutions wherein conformance is done to fulfil moral obligations as in case of membership of professional or trade networks.

Bueno-Garcia, et al. (2021) apply the institutional theory framework to shareholder ownership (a corporate governance variable) and argue that foreign shareholders are more likely to change existing environmental/green practices as opposed to domestic shareholders who are more likely to accept the prevailing practices. Thus, their results confirm that deinstitutionalization from foreign shareholders is more powerful than defensive institutionalism by domestic shareholders.

From the perspective of the present research, the institutional theory is of relevance as this research seeks to compare the US and China which are embedded in very different institutional settings.

Despite the different frameworks with respect to theories on corporate governance, Kiel and Nicholson (2003) conclude that no single theory can completely explain the effect of corporate governance on company performance. Rather, elements of each theory play an additive role. For instance, agency issues need to be paid attention to and this is likely to happen when outside directors are on board. On the other hand, the market rewards the knowledge that the inside directors bring with them, which is in line with the stewardship theory. Further, an appropriate mix of skills determines the value added by the BoD. Jackling and Johl (2009, p. 492) use the resource dependency theory to examine the linkages between corporations and the resources which are needed to maximise performance. They find that large boards positively impact firm performance, implying 'that greater exposure to the external environment

improves access to various resources and thus positively impacts on performance'. According to Al-Shaer and Zaman (2018, p. 983), resource dependency theory plays an important part in explaining the role of the BoD and its committees in achieving sustainability. They conclude that audit committees 'add credibility to sustainability reporting'.

Optimal Contracting Theory

Bebchuk and Weisbach (2010) state that the optimal contracting view regards executive pay as an outcome of an arm's length contract between BoD and the executives and such contracts are efficient in reducing agency issues. Thus, according to this view, pay arrangements are optimally structured and are efficient. According to Tang (2014, p.252) optimal contracting view on compensation maintains that CEO compensation contracts provide incentives to the CEOs so as to maximise shareholders' wealth at minimum cost. Hence, the underlying assumption is that option grants represent optimal compensation. The basis of the optimal contracting view is the separation between ownership and control. Thus, compensation contracts are designed to align the divergent interests of the agents and the principals and thereby reduce the agency costs.

Employing the optimal contracting theory, Gayle et al. (2022) document that though Sarbanes Oxley Act (2002) (SOX) did not reduce the risk-taking preferences of the CEOs, it reduced the divergence in the interests of the shareholders and the CEOs and also reduced the agency costs related to achieving the alignment of the interests of these two parties. Wang and Yang (2022) examine the effect of moral hazards on CEO compensation and termination using optimal contracting. They conclude that moral hazard explains both the increase in variance and level of CEO pay, and the increase in CEO termination. Sung (2022) argues that an optimal contracting explanation for the positive association between stock-price volatility and managerial compensation, is that the agent should be rewarded for both high realised volatility and high realised outcome. Further, this argument is consistent with compensation practices which combine restricted stock with stock options. Chen et al. (2020a) find that pension incentives act as a mechanism for optimal contracting by promoting risk management.

According to the study, executive pension is significantly and positively associated with currency hedging. Thus, pension incentive promotes active risk management by executives. On the other hand, Kyung et al. (2021) find that use of non-GAAP performance metrics in pay arrangements/contracts results in optimal compensation contracts and thereby mitigates agency issues and helps retain talented CEOs.

However, option grants are subject to issues related opportunistic behaviour as evidenced in back-dating and forward-dating of options grants (Narayanan & Seyhun, 2008) and back-dating of option exercise (Cicero, 2009).

Managerial Power Theory

This theory maintains that powerful CEOs use compensation to extract rent from shareholders. According to this view powerful CEOs use their influence to maximise their compensation (Tang, 2014). Thus, the managerial power view considers pay/compensation arrangements as part of the agency problem rather than being a solution for agency issues. Further, this view allows for the eventuality that pay arrangements may be sub-optimally structured (Bebchuk and Weisbach, 2010). Bebchuk, L. and Fried, J.M. (2004b) resonate with the above and state that managerial power view acknowledges the agency problem between shareholders and managers. Further, managerial power is not the same as the bargaining power which emanates from managers' personal characteristics and capabilities. On the other hand, managerial power refers to the power that the executives have over their BoD which enables the former to extract value in excess of the value that the executives will receive in an arm's length negotiation. According to Göx and Hemmer (2020), the managerial power view contends that weak governance enables the CEOs to exercise power over the BoD and thus control the structure and level of their (CEOs) pay. Further, this view explains inefficient pay practices including inflated compensation, weak pay and performance sensitivity, and lack of relative performance evaluation. Guthrie and Stannard (2020) find evidence in favour of managerial power and conclude that option backdating is more likely when gains from backdating are high and when monitoring by independent directors is not very effective. Vo et al. (2019) report that high disparity in CEO pay is associated with existence of managerial power. Morse et

al. (2011) advocate the managerial power view in their study which reveals that powerful CEOs rig their incentive contracts to extract rent and thus make the agency issues more severe.

However, Edmans and Gabaix (2009) argue that rent extraction view may not be appropriate as traditional optimal contracting theories may have failed to capture complex aspects of employment relationship such as talent, firm size, pay structure (options vs stock), industry dynamics such as increase in industry demand. Song and Wan (2019) also negate the managerial power view and contend that powerful CEOs earn more than less powerful CEOs and this excess compensation is a reflection of CEOs' talent and managerial ability.

2.3 Corporate governance systems

2.3.1 Approaches to corporate governance

Based on the foregoing discussion, it is evident that there are two broad approaches to corporate governance. The first one deals with the agency problems between the financiers of firms (i.e. shareholders and banks), called the 'principals', and their agents, called the 'managers'. The prime objective of governance under this system is the maximisation of shareholder wealth/return to investors. Management pursues the short-term objective of returns maximisation along with ensuring liquidity in the capital market. Corporate control (to monitor and discipline managers) is exerted externally in the form of arm's-length control, which is also associated with widespread stock ownership. Further, control is exercised, indirectly, through threat of takeover and the market for corporate control. This is referred to as the '**shareholder approach**' (Lane, 2003; Vilanova, 2007).

The second approach deals with the sharing of risk and return between the various 'stakeholders' in a firm, wherein the prominent stakeholders are shareholders, employees, and managers. Control is exercised internally by shareholders holding a significant portion of the firm's equity. Legal rights of appointment and dismissal along with board membership are used to exercise control directly and actively. Management goals under this approach are related to growth, stability, and long-term

returns to key owners. This is referred to as the '**stakeholder approach**' (Lane, 2003; Vilanova, 2007).

2.3.2 Corporate governance systems

The developed Western world has two main corporate governance models. The first is the **Continental system**, which has two sub-systems – the Latin system (followed by Belgium, France, Italy, and Spain) and the Germanic system (followed by Austria, Denmark, Finland, Germany, Norway, Netherlands, Switzerland, and Sweden), and the second is the **Anglo-American system** (followed by Australia, Canada, the UK, and the US). In the eastern part of the world, the Japanese governance model is amongst the most significant. Further, this model is a mix of the Anglo-American and the Continental model.

The Anglo-American system, which is based on the tenets of common law, is characterised by flexibility in legislation, liquid capital markets, and wide ownership. It also combines elements of dispersed ownership and investors' legal protection in the corporate governance regime. The investors can sue the directors in case of breach of fiduciary duties by the latter. Further, management compensation is characterised by bonus plans and stock options aimed at aligning the interests of the owners and the managers (García-Sánchez et al., 2015).

The Germanic system, on the other hand, is derived from code law. In this system, the government plays a dominant role in social and economic decisions. It is also characterised by stronger creditor rights, weaker shareholder rights, and the presence of large shareholders and large banks. However, the participation of smaller investors is low (García-Sánchez et al., 2015).

The Latin model falls between the Anglo-American and German models but is more influenced by the German model. Under this system, greater influence is exercised by the shareholders as compared to the German model. Both German and Latin models have a high level of ownership concentration and have preference for long-term and stable relationships with stakeholders. In addition, performance-based compensation is not widely used under these models (García-Sánchez et al., 2015).

The Japanese model also falls in between the German and the Anglo-American models in terms of creditor and shareholder rights. It is characterised by the presence of powerful shareholders and banks, though both command less power in comparison to their counterparts in Germany. Also, the participation of small investors is high in Japan (Shleifer and Vishny, 1997).

According to Enriques and Volpin (2007), the corporate governance problem in the US is concerned with the conflict of interest between the controlling managers and small shareholders (who are dispersed). However, in case of most of the rest of the world, the conflict is between a dominant shareholder (family or an individual) controlling majority of the votes and minority shareholders. According to La Porta, et al. (1999, p. 473), the controlling shareholder manages to control despite owning a smaller fraction of cash flow rights by employing tools such as 'cross-shareholdings, differential voting rights, and pyramids'.

The Anglo-American model follows the 'shareholder approach' to corporate governance, whereas the German and Japanese models are more bent towards the 'stakeholder approach'.

These models are discussed in greater detail below.

Anglo-American corporate governance system

According to Cernat (2004), the Anglo-American model is based on the corporate concept of a fiduciary relationship between managers and owners/shareholders. Engrained in market capitalism, this system believes that decentralised markets and self-interest can work together in a balanced manner and can self-regulate each other. Thus, the institutions pursue profits and individuals pursue material success. The effectiveness of institutions is sought to be maximised by combining profit-oriented behaviour with individualism.

Ahmad and Omar (2016) provide more understanding of the Anglo-American model and state that in terms of its theoretical underpinnings, it draws from shareholder perspective. The theory postulates that corporate managers are responsible for maximising shareholders' wealth as it is the shareholders who bear the highest level

of risk. Further, the BoD under the Anglo-American model tends to be single tiered with the presence of both executive and non-executive directors. Also, the relationship between the BoD and shareholders tends to be on an arms-length basis.

With respect to capital, the Anglo-American model is marked by dispersed equity shareholding along with delegation of corporate responsibilities to the management, which is governed by the BoD (Cernat, 2004). The BoD is in turn monitored, externally, by the shareholders. Thus, the Anglo-American model is called the 'stockholder model', wherein the stockholders exercise external control over the firm. However, the influence of shareholders on the management is weak owing to the dispersed shareholding and this makes it imperative for this corporate governance system to be supported by a well-functioning and deep stock market as the stock market, along with legal infrastructure, offers protection to the shareholders. The objective that the firms pursue, under this model, is the maximisation of shareholder wealth. The barometer to gauge firm performance is 'market value'. However, this focus on shareholder wealth leads to profit-oriented behaviour with a short-term perspective (Cernat, 2004; Chhillar & Lellapalli, 2015).

On the labour front, according to Cernat (2004), the Anglo-American model is marked by a low level of unionisation. Compensation is linked to performance, along with employee stock options (ESOPs) being widely used. Further, labour generally doesn't participate in the strategic decision-making process. Corporate decision-making involves the shareholders acting through the BoD and the management. Also, the agency problem is dealt with through internal governance mechanisms via the BoD, and the BoD is considered to be the most vital governance mechanism (Chhillar & Lellapalli, 2015).

This model is prevalent in the US and UK, and this can be explained by some common features shared by these two countries. Both the US and UK are marked by well-developed stock markets, dispersed equity holdings, English common-law-based legal codes, and arm's length control of corporations (Siepel & Nightingale, 2014; Adegbite, Shrives and Nichol, 2011).

Other noticeably important corporate governance models are that of Germany and Japan. According to Brickley et al. (2021), German and Japanese governance models differ from that of the American model in that the prime focus of German and Japanese firms is not shareholder wealth maximisation rather they pay attention to the larger set of stakeholders such as affiliated companies, banks, community at large, employees, and shareholders. These models are discussed in greater detail below.

German/Continental corporate governance system

The German CG system is embedded in the stakeholder theory of the firm. The model considers the interests and welfare of all key stakeholders in a firm, including the shareholders, employees, suppliers, creditors, and the society at large. Thus, unlike the Anglo-American model, the focus is not singularly on shareholder wealth maximisation but on the benefits and costs that the society accrues due to a corporation's operations, implying a focus on stakeholder value maximisation (Chhillar & Lellapalli, 2015). The genesis of the stakeholder approach can be traced back to the history of the development of company law in Germany. The early stages of this development were marked by an element of distrust in legal persons and in the concept of limited liability. This distrust led to an overarching concern for the protection of the interests of the creditors and shareholders, which is also reflected in the CG system in Germany (Hutter et al., 2002).

According to Goergen et al. (2008), under the German model, to deal with the issues with respect to agency between owners and managers, multiple mechanisms (both internal and external) are available. Internal mechanisms include the BoD, and the control/ownership structure, whereas the external mechanisms include product/market competition, laws and regulations, market for corporate control, and creditor monitoring.

With respect to capital/ownership, corporations under this model are characterised by large block shareholding by institutions (which may include banks, financial institutions) or by the public. Banks and large shareholders tend to play an important role in financing and governance. Banks, offering substantial debt to a corporation, may have their representatives on its supervisory board. Also, banks play a vital role in

fundraising and offer a secure environment to corporations, thereby making themselves an attractive avenue for fundraising compared to stock markets. The significance of banks as inside controllers also stems from the fact that banks can cast proxy votes on behalf of small shareholders. This is because most shares are in the form of bearer shares, which are deposited by the shareholders with the banks (Cernat, 2004; Goergen et al., 2008; Lane, 2003).

The largest shareholder may command as high as 50% of the voting rights, implying that control is highly concentrated. Typically, key shareholders include (a) banks and other institutional investors, (b) families and individuals, (c) holding and industrial companies, and (d) public authorities (Goergen et al., 2008). Further, less liquid stock markets make it imperative for the shareholders to monitor the managers and to voice their opinion with respect to the working of the corporation (Cernat, 2004; Goergen et al., 2008).

With respect to the BoD structure, the German model is characterised by a two-tier board system comprising the supervisory board (**SB**) and the executive/management board (**MB**) of directors (Chhillar & Lellapalli, 2015; Brickley et al., 2021). In layman terms, the SB is the equivalent of the BoD for American companies whereas the MB is the equivalent of the top management for US companies (Tuschke & Sanders, 2003). This system is based on the philosophy of 'co-determination', which entails mandatory participation by employees in the decision-making process (Lane, 2003; Von Rosen, 2007). The SB's chairman is appointed by the shareholders, and it also has representation from employees through the trade unions or work councils (Schilling, 2001). The functions of the SB are to appoint or revoke the appointment of the members of the MB and to supervise and control the management of the corporation via the MB (Hutter et al., 2002; Schilling, 2001). The MB is responsible for managing the business of the corporation and for strategic and operational decision-making (Schilling, 2001; Tuschke & Sanders, 2003). Though the MB is not liable to take any instruction from any other body including the SB or the majority shareholders with respect to its management responsibilities and power (Schilling, 2001), it reports to the SB (Tuschke & Sanders, 2003). Also, there is no overlap between the two boards in terms of their members (Chhillar & Lellapalli, 2015). Further, the MB must always act

in the interest of the corporation. This is a departure from the Anglo-American model wherein the interests of the shareholders are of prime importance (Schilling, 2001).

Turnover of the CEO and that of the members of the SB may be used as governance mechanisms for disciplining top management. Another tool for governance is compensation. In terms of compensation structure, basic compensation dominates the total pay. However, there is a move towards adopting higher variable pay. Further, managerial pay tends to be linked to corporate performance. In contrast to the Anglo-American model, under the German model CEOs tend to be marked by lower pay packages, higher basic compensation (i.e. excluding variable components such as benefits, perquisites and variable pay) and less usage of option/equity-based compensation in managerial pay. Cash compensation is generally on the higher side whereas non-cash compensation is on the lower side compared to other countries in Europe (Chhillar & Lellapalli, 2015; Goergen et al., 2008).

According to Goergen et al. (2008), with respect to credit monitoring, large creditors have several control rights which enable them to monitor firms. Large creditors, especially banks that act both as debt providers and as shareholders, play a key role in monitoring and governance of German corporations. Further, being present on the SB of the corporations, banks have access to valuable and privileged information. Access to such information coupled with the long-term lending relationships confer considerable power on the banks.

Market for corporate control or hostile takeovers is limited in Germany. The chief reasons for this are the presence of large controlling shareholders; cross-shareholdings; presence of take-over codes and legislations which act as barriers to take-overs; and a legal and regulatory framework that is still lagging in matters concerning shareholder protection, transparency, and disclosure (Cernat, 2004; Lane, 2003; Goergen et al., 2008).

There is a lack of product market competition, which has a negative effect on productivity growth. However, the control exercised by banks on corporations, under the German governance model, tends to weaken this negative effect (Goergen et al., 2008; Kke & Renneboog, 2005).

On the labour front, this model is characterised by the presence of institutionalised and well-established labour unions. Also, the occupational labour market plays a dominant role. Further, in contrast to the Anglo-American model, trade unions/work councils are consulted before any important strategic decisions are made (Cernat, 2004; Kubo, 2005).

Given the pressure that managers face on account of being accountable to a wide variety of stakeholders (including shareholders, banks, employees, and the local community), decision-making is consensus-oriented, and the top management has less autonomy. Further, since managers are promoted to top-level positions from within the internal labour market, they pursue goals that are oriented towards long-term returns, firm stability, and market growth (Schilling, 2001; Lane, 2003).

Furthermore, the firms aim to seek high long-term profits as opposed to the focus on short-term shareholder wealth maximisation under the Anglo-American model (Cernat, 2004; Goergen et al., 2008).

From the above discussion, it is evident that despite the significance of corporate governance as a controlling mechanism, a single set of strictly defined governance mechanisms is not likely to work in all situations. This is because corporate governance has nuances specific to each country. For this reason, China doesn't strictly fit into any of the corporate governance models discussed above. This is further illustrated by the fact that though China has adopted the German dual board structure but it still holds the 'shareholder supremacy' rather than focus on all stakeholders as in the German corporate governance model. Further, the agency issues in China relate to majority and minority shareholders owing to presence of concentrated ownership (Yu, Zhang, & Zheng, 2015) as opposed to agency issues between management and shareholders as are generally observed.

The section below discusses how culture impacts corporate governance.

Corporate governance - cultural nuances

According to Doidge et al. (2007), country characteristics in terms of the level of financial and economic development and its openness have a significant bearing on corporate governance apart from investor protection provided by the state.

Davis and Mizruchi (1999, p. 237) argue that 'A national economy's system of financial intermediation defines the characteristic problems of corporate governance and generates a social structure by which the institutions of governance evolve'. For instance, in credit-based systems, as observed in Germany/Japan, banks occupy the centre stage and form the core of densely connected business groups. In contrast, capital-market-based systems (as in the US) are atomised and lack such central actors. Consequently, the US has developed a decentralised, managerialist model of governance. Similarly, Aguilera and Jackson (2003) attribute the differences in corporate governance across nations to the differences in the development of financial institutions across countries. For instance, the US has widespread dispersion in equity ownership, which is due to the development of a welfare state wherein the pension regime preferred greater market liquidity. Further, inter-firm co-operation in the US was restricted due to anti-trust laws which encouraged large-scale mergers leading to further dilution in equity. In contrast, Germany and Italy continued to have concentrated ownership due to the availability of bank finance, existence of co-operative networks that blocked rapid dilution, and favourable property rights for block holders.

Gilson and Roe (1993) add to the above assertion and state that apart from financial intermediation and separation of ownership and control, the corporate governance of a country is also influenced by product market competition.

Armitage et al. (2017, p. 148) bring to the fore the differences in CG practices among developed and emerging economies. They argue that governance mechanisms are embedded in a nation's business system and are influenced by its legal, political, and social institutions. Further, the governance problems of the developed world emanate from "dispersed ownership, small managerial shareholdings, prevalence of standalone companies, and market-based transactions. However, emerging economies are characterised by concentrated ownership, pyramidal ownership structures,

dominance of business groups, and high levels of related-party transactions. As a consequence, principal–principal conflicts are a major concern of corporate governance in developing countries”. This further implies that the governance solutions vary across countries and one solution may not work for all.

Dore (2005) supports this view and states that the difference in national value systems determines whether nations adopt the shareholder value prescription or the stakeholder value prescription to corporate governance. Similarly, the solution to the agency problem (a solution essentially is one that ensures that the managers/agents are honest and dynamic), can be achieved by using different institutions in different societies depending upon the availability of motivational resource. For instance, in a society like the United States, personal material gain, reflected in fat salary packages, is a key motivator and commands immense admiration and prestige, whereas in Japan prestige is attached to the title of the role itself.

In a similar vein, Rubach and Sebor (1998, p. 168) state that ‘Each country’s model or system has developed based on its particular cultural, historical, and technological influences. The differences in corporate governance systems reflect the paths by which each came to exist. These paths varied because the systems began in different times and places and because each reflects the sum of the particular decisions made in response to particular national, social, and economic conditions. No corporate governance model is ideal, or even best. The fact that each persists suggests that each is efficient in its own way, and the governance structure of one country is not easily transportable to another’. Similar views have been presented by Zalewska (2014), who contends that diversity in CG stems from the differences in culture, moral and religious beliefs, organisational forms, and legal and political systems. For instance, in the case of countries where organisations assume the form of ‘control by one and ownership by millions’, the focus of corporate governance is on assuring a return on the investments made by the suppliers of finance by managing the relationship between the management and the shareholders. However, in countries where shareholders are regarded as just one of the stakeholders, this approach would not be appropriate. In such countries, good corporate governance would entail value creation for all stakeholders and for the social market economy. Further, country-specific differences

are also evident in the manner of adoption of the corporate governance code by firms. For instance, in the UK, the adoption of corporate governance code works on the principle of 'comply and explain' whereas in the US, corporate governance practices are enforced by law and any non-compliance is subject to penalties (Zalewska, 2014).

China and US also present a unique case to study how difference in culture affects corporate governance mechanisms. The differences in the culture of China and the US has also permeated the corporate governance of these two nations. For instance: China has a collectivist culture whereas US is marked by individualism (Hofstede Insights, 2021). The effect of this cultural attribute on the corporate governance philosophy is that China, though follows shareholders' primacy but it also considers interests of other stakeholders whereas the US focuses primarily on the shareholder perspective. In US the objective of governance is maximisation of shareholder wealth/return to investors whereas in China the focus is on returns to key stakeholders. According to Clarke (2003) corporate governance in China seeks to regulate the relationships between all interested parties in a corporation with shareholders being recognised as a particularly important group. This difference in governance philosophy is further reflected in the difference in structure of the boards in the two countries. China has a dual board structure with the supervisory board and the management board wherein the supervisory board has representatives from both the shareholders and the employees. In contrast, US has only a single board of directors (who represent the shareholders) and there is no representation from employees on the board.

Another cultural difference is with respect to uncertainty avoidance. US has a higher score implying that as compared to China, in the US there is discomfort with ambiguity and uncertainty whereas structure and clarity are preferred (Griffin, et al., 2017). This cultural characteristic is evident in the corporate governance codes of the two countries. According to Jiang and Kim (2015), the Chinese code of corporate governance provides only guiding principles and not explicit regulations. In contrast, in the US, the New York Stock Exchange (NYSE) has stipulated a set of corporate governance rules which are mandatory to comply with (Calder, 2008).

China represents a unique case of culture (collectivist, high power distance, low uncertainty avoidance) and political (communism) mix which is different from the culture and political mix of the US, Germany, and Japan. Thus, the corporate governance of China, doesn't strictly fit into any of the models discussed in section **2.2.2** above. This necessitates a separate discussion on corporate governance in China. The next section examines the Chinese and the US governance models in greater detail.

2.3.3 Chinese corporate governance model

Up to 1978 most of the corporates in China were state owned and governance was collective. The promulgation of company law in 1993 laid down the foundation for establishment of corporate governance in China (Kawamura, 2015).

Chinese corporate governance reforms picked up steam in 2001, when China joined the World Trade Organization (WTO) and committed itself to adopting the OECD principles of CG (Chen, 2015). Securities law and company law were introduced in 2006, which provided further impetus to the development of the country's corporate governance framework (Chen, 2015).

The enforcement agencies in China with respect to corporate governance include 3 bodies namely China Securities Regulatory Committee (CSRC), stock exchanges, and government agencies (such as the Ministry of Commerce, the Ministry of Finance, the General Administration of Industry and Commerce, and the State-owned Assets Supervision and Administration Commission (SASAC)) (Kawamura, 2015).

The Chinese code of corporate governance provides only guiding principles and not explicit regulations (Jiang & Kim, 2015). In its spirit, corporate governance in China seeks to regulate the relationships between all interested parties in a corporation with shareholders being recognised as a particularly important group (Clarke, 2003).

A distinguishing aspect of the Chinese corporate governance system is the existence of a two-tier board structure which includes the board of directors (BoD) and the Supervisory Board (SB). The SB is required to have at least three supervisors and should include representatives of shareholders as well. However, at least one-third of the members of the SB must be employees of the corporation. The supervisors are

responsible for evaluating and supervising the directors and senior managers as well as overseeing the financial affairs of the corporation. Further, they are permitted to participate, as non-voting participants, in the meetings of the directors (Jiang & Kim, 2015). Thus, the Chinese corporate governance system has features of both the German-style two-tier board and the US-style single board (Hass et al., 2016). This view is also supported by Chen (2015), according to whom the two-tier board system of China closely resembles the German model. Under the Chinese model, the SB is entrusted with the task of approving key business decisions and of overseeing the BoD, whereas the BoD makes decisions with respect to the day-to-day operations of the corporation. Despite the close resemblance to the German system, the SB of Chinese-listed companies does not function in the same spirit as the SB of German companies, as the Chinese SBs do not have the authority to either dismiss or select the members of the BoD or the management. Further, unlike Germany, in China the supervisory role of the SB is limited on account of the key role played by government appointees on the SB, lack of representation of institutional investors, and the absence of provisions for implementing the duties and powers of the SB. This view is supported by Kawamura (2015), according to whom the function and authority of SB in China continues to be weak.

According to the corporate governance code of China, the China Securities Regulatory Commission (CSRC) is responsible for regulating and supervising the corporate governance of listed companies. Jiang and Kim (2015) describe the CSRC as a government agency, akin to the Securities and Exchange Commission (SEC) of the US, which falls directly under the purview of the State Council of China (country's main administrative authority). One of the key functions of the CSRC is to investigate and penalise cases of violation of laws and regulations related to securities and futures.

Chinese corporate governance code (China, 2019) mandates that independent directors constitute the majority of the compensation and assessment committee, audit committee, and the nomination committee. Further, an accounting professional is required to be the convener of the audit committee. Regarding compensation of the directors and the supervisors, the same is fixed in general shareholders' meetings. Employee stock options and share-based incentives can be designed according to the

Articles of Association (AoA) of the corporation, and the relevant rules and regulations. According to Jiang and Kim (2015), in China the independent directors are required to monitor large controlling shareholders on behalf of the minority shareholders and for this reason independent directors are neither permitted to be one of the top 10 shareholders of the corporation nor are they allowed to hold more than 1% of the shares of the listed corporation (directly or indirectly). Further, in China, often the chairman of the BoD is the key person who actively runs and controls the corporation. This is in contrast with many developed economies where CEO duality is not encouraged/permitted. Chen (2015) provides support to the above view and contends that in China the chairman of the BoD tends to be the most important person with respect to all decisions of the corporation and even surpasses the CEO and other senior managers in the day-to-day management of the corporation. Further, the monitoring role of the BoD is a moot point, as it is generally dominated by representatives of government or party secretaries, or representatives of the parent company.

On the share ownership front, Chen (2015) argues that there are two kinds of conflicts of interest related to agency theory, first between the owners and the managers, and second between minority and majority shareholders. When ownership is widely spread the first conflict is prominent, whereas the second conflict is more prominent when ownership is concentrated. China, on account of the narrow spread of ownership of its corporations, suffers from the second agency malady. Haß et al. (2016) lend support to the above argument and contend that listed corporations in China are generally dominated by a single shareholder.

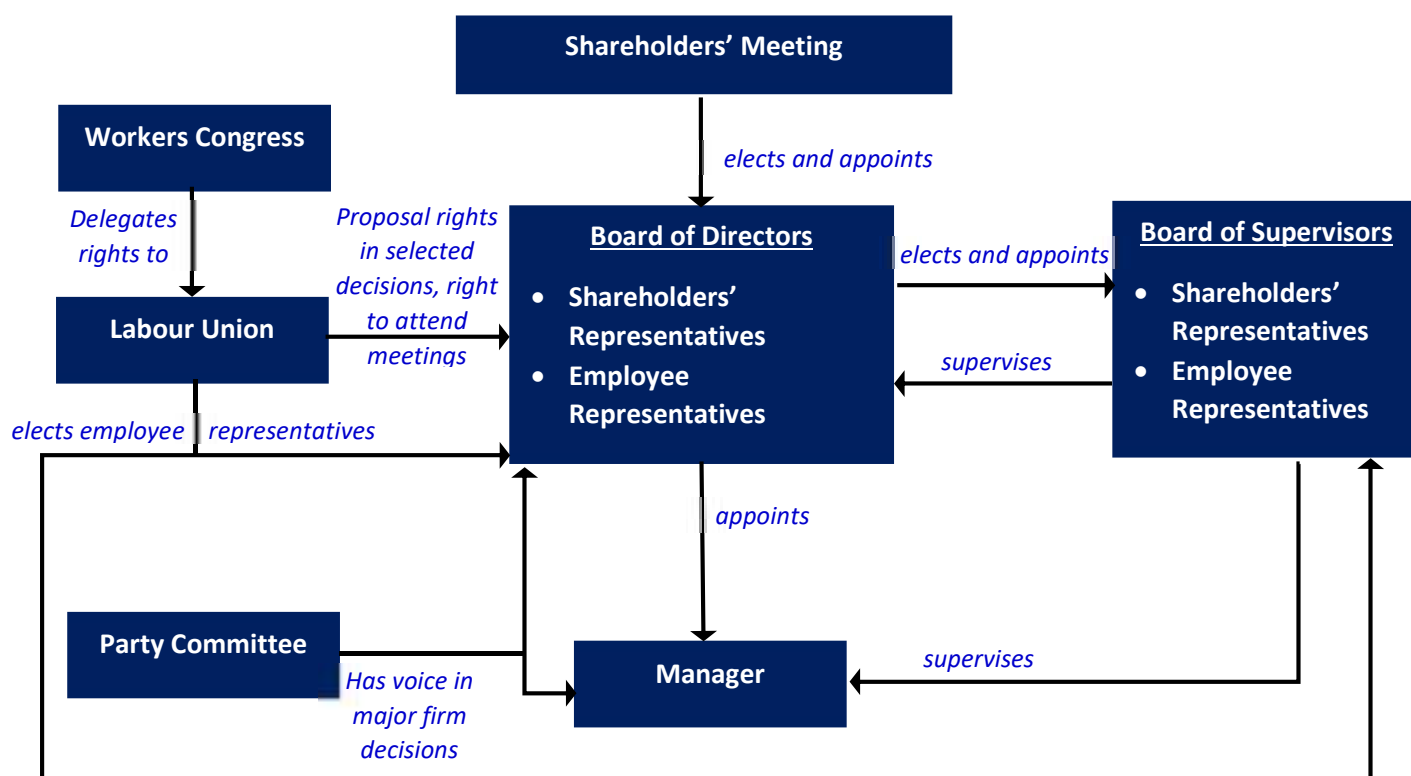
With respect to executive compensation, Yang and Yang (2009) report that executive compensation in China is affected by peer-group effects, which may be associated with factors such as faster growth, better performance, and state ownership. Further, peer effects are not likely to be affected by corporate governance. Chen et al. (2010), on the other hand, find that CEO duality facilitates the pushing up of their compensation levels by insider managers, thus providing evidence of managerial power theory. Further, internal CG mechanisms such as the presence of SB and BoD independence are ineffective in China's case due to factors such as limited market for corporate control, frail shareholder protection, and concentrated ownership by the State. Ye

(2014) studied the causality between cash-based compensation for independent directors in China and earnings management. The results of this study found that high cash compensation for independent directors compromises their independence and makes them ineffective in performing the function of overseeing financial reporting whereas Alkebsee, et al. (2021) document a negative association between corporate fraud and independent directors' cash compensation. It may be noted that the use of stocks and options to compensate independent directors is not prevalent in China. This is based on a ruling by the CSRC. In 2005/2006, the CSRC allowed the introduction of equity incentives (stock options and restricted stocks) to the BoD (excluding independent directors), SB and the top management (Conyon & He, 2011).

As regards the State-Owned Enterprises (SOE) in China, a unique feature of the CG model of these enterprises is the presence of party committees (refer to **Figure 1**). Party committees represent political networks within a corporation that the state/government can mobilise to support its policy reforms and to provide timely information about all matters (Nee et al., 2007). Clarke (2003) lends support to this argument and states that the objective of state/government intervention in corporations is to ensure their efficient running as well as maintaining control over sensitive industries, providing politically motivated job placements, and maintaining urban employment levels. However, Nee et al. (2007) conclude that the state/government intervention, through party committee, results in a negative effect on the overall decision-making within a corporation and on personnel and financial decisions.

Figure 1: Corporate governance mechanism in listed Chinese SOEs⁶, as per company

law



Source: Nee et al. (2007, pp. 28)

Chen (2015) concludes his research by identifying key weaknesses with internal and external corporate governance mechanisms in China. As regards internal mechanisms, the key weaknesses are concentrated ownership structure (which gives rise to agency problems between majority and minority shareholders), weak SB (limited supervisory role resulting in little say in major corporate decisions), and lack of independence among the BoD. With respect to the external CG mechanisms, the key weaknesses include inefficient stock markets (resulting in insider trading), and weak law enforcement.

2.3.4 US corporate governance model

The US CG model is ingrained in the Anglo-American corporate governance system. According to Price et al. (2018) the US has adopted a statutory, rules-based approach

⁶ State-Owned Enterprises.

to corporate governance. Consequently, the legal CG framework in the US relies upon laws, listing rules, and regulations (OECD, 2019).

Davis and Mizruchi (1999) argue that the American CG system is focused on minimising agency costs. In this capital-market-based model, corporations rely on equity issuance for capital, whereas short-term debt is provided by commercial banks implying that the US has a decentralised system of financial intermediation. This results in the development of a decentralised managerialist system of governance in the US.

In a similar vein, Gilson and Roe (1993) argue that the traditional CG system in the US is marked by separation of ownership and control, that is, “who will monitor management in light of dispersed shareholding” (p. 874). This separation is the result of the growing corporations’ need for specialised management and capital.

The key features of the US’s CG model include shareholder primacy, dispersed stock ownership, a flexible labour market, an active market for corporate control, and the importance of equity financing. In terms of stock ownership, institutional investors play a dominant role with money management firms and mutual funds being the largest institutional investors. Further, the position of the CEO and the chair of the BoD tends to be held by a single individual (Aguilera et al., 2006). This can be explained by the fact that the corporate governance guidelines in the US do not provide any specific recommendations with respect to separating the posts of the chair of the BoD and the CEO. Listed companies generally have single-tier boards comprising both executive and non-executive directors. The establishment of completely independent audit, nomination and remuneration committees is required by law/regulations/listing rules. Further, the governance rules/regulations do not stipulate any specific requirements/recommendations with respect to the remuneration of the directors and the key executives. Although the disclosure of the compensation policy and compensation of all directors, CFO, and CEO are required, the shareholder approval for the same is required, only if the corporation uses incentive pay (OECD, 2019).

According to Rubach and Sebora (1998), the US governance system, being based on the dispersed ownership paradigm of Berle-Means, views shareholders as passive investors with their primary concern being financial returns. Though they are claimants

of the residual returns of a corporation, shareholders (being passive) refrain from interfering in the operations of the corporation and are expected to do the 'Wall Street Walk' if they do not like the way the corporation is being run.

The NYSE listed Company Manual (2019) lays down the norms with respect to corporate governance for companies listed or to be listed on the NYSE. According to the manual, listed corporations should have fully independent audit, compensation, and nominating/ corporate governance committees. Each listed corporation should have an internal audit function to assess the corporation's system of internal control and its risk management processes. Further, majority directors in listed corporations should be independent.

Also, listed corporations are required to adopt and disclose their corporate governance guidelines. These guidelines should cover guiding principles related to directors' compensation, qualifications, responsibilities, and orientation, etc. Management succession planning and performance evaluation of the BoD should also form part of these guidelines along with a business code of conduct and ethics. With respect to ownership of the corporations' shares by its directors and officers, the manual provides encouragement to such share ownership via ESOPs and stock options albeit with a word of caution and some guidelines with respect to the timing of such purchase/grant or sale of shares. Further, all equity compensation plans (barring a few exceptions) or material revisions thereof, are required to be approved by the shareholders (NYSE Listed Company Manual, 2019).

On similar lines, NASDAQ equity rules (2019) require listed companies to get shareholders' approval on all stock purchase plans, option plans, or other equity compensation (barring a few exceptions) and on any material amendments thereof. The majority of the BoD should comprise independent directors. Further, listed companies should comply with NASDAQ's corporate governance requirements with respect to the 'board of directors (including audit committees and independent director oversight of executive compensation and the director nomination process); code of conduct; shareholder meetings including proxy solicitation and quorum;

review of related party transactions; and shareholder approval, including voting rights’.

Table 1 presents a comparison of the corporate governance models of the US and China on key parameters such as the ownership structure, the BoD structure, main regulator, and executive compensation.

Table 1: Corporate governance model comparison

S. No.	Criteria	China	United States
1.	Main CG Regulator(s)	China Securities Regulatory Commission (CSRC); State-owned Assets Supervision and Administration Commission (SASAC); Ministry of Finance of the People's Republic of China (MOF)	Securities and Exchange Commission (SEC)
2.	Ownership Structure of listed companies	Concentrated ownership prevalent (with State as majority shareholder in SOEs)	Dispersed ownership. Listed companies tend to be under managerial control and not under control of any major shareholder
3.	Related Party Transactions (RPT)	<ul style="list-style-type: none"> • BoD approval required for non-routine RPT • Shareholder approval required for non-equity RPT 	<ul style="list-style-type: none"> • BoD approval required for non-routine RPT • Shareholder approval required for non-routine transactions
4.	Board Structure Type	Two-tier system	One-tier system

S. No.	Criteria	China	United States
5.	Description of Board Structure	<p><u>Supervisory Board:</u></p> <ul style="list-style-type: none"> • Comprises of representatives from shareholders and employees (employee representatives to be at least 1/3rd of the SB) • Supervisory powers over the BoD, management and the company <p><u>Board of Directors</u></p> <ul style="list-style-type: none"> • Comprises directors and independent directors (independent directors to be more than 1/3rd) • Audit committee comprised of directors with majority being independent directors • Management team selected by the BoD responsible for day-to-day operations of the corporation 	BoD comprises of both executive and non-executive directors

S. No.	Criteria	China	United States
6.	Board and key executive compensation	Disclosure of - total amount of compensation, compensation policy, and the individual – required by law/ regulations	Disclosure of - total amount of compensation, compensation policy, and the individual - required by law/ regulations
7.	Compensation recommendation	Long term incentive mechanism; (employee stock option plans, equity incentive, etc.). Severance payments to be fair and without prejudice to the legitimate rights of listed companies	No specific recommendations. Only disclosure requirements
8	Compensation Practices	Executive compensation influenced by peer effects; No stock-based compensation for independent directors	Restricted stock preferred; options with performance-vesting provisions; performance shares preferred over options
9	Disclosure Requirements	The BoD is required to report to the General Shareholder Meeting (GSM) and disclose the	Listed companies must adopt and disclose corporate governance guidelines including guidelines related to directors' compensation

S. No.	Criteria	China	United States
		compensation of the directors, the supervisors, and the senior executives	
10	Guiding Principles	<ul style="list-style-type: none"> • Compensation of supervisors and directors to be determined by the GSM • Remuneration of senior executives to be approved by BoD; fully disclosed; and be explained in GSM • Incentive mechanisms such as employee stock ownership plans, and share incentives can be established in accordance with laws, regulations and AoA of the corporation • Incentive mechanisms to be conducive to innovation, and sustained development. Also, without jeopardising legitimate interests/rights 	Barring some exceptions, all equity compensation plans including those to directors must be approved by the shareholders

S. No.	Criteria	China	United States
11	Basic philosophy	Socialist approach transitioning to market capitalism	Based on market capitalism
12	Theoretical underpinnings	Shareholder primacy	Shareholder theory (focus on shareholder wealth maximisation)
13	State of capital markets	Inefficient	Deep and liquid
14	Labour market	Low unionisation	Low unionisation
15	Use of ESOPs	Use of restricted stock and stock options allowed since 2005/06.	Wide
16	Market for corporate control	Weak (free-market style mergers & acquisitions not permitted)	Wide

S. No.	Criteria	China	United States
17	Objective of corporations	Improvement in overall value of the corporation	Short-term focus on shareholder wealth maximisation
18	CG Mechanisms	Capital markets; BoD & SB; General shareholders' meetings; audit, nomination, and compensation & appraisal committee	BoD (focus on independence and objectivity); presence of audit and compensation committees; active stock market; extensive market for take-overs

Sources: Chen, 2015; China, 2019; Easterlin, 2014; Conyon and He, 2011; Conyon et. al., 2013; Herd, Koen, and Reutersward, 2010; Jiang and Kim, 2015; Kubo, 2005; Lazar et al., 2014; Mutlu et al., 2018; NYSE Listed Company Manual, 2008; OECD Corporate Governance Factbook, 2017; OECD Corporate Governance Factbook, 2019; Tam, 2002; Yang and Yang, 2009; Ye, 2014

2.3.5 Corporate governance - challenges and the way forward

Common themes that have emerged from accounting scandals in the US are presence of a self-interested and strong management, inadequacy of internal controls, inappropriate management incentives, audit and accounting failures, (Grant & Visconti, 2006; McMillan, 2004; Sorensen & Miller, 2017).

On the other hand, in China political connections, weak legal structures, misplaced managerial compensation, and managerial inefficiency are some of the reasons that have been acknowledged to cause FSF (Conyon & He, 2016; Hass, et al., 2016b; Stuart & Wang, 2016; Wang, et al., 2017).

Chen and Keefe (2018) state that in countries where the ownership of listed corporations is dispersed (like the US), the chief conflict is between the managers and the shareholders. In contrast, in countries where the ownership of listed corporations is highly concentrated (such as China), the chief agency conflict is between minority and large shareholders.

Improving corporate governance is one solution to the FSF debacle. According to Bai et al. (2004) there are two broad categories of mechanism (viz. internal mechanisms and external mechanisms) for resolving the conflicts between owners and managers and those between the controlling and minority shareholders. Internal mechanisms include the BoD, executive compensation, financial disclosure, and ownership structure. External mechanisms on the other hand comprise the external takeover market, product market competition and legal infrastructure.

However, the implementation of corporate governance mechanisms is challenging. Bradley et. al. (1999) regard the rapidly changing structure of corporate activity, organisational forms, regulatory environment, and financial and product markets, as the key challenges for corporate governance. Zalewska (2014) further adds to the challenges faced by CG practice. According to the study, the issue of information asymmetry between principals and agents should be addressed by a focus on ex-ante monitoring rather than ex-post monitoring. Further, cross-country differences make it imperative that the solutions to corporate governance problems in one country be

modified before they are implemented in other countries. Thus, there are no one-size-fits-all solutions. Lastly, political intervention, which may be short-sighted to gain political mileage, may result in the passing of draconian laws which may later have to be modified or withdrawn, a case in point being some of the Sarbanes–Oxley Act (2002) requirements that were later reversed by the Dodd–Frank Act (2010).

Despite the challenges faced in CG practice, it remains a critical mechanism for reducing fraud. Studies have identified corporate governance mechanisms such as BoD independence and the separation of the CEO and Board chair role, etc. to deal with corporate fraud - a view is supported by the regulatory actions taken by the US and China to control FSF.

In order to deal with the menace of scandals, the US has passed two acts namely the Sarbanes-Oxley Act (2002) and the Dodd-Frank Act (2010). Carcello, Hermanson, and Raghunandan (2005) contend that the Sarbanes Oxley Act has provided a renewed focus on internal controls and their research argues that ‘the board of directors provides incremental oversight on internal controls as part of its fiduciary duties’ (Goh, 2009, p-550). Further, the BoD can pressure the management to identify and remedy the deficiencies in the internal control environment. The two acts, mentioned above, are aimed at protecting investors and have further empowered the BoDs (Bainbridge, 2012) clearly supporting the view that the directors can be instrumental in controlling fraud.

To control the incidence of FSF and following the footsteps of the US, China also enacted its version of the Sarbanes Oxley Act (‘China SOX’) in 2008. This Act is China’s first regulation focused on internal controls and it fixes the responsibility of establishing and implementing internal controls on the BoD (Lu & Cao, 2018). Further, Lee, et al. (2018) find that in China the structure of the BoD in terms of the optimal number of directorships held by the directors, BoD diversity in terms of the diverse industry experience of the members of the Board can help reduce corporate misconduct.

Thus, both the countries have acknowledged that directors are crucial to address corporate governance challenges and therefore directors must be well-motivated to

perform this monitoring function. Corporate governance literature regards, compensation as a vital motivation tool. The following sections discuss the various models for determining compensation of executives/ directors under the two governance models namely China and the US.

2.4 Compensation under different corporate governance models

The structure of compensation packages varies from country to country. According to Brickley, Smith, and Zimmerman (2021), as per 2003-2004 Towers Perrin's worldwide compensation survey, US CEOs receive approximately 63% of their salary in variable form. This percentage is 51% and 19% for Germany and Japan, respectively, whereas for China variable pay was only 18%. Further, 85% of the US companies surveyed used stock-options while that percentage was only 35% in case of China (Shanghai). The sub-sections below discuss in detail compensation practices in China and the US.

2.4.1 Executive/directors' compensation under the Chinese model

The CSRC in 2005 introduced a framework for equity incentives. As per this framework, publicly traded corporations (that had completed structural reforms) in China could offer restricted stocks or stock options to their board members, supervisory board members, and the top management (excluding independent directors) (Conyon & He, 2011). However, according to Huang and Boateng (2017), executive⁷ compensation in China is paid mostly in the form of cash and very few corporations use stock option plans albeit with very limited disclosures. Further, according to this study executive compensation in Chinese corporations fails to align the interests of the shareholders and the firm leadership, primarily due to the short-term nature of the compensation (being predominantly cash-based). We find empirical evidence to support the above assertion in, Ye (2014) which links the cash-based compensation of independent directors in China to the propensity of earnings management and concludes that higher levels of cash-based compensation for independent directors compromises their objectivity and independence, thereby reducing their effectiveness in their oversight of financial reporting quality. Jiang et al. (2021) investigate the impact of

⁷ Executives include top management, BoD and supervisory board members.

executive compensation, especially stock options and stock ownership, on acquisition activity in China. They find that executive stock ownership has a non-linear relationship with acquisitions in China whereas stock options have no impact on acquisition decisions. The results indicate that in case of high levels of managerial stock ownership, the executives are less active in making acquisitions whereas managers do engage in acquisitions when their stock-ownership is negligible. Further, in case state-owned enterprises (SOEs) both stock options and stock-ownership are immaterial as for executives in SOEs political promotions are more valuable whereas in case of non-state-owned enterprises (non-SOE) managerial stock-ownership is important. Cheng et al. (2022) find that the presence of foreign institutional investors controls the incidence excessive executive compensation and results in better pay-performance sensitivity among Chinese firms.

Adithipyangkul and Leung (2015) undertook research to study the determinants of the compensation for independent directors in China and found that, in line with other market economies, independent directors in China are also compensated both for the human⁸ and social⁹ capital. Further, the legal institutional environment and the ownership structure also have an influence on the level of independent directors' pay. For instance, human capital is rewarded more in privately owned Chinese firms, whereas among local government units, social capital is considered more valuable. Also, independent directors' pay is less in corporations owned by local government units and their pay in such units is lower still if the unit is in a region with well-developed legal institutions. In a similar study, Chen and Keefe (2018) argue that in China, given the concentrated share ownership of listed corporations, the chief governance conflict is between the large and minority shareholders. Thus, directors' compensation in China should be structured to mitigate this conflict. Given the high degree of ownership concentration in China, large shareholders have significant influence over directors' pay, which may render directors' compensation ineffective in meeting the above stated objective. However, according to the results of their research, directors' compensation increases with an increase in the shareholding of

⁸ Education, effort, and professional expertise.

⁹ Connections.

the ultimate controlling shareholder, implying that ultimate controlling shareholders can attract more experts and high-rank bureaucrats to the board by offering higher compensation. Further, directors' compensation in China increases with tenure and directors' busyness¹⁰, while directors' compensation is lower in state-owned companies (SOE). It may be noted that in China, executive compensation in SOEs is regulated by the Government via a series of regulations, since 2004, which prescribe the 'maximum level of top executives' compensation with reference to the average salary of employees' (Su et al., 2020, p.563). However, such government say-on-pay has detrimental effect on corporate risk taking and consequently on firm performance in China. Further, such restriction on pay is more detrimental, if the firm is in its growth stage wherein risk taking is vital for progress (Su et al., 2020). Jin et al. (2022) view CEO compensation in China from the lens of culture. They argue that Confucian culture in China results in lower CEO pay, widened gender pay gap, and narrow CEO pay gap (gap between pay of the CEO and other members of management) in China. They also find that Confucian culture based restriction on executive compensation reduces pay-performance sensitivity, reduces risk-taking among firms, and results in weaker pay incentives. However, such restrictions mitigate agency issues and reduce on-the-job consumption of managers.

2.4.2 Executive/ directors' compensation in the US

In the US between 1993 and 2001 there was extensive use of stock options. In fact, by 1999 stock and option-based compensation accounted for more than 50% of the outside directors' compensation in the 200 largest US corporations (Cordeiro et al., 2000). However, that trend changed from 2002 onwards, and from 2002 to 2009, there was widespread use of restricted stock, a shift away from the erstwhile use of stock options. The financial crisis of 2009 brought about more stringent reporting requirements with respect to executive compensation. The Dodd–Frank Act (2010) further reformed executive compensation in the US with provisions such as giving shareholders the right to approve executive compensation via a non-binding vote; clawback of payments made to executives in case of restatement of financial

¹⁰ Measured by the number of directorships held at the same time.

statements; and additional disclosures with respect to executive compensation. These changes can be traced back into the accounting rules, corporate governance practices, disclosure requirements, economic conditions, legislation, political climate, and tax policies prevalent in the US during those times. Thus, the US has, in some sense, witnessed a transition wherein restricted stock is preferred and options tend to have performance-vesting provisions. Further, performance shares are preferred over options (Conyon et. al, 2013).

Similarly, Conyon (2014) finds that in the US, restricted stock has gained more significance. Also, executive pay in the US continues to have equity incentives in significant portions and stock options continue to be an essential element of pay packages. Ryan and Wiggins (2004), in a study of board compensation for directors in the US, find that corporations that have BoDs with more independent directors, compensate directors with more equity-based pay. Conversely, corporations with more insiders on the BoD use equity-based compensation less. Farrell et al. (2008) document a trend towards the use of fixed value equity¹¹ compensation in the compensation plan of directors in the US, whereas Hambrick and Jackson (2000) report that top performing companies in the US tend to have directors with substantial equity holdings in those companies, and the companies that lag have insignificant equity stakes held by the directors.

Thus, from the discussions in the foregoing sections, it can be concluded that the governance mechanisms across the various corporate governance models are different, and these differences also have a bearing on the structuring of compensation packages of executives and directors. For instance, Mallin et al. (2015) researched the difference in corporate governance practices with respect to directors' pay and found that the use of performance-based pay for independent non-executive directors was limited in the UK and Italy (in line with their corporate governance codes), whilst the use of such compensation was more common in the US. The British and Italian codes of CG consider performance-linked compensation as detrimental to the independence of the directors, whereas the US considers such pay as a measure to reduce the agency

¹¹ 'Fixed-value equity is the value of stock and options that were awarded in explicit dollar amounts' (Farrell, Friesen & Hersch, 2008, p. 156).

conflict between the independent directors and the shareholders. The study also found differences in the quantum of independent directors' pay in the UK and Italy with the compensation paid in the UK being higher than that paid in Italy. This difference in pay was attributed to the difference in the risks assumed by the independent directors in the two countries, the US influence on the UK corporations, and higher personal liabilities of the directors in the UK.

2.5 Compensation and its role as a corporate governance mechanism

Compensation is regarded as one of the tools for aligning the interests of the agents and the principals. According to Zalewska (2014), a possible solution to the principal–agent conflict is to design the monetary incentives of the agents in such a manner that the agents'/managers' and principals' interests are aligned, and the agents voluntarily act as though they were the principals.

Collins et al. (2015) find strong linkages between equity-based compensation and firm performance. With respect to governance variables, they find that larger boards are associated with higher executive pay, suggesting that large boards signify governance weakness as manifested in poor decision making, managerial monitoring, and communication. Also, high leverage and institutional ownership are linked to lower compensation, alluding to the role played by creditors and institutional owners in reducing the agency problems through enhanced monitoring of the management. Contrarily, McConvill (2006) argues against compensation, specifically pay for performance, as a remedy for agency problems. The study claims that the reliance on compensation is misguided because it lacks understanding of human behaviour and motivation. Monetary reward is not the only tool to converge the diverse interests of the principals and the agents, as psychological and social factors such as authority, cognitive dissonance, friendship, and team spirit also have roles to play. Further, at the senior level, executives regard their work as a calling¹² wherein work becomes a passionate commitment and thereby the primary source of motivation. Another angle

¹² calling' (or vocation) is a passionate commitment to work for its own sake (McConvill, 2006, p. 422)

to this debate is the stewardship theory, which contends that an individual's motivation is driven by self-actualisation rather than by economic considerations.

Balsam et al. (2017) find that related party transactions (RPTs) signify weak governance, as the RPTs of outside directors are significantly and positively related to CEO compensation. Further, RPTs are more likely in bigger corporations or in corporations with larger boards or in corporations with a low proportion of busy directors, and a high proportion of inside directors. According to He (2008), use of incentives for aligning the divergent interests may not always be effective, as managers possess different intrinsic characteristics and attributes. For instance, in the case of founder managers, delegation works better than control. Also, founder CEOs yield better in terms of firm performance and are cheaper in terms of compensation compared with professional CEOs. Work by Core et al. (1999) also relates governance with determination of compensation. They find that weaker governance results in greater agency problems, which translates into higher executive compensation. As per the above, of key significance are corporate governance measures related to BoD, and ownership structures. If the chairman of the BoD and the CEO is the same individual, and the outside/independent directors, who make up a large percentage of the BoD, are appointed by the CEO, then CEO compensation tends to be high. On the ownership front, CEO compensation declines with the increase in the CEO's ownership stake and with the presence of an external investor who holds at least 5% of the equity. Durongkadej et al. (2021) examine the impact of vega (one of the two incentive effects of option compensation which reduces risk aversion) on securities litigation and find that option vega is positively related to litigation risk.

2.5.1 Compensation and agency theory

The agency model has been widely acclaimed to be a solution to the agency conflict and proposes to design compensation packages in such a way that they incentivise the managers to choose and implement those actions that will enhance shareholders' wealth. This is achieved by aligning the goals of the shareholders and the managers. The managers thereby evaluate every action from the point of view of aligning social and private costs with benefits of the action, rather than from a point of view based

on the private benefits and costs, to the managers, of pursuing an activity (Jensen & Murphy, 1990). Murphy (1985) finds evidence in support of the agency theory and claims that managerial compensation is strongly positively linked to shareholder wealth creation. Benito and Conyon (1999) also establish a positive relationship between shareholders' return and directors' pay. However, they use only cash compensation in their research, thereby ignoring other pay sources like share options and warrants, which could affect the results of their study.

However, there is no conclusive stand on the positive linkage between compensation and shareholder wealth, as there is research also to counter the above assertion. Gregg et al. (1993) reported a weak relationship between directors' compensation and company performance in terms of dividend and share price return. However, they find high correlation between directors' compensation and company growth in terms of increase in sales. Rosen (1990) also found evidence of top executive salaries being an increasing function of sales rather than profits. He attributes this phenomenon to the concept of 'scarcity rents', which the top executives earn due to their talent and abilities even in absence of agency conflicts.

Despite the inconclusive evidence with regard to the linkage between compensation and value creation, stock options have been increasingly used as a tool to incentivise executives/directors and to align their interests with that of the corporation.

Liu and Sickles (2021) examine the association between CEO incentive pay and managerial efficiency among the 50 largest commercial banks in the US. They report that managerial efficiency is negatively associated with incentive pay. Thus, large bank size does not justify large bonuses, as large banks are associated with lower managerial efficiency and declining economies of scale.

Liu et al. (2020) find that adoption of clawback provisions in the executives' compensation contracts results in lower risk taking, as evidenced in significant decline in leverage and capital investments, among listed US firms. Further, such decline in risk-taking is higher in firms with Big 4 auditors highlighting the role of big 4 audit firms as an effective mechanism for external corporate governance. Trinh and Seetaram (2022) examine whether top management compensation in the travel and leisure

industry in the US is associated with higher likelihood of survival. The results lend support to agency theory and indicate that high top management compensation is associated with low bankruptcy risk owing to higher retained earnings. Tosun (2020) look into the effect of monitoring by institutional investors on CEO compensation. The study finds that increase in shareholding by large institutional investors results in decrease in cash pay, bonus, option pay, stock pay, and total pay whereas increase in shareholding by small institutional investors results in decrease in deferred pay, pension, stock incentives, and long-term incentive compensation. Further, the negative impact of institutional investor monitoring on CEO compensation is more pronounced in corporates with weak corporate governance.

2.5.2 Directors' compensation and corporate governance

Directors are a vital corporate governance mechanism as they play the critical role of appointing and monitoring a firm's management, and of offering it strategic advice. However, the directors have been delegated these duties by the shareholders and hence they are delegated monitors. This gives rise to issues with respect to agency, and shareholders have to trade-off between control and incentives for directors. Given the limited scope for monitoring the directors, incentives play a significant role in aligning the interests of the directors and the shareholders, thereby making directors' compensation an important corporate governance tool (Andreas et al., 2012).

As per Talha et al. (2009), the CG process should embrace directors' compensation, as mishandling of this could have a damaging effect on the morale of employees and on the reputation of a corporation. At the same time, the make-up and the level of compensation should be such that a corporation is able to attract and retain the directors needed to run the company.

As per Jensen et al. (2004, p. 22) '[...] corporate governance and remuneration policies are highly inter-related: bad governance can easily lead to value-destroying pay practices, and many notorious excesses in pay can be traced to poor governance'. This implies that the agency conflict arising out of the separation between the management and ownership can be mitigated by designing incentive structures for directors in such a manner that they align the interests of the directors and the shareholders. However,

directors' compensation can solve as well as aggravate the agency conflict. Therefore, other corporate governance mechanisms such as compensation committees, shareholders' approval of directors' compensation including stock-based incentive plans, disclosure of directors' compensation, and well-defined maximum lengths of service for directors, etc. may be required.

Several studies have been undertaken to study the packaging of directors' compensation as a governance mechanism. Jensen (1993) advocates the use of equity stakes in corporations as a tool for providing better incentives to outside directors. However, Nahar Abdullah (2006) found that directors' compensation is negatively related to independence of the BoD and to non-executive directors' ownership.

With respect to determination of directors' compensation, Van Der Zahn et al. (2005) studied the presence of the remuneration committee and its impact on executive directors' cash-based bonus pay and found that the remuneration committee, whose members' interests are more closely aligned to those of the shareholders, are more amenable to linking intellectual capital performance and executive directors' compensation. Conyon (1997) also found some evidence of influence of corporate governance policies like remuneration committees on directors' remuneration. However, as per the study, the separation of the roles of the CEO and chairman of the Board had little impact on compensation determination.

In contrast to the above, Benito and Conyon (1999) did not find any significant influence of corporate governance policies on the determination of directors' pay. Further, as per their study there is a positive relationship between directors' pay and shareholders' returns, and between directors' pay and company size. However, a key limitation of the study is that it used just the cash pay. The results may differ if total compensation is considered.

With respect to directors' stock ownership, Bhagat and Bolton (2008) regarded it as an important governance mechanism. They found that directors' median stock ownership, measured in dollars, and operating performance are positively related. However, it is to be noted that they do not include stock options in their assessment of stock ownership by directors. On the other hand, Hambrick and Jackson (2000) in

their research on directors' shareholding and company performance reported that top performing companies tend to have directors with substantial equity holdings in those companies, whereas the companies which lagged had insignificant equity stakes held by the directors. These small holdings resulted in passive governance by the directors, which further led to dismal company performance resulting in a further unwillingness among directors to buy more stakes in the company, thereby creating a vicious cycle. However, Bhagat and Tookes (2012) reported that the nature of director ownership plays a role in determining firm performance, and found that mandatory stock holding by directors is unrelated to operating performance, whereas voluntary holdings are significantly and positively related to future company performance.

Contrary to the expectation, in a study Kosnik (1987) found that outside directors' equity interests in the corporation are not a motivating factor in influencing directors' resistance of greenmail¹³ payments. Kosnik used greenmail payments as a proxy for signifying ineffectiveness of the BoD. Greenmail payments are at odds with the interest of the shareholders as these payments are discriminatory and have an adverse impact on the wealth of shareholders who are not part of the greenmail. Hence, BoDs that prevent the management from making greenmail payments are considered to be more effective. The results of the study indicate that BoDs comprising more directors who are outsiders, or who are professionally qualified or with executive experience, are found to be more effective in resisting greenmail payments. Further, as per the study, outside directors' equity interests do not motivate directors to resist greenmail payments. The plausible explanation for this could be the small size of equity ownership of outside directors in the sample under study.

However, in a further study, Kosnik (1990) found that the resistance to greenmail payments by the BoD is more likely when the outside directors' stock ownership is greater in proportion to their cash compensation and the top management has low stock ownership compared to its cash compensation. This implies that, in line with the agency theory, the outside directors pursue shareholders' interests when they are aligned with their own interests. Further, companies with outside dominated directors

¹³ Private repurchase of shares by a company from a minority shareholder at a premium over and above the prevailing market price.

on the BoD or with remuneration committees with a larger proportion of outside directors tend to have greater alignment between firm performance and top management pay (Conyon & Peck, 1998).

Nguyen (2014) found that firms with more active boards and committees tend to pay their directors for attending board and committee meetings. Also, more active committees/boards are paid more. Linn and Park (2005) found evidence of higher total compensation being paid to outside directors by corporations with more investment opportunities as opposed to corporations with fewer such opportunities. Further, corporations (with more investment opportunities) rely more heavily on stock than cash to compensate their directors. Also, outside directors' compensation increases with firm size. Deutsch et al. (2007, p. 49) suggest that 'outside directors should also themselves be regarded as agents rather than mere stewards, monitors, or information channels for shareholders'. Thus, they suggest a dual agency model for corporate governance as per which incentives of outside directors should also be aligned to shareholder value creation. In fact, Yermack (2004), in a study of Fortune 500 firms from 1994 to 1996 (with more than 700 directors), found evidence of personal financial gain for outside directors with the increase in the market capitalisation of a corporation.

Yetman (2022) examine directors' compensation and their effectiveness in monitoring function in the back drop of private charitable foundations. The analysis reveals that foundations that compensate their directors donate less to public charities as compared to foundations that do not compensate their directors. In terms of foundation performance, the study does not report any significant association between directors' compensation and investment returns implying that compensated directors are either not involved in investment decisions of the foundations or are not better than their volunteering counterparts in investing foundations' assets.

Melis and Rombi (2021) provide insights into how the agency theory and institutional theory are intertwined into corporate governance practices and independent directors' compensation. According to them, country level variations in the design of independent directors' compensation are due to country level differences in

institutional characteristics. Further, agency relationships also vary according to director liabilities which in turn are dependent upon the institutional environment. Thus, the institutional characteristics at the country level, and the agency relationships at the director and firm level explain the variations in independent directors' compensation. On the other hand, Burns et al. (2021) find that independent directors in corrupt countries get higher compensation which reflects extra pay for the additional effort required to reduce the negative effects of corruption. According to the results of this study, one standard deviation increase in corruption results in 38% increase in independent directors' median pay. Further, the institutional setting/framework also has an impact on independent directors' compensation. For instance: in developed countries, director pay, and director liability and disclosure are positively related implying that disclosure and liability laws are more effectively applied in developed countries which leads to greater effort on part of the directors and hence higher director pay.

2.5.3 Types of compensation packages

Directors' compensation generally comprises basic salary and other non-monetary or monetary benefits paid to the directors during their tenure. Common constituents of directors' compensation are cash, stocks, stock options, pension, non-equity incentives, retainer fees, and meeting fees (Nguyen, 2014; Cordeiro et al., 2000).

Incentives generally include shares, bonuses, and options (Zalewska, 2014). Further, though bonuses can be linked to accounting performance, the value of option grants and shares is dependent on the strike price of the option and the share price, respectively. Lazar et al. (2014) state that for non-executive directors, the compensation package should include a function-oriented component, a fixed component, and a performance-linked component.

The use of stock options in compensation packages has gained a lot of attention from the academic world. Hence, it warrants greater attention, and hence the efficacy of use of stock options is discussed in greater detail below.

2.5.4 The efficacy of stock-based compensation including stock options

Academic parlance regards corporate governance to be concerned with the alignment of divergent interests and bringing about desirable actions on the part of the key actors of a corporation. To achieve this objective, chief elements of any corporate governance system are identified to include the BoD, shareholding voting rights, shareholder meetings, and executive compensation. Outside directors who are independent, block shareholding, and the use of stock options to compensate executives are regarded as the key tenets of good corporate governance. However, given the historical cases of corporate scandals such as Enron, WorldCom, etc., the erstwhile CG mechanisms including stock-option-based compensation have come under considerable scrutiny (Bhagal et al., 2008).

There are two key theories with respect to the use of stock options for remunerating directors/executives. According to the optimal contracting theory, linking directors' compensation to corporate performance incentivises directors to work hard to maximise the firm's value. On the other hand, the managerial power theory postulates that issuing options to directors aggravates the agency problem and encourages them to manage earnings (Seamer & Melia, 2015).

Empirical research is divided on its view with respect to the use of stock options in compensation plans. Some researchers find evidence of a positive relationship between the grant of options and the maximisation of value of the firm, whilst others argue otherwise.

Brickley et al. (1985) find that on average, long-range compensation plans for management, which may include phantom stock, stock options, performance plans, stock appreciation rights, and restricted stock, result in an increase in shareholders' wealth. They argue further that there is no difference in the market reaction to different types of long-range compensation plans, implying that no single compensation package dominates, and firms design these packages depending upon the tax situation and incentive effects (alignment of shareholder and managerial interests) they face. In similar research, Lewellen et al. (1989) take up the issue of mergers that are ostensibly aimed at reducing the risk faced by the firm but are

instrumental in reducing the risk to the personal wealth of the management, especially when the managers own large stakes in the corporation. Contrary to the general belief, their research finds no such evidence. Further, managers may in fact be deterred, by the possibility of loss to their personal wealth, from taking poor decisions with respect to mergers. Hanlon et al. (2003) also support the grant of stock options based on the results of their research. According to them, stock options result in reducing the problem of moral hazards that stems from the top management having a very low stake/ownership in the corporation. In fact, stock options generate positive payoffs in future operating income, and the relation between future operating income and value of options is concave (i.e. increasing at a decreasing rate). Further, they find no evidence of rent extraction, i.e. compensation in excess of the level considered optimal from the perspective of shareholders' interest, being pursued by the top management. Similarly, Oswald and Jahera (1991) report a positive relationship between firm performance (measured by return on stocks) and the level of inside stock ownership (i.e. stock ownership by officers and directors). They thus conclude that giving equity stake is instrumental in fostering long-term growth of corporations. Lin et al. (2011) also find evidence to support the above assertion and claim that pay-for-performance models are effective in Taiwanese high-tech businesses. Similarly, Bolton (2014) studies the impact of stock ownership by audit committee members on firm performance, and concludes that firms in which stock ownership by audit committees is increased have a significant increase in their operating performance, and this result sustains irrespective of the level of independence of the audit committee. Ryan and Wiggins (2004) find evidence that corporations with more outside directors give more equity-based compensation to their directors.

On the contrary, Aboody and Kasznik (2000) disagree with the grant of stock options and argue that CEOs make opportunistic decisions by timing the voluntary disclosures in a manner which maximises the value of their stock options. They argue that since the exercise price of the stock options is fixed and equal to the stock price on the date of award of the option, CEOs delay good news and rush in bad news around the date of the stock option award. Likewise, Yermack (1997) argue that managers use stock options to serve their self-interest by using them as a means to capitalise on the

expected positive movements in share price in response to operating improvements. This is achieved by having more performance-related pay being awarded to themselves in the wake of the imminent betterment in company performance. Adding to the above viewpoint, Bebchuk et al. (2002) argue that managers wield significant influence over the design process of their compensation packages and can thus extract rents (by receiving pay in excess of the level which is optimal for shareholders) by using stock options along with the freedom to unwind incentives and the freedom to choose the timing of unwinding. However, their need to camouflage the rents may result in inefficient compensation packages, which have an adverse impact on shareholder value. Goldman and Sleazak (2006), on the other hand, define stock-based compensation as a double-edged sword that, while inducing productive effort on part of the managers, thereby increasing shareholder value, may also result in the divergence of resources to manipulate firm performance, which reduces shareholder value. Firms with stock-option based compensation to audit committee members have been found to have weak internal control systems (Cullina et al., 2010). In view of Greenspan (2002), "Too many corporate executives sought ways to 'harvest' some of those stock market gains. As a result, the highly desirable spread of shareholding and options among business managers perversely created incentives to artificially inflate reported earnings in order to keep stock prices high and rising. This outcome suggests that the options were poorly structured, and, consequently, they failed to properly align the long-term interests of shareholders and managers, the paradigm so essential for effective corporate governance. The incentives they created overcame the good judgment of too many corporate managers. It is not that humans have become any more greedy than in generations past. It is that the avenues to express greed had grown so enormously".

Rose et al. (2013) also find evidence in support of management of earnings and state that stock ownership can affect the objectivity and independence of the directors. However, such myopic behaviour focussed on boosting share prices can be put into check by increasing the transparency of boardroom discussions. Similar results were reported by Boumosleh (2009) who found that giving stock option grants to directors

incentivise them to make compromises on their task with respect to the monitoring of financial information, which may translate into favourable financial reporting.

Use of stock-based compensation has also been related to higher risk-taking by managers. Rajgopal and Shevlin (2002) find empirical evidence that stock options incentivise managers to invest in risky projects. However, a key limitation of this study is that it uses data from a single industry – oil and gas exploration. Smith and Stulz (1985) provide further evidence to support the assertion with respect to risk behaviour by looking at the hedging behaviour of corporations. As per their study, option-like features in the compensation packages make a manager's income a convex function of the firm value and thus make the manager a risk seeker. Hence, the manager would be better off by hedging less. Similar results are reported by Deutsch et al. (2011) and as per their findings stock-option based compensation schemes for directors increase firm-level risk taking. Ryan and Wiggins (2001) argue that the investment opportunities and monitoring mechanisms influence the use of stock-based compensation. According to their study, options are used more in case of monitoring difficulties, whereas block holder and CEO ownership lead to less use of options. Similarly, risky investments result in more use of options and a decline in the use of restricted stock and cash bonuses, implying that corporations use options to encourage risk-taking by managers.

A contrasting view is that linking compensation to performance may make an executive risk-averse by nature, thus making the executives short-term-performance oriented and leading them to overlook long-term strategic objectives.

Bruce and Buck (2005) argue that innovative/complex executive compensation instruments, including long-term incentive plans (LTIPs) and executive stock options (ESOP), may be used by executives for extending their self-serving behaviour, as disclosure requirements have failed to keep up with the increasingly complex and innovative nature of executive pay packages. This view is also supported by Harris and Bromiley (2007), who argue that stock options provide a strong incentive to take actions that result in an increase in the value of the options granted and such actions may also encompass impropriety such as financial misrepresentation. The non-linear

effect of options (which results in massive gains if the stock price is above the strike price, and no gain if the stock price is below the strike price) is one of the factors that influences financial representation. Further, this effect is more accentuated for corporations that offer very high percentages of the compensation in the form of options.

With respect to stock-based compensation for directors, Dalton and Daily (2001) argue against the grant of stock-based and option-based compensation for directors. They contend that such compensation creates an inherent conflict of interest and may compromise the independence of the directors, as BoDs may set their own compensation packages. Further, there could be conflicts of interests on account of 'setting option performance targets, stock buybacks, stock option resets and reloads, consolidations (mergers and acquisitions), and service on multiple boards', which may not be in the interest of the shareholders (Dalton & Daily, 2001, p. 89). They take the case of auditors and attorneys and argue that these two parties are prohibited from owning shares in clients that they serve, as such stock ownership may compromise their independence. Further, even if one is to argue that stock-based/option-based compensation to directors is given post shareholder approval, they contend that ways and means could be devised to circumvent this approval. Thus, on fiduciary and ethical grounds, stock-based/option-based compensation to directors should be used with caution. Additionally, equity-based compensation for directors may cause them to lose their objectivity and may motivate them to adopt a short-term perspective, as they would focus on the present worth of their equity holdings rather than on its worth in the long run (Daily & Dalton, 2002). In a similar vein, Crutchley and Minnick (2012) argue that high incentive pay (stocks and options), which is actually designed to align the interests of directors and shareholders, leads to greater incidence of shareholder lawsuits against directors, alleging poor director oversight. This implies that excessive use of incentive pay in directors' compensation packages may distort the shareholder–director agency relationship. On the other hand, Deutsch et al. (2011) find that stock-option-based compensation schemes for directors increases firm-level risk taking.

Gerety et al. (2001) also conclude that incentive pay plans for directors are ineffective and hence less likely to be beneficial to shareholders, especially if such incentive pay

to directors is given by corporations where the CEO is involved in director selection and the corporation has no nomination committee. In the absence of a nomination committee, the incentive pay plans are issued at terms more favourable to the directors and the stock market reacts negatively to such incentive plan announcements. Option-based compensation to outside directors has also been found to impede their independence. Byard and Li (2004) find evidence of timing opportunism¹⁴ by CEOs, implying a failure of directors in their monitoring function. As per the findings, directors who receive lower option-based pay are better enabled to control CEOs' timing opportunism.

Cullinan et al. (2008) argue that when granted to directors, stock options (which are generally used to compensate the management) result in a mutuality of interest between directors and the management as against an alignment of interests between the directors and the shareholders. They find evidence of impairment in the objectivity and independence of outside directors when they are compensated with option-based pay. Further, outside directors who meet the definition of independence as per the Sarbanes–Oxley Act (2002) and have no option-based compensation are more effective in overseeing the management and thereby preventing revenue misstatements. Another critical view on stock-option-based compensation for directors is presented by Minnick and Zhao (2009). According to them, corporations that grant more options to their directors are more likely to backdate them. They further argue that it is likely that the directors derive personal benefit from such option-backdating exercises.

Despite the overwhelming amount of research opposing option-based pay to directors, there is some research that supports the grant of options to directors. For instance, Perry (2000) supports the contention that stock-based incentive plans for directors align their interests with those of the shareholders. According to his research, incentive pay for directors has a positive impact on their monitoring of the management. This is evident in the higher incidence of CEO turnover following poor performance in

¹⁴ Timing opportunism means co-ordination of two decisions – CEOs' decision on the timing of release of corporate news and compensation committees' decision on the dates of option grants to the CEOs.

corporations that grant option-based pay to their directors. Fich and Shivdasani (2005) argue that option-based compensation to outside directors is value accretive to corporations and this is evident in the positive association between stock-option plans for directors and the market-to-book ratio, the upward revision in annual EPS forecasts by analysts in the year of adoption of incentive pay for outside directors, and the positive investor reaction on first announcement of such pay by corporations.

2.6 Financial statement fraud

2.6.1 Introduction

Financial statement fraud (FSF) distorts the financial worth and the monetary position of a corporation and its repercussions are harmful both economically and socially. As per Hogan et al. (2008), FSF is a cause of concern for shareholders and investors due to its adverse consequences on the market value and the existence of a corporation. As per estimates, 30 high-profile financial scandals in the US from 1997 to 2004 resulted in market capitalisation loss of ~USD 900.0 billion, representing a 77% decline in the market capitalisation of these firms. In some cases, FSF results in a drop in the market capitalisation of the fraudulent firm by as much as 500 times the amount of the fraud (Albrecht et al., 2008). These statistics make it imperative to understand what FSF entails before delving further into the domain of FSF.

Margret and Peck (2015, p. 1) define FSF as 'An act of deliberate deceit that results in a misleading representation, material misstatement or intended exclusion in a business entity's financial accounts. The deception is committed with the intent to mislead shareholders and other stakeholders about the financial state of the business entity. The fraud may misleadingly relate financial circumstances, or an otherwise non-financial material fact'.

On the other hand, the National Commission on Fraudulent Financial Reporting defines FSF as: 'intentional or reckless conduct, whether act or omission, that results in materially misleading financial statements... It may entail gross and deliberate distortion of corporate records... It may entail the misapplication of accounting principles. Company employees at any level may be involved, from top to middle

management to lower-level personnel' (National Commission on Fraudulent Financial Reporting, 1987, p.2).

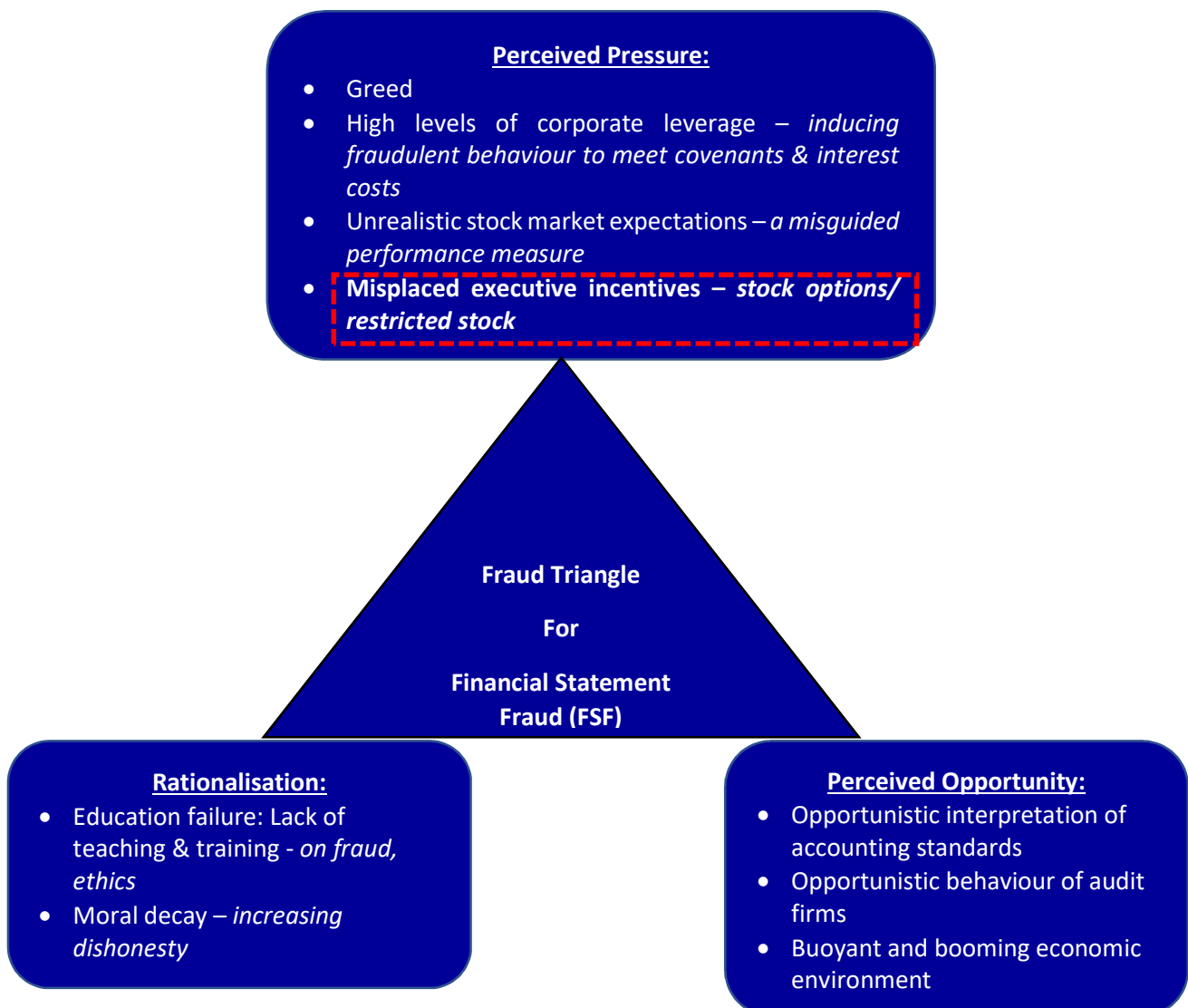
Having defined FSF, one needs to understand why FSF is committed. In this regard, several attempts have been made to understand the occurrence of FSF by using theoretical frameworks. An important theory in this regard is the theory of the fraud triangle. Other theoretical frameworks have also attempted to explain the incidence of fraud. Some of these theories are discussed in the following section.

2.6.2 Financial statement fraud and theories of crime

The theory of fraud triangle

The theory of fraud triangle has been widely used to explain the incidence of financial statement fraud. Margret and Peck (2014) state that FSF can occur when the perpetrators of fraud are under perceived pressure, when the perpetrators can rationalise the fraud, and when there is an opportunity to commit the fraud. In a similar vein, Albrecht et al. (2004) identify nine elements to define the fraud triangle with respect to FSF. They argue that when agency-based rewards (aligning the interests of agents and principals by using instruments like restricted stock, stock options, etc.) are combined with a stewardship-based corporate structure (marked with high levels of trust and empowerment) along with behavioural attitudes of the management which are ingrained in agency theory (i.e. behaviour driven by short-term focus and personal interest irrespective of long-term impact on the corporation), then the likelihood of occurrence of FSF is high. **Figure 2** provides the theoretical framework devised by Albrecht et al. (2004) to explain FSF.

Figure 2: Fraud triangle with respect to FSF as proposed by Albrecht et al. (2004)



As is evident from **Figure 2**, misplaced incentives can motivate or pressurise executives into committing fraud. Directors' are regarded as the 'top-level court of appeals' (Fama & Jensen, 1983, p. 314), hence the compensation of the directors assumes a high level of significance. Thus, it is vital to understand if the compensation structure of directors' pay packages (including stock options or performance-linked compensation) encourages directors to connive to commit FSF.

Analysis of each of the three prongs of the fraud triangle has been a focus of academic research aimed at explaining FSF. With regard to the incentives and pressures for FSF, Dechow et al. (1996) identify low-cost external funding as the chief reason/pressure

which may induce one to undertake FSF. Efendi et al. (2007) look at the stock options granted to CEOs and report that money stock options, held by CEOs, could be another incentive for FSF. Similarly, Burns and Kedia (2006, p. 40) find that stock options provide a strong incentive for FSF, as these make CEOs' 'wealth a convex function of the stock price', which limits the downside risk (for the CEOs) of the detection of FSF. Rosner (2003) finds that failing firms are motivated to manipulate their earnings to conceal their distress. Trompeter et al. (2014) further add to the list of incentives and pressures based on extant research and identify additional factors such as the timing of management stock sale; stress; social status; and personality traits such as conceit, excessive risk-seeking, and extroversion.

With respect to opportunities for FSF, weakness in corporate governance has often been regarded as one of the catalysts for the occurrence of fraud. For instance, Dechow et al. (1996) link weak governance with the manipulation of earnings. In their study on US corporations, they identify weakness in governance structures to include absence of an audit committee, the CEO acting as the chairman of the BoD, insiders dominating the BoD, and absence of monitoring of the management by an external block holder. Likewise, Farber (2005) finds that firms that have committed fraud have poor governance structures/mechanisms compared to firms which have not committed any fraud. The study identifies weak governance factors such as less representation of outside directors on the BoD, fewer audit committee meetings, less representation of financial experts in audit committees, less use of Big-4 consulting firms as auditors, and CEO duality. Similarly, McMullen and Raghunandan (1996) compare fraud and no-fraud firms to check the effectiveness of audit committees. They find that a greater percentage of non-fraud corporations have audit committees made solely from outside directors. Further, a large proportion of no-fraud corporations have at least one CPA on the audit committee as compared to fraud firms. Lastly, a greater percentage of no-fraud firms have audit committee meetings at least three times per year, as compared to corporations afflicted by fraud. Abbott et al. (2004) contrast the characteristics of audit committees across fraud and no-fraud firms. They find that the independence and activity level of audit committees, and the financial expertise of the members of the audit committee are both negatively related to the incidence of fraud,

i.e. the more independent and more active an audit committee is, the less likely it is for fraud to occur. On the other hand, Loebbecke et al. (1989), using the survey approach, collected evidence from audit partners of an accounting firm. Their results reveal that weak internal controls and management-dominated decisions are the two main factors prevalent in cases of firms that commit fraud.

Research has also been conducted from the perspective of characteristics of the BoD and its impact on the occurrence of fraud. Beasley (1996) studies the composition of the BoD and its impact on FSF. Their results suggest that no-fraud firms have a higher proportion of outside directors on their BoD as compared to fraud firms. Further, the composition of the BoD is significant in reducing the occurrence of fraud as compared to the existence of and/or the composition of audit committees. Additionally, the probability of occurrence of FSF decreases with an increase in stock ownership by outside directors, an increase in directors' tenure on the BoD, a decrease in the number of directorships held by outside directors, and a decrease in size of the BoD.

Similar evidence is reported by Efendi et al. (2007), who find that misstatements in financial statements are more probable for corporations where the CEO is the chairman of the BoD, new equity or debt funding is raised, or there are constraints with respect to debt covenants. Johnson et al. (2009) also find evidence of insiders dominating the BoD of fraud firms.

Albrecht et al. (2008) state that the perpetrator of FSF may face perceived pressures on account of a personal financial need or due to executive compensation plan structures. There could be non-financial pressures in terms of meeting analyst expectations, or meeting expectations of the competition, or the need to beat the system, or even frustration from work or fear of losing a corporate position. Perceived opportunity may arise due to the perpetrator's belief that he/she will not be caught, or even if they are caught, that there will be no serious repercussions. Other avenues giving rise to opportunities for committing FSF include lack of external monitoring and oversight by auditors (due to conflicts of interest on account of auditors' ulterior motive of providing other services to the same client); lax internal monitoring and control; complex companies/divisions/corporate structures; rule-based accounting

structures; and related party transactions. Finally, common rationalisations of the fraudulent behaviour could include that the fraud is temporary, or it is good for the corporation; there is no other option; no one is being hurt; or it is for a good purpose. Alternatively, a sheer lack of ethics, tone at the top/organisational culture or environment, or a personal need to succeed may motivate FSF.

Some of the other reasons for perpetrating FSF may include the desire/need to raise low-cost external financing (Dechow et al., 1996); high leverage (Ghafoor et al., 2019); and poor performance on account of losses/decrease in earnings (Burgstahler & Dichev, 1997; Degeorge et al., 1999).

The fraud triangle framework (FTF) has been widely applied in academic research. Sakawa and Watanabel (2022) apply this framework to examine whether monitoring of firms by main banks, in Japan, can mitigate the agency problem. The study concludes that delegated monitoring by main banks reduces the likelihood of accounting fraud. The FTF has also been applied to understanding employees' computer fraud behaviour (Jiang, 2022), corruption in public procurement (Zulaikha et al., 2021), greenwashing¹⁵ behaviors and CSR reporting (He et al., 2022; Kurpierz and Smith, 2020), incidence of fraud in public sector in Solomon Islands (Malau et al., 2021), role of accounting information in pre-modern historical cases of financial fraud (Agostini et al., 2021), incidence of accounting manipulation in Vietnam (Nguyen et al., 2021), enabling selection of suitable FSF detection models (Gepp et al., 2021),

The triangle of fraud action

The triangle of fraud action provides a description of the actions that an individual has to perform in order to perpetrate the fraud. The theory identifies three elements – act, concealment, and conversion (refer to **Figure 3**). The **Act** is concerned with the methodology and the execution of the fraud. For instance, the Act could take the form of FSF, embezzlement, or cheque kiting, etc. **Concealment** deals with how the fraudulent act has been hidden. It could take the form of fake journal entries, destruction of files, or falsification of bank reconciliations, etc. Lastly, **Conversion** deals

¹⁵ misleading environmental communication

with the process of converting the ill-gotten gains into legitimate gains and it could include money laundering, buying cars, homes, etc. (Dorminey et al., 2012).

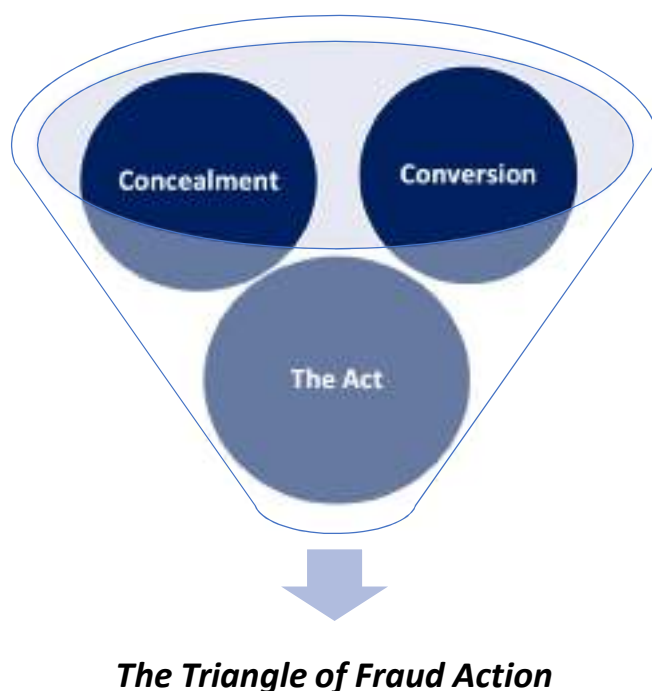


Figure 3: The triangle of fraud action

The acronym M.I.C.E.

This framework further delves into the pressure side of the fraud triangle theory by throwing some more light on motivations for committing fraud which may not necessarily be monetary. The Acronym MICE has been defined as **M = Money; I = Ideology; C = Coercion; E = Ego**. **Ideological** frauds may be related to tax evasion schemes, money laundering, or terrorism financing. **Coercion** happens in a situation wherein the perpetrator is not willing but is forced to commit the fraud. Most other frauds are related to **Money** and **Ego** such as Enron, WorldCom, and Bernie Madoff's ponzi scheme (Dorminey et al., 2012).

Economic framework for combating illegal activities – The rational choice theory

Becker (1968) proposes an economic framework for combating illegal behaviour and argues that the optimality condition for crime not to occur is when 'crime does not pay' i.e., when the probability of being caught and convicted increases, crime should

decrease. This is because crime is committed because the payoff from committing the crime exceeds the loss on account of being convicted and punished.

According to Cox et al. (2018), under the rational crime theory, criminals make a rational economic choice by weighing the perceived benefits against the perceived costs of committing a crime.

Johnson et al. (2009) find that Becker's framework holds true in the case of FSF and that 'unrestricted linear incentives' (comprising restricted and unrestricted stock) increase the likelihood of FSF.

2.6.3 The FSF challenge

FSF as a malady has continued to affect countries the world over, despite the heightened vigilance and improved corporate governance mechanisms. China and the US have also been chequered by several accounting scandals, some which have been discussed in this section.

Apart from the challenge with respect to the quantum of loss suffered by the stakeholders on account of FSF, other challenges with respect to FSF may include the non-detection of the fraud for a considerable period of time; unreliable financial statements; and undermining of the confidence in financial markets, which could translate into inefficient capital markets and higher risk premiums (Perols & Lougee, 2011). A major concern remains that the total loss on account of the FSF far exceeds the amount involved in the FSF, which calls into question the whole logic behind committing an accounting scandal.

The US has had its own share of FSFs, key among them being the FSF committed by American International Group, Inc. (AIG). Between December 2000 and March 2001, AIG entered into fraudulent reinsurance transactions with General Re Corporation with the intent of boosting its loss reserves by USD 500.0 million. The motivation behind the fraud was the eagerness to avoid criticism from analysts over AIG's declining reserves. Apart from this, AIG also entered into a number of other sham transactions, which resulted in material misstatement of its financial results. AIG paid close to USD 1.6 billion in fines and settlement (SEC, 2006).

China has also been chequered by FSF. TAL Education Group, an after-school tutoring company, had been alleged to have overstated its profits, fraudulently, since 2016 (Yu, 2018). Similarly, Sino-Forest Corp, a timber company, had been accused of inflating its revenue and assets by making fraudulent sales transactions to related parties (Hasselback, 2017).

2.7 Compensation, corporate governance, and FSF – The link

Linkages between compensation and corporate fraud (including earnings management, financial restatements, and financial statement fraud) have been explored in academic research for some time now, however the empirical results with respect to this association are mixed. For instance, Armstrong et al. (2010a) and Erickson et al. (2006) do not find any positive association between executives' equity incentives and fraud. On the other hand, Crutchley and Minnick (2012), Gerety et al. (2001), Dalton and Daily (2001), Harris and Bromiley (2007), Jiang et al. (2010), Ndofor et al. (2015), and Denis et al. (2006) all find a positive association between equity compensation and fraud. Brink et al. (2020) report that decision to undertake real earnings management is influenced by the structure of the compensation package of the executives and the personal incentives of their subordinates.

Directors act as delegated monitors on behalf of the shareholders (Andreas et al., 2012). Establishment of appropriate incentives to align their interests with those of the principals' is vital (Jensen & Meckling, 1976). Though there is ample research on earnings management/restatements/FSF and executive compensation, research specifically linking directors' compensation to FSF is rather sparse. In experimental research, Magilke et al. (2009) find that biased financial reporting is preferred if audit committee members (generally comprising directors/members of the BoD) are compensated with stock-based compensation. Further, aggressive reporting is preferred by audit committee members when they have current stock-based compensation as part of their compensation package.

Furthermore, though compensation packages have several elements, the use of stock options has gained a lot of attention. Hence, directors' compensation and the use of stock-based compensation for directors needs to be delved into in greater detail.

Another angle to this debate is the impact of corporate governance on the fraud. Weak governance has been found to be a propeller of fraud (Beasley, 1996; Agrawal & Chadha, 2005; Chen et al., 2006; Khanna et al., 2015). Gam et al. (2021) report that weak governance in the form of evasive shareholders' meeting is related to high likelihood of corporate fraud. Basing her conclusions on a detailed literature review, Kassem (2022) concludes that effective CG can help detect fraud, prevent fraud, and reduce fraud risk. Shi et al. (2020) report that a high level of state ownership/political governance has a negative influence on securities fraud. Broadstock and Chen (2021) report that private monitoring, in form of corporate site visits by stakeholders, reduces the incidence of corporate fraud. Choi et al. (2021a), regarding corporate fraud as a coordinated activity, report that internal corporate governance by the way of managerial dissent between the CEO and subordinate executives reduces corporate fraud. Sakawa and Watanabel (2022) conclude that delegated monitoring by main banks, in Japan, reduces the likelihood of accounting fraud and thereby strengthens business ethics/corporate governance in bank dominated economies. Li et al. (2021a) find that fraud firms with weak corporate governance use better/higher CSR (corporate social responsibility) performance to camouflage their misconduct. Yao et al. (2021) find that weak governance, as exhibited in weak internal supervision and more frequent decision errors which are characteristic of marital leadership, set up the stage for financial fraud by providing both motives and opportunity for frauds and further aggravates the agency issues between family shareholders (controlling) and external shareholders (minority). Assenso-Okofu et al. (2021) contend that strong corporate governance can moderate the positive relationship between CEO compensation and earnings management.

2.8 Research gap, questions and framework

It is evident from the above literature that academic research is divided upon the impact of executive compensation on governance and vice-versa. Further, though there have been several studies linking executive compensation to earnings management (O'Connor et al., 2006; Cheng & Warfield, 2005; Bergstresser & Philippon, 2006) and those linking corporate governance to prevention of earnings management (Romano & Guerrini, 2012; Beasley, 1996; Abbott et al., 2004; Cornett et

al., 2008), however empirical evidence which studies the linkage between directors' compensation (especially stock options) and FSF is sparse and such evidence in a comparative study of the world's two largest economies (the US and China) following two different governance models namely the US and Chinese (2CGM) is not available. The present research proposal seeks to bridge this gap and thereby enhance the understanding of the causal relationship between directors' compensation, corporate governance, and FSF. It is important to address this gap and to enhance the understanding of this issue due to the adverse implications of FSF. Coenen and ProQuest (2008) argue that FSF is the costliest kind of corporate fraud. Though FSF may be present in just 10% of the corporate fraud cases, its median cost can be as much as USD 2.0 million. The high cost and magnitude of FSF emanates from the fact that those who commit FSF tend to be in positions of power, generally senior level managers/executives, who have access to assets, information, and systems. Further, this access can be easily used by them to carry out the fraud. Furthermore, FSF, which is a deliberate crime, can cause excessive harm to the other stakeholders of a business such as auditors, bankers, creditors, investors, and pensioners. It erodes the confidence of the market participants in audited accounting statements. It also has an adverse impact on security prices and the cost of capital, as the market participants associate low quality of financial statements with high information risk. As per some estimates, FSF has caused losses of approximately USD 500.0 billion over the last few years (Rezaee, 2005). The actual loss may be even higher on two accounts – firstly, the figure of USD 500.0 billion is only for the US market and secondly, the estimate dates back to 2002 (Rezaee, 2005).

Thus, the main research question of this study is whether the quantum and structure of directors' compensation, under the 2CGM can induce the directors participate in FSF. Sub-research questions are:

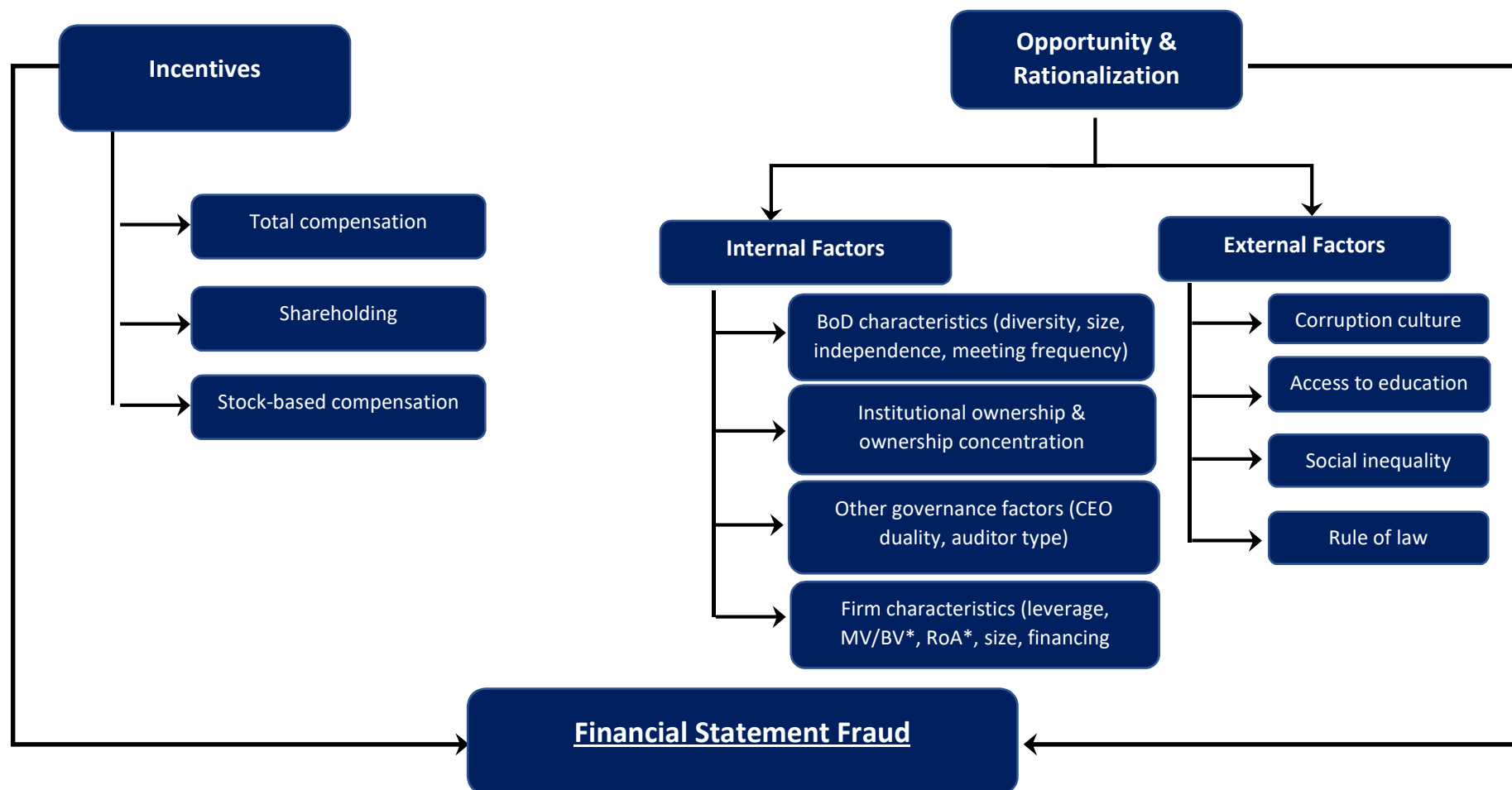
- a. Does the level of directors' stock ownership in the corporation influence FSF?
- b. Does the design of directors' compensation package such as the proportion of stock-based compensation affect FSF?
- c. Do BoD characteristics such as independence and diversity influence the incidence of FSF?

- d. What role do corporate governance and firm-specific factors play in influencing the incidence of FSF?
- e. Despite the overarching influence of culture & legal/institutional structures on the different corporate governance systems, are there any best practices with respect to directors' compensation which can be adopted under the 2CGM to combat FSF? Also, is there an optimal structure of directors' compensation, or if not, what type of compensation is good enough?

The larger implication of this research on academic literature could be an outcome in the form of identification of best practices with respect to directors' compensation, which are relevant and adaptable in each of the 2CGM.

The present research combines the agency theory of corporate governance and the institutional theory and the theory of fraud to explain the occurrence of FSF in presence of directors' compensation including stock-based compensation. The research hypothesis is that compensation, including stock- and option-based compensation, along with weak governance mechanisms, increases the propensity for FSF (refer to **Figure 4**).

Figure 4: Proposed model for interaction between FSF, Directors' compensation and CG



* Market value/book value (MV/BV), return on assets (RoA)

2.9 Chapter summary

This chapter discussed in detail the relevant literature on corporate governance, compensation, fraud and the interactions between these three.

The next chapter discusses the research philosophy, research design, methodology, sample selection, and data analysis techniques used in this thesis.

3. Research philosophy and methodology

3.1 Chapter introduction

The present chapter sets the background for the empirical analysis undertaken in this thesis by discussing in detail the research philosophy, research design, methodology, sample selection, and data analysis techniques used in the present work. It also throws light on the exploratory nature of the present research and discusses the ethical considerations relevant to this study.

3.2 Research philosophy and approach

Ontology is concerned with the nature of reality and our view of reality. The methodological choices and the epistemological considerations flow from the ontological assumptions (Jacobsson & Söderholm, 2022; Everett et al., 2015). According to Senteny (2020), ontology examines the question: what is being? It is an investigation into the basic structures of action, knowledge, and thought. This study is based on the ontological assumption that there is one true reality which is external, granular, and independent. With respect to epistemology, Everett et al. (2015) state that it relates to how do we know the reality. Mintchik and Farmer (2009) state that epistemological beliefs relate to beliefs about the nature and source of knowledge. Conventionally, epistemology is divided into two dimensions namely positivism and anti-positivism. Positivism is based on the premise that, mathematics and logic can be used to develop theories and empirical testing can confirm or negate these theories. Hence, positivists undertake objective measurements which are reported in quantitative terms. Other key positivist principles include predictive power and causality. Anti-positivism rejects the idea of separation between the observer and the object observed and contends that as positivists focus only on the tangible aspects of the objects observed, they miss details with respect to experiences, historical and social antecedents (Everett et al., 2015). The epistemological assumption, for this thesis, is that knowledge is quantifiable and is based on facts which can be derived from good quality data based on numbers (Saunders et al., 2019). Further, this thesis adopts positivist epistemology as it focuses on the discovery of measurable and observable facts and makes an attempt to identify a causal relationship between

directors' compensation/remuneration, corporate governance, and FSF. The hypotheses are developed using existing theoretical frameworks relating to agency, institutional settings, and fraud. Further, the data collected is measurable and quantifiable. Finally, the methodology used is highly structured, which facilitates replication (Saunders et al., 2015).

The research approach of this study is 'inductive' as the research project starts with collection of the relevant data to explore the phenomena of financial statement fraud and its relation to directors' compensation. The objective is to construct a conceptual framework by identifying patterns and themes (Saunders et al., 2015). Heracleous and Lan (2012) argue that induction enables analytical generalizations based on an in-depth observation of the sample. According to Hayes et al. (2010) inductive reasoning involves use of existing observations to make predictions and such predictions are probabilistic. Further, several cognitive activities involve use of inductive reasoning. For instance: analogical reasoning, categorization, decision making, probability judgment, and scientific inference. In line with the 'positivist' philosophy of this thesis, quantitative methods have been adopted. Thus, it follows that the research findings from this thesis are likely to be generalizable and objective (Saunders, Lewis & Thornhill, 2019).

3.3 Research design

The present research project entails detailed analysis of two corporate governance systems (2CGM), with specific focus on directors' compensation, corporate governance, and their implications on FSF. Since it is a comparative analysis, the research lends itself to comparative case-study design. This view is bolstered by Goodrick (2014), according to whom the comparative case-study method involves extensive analysis of the differences and similarities across cases which have a common focus and the method's distinctive feature is its emphasis on examination of causality. Comparative case study design finds wide application across a variety of industries such as education (Germain-Alamartine & Moghadam-Saman, 2020; Keynan et al., 2022), engineering (Khosravi et al., 2021), healthcare (Grove et al., 2022), construction (Steinhardt et al., 2020), and public sector (Johnson et al., 2021).

Further, this research uses the matched pairs design to compare fraud and no-fraud companies. An advantage of this method is that it reduces the variation between the fraud and no-fraud firms and thus the actual differences owing to the independent variables can be easily detected. Also, this design finds wide application in research related to clinical trials (Tang, et al., 2003) apart from research in accounting and finance.

Ndofor et al. (2015, p. 1781) argue that “the matching process itself controls for a number of possible differences in each pair of firms, in a manner similar to a repeated-measures regression”. Johnson et al. (2009) and O'Connor et al. (2006) contend that matching by industry and firm size controls for firm and industry characteristics.

The methodology of comparison of matched pairs finds wide application in literature related to fraud and restatements. Ndofor et al. (2015) use the matched pairs design to determine the effectiveness of ratio analysis in detecting FSF whereas Kaminski (2004) use matched pairs design to find if the fraud firms differ from non-fraud firms in terms of their financial ratios. On the other hand, Abbott, et al. (2004), use the matched pairs design to determine the impact of audit committee on the incidence of financial restatements. Agrawal and Chadha (2005) use the matched pairs methodology to compare 159 firms that restated their financials with 159 firms that did not, on corporate governance characteristics.

Carcello and Nagy (2004b) use the matched pairs design to determine the association between financial statement fraud and auditor tenure and conclude that short auditor tenure can lead to FSF. Archambeault et al. (2008) employ this design to find association between audit committee compensation and restatements. On the other hand, Armstrong et al. (2010a) use the matched pair design to examine the linkages between CEO equity-based incentives and restatements. In an Italy based research, Romano and Guerrini (2012) compare fraud (i.e. firms subject to enforcement action related to accounting) and control firms on a set of corporate governance parameters. Feng et al. (2011), in a US based study, examine whether chief financial officers get involved in accounting manipulation using a sample of matched pairs of manipulating and non-manipulating firms.

O'Connor et al. (2006) also use the matched pairs design. In their study, as a first step, corporations/firms that had fraudulently inflated their financial results were identified. Then, as a second step, for each fraud firm, a matching no-fraud firm was identified. The fraud firms were those that had restated their financial statements during the period from 2000 to 2004. Only those firms which met the following three criteria were included in the study: that the restatement of financial statements was downwards; that the restatement was unrelated to non-financial matters or to changes in accounting principles; and that the restatement was pursuant to pressure from regulatory agencies. For identification of matched firms, they employed eight matching variables, which were average net income, average annual net sales, average annual vesting period, firm independence, industry, public ownership, time period, and US citizenship.

Other studies that have used the matched pairs design include Beasley, 1996; Bell and Carcello, 2000; Carcello and Nagy, 2004a; Daines et al., 2021; Dechow et al., 1996; Erickson et al., 2006; Farber, 2005; Mason and Williams, 2022; McLaughlin et al., 2021; and McMullen and Raghunandan, 1996; and Wu, 2022.

3.4 Research method

As a first step in the research process, an in-depth study of the 2CGM has been undertaken with special focus on the aspects related to directors' compensation/compensation.

The study uses the matched pairs design. Hence, the second step entails identification of listed companies that have been found culpable of FSF under each of the two CG models. Subsequently, two groups are created under each of the CG models, with **Group A** comprising public/listed corporations which have suffered FSF, and **Group B (Control Group)** comprising listed corporations where no fraud has occurred or has been reported or found culpable, and which are closest to Group A companies in terms of size (market capitalisation/ revenue/total assets), reporting period, and industry. The match year is the last year of non-fraudulent financial reporting by Group A companies. Thus, all variables shall be measured in the year before the fraud was committed (Hass et al., 2016; Mason & Williams, 2022).

A comparison has then been made of Group A companies with those in the Control Group on director's compensation and shareholding and other variables, to identify factors that may have induced FSF.

The results for each of the 2CGM are then be compared to better understand the effect of directors' compensation on FSF and its linkage to the CG models.

3.5 Sample selection

This study analyses and compares two of the most important economic powers of the world, the US and China. The table below gives a snapshot of the two countries to highlight their economic significance at the world level:

Table 2: Economic Significance of China and the United States (US)

Country Profile		China	United States	<i>China as % of World</i>	<i>US as % of World</i>
Population, (millions)	total	1,392.73	327.17	18.3%	4.3%
GDP (billions)	(current US\$)	13,608.15	20,544.34	15.8%	23.9%
Foreign investment, net inflows (current US\$) (millions)	direct	203,492	258,390	17.0%	21.6%
Total reserves (current US\$) (millions)		3,168,216.33	449,907.09	-	-

**: Not Available; -: Not Applicable; Source: World Bank (2020)*

Sample selection is done in two phases. In the **first phase**, listed companies which have been found guilty of FSF are identified in each of the two jurisdictions, namely China and the US.

For China, fraudulent companies are identified using data from China Stock Market and Accounting Research database (CSMAR) database. Prior studies such as Conyon and He, 2016; Hass et al., 2016; Lisic et al., 2015; Firth et al., 2005; Luo & Wang, 2022; Zhang et al., 2020; and Sun et al., 2017; have all used this data source. Control firms were identified using data from DataStream.

For the US, the initial sample of fraud firms was obtained from the Securities Class Action Clearinghouse (SCAC). This study limits the examination to firms that are listed on the NYSE and NASDAQ, that also have class action lawsuits against them. NYSE and NASDAQ are chosen because they are the top two stock exchanges in the US. Control firms were identified using data from Capital IQ.

In the **second phase**, listed one company is short-listed (control firms), for each of the fraud firm identified in the first phase, to form matched pairs. In this phase, databases such as DataStream and Capital IQ have been used.

Three matching criteria were used. Firstly, industry-level matching was done by identifying control firms in the same industry (SIC Code, Level 1) as the fraud firm. Secondly, the control firm had to be the nearest match of the fraud firm in terms of the market capitalisation/ net sales/ total assets in the match year. Lastly, the control firm had to have a clean slate i.e. not implicated for FSF during the sample period.

The year preceding the first year of fraud/FSF was designated as the 'match year'.

The sample selection is subject to some limitations, Firstly, only discovered cases of fraud have been included. However, there may be firms where fraud may have occurred but not yet discovered or revealed. Such undiscovered cases of fraud are not part of this study. Secondly, in case of US, we use data from SCAC. A limitation of this data is that US is a very litigious society (Levene, 2003; Trowbridge, 1989). Though class-actions were coined so that people with similar grievance could file a common suit but it has become a breeding ground of greed for lawyers translating into a lot of

unnecessary litigation (Greenberg, 2003). To mitigate this risk, the present research has excluded cases which were 'voluntarily dismissed' or 'dismissed with prejudice' or 'dismissed' or 'voluntarily dismissed as moot', thus limiting the extent of unwarranted cases to a large extent. However, cases which were voluntarily dismissed but a related case continued in another court are included in the sample. Thirdly, the definition of FSF may differ between the 2CGMs. Fourthly, matching results in reducing the sample size as for some fraud firms a suitable no-fraud firm cannot be identified. Lastly, firms in the Control Group may be subject to fraud that has not been made public yet.

3.6 Data analysis

3.6.1 Probit regression

Matched pairs sample t-tests were conducted on the matching variables (i.e. market capitalisation, sales, and total asset) to confirm that the matching was robust and that the fraud firms and non-fraud firms were not significantly different (Kaminski, et al., 2004) on the three matching variables.

This study uses matched pairs design with a single probit model. Such model captures the joint probability of fraud being detected and committed (Wang, et al., 2019; Belhadji, et al., 2000). Further, according to Gujarati and Porter (2009) the probit regression model assumes normal distribution in error terms. As the dependent variable in this research is 'occurrence of FSF' which is a dummy binary variable, use of probit regression is recommended (Ullah, et al., 2019; Bertelli & Sinclair, 2015). Also, research by Guo et al. (2022) uses the probit model to examine the propensity to misstate whereas Ahmed et al. (2022) use probit regression to examine the linkages between non-audit service fee and auditor independence.

3.6.2 VIF analysis

Variance inflation factor (VIF) analysis is conducted to test for issues with respect to multi-collinearity. A VIF of less than 10 for all variables implies that the probit models have been well specified (Lin, et al., 2008). Dormann et al. (2013) also recommend a threshold value of 10 for VIF. However, to Ahmed et al. (2022) recommend a VIF value of less than 4. On the other hand, Lian et al. (2022) contend that VIF value of closer to

1 implies low multi-collinearity whereas a VIF value in excess of 5 suggests high linear correlation.

3.6.3 Propensity score matching (PSM)

According to Guo, et al. (2020), a key assumption of regression analysis is that the independent variable is not correlated with the error/residual term. However, the categorisation of participants into control and treatment groups can result in selection bias which may translate in to the independent term being correlated with the error term. Thus, it is important to control for such selection biases to avoid wrong estimates of treatment effects, which is the core of the endogeneity problem. According to Roberts and Whited (2013, p.494) endogeneity in the context of regression implies 'correlation between the explanatory variables and the error term'. Endogeneity can arise on account of omitted variables (i.e. variables which should have been included, as explanatory variables, but have could not be included in the regression because they are unobservable or difficult to quantify), simultaneity (i.e. the independent variable causes changes in dependent variable and vice versa), reverse causality (i.e. dependent variable causes changes in independent variable), measurement error (i.e. difference in the value of the proxy and that of the true variable) (Reeb, et al., 2012; Roberts & Whited, 2013; Certo, et al., 2016; Bascle, 2008). To deal with endogeneity, this study employs the propensity score matching (PSM) (Choi et al., 2021b) and Ramsey RESET test. Ramsey RESET test deals with endogeneity on account of omitted variables (Zahid et al., 2020) and IV probit (Peel, 2014; Wooldridge, 2010) whereas PSM is used to deal with other forms of endogeneity.

PSM is adopted as it ascribes the observed effects to any change in independent variable, to the independent variable itself instead of attributing it to the endogenous characteristics of the firm (Luo & Wang, 2022; Conyon, et al., 2019). Similarly, according to Yuan and Wen (2018), key benefit of using propensity score matched control sample is that it permits the observed effects to be attributed to the independent variable. Rosenbaum and Rubin (1983, p. 41) argue that 'propensity score is sufficient to remove bias due to all observed covariates'. According to Reeb et al. (2012) propensity score matching rectifies non-random treatment effects including

reverse causality. Further, this method is argued to reduce the number of extrapolations by removing firms that do not have comparable firms (either in control group or in the treatment group). Shipman, et al. (2017) support propensity score matching on the ground that concerns with respect to model specification are reduced when PSM is used. PSM is argued to reduce structural issues in the data such as non-linear relationship among variables.

In a study on CEO incentives and restatements, Armstrong et al. (2010a) employ propensity score matching and argue that as an econometric approach 'propensity score' is superior to other methods of controlling for confounders. Further, propensity score helps determine how sensitive the observed effects for the independent variable are to correlated omitted/unobserved variables.

However, this method suffers from a limitation that at a particular propensity score there might be several treated firms and few untreated firms, which might make matching tough (Reeb et al., 2012). Also, it is argued that propensity score matching may not address endogeneity issues with respect to unobservable factors, however this method can alleviate endogeneity concerns on account of the relation between the dependent and the independent variable being misspecified (functional form misspecification) (Shipman et al., 2017).

3.6.4 Winsorization

A common methodological challenge with respect to research data is existence of 'outliers'. According to Aguinis (2014) data points that are markedly different from other data points are classified as outliers. According to Aguinis, et al. (2013), outliers can exert significant influence on the conclusions drawn regarding the relationship between variables.

Following Aguinis, et al. (2013), the outliers in the data in the present study are 'single construct outliers'. These outliers signify values that are either very large or too small in comparison to other values of a construct. Such values are, generally, found in the tale of the data distribution.

Some of the methods of dealing with outliers as outlined in Aguinis, et al. (2013) include removal of outliers, keeping the outlier and acknowledging its presence, report results with and without the outliers, winsorization, truncation, transformation, etc. Each of these techniques has its advantages and disadvantages. For instance: deleting the outlying values can result in deletion of interesting values which warrant further investigation and are not problematic observations (Aguinis, 2014).

In the present study we use winsorization. Winsorization involves 'transforming extreme values to a specified percentile of the data. For example, a 95th percentile winsorization would transform all the data below the 5th percentile to the 5th percentile, and all the data above the 95th percentile would be set at the 95th percentile' (Aguinis, et al., 2013, p.279). According to Brownen-Trinh (2019) winsorization alters the data in the tails and thus provides a better dataset. More specifically, winsorization 'replaces sample values above or below a given percentile of the sample distribution with the values at the respective percentiles' (Brownen-Trinh, 2019, p.105).

Winsorization is a commonly used method, by finance and accounting practitioners, to deal with outliers (Nayar et al., 2017; Brownen-Trinh, 2019). For instance: research by Ferreira, et al. (2012) and Clifford, et al. (2014) use winsorization to deal with outliers. According to Keyton and Reifman (2010) an advantage of winsorization is that it protects from the adverse effects of outliers while preserving the highest and lowest values in the distribution. However, Leone et al. (2019) criticise winsorization stating that winsorization does little to mitigate the impact of outliers.

3.6.5 ANOVA

Analysis of variance (ANOVA) compares group means to determine, if the groups are statistically different from each other. ANOVA is a very popular statistical analysis tool especially among education research journals (Warne, et al., 2012; Shieh & Jan, 2014). In this thesis, ANOVA is used to compare the fraud firms in the US and China on the various variables representing the three legs of the fraud triangle framework.

3.6.6 Heteroscedasticity

An assumption of probit regression is homoscedasticity, i.e. the variance of the error term is constant. If the assumption of homoscedasticity is relaxed or doesn't hold true, then we have the problem of heteroscedasticity. Heteroscedasticity results in inconsistent and biased parameters.

In this thesis, heteroscedasticity is tested using the Breusch–Pagan/Cook–Weisberg test and the White test (Sing, et al., 2016; Bae & Kim, 2020; Berenguer-Rico & Wilms, 2021). Further, the issue of heteroscedasticity is addressed by calculating robust standard errors (Mansournia, et al., 2021). Bartalotti (2018) also supports heteroscedasticity robust standard errors.

3.7 Exploratory research

The spate of occurrences of FSF, which have afflicted corporations the world over, has made it imperative that one understands the reason for such frauds in order to devise means of avoiding it in future. Academic research can and has played an instrumental role in increasing the understanding of such crimes and in devising ways to combat them. Compensation has always been regarded as a potent tool for corporate governance. Directors' compensation is furthermore significant, as directors are a key mechanism in the CG structure. Thus, this research, which relates directors' compensation to FSF under the two CG models (2CGM) assumes considerable importance. However, this research is exploratory in nature, as it could emerge that factors other than directors' compensation such as cultural ethos, information asymmetry between directors and management, CEO duality, and limited independence of the BoD, etc. have greater impact on the incidence of fraud rather than compensation. For instance, Buck and Shahrim (2005) argue that cultural nuances have an impact on the governance environment. They contend that Germany, which works on welfare capitalism, has governance systems marked by a high level of uncertainty avoidance and promotion of collectivism, whereas the US, which relies on stock market capitalism, has governance policies tilted towards a low level of uncertainty avoidance and a focus on individualism.

3.8 Ethical considerations

The study proposes to use secondary sources of information. As there are no surveys or interviews envisaged in the research methodology, ethical concerns with respect to the anonymity of the participants or requirement of informed consent or invasion of privacy are not expected to be of relevance.

Any harm to the researcher is also not foreseen, as no personal or sensitive information with respect to the researcher is made public.

However, the research entails study of incriminating documents related to fraud and fraudsters. Hence, adequate caution has been exercised in abstaining from revealing personal details of the fraudsters.

3.9 Chapter summary

This chapter discussed in detail the ontological and epistemological assumptions of the present study. It also discussed the research design (matched pairs and comparative case study), sample selection (why US and China; identification of fraud firms and control firms), data analysis techniques (including probit regression, PSM, and winsorization).

The next chapter constitutes the first empirical paper of this thesis. In this paper, directors' compensation and its association with the likelihood of FSF, in view of the corporate governance mechanisms, in China has been examined. Using matched pairs design, this chapter tests four hypotheses related to compensation and corporate governance and their impact on FSF.

4. Paper 1 – ‘Directors and financial statement fraud in China’

4.1 Chapter introduction

This chapter is the first empirical paper of this thesis. In this paper, directors’ compensation and its association with the likelihood of FSF, in view of the corporate governance mechanisms, in China has been examined. The paper compares 903 fraud firms and 903 control firms, from various industries, in the time frame from 2005 to 2018.

4.2 Abstract

Through agency and institutional theories, this study examines whether directors’ compensation and corporate governance have an impact on financial statements fraud (FSF) perpetrated by listed companies. It uses a sample of 903 ‘fraudulent’ firms and 903 control firms in China during the period from 2005 to 2018. The study finds that directors’ shareholding is positively associated with FSF. The results also suggest that firm performance (i.e. return on assets (ROA)), board attributes (such as chief executive officer (CEO) duality, independence, and frequency of board meetings), leverage, auditor type, and ownership structure (i.e. the shareholding of the top 10 shareholders) have a significant influence on FSF. Among the two broad subcategories of directors, the study finds that the shareholding of non-independent directors has a positive association with FSF. Further, the relationship between directors’ shareholding and FSF is negative in case of SOE firms whereas it is positive in case of non-SOE firms. Also, directors’ political connectedness has no bearing on the incidence of FSF. These findings raise an important question in relation to directors’ shareholding and suggest that pay-for-performance for directors, should be implemented in consideration of FSF incidences.

Keywords: China, corporate governance, directors’ compensation, directors’ shareholding, financial statements fraud.

4.3 Introduction

Financial statements fraud (FSF) can inflate earnings and consequently the decisions and expectations of shareholders (Petrou and Procopiou 2016). It also has adverse consequences for creditors, employees, investors, pensioners, and other market participants (Rezaee 2005). In the US, from 1997 to 2004, 30 high-profile financial scandals led to a market capitalisation loss of USD 900.0 billion, representing a 77% decline (Hogan et al. 2008). Further, the cost of funds for fraud firms experienced a considerable increase in recent past (Graham et al. 2008) which has had adverse consequences for the financial markets and for the institutional framework (Ball 2009). Thus, it is vital to ensure that financial statements are of high quality, but this depends on corporate governance effectiveness (Bonetti et al. 2016).

According to Fama and Jensen (1983), directors, by virtue of being delegated monitors and custodians of internal control, assume the responsibility of corporate governance, including financial reporting oversight via audit committees (Shepardson 2019). Directors play a vital role in setting the right ‘tone at the top’, which in turn affects internal controls, management oversight, and the truthfulness of financial statements (Brandes et al. 2016; Schwartz et al. 2005). The effectiveness of internal controls determines the quality of financial statements, such that improvements in internal control translate into a better quality financial reporting (Altamuro and Beatty 2010) and firms with weak internal controls have a lower quality of accruals (Doyle et al. 2007). Thus, directors play a critical role in the detection and prevention of accounting fraud via their monitoring function, and to encourage them to carry out this function effectively it is vital that their interests are well aligned with those of the shareholders (Dalton et al. 2007). Therefore, it is imperative to look at the relationship between governance mechanisms, fraud, and the motivation of directors to set the right tone at the top. The motivation of directors, in turn, is a function of the alignment of their interests with those of the shareholders, and to achieve this alignment, the compensation of directors needs to be well structured and well specified (Jensen and Meckling 1976). Therefore, this paper examines the association between directors’ compensation and FSF within the corporate governance and internal control framework. The study takes recourse to the agency and institutional theories to

examine this relationship. In doing so, this study focuses on assessing the relationship between FSF and directors' total compensation and shareholding.

A large body of research has been undertaken on executive compensation and its impact on fraudulent behaviour, including restatement of financial statements, corporate fraud and earnings management (Jiang et al. 2010; Harris and Bromiley 2007; Laux and Laux 2009; Conyon and He 2016). However, there is a dearth of research on the relationship between directors' compensation and FSF. The limited research in this space remains inconclusive. For example, a positive association between directors' compensation and fraud/earnings management is reported by Kim et al. (2013), Archambeault et al. (2008), and Ye (2014). On the other hand, Alkebeese et al. (2021) report a negative relationship whereas Persons (2012) does not find any relationship between fraud and directors' compensation but finds independent directors' stock-options to be positively related to fraud. Additionally, most of the existing research is either focussed on the US market (barring Ye (2014)) or has not focused on FSF (rather they focus on bribery, earnings management, embezzlement, opportunistic timing of option grants, option back-dating, or restatements).

The present research addresses this gap and helps us to examine if there are any elements in directors' compensation packages which can adversely affect the motivation for directors to set the right tone within the organisation, or which can even act as an inducement for FSF.

Also, making executive compensation sensitive to firm performance by using bonuses, stock options, or share ownership is one way of mitigating the conflict of interest between shareholders and managers (Bushman and Smith 2001; Jensen and Meckling 1976). However, the literature provides an inconclusive view on the efficacy of stock-based compensation as a means to align interests. Prior research argues both in favour of (Bhagat and Bolton 2008; Hambrick and Jackson 2000) and against (Martin et al. 2019; Aboody and Kasznik 2000) stock-based compensation and shareholding. As self-enrichment is a key motivation for FSF (Amiram et al. 2018), this research also examines whether directors' shareholding can act as an inducement to commit FSF.

The sample for this study consists of 903 ‘fraudulent’ firms in China. China is a good case study for several reasons. Firstly, apart from being one of the largest and the fastest growing economies in the world, China is also marked by government intervention and political considerations which interfere, constantly, with corporate conduct and governance. For instance: in China, the chief executive officer (CEO) pay is restricted to three to fifteen times of the average worker salary in case of state-owned enterprises (SOE) (Chen et al. 2011c), which is not the case in most developed and developing economies. This makes China a unique case study. Secondly, though the quality of financial statements is an issue of great concern for regulators, investors, and other stakeholders of all corporations, it assumes greater significance in high-growth markets with substantial domestic demand, such as China, as low-quality financial statements may hinder the growth of such economies. According to Mo (2001), a percentage-point increase in corruption level reduces economic growth by 0.72%. Similarly, according to Cieslik and Goczek (2018), corruption hampers investment and thereby adversely affects economic growth. Hain et al. (2016) report that venture capital (VC) investments from developed countries to emerging markets are influenced by the VC investors’ trust in the institutional environment of the emerging market. Similarly, d’Agostino et al. (2016) provide evidence of the negative impact of corruption on economic growth. Thirdly, emerging economies, especially China, now play a vital role in driving competitiveness and economic growth globally. However, China’s ability to sustain its development and growth would depend on its business ethics (Cumming et al. 2016). Fourthly, the impact of corruption in China is rather fatal. According to Kim et al. (2018), listed firms in China lost firm value of USD30.0 billion when the anti-corruption investigation was triggered in the country in 2013. Further, the equity markets in China react more to corruption by high-ranking officials as compared to that by lower-level officials. FSF, being a white collar crime, is generally perpetrated by high-ranking officials (Coenen and ProQuest 2008) and hence it is vital to dig deeper into the causes of this fraud in China. Fifthly, the series of accounting frauds by Chinese corporates listed in the US have marred the image of Chinese stocks in the US market leading to the dumping of Chinese corporates by investors (Ang et al. 2016), as well as inhibiting other potentially non-fraudulent firms from listing abroad.

This study uses matched pairs design (by matching control firms by industry and size) and probit regression (as the outcome variable is binary). The results show a significant positive relationship between directors' shareholding and FSF, implying that stock-based compensation for directors should be used with caution. The results also indicate that CEO duality, leverage, shareholding concentration (the shareholding of the top 10 shareholders), return on assets (ROA), type of auditor, board of directors (BoD) independence, and frequency of board meetings have a significant influence on the incidence of FSF. These results are robust to a series of checks/tests.

This study makes several contributions to the literature. Firstly, it contributes to the literature on corporate governance and on agency theory by focusing on directors, who are agents appointed by the shareholders. Understanding the motivations and behaviour of directors is imperative to understanding and regulating corporate behaviour. The study furthers this understanding by investigating the association between fraudulent corporate behaviour, as evidenced in FSF, and motivation as evidenced in directors' compensation. Further it contributes to agency theory perspective by examining the impact of board diversity on FSF, as diversified boards enhance monitoring (Carter et al. 2010). This research uses age and gender as two observable characteristics of diversity and finds that, contrary to expectation, both have no significant influence on FSF. Secondly, it contributes to institutional theory perspectives by paying attention to the institutional context of China and its interactions with FSF, especially because the Chinese government and the Chinese Security Regulatory Committee (CSRC) are motivated to improve the quality of financial statements to attract international investment (Lisic et al. 2015). The rest of the paper is structured as follows. Section 2 reviews prior research and presents the research hypotheses. In sections 3 and 4, methodology and results are presented. The findings are summarised and the conclusion is presented in section 5.

4.4 Literature review and hypotheses development

Examination of corporate governance is an innate part of any examination of corporate fraud (including FSF). Corporate governance also influences the compensation practices within a corporation. Hence, it is vital understand the linkages between corporate governance, compensation, and fraud.

4.4.1 Compensation and governance

Corporate governance and compensation are intertwined, with good governance creating a better compensation system and excessive compensation being an indicator of poor governance. According to Firth et al. (2007a), corporations with larger board size pay less CEO compensation, while a higher proportion of non-executive directors increases the likelihood of performance-based compensation. The authors also argue that CEO duality results in a reduced use of performance-linked pay. Also, the presence of foreign investors tends to increase CEO pay, unlike substantial government holding. Conyon and He (2011) find that a high proportion of independent directors results in a tighter relationship between pay and performance. According to Liu et al. (2017), cash bonuses are influenced by the quality of governance. Armstrong et al. (2012) find evidence of high CEO compensation in corporations with weak governance, a view supported by Core et al. (1999). However, Conyon and He (2012) do not find any association between CEO compensation and internal governance factors such as CEO duality, board size, and proportion of outside directors.

4.4.2 Fraud and governance

Weak corporate governance is often considered a precursor to fraud and vice versa (Agrawal and Chadha 2005; Chen et al. 2006; Farber 2005). Yu et al. (2015) argue that in a weak institutional environment coupled with persistent information asymmetry, scandals are a reflection of governance issues faced by all firms with a similar corporate governance structure (Adegbite 2010, 2012). Li et al. (2021a) contend that good governance can help prevent fraudulent firms from using CSR activities as a facade to cover up fraudulent financial reporting. Chen et al. (2006) find that increasing the proportion of outside directors on the board of directors (BoD) reduces the likelihood

of FSF. On the contrary, Shi et al. (2017) argue that pressure exerted by external governance agents/mechanisms such as security analysts, activist owners, and market for corporate control, can induce managers into committing financial fraud.

4.4.3 Fraud and compensation

Research on the association between fraud and compensation remains inconclusive. Efendi et al. (2007) find empirical evidence of a positive association between accounting irregularities and in-the-money stock options of CEOs. Hogan and Jonas (2016) contend that the likelihood of high-quality transparency disclosures reduces with an increase in the equity portion of executive pay. In a similar vein, Harris and Bromiley (2007) and Harris et al. (2019) argue that financial misrepresentation is more likely when CEOs have a high percentage of their compensation in stock options. On the other hand, Conyon and He (2016) document a statistically significant and negative association between corporate fraud and CEO compensation.

4.4.4 Hypotheses development

This study uses agency and institutional theories (Scott 1987; Meyer and Rowan 1977; Doherty et al. 2014) to support the examination into the effect of directors' compensation, directors' shareholding, as well as BoD independence and BoD diversity on FSF. From an agency perspective, directors are agents of the shareholders (Reeb and Zhao 2013), and in order to keep their interests aligned with those of their principals, prior studies have suggested the design of appropriate incentives/compensation (Jensen and Meckling 1976). However, compensation can aggravate the agency problem. According to Arye Bebachuk and Fried (2003, p. 72) "executive compensation is viewed not only as a potential instrument for addressing the agency problem but also as part of the agency problem itself". Barton (2001) finds that managers engage in earnings management to increase their cash compensation.

The limited research on executive compensation and fraud in China also provides mixed evidence. For example, Conyon and He (2016) document a statistically significant and negative association between corporate fraud and CEO compensation. Contrarily, Ye (2014) reports a positive association, which implies that compensation

could induce self-serving or even fraudulent behaviour. From an agency theory perspective, the foregoing studies suggest that compensation may play a role in inducing fraudulent behaviour among directors (as agents of shareholders). Thus, the study hypothesis is that:

H1: Directors' compensation is positively associated with FSF.

Jensen and Meckling (1976) propound the use of stock ownership as a mechanism to align the divergent interests of agents and principals. However, with stock ownership, a change in share prices would result in a change in the wealth of agents, hence the agents may be induced to undertake earnings manipulation (Petrrou and Procopiou 2016; Hass et al. 2016b). Therefore, it is vital to understand the impact of directors' shareholding on FSF. Empirical evidence on the efficacy of stock-based compensation is inconclusive. Bhagat and Bolton (2008), and Hambrick and Jackson (2000) argue in favour of stock ownership. However, Rose et al. (2013) state that stock ownership can affect the objectivity and independence of the directors. Martin et al. (2019) also question the ethics of equity incentives and conclude that CEOs can resort to pension underfunding in order to obviate any risk to stock price and thereby to their option wealth. Similarly, Cheng and Warfield (2005) conclude that equity incentives to managers incentivise them to indulge in earnings management. Bergstresser and Philippon (2006) argue that CEOs whose compensation is more closely tied to the share price, via stock and options, are more likely to indulge in earnings management. Davidson (2022) report that equity incentives of executives at fraud firms are stronger as compared to those of executives, in similar roles, at no-fraud firms.

On the other hand, O'Connor et al. (2006) find that the effect of CEO duality and BoD stock options varies with the level of CEO stock options. In absence of CEO duality and no options to the BoD, an increase in CEO options reduces the likelihood of fraudulent financial reporting. On the other hand, when the BoD has options and there is no CEO duality, the likelihood of fraudulent financial reporting increases tremendously with increase in CEO stock options.

However, Lai and Tam (2017) do not find any association between management equity shareholding and earnings management. Similarly, Mayberry et al. (2021) do not find

any statistically significant association between stock option vega and earnings management implying that executives' equity-based compensation does not incentivize them to increase stock price volatility (vega) and thus engage in earnings management. In contrast to the existing research claiming a positive association between pay-performance sensitivities (PPS) on account of equity incentives of top management and earnings manipulation, Kim et al. (2022) argue that dispersion in PPS of top management is negatively associated with earnings management and positively related to earnings quality. This is attributed to the dispersion in PPS which hampers the coordination required among the top managers to manipulate earnings. Kang and Kim (2022) find evidence in support of optimal contracting theory and agency theory stipulation of adequate incentives to align the interest of principals and agents. They report that shareholders grant more options to managers, when shareholders can monitor risk management practices (specifically speculative derivative transactions) of the managers

Thus, the evidence of association between shareholding and fraud is also inconclusive. Hence, this warrants further investigation especially in the Chinese context, as stock ownership is traditionally a measure of internal governance adopted by developed nations and its efficacy in an emerging market like China (with a different ownership structure and institutional setting) needs to be established (Hass et al. 2016b; Chen et al. 2016). Additionally, a crime is committed when its benefits exceed the punishment associated with it (Becker 1968; Ehrlich 1973). Employing the institutional theory, it can be argued that in China, given its weak legal environment (Jiang and Kim 2015) and weak formal governance structures (Estrin and Prevezer 2011), the probability of being caught is low and hence directors may have an incentive to participate in FSF to maximise their wealth. Therefore, the next hypothesis is that:

H2: Directors' stockholding is positively associated with FSF.

In the corporate governance context, independent directors play a significant role in monitoring and challenging executive directors, thereby mitigating agency issues (Jiang et al. 2016), deterring fraud, exposing corporate wrongdoing, and implementing corporate fiduciary duty (Beasley et al. 2000; Kuang and Lee 2017). Jiang et al. (2016)

argue that BoD independence augurs well for corporations, as independent directors' interests are aligned more to that of shareholders than to that of management. Similarly, Hu et al. (2017) find that independent directors, through their monitoring power, improve the quality of internal control whereas Firth et al. (2007b) argue that a high proportion of independent directors improves the quality of earnings informativeness. Tang et al. (2013) contend that in wake of the mandatory disclosure rule in China, independent directors can protect the interests of outside investors, as the stock markets react negatively to independent directors' modified opinions.

Detection and deterrence of fraud is another forte of independent directors. Chen et al. (2006) report a statistically significant and negative relationship between fraud and the proportion of outside directors. Lai and Tam (2017) also support the benign effect of independent directors on avoidance of earnings management. However, Chen (2022) find that rookie independent directors increase the likelihood of corporate fraud and are less likely to dissent as they are more likely to lose their BoD seat in case of dissent. In contrast, Files and Liu (2022) find that firms where internal investigations are conducted by independent directors, post accounting irregularities, are more likely to witness CEO turnover and are less likely to receive enforcement action from the SEC (Securities Exchange Commission). Brandes et al (2022) argue that retired independent directors, who have less demands on their time, are more effective in resolving agency conflicts and in curbing fraudulent financial reporting, by increasing the intensity of monitoring in the financial reporting process. The results of Bonini et al. (2022) reconcile with the agency perspective and they report that long-tenured independent directors improve governance as the latter are associated with lower likelihood of activist motion against the firm and of class action lawsuit by shareholders. Fei (2022) contends that independent directors improve corporate governance and contribute to detection of violations vide their dissent on the Boards. Choi et al. (2021b) contend that independent directors improve corporate governance and thereby reduce agency conflicts. Further, according to them, independent directors' dissent is a mark of effective monitoring. Gong et al. (2021) find evidence of reduction in agency problems between controlling and minority shareholders with increase in the proportion of independent directors on the BoD. This view is also upheld by Elnahass et al. (2022)

who find evidence of reduction in earnings management in conventional and Islamic banks when the BoD is independent.

Thus, from an agency theory perspective, our next hypothesis is that:

H3: The presence of independent directors is negatively associated with FSF.

The association between board diversity and effectiveness has long aroused the interest of academic researchers. Bernile et al. (2018) argue that board diversity is vital as it reduces stock volatility, results in the adoption of stable corporate policies, and increases investment in R&D. BoD diversity has also been found to promote transparency in the corporate information environment (Upadhyay and Zeng 2014), which indirectly increases firm value (Carter et al. 2003) via enhanced social and ethical compliance (Isidro and Sobral 2015), and increases stock-price informativeness (Gul et al. 2011). Anderson et al. (2011) find evidence of improvement in firm performance with BoD diversity. Other studies arguing in favour of diversified boards include Wahid 2019; García et al. 2017; Post and Byron 2015; Adegbite 2015; and Chijoke-Mgbame et al. 2020. However, the evidence is inconclusive, as Harjoto et al. (2018) do not find any association between board performance and board diversity. Similarly, Adams and Ferreira (2009) argue that gender diversity on the BoD may lead to a decrease in shareholder value when gender-based quotas are enforced by well-governed BoDs, which may result in over-monitoring. Drawing upon economic (such as behavioural theory and agency theory) and social theories (such as ethical and psychological theories), Zalata (2019) find that female directors in monitoring roles mitigate/lower opportunistic behaviour (earning management) by the management. Abbasi et al. (2020) claim that female directors and female financial experts on the audit committee are associated with superior audit quality. Presence of female directors' and of female financial experts on the audit committee has also been reported to be associated with lower internal control weakness (Oradi & E-Vahdati, 2021). In similar vein, Zalata et al. (2022) find evidence of high earnings quality in firms with high proportion of female directors and more so in case of female directors with relevant financial background. However, Zalata and Abdelfattah (2021) find that non-executive female directors are

positively associated with opportunistic management behaviour exhibited in classification shifting based earnings management.

In China too, the empirical evidence on the efficacy of board diversity is mixed. Cheng et al. (2010) find that older chairpersons enable better firm performance. Xu et al. (2018) find that board members' average age is negatively related to the probability of corporate fraud. Daboub et al. (1995) argue that traits such as hesitation over challenging rules and preference for a routine in the elderly reduce the probability of their engaging in illegal corporate activity. Thus, with increase in age, the incidence of fraud can be expected to decrease. Ho et al. (2015) find female CEOs are more conservative in terms of their reporting of earnings. Liu et al. (2016) find female CFOs less amenable to earnings management. Similarly, Cumming et al. (2015) find that gender diverse boards are marked by less frequent and less severe frauds. Li and Li (2020), provide evidence in support of the view that female chairpersons of audit committees reduce the likelihood of financial irregularities and thereby reduce agency costs. According to Wang et al. (2022) female corporate leaders decrease the propensity for FSF as they are risk averse and more committed to ethical behaviour as opposed to their male counterparts. Similarly, Saona et al. (2020) report that larger representation of women on the BoD reduces the incidence of earnings management by executives. However, McGuinness et al. (2015) find that greater representation of female directors on the BoD does not result in lower cash distribution among Chinese corporations. Gull et al. (2021) find that the attributes of female directors such as audit committee memberships, experience, and financial expertise lower the likelihood of material misstatement.

This study uses age and gender, both relation-oriented dimensions, as measures of BoD diversity (Harjoto et al. 2018), as these two dimensions have a bearing on risk-taking and ethical behaviour. Malik et al. (2021) find negative association between the average age of directors on the board risk committee and managerial risk aversion, as evidenced in fewer constraining words in 10-k reports. Goergen et al. (2015) argue that considerable age difference/ generation gap (20 years) between chair of the supervisory board and the CEO increases the intensity of monitoring of the latter by the former. In support, Fan et al (2021) find that age similarity between independent

directors and the CEO lowers the effectiveness of BoD monitoring and thereby leads to increase in earnings management. However, the positive association with earnings management diminishes as the age gap between the independent directors and the CEO increases.

Thus, older directors can be expected to bring a diverse range of ideas owing to their experience and they also provide greater stability to the BoD (Anderson et al. 2011) whereas female directors enable better monitoring. From an institutional theory perspective, BoD diversity has been argued to be a function of institutional systems, especially cultural and legal institutions (Grosvold and Brammer 2011; Saeed et al. 2016; Mensi-Klarbach et al. 2021; Carrasco et al. 2015) whereas from the agency theory perspective, BoD diversity is argued to result in enhanced monitoring (Mateos de Cabo et al. 2012; Terjesen et al. 2009; Carter et al. 2010). Thus, the next hypothesis is that:

H4: More diversified BoDs are negatively associated with FSF.

4.5 Research method

4.5.1 Data and sample

The initial sample of 2,344 fraud firms was obtained from China Stock Market & Accounting Research Database (CSMAR). Duplicate cases and corporations for which the violation year was not available were excluded. Corporations which appeared in two continuous time periods were included only once. After these adjustments, the final list consisted of 1,312 fraud firms. After excluding firms for which required data were not available or for which a suitable control firm could not be found, the final sample comprised 903 fraud firms. The sample period is from 2005 to 2018 (year of start of violations). The year immediately preceding the first alleged fraud year is used as the match year/reference year for variable measurement (Erickson et al. 2006; Hass et al. 2016b). Directors' data, BoD details and other data for the match year for the fraud firms and the control firms were obtained from CSMAR, whereas financial data was collected from DataStream.

In the final sample of 903 fraud firms, the highest concentration was from the industry segment 'operative builders' with 104 fraud firms (5.76%), followed by pharmaceutical preparations (3.65%), semiconductors and related devices (2.99%), and electronic components (2.21%), respectively.

In terms of the year profile, the largest number of fraud firms (103) were in the match year 2011 accounting for 11.41% of the total fraud firms, followed by match year 2014 (98 fraud firms, 10.85%), 2010 (90 fraud firms, 9.97%) and 2012 (82 fraud firms, 9.08%).

4.5.2 Research design

This study uses matched pairs design (Abbott et al. 2004; Archambeault et al. 2008; Armstrong et al. 2010; Cumming et al., 2021; Feng et al. 2011; McLaughlin et al., 2021; Mason & Williams, 2022; Daines et al., 2021; Wu, 2022). Control firms are identified using three shortlisting criteria. Firstly, the control firm had to have the same SIC code (level 1) as that of the fraud firm (industry-level matching). Secondly, the control firms are firms not implicated for FSF during the sample period. Thirdly, among the potential control firms for a fraud firm (within the same SIC level 1 code in the match year), the closest match in terms of the market capitalisation or net sales or total assets in the match year is chosen as the control firm.

O'Connor et al. (2006) regard the matched pairs design to be very powerful. They argue that industry characteristics (such as environmental uncertainty, market structure, regulatory environment, and resource scarcity) and firm characteristics (such as size) also affect the likelihood of fraudulent financials and these variations can be controlled by matching by industry and firm size. Johnson et al. (2009, p. 135) also argue that "using matched pairs implicitly controls for industry, firm size, and industry growth opportunities".

Dependent variable

The main dependent variable is occurrence of FSF (Fraud), which is equal to 1 if the firm is a fraud firm and 0 if the firm is a control firm (Crutchley and Minnick 2012; Hass et al. 2016b; Zhang et al. 2008).

Independent variables

In order to test **H1**, the study uses log value of the total compensation (salary and allowance) of all directors as the independent variable (Conyon and He 2016; Conyon and He 2012).

In relation to **H2**, the study measures directors' shareholding as a proportion of the number of shares held by all directors over the total number of outstanding shares (Hass et al., 2016b; Bai et al., 2004).

H3 and **H4** are tested by including variables – the percentage of independent directors on the board (IND_DIR%), average age of all directors (Dir_Age), and percentage of female directors on the board (FEMALE_DIR%) across all regression models. Dir_Age and FEMALE_DIR% are measures of BoD diversity.

This study divides directors into two broad categories: independent directors (ID) and non-independent directors (NID). Directors who have been explicitly identified as independent directors by CSMAR's corporate governance database have been classified as IDs and all other directors are considered to be NIDs.

Control Variables

This study controls for variables related to the firm, corporate governance, and ownership. Frequency of board meetings, size of the board, auditor type, and CEO duality are governance-related control variables. Chen et al. (2006) argue that there is a positive association between frequency of BoD meetings and the incidence of fraud, whereas Liang et al. (2013) document a positive impact of the frequency of BoD meetings on the performance and assets quality of banks. With respect to CEO duality, Chen et al. (2010) find that CEO duality results in higher compensation for CEOs. Bai et al. (2004) find that CEO duality has a significant negative impact on the market valuation of corporations. Similarly, Hass et al. (2016a) argue that CEO duality can reduce performance persistence (measured by ROA) in the short term. Saona et al. (2020) also contend that CEO duality increases the propensity of manipulation of financial reporting. However, Mutlu et al. (2018), Chen et al. (2006), and Lai and Tam

(2017) do not find any impact of CEO duality on firm performance or on earnings management.

Liang et al. (2013) document a negative impact of BoD size on the performance of banks. On the other hand, Saona et al. (2020) contend that larger boards are more effective in preventing earnings management. Similarly, Elnahass et al. (2022) report that traditional governance in form of large boards is effective in controlling the incidence of earnings management in both conventional and Islamic banks. With respect to auditors, Chen et al. (2011b) report reduction in earnings management when better-quality auditors are used by non-state-owned enterprises. DeFond et al. (1999) report a decline in market share of large auditors who are independent and are more likely to issue modified audit opinions. Singer and Zhang (2022) provide additional evidence on the efficacy of auditors by finding that auditor shopping leads to delay in discovery of misstatements. This implies that auditors of the right type and size could deter FSF. However, Christensen et al. (2022) find that auditor incentives, in terms of high engagement risk¹⁶ and high client importance, are related to lower disclosure of misstatements.

On the ownership front, institutional investors can be key to good governance. Hou et al. (2016) link corporate governance to institutional ownership and argue that, in China, since the split-share reform, executive compensation has become more sensitive to firm performance, implying that institutional ownership reduces agency conflicts and thereby agency costs. Ramalingegowda et al. (2021) find evidence in support of enhanced monitoring provided by common institutional ownership¹⁷ exhibited in the negative relationship between common institutional ownership and earnings management. Garel et al. (2021) also highlight the importance of monitoring by institutional investors by providing evidence of exploitation of distraction of institutional investors by the managers to engage in earnings management. Khalil et al. (2020) find that higher foreign institutional ownership results in accounting conservatism. However, Ward et al. (2020, p.380) contend that the monitoring

¹⁶ Risk of reputation loss and of litigation

¹⁷ Block ownership of peer firms (in the same industry) by a common set of institutional investors

effectiveness of an institutional investor depends upon the importance of the firm's stock in the institutional investor's portfolio as 'if a firm represents only a very small proportion of institutional investors' portfolios, the opportunity cost of monitoring a firm may exceed the benefit of doing so'.

Firm-level variables such as return on assets (ROA), industry, modified leverage, and market-to-book ratio (MV/BV) are also included. Leverage is included to control for the possibility of FSF being committed due to financial distress. Leverage can also induce fraud owing to the pressure to comply with debt covenants. Pittman and Zhao (2020) validate this assertion as they find that managers can resort to misreporting to relieve covenant constraints. Further, managers are more likely to use non-income increasing misreporting when they face earnings management constraints. Leverage is controlled for by computing modified leverage (MLEV) as leverage divided by total assets. ROA and MV/BV are measures to control for poor financial performance. Further, ROA is also used to control for the possibility of rent extraction. The study controls for 'industry' (by selecting control firms with the same SIC level 1 code as that of the fraud firm), because certain industries are associated with earnings management (Agrawal and Chadha 2005; Erickson et al. 2006; Hass et al. 2016b; Conyon and He 2016; Zhang et al. 2008). Finally, shareholding concentration represented by TOP10_SHLDR (which measures by the ownership percentage of the top 10 shareholders) has also been included.

Additional governance variables

As a robustness check, additional governance variables have been introduced in the regression analysis, which include percentage ownership of controlling shareholder (CONTROLLING_SHLDR); auditors' opinion (Audit_Opinion); and percentage ownership of foreign promoters (FOREIGN_PROMOTER). CONTROLLING_SHLDR is a control measure for influence of the controlling shareholder whereas FOREIGN_PROMOTER controls for the influence of foreign promoters. The definitions of the various variables are set out in **Appendix 1**.

4.5.3 Regression models

The regression models used for examining the various hypotheses are detailed below.

To examine the impact of directors' compensation on FSF (**H1**), the impact of independent directors, and diversity of the board on FSF (**H3** and **H4**), **Model 1** is used as below:

$$\begin{aligned} \text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_1 \text{Dir_Comp}_{i,t-1} + \text{Ind_Dir\%} + \text{Female_Dir\%} \\ & + \text{Dir_Age} + \beta_1 \text{Controls (governance, performance and others)}_{i,t} \\ & - 1 + \varepsilon_{i,t} \end{aligned}$$

(Model 1)

To test the impact of directors' shareholding on FSF (**H2**), **Model 2** is used as below:

$$\begin{aligned} \text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_2 \text{Dir_Shldng}_{i,t-1} + \text{Ind_Dir\%} + \text{Female_Dir\%} \\ & + \text{Dir_Age} + \beta_1 \text{Controls (governance, performance and others)}_{i,t} \\ & - 1 + \varepsilon_{i,t} \end{aligned}$$

(Model 2)

In the above models, Fraud is a dummy variable. Controls represents control variables, which include variables related to firm-level characteristics and corporate governance measures (Harris and Bromiley 2007; Johnson et al. 2009; O'Connor et al. 2006; McLaughlin et al., 2021; Mason & Williams, 2022; Cumming et al., 2021).

4.6 Descriptive results

4.6.1 Descriptive statistics

Table 1 provides descriptive statistics for all firms combined, while **Table 2** offers a comparative view of the fraud and no-fraud/control firms.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dir_Comp	1,800	14.01	0.96	10.13	17.07
Dir_Shldng	1,806	10.58%	0.19	0.00%	88.83%
Non-Ind_Dir_Comp	1,725	13.92	0.97	8.70	17.07
Non-Ind_Dir_Shldng	1,806	10.57%	0.19	0.00%	88.83%
Ind_Dir_Comp	1,764	12.05	0.55	8.70	15.00
Ind_Dir_Shldng	1,806	0.00%	0.00	0.00%	0.05%
Ind_Dir%	1,806	37.31%	0.07	18.18%	70.00%
Female_Dir%	1,806	12.81%	0.11	0.00%	66.67%
Dir_Age	1,806	50.03	3.83	37.83	63.71
ROA	1,801	4.49%	0.08	-77.54%	165.21%
MVBV	1,792	5.06	24.51	-121.13	816.06
ABig4	1,806	0.03	0.18	0.00	1.00
BoardSize	1,806	10.02	2.47	5.00	23.00
CDual	1,806	0.01	0.08	0.00	1.00
Inst_Ownership	1,736	6.25%	0.08	0.00%	75.10%
MLEV	1,806	0.24	0.22	0.00	3.97
NoBM	1,805	9.26	3.63	2.00	32.00
Top10_Shldr	1,806	57.12%	0.16	4.45%	93.41%
FirmSize1	1806	14.78	1.16	8.82	22.56

This table presents the descriptive statistics related to the independent variables and control variables in this study. Column one represents the number of observations for each variable, column two represents the mean value of the variable, column three gives the standard deviation, whereas column four and five give the minimum and the maximum value of each

variable, respectively. Variables are defined as follows: *Dir_Comp* (log of Directors' total compensation), *Dir_Shldng* (Shareholding of all directors (%)), *Non-Ind_Dir_Comp* (log of non-Independent directors' total compensation), *Non-Ind_Dir_Shldng* (shareholding of non-executive non-independent directors (%)), *Ind_Dir_Comp* (log of independent directors' total compensation), *Ind_Dir_Shldng* (shareholding of independent directors (%)), *Ind_Dir%* (% of independent directors on BoD), *Female_Dir%* (% of female directors), *Dir_Age* (average age of all directors), *MLEV* (match year modified total debt), *ROA* (match year return on assets (%)), *MVBV* (match year market value/ book value), *CDual* (CEO and chair of bod same person), *BoardSize* (total number of directors), *NoBM* (frequency of board meetings), *ABig4* (auditors from "Big 4" accounting firms or not), *Inst_Ownership* (institutional ownership), *Top10_Shldr* (shareholding of top 10 shareholders), *FirmSize1* (firm size), *FirmSize2* (log of net sales); *ControllinG_Shldr* (percentage ownership of controlling shareholder), *SOE* (state-owned enterprise), *Audit_Opinion* (financial auditor opinion), *Foreign_Promoter* (percentage ownership of foreign promoter), *Political_Dir* (politically connected directors).

Table 2: Statistical Description of Fraud vs. Control Firms, 2005–2018

Variable	Fraud		Control		p-value	Fraud Median	Control Median	p-value
	Obs	Mean	Obs	Mean				
<i>Dir_Comp</i>	899	13.97	901	14.04	0.16	14.10	14.10	0.25
<i>Dir_Shldng</i>	903	10.53%	903	10.62%	0.93	0.01%	0.01%	0.37
Non- <i>Ind_Dir_Comp</i>	859	13.90	866	13.94	0.32	13.98	13.98	0.41
Non- <i>Ind_Dir_Shldng</i>	903	10.53%	903	10.62%	0.93	0.01%	0.01%	0.35
<i>Ind_Dir_Comp</i>	877	12.03	887	12.07	0.12	12.10	12.10	0.15
<i>Ind_Dir_Shldng</i>	903	0.00%	903	0.00%	0.31	0.00%	0.00%	0.89
<i>Ind_Dir%</i>	903	37.06%	903	37.57%	0.10*	33.33%	36.36%	0.04**
<i>Female_Dir%</i>	903	12.82%	903	12.80%	0.96	11.11%	11.11%	0.76
<i>Dir_Age</i>	903	49.95	903	50.12	0.37	49.89	50.09	0.21
<i>ROA</i>	900	3.50%	901	5.48%	0.00***	3.67%	4.55%	0.00***
<i>MVBV</i>	897	6.08	895	4.05	0.08*	3.24	3.04	0.28
<i>ABig4</i>	903	0.03	903	0.04	0.03**	0.00	0.00	0.03**

Variable	Fraud		Control		p-value	Fraud		p-value
	Obs	Mean	Obs	Mean		Median	Median	
BoardSize	903	10.04	903	9.99	0.70	9.00	9.00	0.76
CDual	903	0.01	903	0.00	0.08*	0.00	0.00	0.08*
Inst_Ownership	864	5.93%	872	6.57%	0.09*	2.83%	3.72%	0.08*
MLEV	903	0.27	903	0.22	0.00***	0.26	0.18	0.00***
NoBM	902	9.56	903	8.96	0.00***	9.00	8.00	0.00***
Top10_Shldr	903	55.34%	903	58.89%	0.00***	56.19%	60.85%	0.00***
FirmSize1	903	14.78	903	14.78	0.99	14.69	14.65	0.90

*This table presents a comparison, of the fraud firms and the no-fraud/ control firms in the sample. P-value of the mean and the associated significance is based on t-test whereas P-value of the median and the associated significance is based on Wilcoxon Rank-sum (Mann--Whitney) test. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Appendix 1 defines all the variables.*

To check the robustness of the “matching” we conducted t-tests. p values of the t-tests are not significant, which implies that the fraud firms and control firms are similar in size and that the matching is robust.

As is evident from Table 2, average directors’ compensation is higher for control firms as is also the shareholding of directors. With respect to diversity of the BoD, fraud firms tend to have younger boards and higher female representation. On the governance front, CEO duality is higher for fraud firms vis-à-vis control firms. This is intuitive, as when the CEO also acts as the chair of the BoD, he/she can exercise greater control over the BoD, which can open gateways for the manipulation of financial statements. The control firms also have a greater percentage of independent directors on the board, fewer board meetings, and are more likely to have an auditor from the one of the Big 4 audit firms. On the other hand, fraud firms have higher leverage (high MLEV) and were valued more in the equities market (higher MVBV). With respect to ROA, control firms fare better. Most of these results are in line with prior research, which has provided empirical evidence of weakness in governance mechanisms among fraud

firms in comparison to control firms. These flaws in governance include a lower proportion of independent directors, CEO duality, and the auditor not being from one of the top audit firms (Farber 2005; Davidson III et al. 2004; Chen et al. 2011b; Lennox and Pittman 2010).

Table 3 sets out the results of the correlation analysis. The correlation of Dir_Comp and DIR_SHLDNG (representing compensation and shareholding of all directors) with compensation and shareholding of NID is high. That is understandable as non-independent directors' compensation and shareholding is the major sub-set of all directors' compensation and shareholding, respectively. To deal with this issue of high multi-collinearity, separate models are run for all directors, NIDs, and IDs. We also conducted VIF analysis of all models, and the results suggest that multi-collinearity is not an issue.

Table 3: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dir_Comp (1)	1.00									
Dir_Shldng (2)	0.21***	1.00								
Non-Ind_Dir_Comp (3)	1.99***	0.20***	1.00							
Non-Ind_Dir_Shldng (4)	0.21***	1.00***	0.20***	1.00						
Ind_Dir_Comp (5)	0.57***	0.05*	0.50***	0.05*	1.00					
Ind_Dir_Shldng (6)	-0.04	-0.04	-0.04*	-0.04*	-0.05*	1.00				
Ind_Dir% (7)	0.08***	0.13***	0.03	0.13***	0.16***	0.01	1.00			
Female_Dir% (8)	0.10***	0.17***	0.09***	0.17***	-0.01	-0.02	0.05**	1.00		
Dir_Age (9)	0.20***	-0.08***	0.18***	-0.08***	0.24***	-0.05**	0.13***	-0.09***	1.00	
ROA (10)	0.09***	0.14***	0.12***	0.14***	0.05**	-0.01	0.03	0.02	0.04	1.00
MVBV (11)	-0.05**	-0.02	-0.07***	-0.02	-	-0.01	-0.00	0.03	-0.03	0.02
ABig4 (12)	0.11***	-0.09***	0.12***	-0.09***	0.19***	-0.01	0.03	-0.02	0.11***	-0.01
BoardSize (13)	0.22***	-0.13***	0.20***	-0.13***	0.30***	-0.04*	-0.08***	-0.02	0.10***	0.02
CDual (14)	0.03	-0.01	0.02	-0.01	0.04	-0.01	0.02	0.03	0.04	0.01
Inst_Ownership (15)	0.13***	-0.05**	0.10***	-0.06**	0.09***	-0.03	-0.02	-0.04*	0.04	0.13***
MLEV (16)	-0.08***	-0.24***	-0.06**	-0.24***	-0.00	0.04	-0.06**	-0.06***	-0.02	-0.15***

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
NoBM (17)	0.19***	0.04*	0.17***	0.04*	0.15***	0.02	0.08***	0.08***	-0.05*	-0.01
Top10_Shldr (18)	0.05**	0.29***	0.06**	0.29***	0.07***	0.00	0.06***	0.00	0.00	0.14***
FirmSize1 (19)	0.40***	-0.16***	0.39***	-0.16***	0.44***	-0.02	0.04*	-0.07***	0.34***	-0.06**

Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Appendix 1 defines all the variables.

Table 3: Correlation matrix (contd.)

Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
MVBV (11)	1.00								
ABig4 (12)	-0.02	1.00							
BoardSize (13)	-0.01	0.10***	1.00						
CDual (14)	-0.01	0.13***	0.05**	1.00					
Inst_Ownership (15)	0.01	0.00	0.08***	0.02	1.00				
MLEV (16)	-0.02	0.03	0.08***	0.01	-0.00	1.00			
NoBM (17)	0.01	-0.01	0.06***	0.01	0.113***	0.11***	1.00		

Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Top10_Shldr (18)	-0.07***	0.08***	-0.00	-0.05*	0.04*	-0.15***	-0.02	1.00	
FirmSize1 (19)	-0.11***	0.25***	0.28***	0.06**	0.16***	0.25***	0.22***	0.08***	1.00

Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Appendix 1 defines all the variables.

4.7 Empirical results

To test the hypotheses, probit regression analysis is undertaken as probit is a suitable regression method when the outcome variable is binary (Ullah et al. 2019; Chen et al. 2018; Chen et al. 2006). The large sample size in this study further stands in favour of using probit regression as probit models, which are based on the maximum likelihood technique, require a large number of observations (UCLA).

Table 4: Probit regression results

	Model 1	Model 2
Independent Variables		
Dir_Comp	0.00 (0.90)	
Dir_Shldng		0.45** (0.01)
Ind_Dir%	-0.79* (0.10)	-0.90* (0.06)
Female_Dir%	-0.08 (0.77)	-0.17 (0.54)
Dir_Age	0.00 (0.91)	0.00 (0.83)
Control Variables		
ROA	-2.35*** (0.00)	-2.49*** (0.00)
MVBV	0.01 (0.13)	0.01 (0.11)
ABig4	-0.36** (0.05)	-0.34* (0.06)
BoardSize	0.00 (0.90)	0.00 (0.76)

	Model 1	Model 2
CDual	0.83** (0.04)	0.82** (0.04)
Inst_Ownership	-0.54 (0.18)	-0.48 (0.23)
MLEV	0.65*** (0.00)	0.73*** (0.00)
NoBM	0.03*** (0.00)	0.03*** (0.00)
Top10_Shldr	-0.44** (0.04)	-0.57*** (0.01)
FirmSize1	-0.03 (0.49)	-0.02 (0.66)
_cons	0.51 (0.43)	0.43 (0.46)
N	1,713	1,718
Pseudo R2	0.04	0.04

*This table provides results of probit regression for Model 1 and Model 2 analysing the association between directors' compensation, directors' shareholding and financial statement fraud for an industry, size, and year matched sample of fraud and control/non-fraud firms. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and *denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

Table 4 sets out the result of probit regression for all the hypotheses. The results indicate an insignificant association between directors' compensation and FSF (*coef: 0.00, p-value: 0.90*). Therefore, **H1** cannot be accepted. Thus, we find no support for our hypothesis that directors' compensation is positively linked to the incidence of FSF.

H2, concerning the association between directors' shareholding and FSF, is accepted, with *Dir_Shldng* having a significant positive coefficient (*coef: 0.45, p-value: 0.01*), which implies that the incidence of FSF increases as directors' shareholding increases. Thus, our results do not support the agency theory mechanism of using compensation and incentives to align the divergent interests of the directors and the shareholders (see Shapiro, 2005). Consistent with our hypothesis, our results indicate that directors' stockholding increases the incidence of FSF. Our findings on directors' shareholding are largely consistent with research that argues against the use of stock-based compensation (see Aboody and Kasznik 2000; Martin et al. 2019; Rose et al. 2013; Boumosleh 2009; Durongkadej et al., 2021).

We also test the economic significance of our results with respect to directors' shareholding and find that one standard deviation increase in directors' shareholding increases the likelihood of FSF by 0.086 units.

The association between the presence of independent directors on the BoD and FSF is significant at 10% level. Thus, **H3** is accepted. This result is consistent with our hypothesis and with the monitoring perspective of agency theory which argues that institution of monitoring mechanisms is necessary to safeguard the interests of the principals (see Nicholson & Kiel, 2007; Fama & Jensen, 1983). According to Cheung et al. (2013), BoD independence is a critical monitoring mechanism as it minimises the conflicts of interests between majority and minority shareholders. Our results also find support in research by Abu-Dawleh et al. (2022), Chen et al. (2006), Lai and Tam (2017), and Razzaque et al. (2020).

In case of model 1, economic significance of BoD independence is indicated by 0.053 units decrease in the likelihood of FSF with one standard deviation increase in BoD independence whereas in model 2, the decrease in likelihood of FSF is 0.060 units with one standard deviation increase in BoD independence.

With respect to BoD diversity (**H4**), no significant causal relationship between percentage of female directors or directors' age and FSF is found. Hence, **H4** finds no support in the empirical results and is rejected. An insignificant impact of female

directors on the board finds support in research by McGuinness et al. (2015), Carter et al. (2010), and Harris et al. (2019).

Among the other control variables, ABig4(-), CDual(+), MLEV(+), NoBM(+), ROA(-), and Top10_Shldr(-) continue to be significant across Models 1 and 2, implying that these variables have an influence on the incidence of fraud. The positive association between NoBM and FSF, though counter-intuitive, is not unprecedented. Chen et al. (2006) also report a positive association between frequency of BoD meetings and the incidence of fraud. High leverage increases the incidence of fraud is the conclusion that can be drawn from the significant positive association between FSF and MLEV. Firth et al. (2011) also support this conclusion. The negative association between ownership concentration (TOP10_SHLDR) and FSF is contrary to the expectation. Negative association between auditor size (ABig4) and earnings management finds support in Chen et al. (2011b). Consistent with agency theory (which regards CEO duality as a sign of weak corporate governance (Sheikh et al., 2018)), we find a positive association between CDual and FSF. This finding is also detected by O'Connor et al. (2006).

MVBV and board size are insignificant across all the models. Lai and Tam (2017) support the absence of any association between earnings management and BoD size. Chen et al. (2006) also do not find any association between fraud and board size.

4.7.1 Additional analysis

For additional analysis, we use **Models 3(a)** and **4(a)** to test the impact of non-independent directors' and independent directors' compensation, respectively, on the incidence of FSF. **Models 3(b)** and **4(b)** are used to test the impact of non-independent directors' and independent directors' shareholding, respectively, on the incidence of FSF.

$$\begin{aligned} \text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_2 \text{Non-Ind_Dir_Compi,t-1} + \text{Ind_Dir\%} \\ & + \text{Female_Dir\%} + \text{Dir_Age} \\ & + \beta_1 \text{Controls (governance, performance and others)}_{i,t-1} + \varepsilon_{i,t} \end{aligned}$$

Model 3(a)

$$\begin{aligned}\text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_2 \text{Non-Ind_Dir_Shldng}_{i,t-1} + \text{Ind_Dir\%} \\ & + \text{Female_Dir\%} + \text{Dir_Age} \\ & + \beta_1 \text{Controls (governance, performance and others)}_{i,t-1} + \varepsilon_{i,t}\end{aligned}$$

Model 3(b)

$$\begin{aligned}\text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_1 \text{Ind_Dir_Comp}_{i,t-1} + \text{Ind_Dir\%} + \text{Female_Dir\%} \\ & + \text{Dir_Age} + \beta_1 \text{Controls (governance, performance and others)}_{i,t-1} + \varepsilon_{i,t}\end{aligned}$$

Model 4(a)

$$\begin{aligned}\text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_2 \text{Ind_Dir_Shldng}_{i,t-1} + \text{Ind_Dir\%} + \text{Female_Dir\%} \\ & + \text{Dir_Age} + \beta_1 \text{Controls (governance, performance and others)}_{i,t-1} + \varepsilon_{i,t}\end{aligned}$$

Model 4(b)

The results of the above models are presented in **Table 5**.

Table 5: Additional Analysis (Probit Regression)

	Model 3a	Model 3b	Model 4a	Model 4b
<u>Independent Variables</u>				
Non-Ind_Dir_Comp	0.01 (0.75)			
Non-Ind_Dir_Shldng		0.45** (0.01)		
Ind_Dir_Comp			-0.04 (0.53)	
Ind_Dir_Shldng				-1,894.50 (0.12)
Ind_Dir%	-0.85* (0.08)	-0.90* (0.06)	-0.69 (0.15)	-0.80* (0.09)
Female_Dir%	-0.04	-0.17	-0.04	-0.09

	Model 3a	Model 3b	Model 4a	Model 4b
	(0.88)	(0.54)	(0.88)	(0.76)
Dir_Age	-0.00 (0.95)	0.00 (0.83)	0.00 (0.88)	0.00 (0.92)
<u>Control</u>				
<u>Variables</u>				
ROA	-2.99*** (0.00)	-2.49*** (0.00)	-2.28*** (0.00)	-2.33*** (0.00)
MVBV	0.0122* (0.08)	0.01 (0.11)	0.01 (0.13)	0.01 (0.13)
ABig4	-0.38** (0.05)	-0.34* (0.06)	-0.34* (0.06)	-0.37** (0.04)
BoardSize	0.00 (0.74)	0.00 (0.76)	0.00 (0.84)	0.00 (0.91)
CDual	0.84** (0.03)	0.82** (0.04)	0.82** (0.04)	0.83** (0.04)
Inst_Ownership	-0.57 (0.16)	-0.48 (0.23)	-0.45 (0.26)	-0.55 (0.17)
MLEV	0.62*** (0.01)	0.73*** (0.00)	0.63*** (0.00)	0.67*** (0.00)
NoBM	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Top10_Shldr	-0.31 (0.15)	-0.57*** (0.01)	-0.48** (0.03)	-0.43** (0.04)
FirmSize1	-0.01 (0.79)	-0.02 (0.66)	-0.02 (0.66)	-0.03 (0.50)
_cons	0.19 (0.77)	0.43 (0.46)	0.86 (0.27)	0.57 (0.33)
N	1,642	1,718	1,680	1,718
Pseudo R2	0.04	0.04	0.04	0.04

*This table provides results of probit regression for Models 3a, 3b, 4a, and 4b analysing the association between non-independent directors' compensation & shareholding and FSF (Model 3a and 3b) and between independent directors' compensation & shareholding and FSF (Model 4a and 4b) for an industry, size, and year matched sample of fraud and control/non-fraud firms. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

In the additional analysis, Non-Ind_Dir_Shldng has a significantly positive association with FSF whereas Ind_Dir_Comp, and Ind_Dir_Shldng are insignificant implying that the independent directors' compensation and shareholding have no impact on the incidence of FSF. Further, Non-Ind_Dir_Comp is also insignificant and it is only the shareholding of non-independent directors (Non-Ind_Dir_Shldng) which can lead to an increase in the likelihood of FSF. The results for control variables are mostly in line with those for Models 1 and 2.

4.7.2 Robustness tests

To establish the robustness of the results, a series of tests, including the use of different regression models (logistic regression and conditional logistic regression) to test for endogeneity, heteroscedasticity, and multi-collinearity are undertaken.

Endogeneity can arise on account of omitted variables (unobserved variables or self-selection), measurement error, and simultaneity (Wooldridge 2010). To test for omitted variables, we use the STATA command 'estat ovtest, rhs' to perform the Ramsey RESET test (Zahid et al. 2020) for model 1 and model 2. The significant p-values suggest that there are missing values in the regression model. To address this issue we follow the Rivers and Vuong method implemented via the command 'ivprobit' in STATA (Peel 2014; Wooldridge 2010). We use FirmSize2 (log of net sales) as an instrument in both the models (1 and 2). For an instrument to be valid it should not be correlated with the error term and should be correlated with the endogenous regressor (Wooldridge 2010). Like total assets (FirmSize1), net sales (FirmSize2) are also an

indicator of firm size (Dang et al. 2018) and hence are expected to be correlated with the total assets. Further, net sales are not expected to be directly related to the occurrence of FSF. The results of ivprobit (**Table 6**) are in line with those of the probit regression (Table 4) with Dir_Comp being insignificant and Dir_Shldng being significant with a positive co-efficient. Likewise, Ind_Dir%(-), ROA(-), ABig4(-), CDual(+), MLEV(+), NoBM(+), and Top10_Shldr(-) continue to be significant under ivprobit, as in case of probit regression. However, MVBV(+) also becomes significant under instrumental variable method.

Further, the insignificant p-value of Wald's exogeneity test suggests absence of endogeneity on account of omitted variables.

Table 6: IV Probit

	Model 1	Model 2
Independent Variables		
Dir_Comp	0.02 (0.57)	
Dir_Shldng		0.45** (0.01)
Ind_Dir%	-0.81* (0.09)	-0.91* (0.06)
Female_Dir%	-0.08 (0.78)	-0.15 (0.59)
Dir_Age	0.00 (0.80)	0.00 (0.76)
Control Variables		
ROA	-2.79*** (0.00)	-2.92*** (0.00)
MVBV	0.01* (0.07)	0.01* (0.06)
ABig4	-0.35* (0.07)	-0.33* (0.08)

	Model 1	Model 2
BoardSize	0.00 (0.78)	0.01 (0.63)
CDual	0.85** (0.03)	0.83** (0.04)
Inst_Ownership	-0.47 (0.24)	-0.41 (0.30)
MLEV	0.69*** (0.00)	0.74*** (0.00)
NoBM	0.03*** (0.00)	0.03*** (0.00)
Top10_Shldr	-0.38* (0.07)	-0.52** (0.02)
FirmSize1	-0.05 (0.36)	-0.03 (0.60)
_cons	0.49 (0.48)	0.48 (0.46)
Wald test of exogeneity (corr = 0): chi2(1) =	0.85	0.46
Prob > chi2 =	0.36	0.50

*This table provides results of IVprobit regression for Models 1 and 2 to address concerns with respect to endogeneity on account of omitted variables. FirmSize1 has been identified as the endogenous variable and FirmSize2 (log of net sales) is regarded as the instrument. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

To deal with other forms of endogeneity we employ propensity score matching (PSM) in line with Conyon and He (2016), Li (2013), Wang et al. (2019), and Choi et al. (2021b). Yuan and Wen (2018) argue that PSM attributes the observed effects to the

independent variable. Rosenbaum and Rubin (1983) assert that PSM can remove bias on account of all observed covariates. On the other hand, Reeb et al. (2012) affirm that PSM can rectify reverse causality and other non-random treatment effects. Another advantage of the PSM is that it removes firms that do not have comparable firms and thus reduces the number of extrapolations. According to Shipman et al. (2017) PSM also reduces the concerns with respect to model specification and those related to structural issues in the data.

However, this method has some limitations. According to Reeb et al. (2012), matching can become tough in case at a particular propensity score there are few untreated firms and several treated firms. Further, PSM may not address endogeneity on account of unobservable factors, however the method can alleviate endogeneity concerns on account of functional form misspecification (Shipman et al. 2017).

Probit regression is run on the propensity score matched sample. The % bias is mostly less than 5%, and p-values of the t-tests are insignificant (>0.05) (**Table 7b**), implying that the matching is acceptable. Further, the results of the PSM (**Table 7a**) tally with those of the probit regression (Table 4) across all models, which implies that the results are robust.

Table 7a: Propensity Score Matching (PSM)

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Independent Variables						
Dir_Comp	0.00 (0.90)					
Dir_Shldng		0.45** (0.01)				
Non-Ind_Dir_Comp			0.01 (0.75)			

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Non- Ind_Dir_Shldng				0.45** (0.01)		
Ind_Dir_Comp					-0.04 (0.54)	
Ind_Dir_Shldng						- 1,894.50 (0.24)
Ind_Dir%	-0.79* (0.09)	-0.91* (0.06)	-0.85* (0.08)	-0.90* (0.06)	-0.69 (0.15)	-0.80* (0.09)
Female_Dir%	-0.08 (0.77)	-0.17 (0.54)	-0.04 (0.88)	-0.17 (0.54)	-0.04 (0.88)	-0.09 (0.76)
Dir_Age	0.00 (0.91)	0.00 (0.83)	-0.00 (0.95)	0.00 (0.83)	0.00 (0.88)	0.00 (0.92)
Control Variables						
ROA	- 2.35*** (0.00)	- 2.49*** (0.00)	-2.99*** (0.00)	-2.49*** (0.00)	- 2.28*** (0.00)	- 2.33*** (0.00)
MVBV	0.01 (0.13)	0.01 (0.11)	0.0122* (0.08)	0.01 (0.11)	0.01 (0.12)	0.01 (0.13)
ABig4	-0.36** (0.04)	-0.34* (0.06)	-0.38** (0.05)	-0.34* (0.06)	-0.34* (0.06)	-0.37** (0.04)
BoardSize	0.00 (0.90)	0.00 (0.76)	0.00 (0.74)	0.00 (0.76)	0.00 (0.84)	0.00 (0.91)
CDual	0.83** (0.04)	0.82** (0.05)	0.84** (0.03)	0.82** (0.05)	0.82** (0.04)	0.83** (0.04)
Inst_Ownership	-0.54 (0.19)	-0.48 (0.24)	-0.57 (0.16)	-0.48 (0.24)	-0.45 (0.28)	-0.55 (0.18)
MLEV	0.65***	0.73***	0.62***	0.73***	0.63***	0.67***

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
NoBM	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Top10_Shldr	-0.44** (0.04)	- 0.57*** (0.01)	-0.31 (0.15)	-0.57*** (0.01)	-0.48** (0.02)	-0.43** (0.04)
FirmSize1	-0.03 (0.46)	-0.02 (0.64)	-0.01 (0.79)	-0.02 (0.64)	-0.02 (0.64)	-0.03 (0.47)
_cons	0.51 (0.42)	0.43 (0.44)	0.19 (0.77)	0.43 (0.44)	0.86 (0.27)	0.57 (0.31)
N	1,713	1,718	1,642	1,718	1,680	1,718

*This table provides results of propensity score matching based probit regression for Models 1, 2, 3a, 3b, 4a and 4b to address concerns with respect to endogeneity on account of all other factors except omitted variables. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

Table 7b: PSM (% bias & p-values)

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Independent Variables						
Dir_Comp	-0.10 (0.99)					
Dir_Shldng		2.20 (0.65)				

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Non- Ind_Dir_Comp			-1.80 (0.72)			
Non- Ind_Dir_ShldnG				2.20 (0.65)		
Ind_Dir_Comp					0.30 (0.96)	
Ind_Dir_Shldng						-0.40 (0.90)
Ind_Dir%	-2.70 (0.58)	-2.10 (0.66)	-2.60 (0.59)	-2.10 (0.66)	-2.70 (0.58)	-2.50 (0.60)
Female_Dir%	- (0.99)	0.50 (0.92)	-0.50 (0.92)	0.50 (0.92)	-0.10 (0.98)	- (1.00)
Dir_Age	0.70 (0.88)	0.90 (0.85)	-0.40 (0.94)	0.90 (0.85)	1.10 (0.83)	0.70 (0.89)
Control Variables						
ROA	-5.80 (0.20)	-5.80 (0.21)	-3.30 (0.38)	-5.80 (0.21)	-5.40 (0.24)	-5.80 (0.21)
MVBV	1.10 (0.56)	0.90 (0.63)	0.90 (0.44)	0.90 (0.63)	1.30 (0.52)	1.10 (0.56)
ABig4	- (1.00)	-0.50 (0.90)	-0.30 (0.94)	-0.50 (0.90)	0.40 (0.92)	0.20 (0.96)
BoardSize	0.40 (0.94)	0.10 (0.98)	-0.10 (0.99)	0.10 (0.98)	1.00 (0.84)	0.30 (0.95)
CDual	4.40 (0.42)	4.00 (0.46)	2.30 (0.70)	4.00 (0.46)	4.70 (0.40)	4.30 (0.43)
Inst_Ownership	2.10 (0.65)	1.90 (0.69)	1.90 (0.69)	1.90 (0.69)	1.90 (0.69)	2.10 (0.64)
MLEV	-2.00	-2.40	-0.60	-2.40	-2.10	-1.70

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
	(0.69)	(0.64)	(0.91)	(0.64)	(0.69)	(0.73)
NoBM	-0.80 (0.87)	-0.90 (0.87)	-2.00 (0.71)	-0.90 (0.87)	-0.30 (0.95)	-0.90 (0.86)
Top10_Shldr	3.20 (0.52)	3.20 (0.51)	3.40 (0.50)	3.20 (0.51)	2.70 (0.58)	3.00 (0.53)
FirmSize1	-1.30 (0.78)	-1.80 (0.70)	-1.80 (0.71)	-1.80 (0.70)	-0.50 (0.91)	-1.50 (0.76)

*This table provides results of the % bias and p-values associated with the propensity score matching based probit regression for Models 1, 2, 3a, 3b, 4a and 4b. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

The results of logistic regression and conditional logistic regression reconfirm the results of the probit regression with respect to the statistical significance Dir_Shldng(+) and Ind_Dir%(-). Dir_Comp, Female_Dir%, and Dir_Age continue to be insignificant. Detailed results of these tests are provided in **Tables 8a** and **8b**.

Table 8a: Model 1 (Clogit, Logit, and Probit)

	Clogit	Logit	Probit
Independent Variables			
Dir_Comp	-0.04 (0.60)	0.02 (0.80)	0.00 (0.90)
Ind_Dir%	-1.39* (0.08)	-1.28* (0.10)	-0.79* (0.10)
Female_Dir%	-0.25 (0.62)	-0.11 (0.81)	-0.08 (0.77)
Dir_Age	0.00 (0.87)	0.00 (0.91)	0.00 (0.91)
Control Variables			
ROA	-4.77*** (0.00)	-4.05*** (0.00)	-2.35*** (0.00)
MVBV	0.01 (0.15)	0.01 (0.14)	0.01 (0.13)
ABig4	-0.54 (0.12)	-0.60** (0.05)	-0.36** (0.05)
BoardSize	0.01 (0.83)	0.00 (0.92)	0.00 (0.90)
CDual	1.37** (0.02)	1.35** (0.04)	0.83** (0.04)
Inst_Ownership	-1.44** (0.05)	-0.85 (0.18)	-0.54 (0.18)
MLEV	1.56*** (0.00)	1.11*** (0.00)	0.65*** (0.00)
NoBM	0.04*** (0.01)	0.05*** (0.00)	0.029*** (0.00)
Top10_Shldr	-0.65	-0.68**	-0.44**

	(0.10)	(0.05)	(0.04)
FirmSize1	-0.04 (0.76)	-0.05 (0.45)	-0.03 (0.49)
_cons	0.78 (0.47)	0.51 (0.43)	
N	1,644	1,713	1,713

*This table provides results of conditional logistic, logistic, and probit regression for Model 1 for analysing the association between directors' compensation and financial statement fraud for an industry, size, and year matched sample of fraud and control/non-fraud firms. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

Table 8b: Model 2 (Clogit, Logit, and Probit)

	Clogit	Logit	Probit
Independent Variables			
Dir_Shldng	0.78** (0.02)	0.75** (0.01)	0.45** (0.01)
Ind_Dir%	-1.48* (0.06)	-1.46* (0.06)	-0.90* (0.06)
Female_Dir%	-0.39 (0.44)	-0.25 (0.57)	-0.17 (0.54)
Dir_Age	0.01 (0.65)	0.00 (0.82)	0.00 (0.83)
Control Variables			
ROA	-5.15*** (0.00)	-4.28*** (0.00)	-2.49*** (0.00)

	Clogit	Logit	Probit
MVBV	0.01 (0.14)	0.01 (0.12)	0.01 (0.11)
ABig4	-0.52 (0.14)	-0.57* (0.06)	-0.34* (0.06)
BoardSize	0.00 (0.86)	0.01 (0.76)	0.00 (0.76)
CDual	1.35** (0.02)	1.33** (0.04)	0.82** (0.04)
Inst_Ownership	-1.24* (0.09)	-0.75 (0.24)	-0.48 (0.23)
MLEV	1.70*** (0.00)	1.24*** (0.00)	0.73*** (0.00)
NoBM	0.04*** (0.01)	0.04*** (0.00)	0.03*** (0.00)
Top10_Shldr	-0.84** (0.04)	-0.89** (0.01)	-0.57*** (0.01)
FirmSize1	-0.07 (0.64)	-0.03 (0.63)	-0.02 (0.66)
_cons	0.71 (0.45)	0.43 (0.46)	
N	1,652	1,718	1,718

*This table provides results of conditional logistic, logistic, and probit regression for Model 2 for analysing the association between directors' shareholding and financial statement fraud for an industry, size, and year matched sample of fraud and control/non-fraud firms. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

To deal with heteroscedasticity, we calculate robust standard errors. We also include additional variables in the regression to check the robustness of the results. Empirical

evidence shows that controlling shareholders can engage in tunnelling and rent-sharing behaviour (Zhang et al. 2014). Further, foreign ownership has an influence on the governance of the corporation (Lel 2018; Gul et al. 2010) and a qualified/adverse opinion from the auditors could be a harbinger of fraud (Donelson et al. 2017a). Therefore, we add percentage ownership of controlling shareholder (Controlling_Shldr), percentage ownership of foreign promoters (Foreign_Promoter), and auditors' opinion (Audit_Opinion) into the analysis. With additional variables too (Table 9), Dir_Shldng and Non-Ind_Dir_Shldng have a significant positive association with FSF. Percentage of independent directors has a negative coefficient across all models which is significant in case of Models 2, 3a, and 3b.

Table 9: Additional variables

	Model 1	Model 2	Model3 a	Model3 b	Model4 a	Model4 b
Independent Variables						
Dir_Comp	0.01 (0.82)					
Dir_Shldng		0.47** *				
		(0.01)				
Non-Ind_Dir_Comp			0.02 (0.66)			
Non-Ind_Dir_Shldng				0.47*** (0.01)		
Ind_Dir_Comp					-0.05 (0.45)	
Ind_Dir_Shldng						- 1,936.50 (0.12)

	Model 1	Model 2	Model3 a	Model3 b	Model4 a	Model4 b
Ind_Dir%	-0.77 (0.11)	-0.88* (0.07)	-0.82* (0.10)	-0.88* (0.07)	-0.66 (0.18)	-0.77 (0.11)
Female_Dir%	-0.08 (0.78)	-0.17 (0.55)	-0.04 (0.88)	-0.17 (0.55)	-0.04 (0.89)	-0.08 (0.78)
Dir_Age	0.00 (0.84)	0.00 (0.78)	-0.00 (0.97)	0.00 (0.78)	0.00 (0.79)	0.00 (0.85)
Control Variables						
ROA	-2.28*** (0.00)	- 2.41** * (0.00)	- 2.95*** (0.00)	-2.41*** (0.00)	- 2.19*** (0.00)	-2.25*** (0.00)
MVBV	0.01 (0.14)	0.01 (0.12)	0.0117* (0.08)	0.01 (0.12)	0.01 (0.14)	0.01 (0.14)
ABig4	-0.41** (0.03)	-0.38** (0.04)	-0.42** (0.03)	-0.38** (0.04)	-0.39** (0.04)	-0.41** (0.03)
BoardSize	-0.00 (0.92)	0.00 (0.90)	0.00 (0.92)	0.00 (0.90)	0.00 (0.99)	-0.00 (0.92)
CDual	0.86** (0.03)	0.85** (0.03)	0.88** (0.03)	0.85** (0.03)	0.85** (0.03)	0.86** (0.03)
Inst_Ownership	-0.59 (0.15)	-0.50 (0.22)	-0.61 (0.15)	-0.50 (0.22)	-0.51 (0.22)	-0.59 (0.15)
MLEV	0.83*** (0.00)	0.91** * (0.00)	0.80*** (0.00)	0.91*** (0.00)	0.80*** (0.00)	0.84*** (0.00)
NoBM	0.03*** (0.00)	0.03** * (0.00)	0.03*** (0.01)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)

	Model 1	Model 2	Model3 a	Model3 b	Model4 a	Model4 b
Top10_Shldr	-0.24 (0.38)	-0.44 (0.12)	-0.14 (0.62)	-0.44 (0.12)	-0.26 (0.34)	-0.25 (0.36)
FirmSize1	-0.04 (0.33)	-0.03 (0.48)	-0.02 (0.59)	-0.03 (0.48)	-0.03 (0.50)	-0.04 (0.34)
Controlling_Shldr	-0.28 (0.30)	-0.20 (0.47)	-0.24 (0.39)	-0.20 (0.47)	-0.29 (0.29)	-0.25 (0.35)
Audit_Opinion	0.43 (0.17)	0.45 (0.16)	0.48 (0.17)	0.45 (0.16)	0.42 (0.20)	0.42 (0.18)
Foreign_Promoter	0.33 (0.51)	0.46 (0.35)	0.39 (0.44)	0.46 (0.35)	0.19 (0.71)	0.32 (0.52)
_cons	0.55 (0.40)	0.52 (0.37)	0.25 (0.71)	0.52 (0.37)	1.02 (0.20)	0.65 (0.26)
N	1,695	1,700	1,624	1,700	1,662	1,700

*This table provides results of probit regression for Models 1,2, 3a,3b, 4a, and 4b by introducing three new variables in three new variables related to shareholding of the controlling shareholder, auditors' opinion, and shareholding of foreign promoter. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

To deal with outliers in the data, we winsorize all variables at 1% and 99% (Table 10). In the re-estimated models, Dir_Shldng and Non-Ind_Dir_Shldng continue to have a significant positive impact on the incidence of FSF whereas Ind_Dir% has significant negative impact on the incidence of FSF across all models (except model 4a).

Table 10: Winsorized variables

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Independent Variables						
Dir_Comp_win	0.01 (0.81)					
Dir_Shldng_win		0.51*** (0.01)				
Non-Ind_Dir_Comp_win			0.02 (0.57)			
Non-Ind_Dir_Shldng_win				0.51*** (0.01)		
Ind_Dir_Comp_win					-0.05 (0.46)	
Ind_Dir_Shldng_win						-4,897.20 (0.47)
Ind_Dir%_win	-0.89* (0.07)	-1.00** (0.04)	-0.91* (0.07)	-1.00** (0.04)	-0.76 (0.12)	-0.88* (0.07)
Female_Dir%_win	-0.10 (0.71)	-0.20 (0.48)	-0.10 (0.74)	-0.20 (0.48)	-0.06 (0.83)	-0.10 (0.71)
Dir_Age_win	0.00 (0.97)	0.00 (0.90)	-0.00 (0.91)	0.00 (0.90)	0.00 (0.95)	0.00 (0.96)
Control Variables						
ROA_win	- 3.27*** (0.00)	- 3.47*** (0.00)	-3.53*** (0.00)	-3.47*** (0.00)	- 3.15*** (0.00)	-3.25*** (0.00)
MVBV_win	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ABig4_win	-0.32* (0.07)	-0.29 (0.11)	-0.31* (0.09)	-0.29 (0.11)	-0.29 (0.11)	-0.32* (0.08)
BoardSize_~n	-0.00 (0.76)	-0.00 (0.93)	-0.00 (0.87)	-0.00 (0.93)	-0.00 (0.86)	-0.00 (0.80)
CDual_win	- (.)	- (.)	- (.)	- (.)	- (.)	- (.)
Inst_Ownership _win	-0.54 (0.23)	-0.47 (0.29)	-0.62 (0.17)	-0.47 (0.29)	-0.45 (0.32)	-0.55 (0.22)
MLEV_win	0.75*** (0.00)	0.82*** (0.00)	0.73*** (0.00)	0.82*** (0.00)	0.71*** (0.00)	0.75*** (0.00)
NoBM_win	0.03*** (0.00)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.00)	0.03*** (0.00)
Top10_Shldr_win	-0.36* (0.09)	-0.51** (0.02)	-0.27 (0.22)	-0.51** (0.02)	-0.40* (0.06)	-0.37* (0.08)
FirmSize1_win	-0.01 (0.72)	-0.00 (0.98)	-0.00 (0.92)	-0.00 (0.98)	-0.00 (0.97)	-0.01 (0.76)
_cons	0.29 (0.66)	0.24 (0.69)	-0.00 (1.00)	0.24 (0.69)	0.75 (0.35)	0.38 (0.53)
N	1,718	1,718	1,642	1,718	1,680	1,718

*This table provides results of probit regression for Models 1, 2, 3a, 3b, 4a, and 4b for winsorized variables to deal with outliers in the data. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

Shi et al. (2020) find that a high level of state ownership has a negative influence on securities fraud. Therefore, we undertake a sub-sample analysis. The first sub-sample

comprises SOE fraud firms and the second comprises non-SOE fraud firms. In both subsamples, directors' compensation continues to be insignificant, whereas Dir_Shldng and Non-Ind_Dir_Shldng are significant. However, in the case of SOE fraud firms, this association is negative while it is positive in case of non-SOEs, implying that directors' shareholding reduces the incidence of FSF in the case of SOEs while it increases the likelihood of FSF in non-SOE firms.

Table 11a: FSF as SOE

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Independent Variables						
Dir_Comp	-0.02 (0.86)					
Dir_Shldng		-2.18** (0.03)				
Non-Ind_Dir_Comp			-0.08 (0.36)			
Non-Ind_Dir_Shldng				-2.18** (0.03)		
Ind_Dir_Comp					-0.06 (0.70)	
Ind_Dir_Shldng						-1.010.80 (0.57)
Ind_Dir%	-1.99 (0.11)	-1.88 (0.13)	-2.24* (0.09)	-1.88 (0.13)	-1.85 (0.15)	-2.07* (0.09)
Female_Dir%	-0.08 (0.92)	-0.07 (0.93)	-0.05 (0.95)	-0.07 (0.93)	-0.05 (0.95)	-0.08 (0.91)
Dir_Age	0.02 (0.29)	0.02 (0.28)	0.02 (0.33)	0.02 (0.28)	0.02 (0.36)	0.02 (0.30)
Control Variables						

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
ROA	- 5.77*** (0.00)	- 5.30*** (0.01)	-4.65** (0.02)	-5.30*** (0.01)	-5.33*** (0.01)	-5.62*** (0.00)
MVBV	-0.00 (0.88)	-0.00 (0.93)	-0.01 (0.74)	-0.00 (0.93)	-0.00 (0.95)	-0.00 (0.87)
ABig4	-1.06** (0.01)	- 1.09*** (0.01)	-0.96** (0.03)	-1.09*** (0.01)	-1.05** (0.01)	-1.08** (0.01)
BoardSize	-0.00 (0.89)	-0.00 (0.90)	0.01 (0.83)	-0.00 (0.90)	0.00 (0.90)	-0.00 (0.90)
CDual	0.48 (0.48)	0.47 (0.49)	0.49 (0.47)	0.47 (0.49)	0.43 (0.53)	0.46 (0.50)
Inst_Ownership	-0.75 (0.40)	-0.84 (0.34)	-1.19 (0.19)	-0.84 (0.34)	-0.67 (0.45)	-0.79 (0.37)
MLEV	0.59 (0.25)	0.61 (0.21)	0.54 (0.29)	0.61 (0.21)	0.47 (0.35)	0.65 (0.18)
NoBM	0.00 (0.90)	0.00 (0.93)	0.00 (0.89)	0.00 (0.93)	0.00 (0.94)	0.00 (0.94)
Top10_Shldr	0.08 (0.88)	0.13 (0.81)	0.13 (0.81)	0.13 (0.81)	0.01 (0.98)	0.11 (0.83)
FirmSize1	0.09 (0.31)	0.07 (0.43)	0.08 (0.37)	0.07 (0.43)	0.11 (0.24)	0.08 (0.35)
_cons	-1.51 (0.29)	-1.44 (0.27)	-0.52 (0.73)	-1.44 (0.27)	-1.23 (0.46)	-1.51 (0.24)
N	306	309	277	309	297	309

*This table provides results of probit regression for Models 1, 2, 3a, 3b, 4a, and 4b for fraud firms which are state owned enterprises (SOE). The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

Table 11b: FSF as Non-SOE

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Independent Variables						
Dir_Comp	0.02 (0.71)					
Dir_Shldng		0.54*** (0.00)				
Non- Ind_Dir_Comp			0.04 (0.39)			
Non- Ind_Dir_Shldng				0.54*** (0.00)		
Ind_Dir_Comp					-0.04 (0.56)	
Ind_Dir_Shldng						- 2,080.90 (0.22)
Ind_Dir%	-0.61 (0.24)	-0.70 (0.18)	-0.65 (0.21)	-0.70 (0.18)	-0.53 (0.31)	-0.61 (0.24)
Female_Dir%	-0.12 (0.69)	-0.20 (0.50)	-0.06 (0.83)	-0.20 (0.50)	-0.08 (0.78)	-0.11 (0.71)
Dir_Age	-0.00 (0.77)	-0.00 (0.91)	-0.00 (0.67)	-0.00 (0.91)	-0.00 (0.83)	-0.00 (0.77)
Control Variables						
ROA	-1.82*** (0.01)	- 1.96***	-2.68*** (0.00)	-1.96*** (0.01)	-1.83*** (0.01)	- 1.81***

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
		(0.01)				(0.01)
MVBV	0.01 (0.13)	0.01 (0.10)	0.01* (0.08)	0.01 (0.10)	0.01 (0.13)	0.01 (0.13)
ABig4	-0.19 (0.38)	-0.15 (0.49)	-0.22 (0.33)	-0.15 (0.49)	-0.16 (0.45)	-0.19 (0.38)
BoardSize	-0.00 (0.97)	0.00 (0.84)	0.00 (0.96)	0.00 (0.84)	-0.00 (0.98)	-0.00 (0.98)
CDual	0.85* (0.07)	0.83* (0.08)	0.89* (0.06)	0.83* (0.08)	0.85* (0.07)	0.85* (0.08)
Inst_Ownership	-0.45 (0.32)	-0.38 (0.40)	-0.36 (0.43)	-0.38 (0.40)	-0.37 (0.42)	-0.46 (0.31)
MLEV	0.69*** (0.01)	0.77*** (0.00)	0.67*** (0.01)	0.77*** (0.00)	0.68*** (0.01)	0.69*** (0.01)
NoBM	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.04*** (0.00)	0.03*** (0.00)
Top10_Shldr	-0.57** (0.01)	- 0.76*** (0.00)	-0.42* (0.08)	-0.76*** (0.00)	-0.59** (0.01)	-0.57** (0.01)
FirmSize1	-0.05 (0.28)	-0.03 (0.45)	-0.03 (0.50)	-0.03 (0.45)	-0.04 (0.39)	-0.04 (0.32)
_cons	0.80 (0.29)	0.75 (0.26)	0.24 (0.76)	0.75 (0.26)	1.34 (0.15)	0.94 (0.15)
N	1,407	1,409	1,365	1,409	1,383	1,409

*This table provides results of probit regression for Models 1, 2, 3a, 3b, 4a, and 4b for fraud firms which are not state owned enterprises (SOE). The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

Ang et al. (2016, p.615) find that Chinese firms with politically connected CEOs are more likely to commit accounting fraud and hence they regard political connections ‘a dark side of a relationship-centred’ societies. According to Chizema et al. (2015) politically connected directors have an impact on executive pay in China. Stuart and Wang (2016) find that political connectedness of the founders of the firm positively affects the propensity of fraudulent financial reporting. Therefore, we control for political connection of directors. We find directors’ political connection by tracing whether they formerly held or currently hold any government posts (Fan et al. 2007; Chen et al. 2011a). The variable (Political_Dir) is set at ‘1’ if any director of a corporate has or had held a government post, and at ‘0’ otherwise (Li et al. 2021b; Wu et al. 2012) (Table 12). Dir_Shldng continues to be positive and significant whereas Ind_Dir% is significant and negative across all models (except Model 4a). On the other hand, Political_Dir is insignificant. This implies that the political connectedness of directors has no bearing on the positive association between directors’ shareholding and FSF. Further, Dir_Comp, Female_Dir%, and Dir_Age are insignificant.

Table 12: Political connectedness of directors

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Independent Variables						
Dir_Comp	0.00 (0.96)					
Dir_Shldng		0.45** (0.01)				
Non-Ind_Dir_Comp			0.01 (0.74)			
Non-Ind_Dir_Shldng				0.45** (0.01)		

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Ind_Dir_Comp					-0.05 (0.48)	
Ind_Dir_Shldng						-1,886.90 (0.13)
Ind_Dir%	-0.81* (0.09)	-0.90* (0.06)	-0.84* (0.08)	-0.90* (0.06)	-0.72 (0.14)	-0.81* (0.09)
Female_Dir%	-0.08 (0.76)	-0.17 (0.53)	-0.04 (0.88)	-0.17 (0.53)	-0.05 (0.86)	-0.09 (0.74)
Dir_Age	0.00 (0.96)	0.00 (0.85)	-0.00 (0.96)	0.00 (0.85)	0.00 (0.98)	0.00 (0.97)
Control Variables						
ROA	2.36*** (0.00)	2.49*** (0.00)	3.00*** (0.00)	2.49*** (0.00)	2.30*** (0.00)	-2.34*** (0.00)
MVBV	0.01 (0.13)	0.01 (0.11)	0.0122* (0.08)	0.01 (0.11)	0.01 (0.12)	0.01 (0.13)
ABig4	-0.36** (0.05)	-0.34* (0.06)	-0.38** (0.05)	-0.34* (0.06)	-0.34* (0.06)	-0.37** (0.05)
BoardSize	0.00 (0.91)	0.00 (0.77)	0.00 (0.73)	0.00 (0.77)	0.00 (0.86)	0.00 (0.93)
CDual	0.83** (0.04)	0.82** (0.04)	0.84** (0.03)	0.82** (0.04)	0.82** (0.04)	0.82** (0.04)
Inst_Ownership	-0.53 (0.18)	-0.48 (0.23)	-0.57 (0.16)	-0.48 (0.23)	-0.44 (0.27)	-0.54 (0.17)
MLEV	0.65*** (0.00)	0.73*** (0.00)	0.62*** (0.01)	0.73*** (0.00)	0.64*** (0.00)	0.67*** (0.00)
NoBM	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)

	Model 1	Model 2	Model 3a	Model 3b	Model 4a	Model 4b
Top10_Shldr	-0.44** (0.04)	- 0.56*** (0.01)	-0.31 (0.15)	- 0.56*** (0.01)	-0.47** (0.03)	-0.43** (0.04)
FirmSize1	-0.03 (0.49)	-0.02 (0.66)	-0.01 (0.79)	-0.02 (0.66)	-0.02 (0.65)	-0.03 (0.48)
Political_Dir	0.03 (0.75)	0.01 (0.92)	-0.01 (0.94)	0.01 (0.92)	0.05 (0.53)	0.02 (0.76)
_cons	0.57 (0.40)	0.44 (0.45)	0.18 (0.79)	0.44 (0.45)	0.98 (0.23)	0.60 (0.31)
N	1,713	1,718	1,642	1,718	1,680	1,718

*This table provides results of probit regression for Models 1, 2, 3a, 3b, 4a, and 4b for evaluating the impact of politically connected directors on the incidence of FSF by introducing an additional variable - Political_Dir. The dependent variable, occurrence of FSF, is binary variable equal to 1 for fraud firms, and 0 otherwise. All other variables are defined in Appendix 1. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels. N denotes the number of observations. p-values in parentheses.*

4.8 Discussion and conclusion

Implications for theory

In the main, this study contributes to the literature on agency theory and corporate governance by providing empirical evidence on how corporate governance, and directors' compensation and shareholding, affect the incidence of FSF.

Agency theory provides two corporate governance mechanisms to address agency problems namely incentive alignment and monitoring (Sheikh et al., 2018; He & Wang, 2009; Fama & Jensen, 1983). Our results indicate a positive association between directors' shareholding and FSF, and a negative association between BoD

independence and FSF. These findings jointly support monitoring view of the agency theory prescription to deal with agency issues.

The results show that directors' shareholding provides an incentive for fraudulent behaviour. This analysis reinforces the view that directors' shareholding should be viewed with caution, and it supports Dalton and Daily (2001, p. 89), who suggest that 'potential conflicts of interest and related outcomes may ultimately serve to erode any anticipated benefits of director stock compensation'. This study provides additional evidence on the drivers of FSF and recommends caution in designing directors' compensation. Particularly, the results suggest that the design of directors' compensation package can worsen agency issues in China. The results also indicate that corporate governance measures such as CEO duality and frequent board meetings should be avoided to cement good governance behaviour among Chinese firms. Further, this study supplements the literature by providing evidence on how various measures of good corporate governance influence the incidence of FSF.

Complementing erstwhile research on inefficacy of stock based compensation (Davidson, 2022; Rose et al., 2013), the wide coverage of our sample over 14 years and across industries should bolster the support in favour of effective monitoring and exercise of caution in using stock-based compensation or shareholding for directors.

This paper also contributes to studies focussing on the institutional context of China through an institutional theory perspective which shows how the institutional context of China interacts with FSF.

Implications for practice and policy

Our research highlights the important role of effective monitoring in curbing the incidence of FSF. Firms need to strengthen their internal controls and corporate governance to effectively curb the opportunity for fraud. Further, attention needs to be paid to the design and structure of directors' pay packages which conscious exclusion or minimisation of shareholding and stock based compensation from directors' compensation.

From a policy perspective, regulators also need to take cognizance of the adverse impact of stock-based compensation and positive effect of monitoring on the incidence of FSF, in designing regulations with respect to directors' compensation and corporate governance.

Implications for future research

Apart from informing theory, this paper also informs future research. The insignificant association of FSF with cash-based compensation is contrary to expectation, although not unprecedented. The significant positive association with shareholding is in line with expectation. However, these results need to be delved into more deeply. A possible explanation could relate to the value of shareholding vis-à-vis the value of cash-based compensation.

Conclusion

FSF has implications for the entire spectrum of stakeholders associated with a corporation. Hence, avoidance of FSF is of critical significance. The central research question is whether directors' compensation induces FSF. The results show an insignificant association between directors' compensation and FSF in China, and a significant positive association between FSF and directors' shareholding. These results are robust to alternative statistical analyses and tests.

A limitation of this paper is that only publicly listed companies were analysed (because of the non-availability of relevant data for private companies). Additionally, the focus of this paper is on corporations implicated of fraud. However, many cases of fraud may not have been either reported or detected. Further, reliance on data presented in regulatory filings and databases assumes that the data disclosed by corporations is true, fair, does not omit any vital information and is not misleading. Another limitation of this study is the sparsity of disclosed data. This study uses cash compensation, as provided by CSMAR; however, Chinese corporations pay substantial amounts in perks and in-kind benefits, and these have not been included in this study (Chen et al. 2010; Kato and Long 2006; Ting & Huang, 2018).

4.9 Chapter summary

This chapter was the first empirical paper of this thesis and it focussed on the incidence of FSF in China and its linkages with directors' compensation and corporate governance. The results indicate a positive association between directors' shareholding and the incidence of FSF in China. Further, the proportion of independent directors, type of auditor, CEO duality, leverage, frequency of BoD meetings, shareholding of top 10 shareholders, and firm performance (ROA) have a significant influence on the incidence of FSF.

The next chapter is the second empirical paper of this thesis and it examines the impact of directors' compensation and corporate governance on the incidence of FSF in the US.

Appendix 1: Variable definition and measurement*

Variable Name	Label	Details	Hypothesis/ predicted association	Reference
<u>Dependent Variable</u>				
Fraud	Fraud Firm (FF)/ Control Firm (CF)	Value of "1" for fraud firm and "0" for control firm		Hass et al., 2016b; Chen et al., 2006; Zhang et al., 2008
<u>Independent Variables</u>				
Log of Directors' total compensation	Dir_Comp	Log of compensation of all directors; Source: CSMAR	H1 (+)	Conyon & He, 2012; Conyon & He, 2016
Shareholding of all directors (%)	Dir_Shldng	Percentage Shareholding held by all directors; Source: CSMAR	H2(+)	Lai & Tam, 2017; Bai et al. (2004)
Log of Non-Independent Directors' total compensation	Non-Ind_Dir_Comp	Log of the non-independent directors' total compensation; Source: CSMAR	(+)	
Shareholding of Non- Executive Non-	Non- Ind_Dir_Shldng	Shareholding of non-independent directors;	(+)	

Variable Name	Label	Details	Hypothesis/ predicted association	Reference
Independent Directors (%)		Source: CSMAR		
Log of Independent Directors' total compensation	Ind_Dir_Comp	Log of the independent directors' total compensation; Source: CSMAR	(+)	
Shareholding of Independent Directors (%)	Ind_Dir_Shldng	Shareholding of independent directors; Source: CSMAR	(+)	
% of Independent Directors on BoD	Ind_Dir%	Percentage of independent directors; Source: CSMAR	H3(-)	Jiang et al., 2016; Firth et al., 2007b
%Female Directors	Female_Dir%	Percentage of female directors; Source: CSMAR	H4(-)	Liu et al., 2016;
Average age of all directors	Dir_Age	Average age of all directors; Source: CSMAR	H4(-)	Xu et al., 2018; Daboub et al., 1995
<u>Control Variables</u>				

Variable Name	Label	Details	Hypothesis/ predicted association	Reference
Match Year Modified Total Debt	MLEV	Total Debt / Total Assets; Source: DataStream	(+)	Canyon & He, 2016; Zhang et al., 2008; Hass et al., 2016b
Match Year ROA (%)	ROA	Return on Assets (ROA); Source: DataStream		Canyon & He, 2011
Match Year MV/BV	MVBV	Market value/book value; Source: DataStream		Canyon & He, 2011
CEO and Chair of BoD same person	CDual	"1" if there is CEO duality, "0" otherwise; Source: CSMAR	(+)	Mutlu et al., 2018; Lai, & Tam, 2017; Canyon & He, 2011
Total Number of Directors	BoardSize	Total number of directors; Source: CSMAR	(-)	Canyon & He, 2011
Frequency of Board Meetings	NoBM	Frequency/number of board meetings; Source: CSMAR	(-)	Chen et al., 2006; Liang et al., 2013
Auditors from "Big 4" Accounting Firms or Not	ABig4	Value of "1" if the auditor is among the Big 4 firms, and "0" otherwise; Source: CSMAR	(-)	Chen et al., 2011b; Firth et al., 2005

Variable Name	Label	Details	Hypothesis/ predicted association	Reference
Institutional Ownership	Inst_Ownership	Percentage of shareholding with institutional owners; Source: CSMAR	(-)	Hou et al., 2016; Wu et al., 2016
Shareholding of top 10 shareholders	Top10_Shldr	Percentage of shares held by the top 10 shareholders. Measure of shareholding concentration.; Source: CSMAR	(+)	
Firm Size	FirmSize1	Log of Total Assets; Source: DataStream		
Firm Size ²	FirmSize2	Log of Net Sales; Source: DataStream		Dang et al., 2018
Percentage ownership of Controlling Shareholder	Controlling_Shldr	Percentage of shares held by the controlling shareholders; Source: CSMAR	(+)	Zhang et al., 2014; Shyu & Lee, 2009; Lin et al., 2013
State-Owned Enterprise (SOE)	SOE	Value of "1" if SOE and a value of "0" if not. SOE if State is the largest shareholder;	(+)	Jiang & Kim, 2015; Conyon & He, 2016; Hou & Moore, 2010

Variable Name	Label	Details	Hypothesis/ predicted association	Reference
		Source: CSMAR		
Financial Auditor Opinion	Audit_Opinion	"1" in case of: qualified opinion; adverse opinion; qualified opinion with emphasis of matter paragraph. "0" in all other cases; Source: CSMAR	(+)	Bartov et al., 2000; Hirst, 1994
Percentage ownership of Foreign Promoter	Foreign_Promoter	(Number of shares held by foreign promoters' legal person)/ (Total Number of Shares); Source: CSMAR	(-)	Lel, 2018; Gul et al., 2010
Politically connected Directors	Political_Dir	Political_Dir is set at '1' if the firm has any director who has or had held a government post, and at '0' otherwise; Source: CSMAR	(+)	Wang (2015); Li et al. 2021b; Wu et al. 2012

* All variables measured as of the match year

5. Paper 2 – ‘Does directors’ compensation induce financial statement fraud?’

5.1 Chapter introduction

This chapter is the second empirical paper of this thesis and it examines the impact of directors’ compensation and corporate governance on the incidence of FSF in the US. Using matched pairs research design, the chapter compares 387 fraud firms with an equal number of control firms, over various parameters related to directors’ compensation, corporate governance, and firm performance.

5.2 Abstract

Using a unique dataset of fraud firms in the United States (US) over a 15 year-period (2005–2019), this study investigates the impact of directors’ compensation and corporate governance on financial statement fraud (FSF). It further investigates which components of the compensation package could be more amenable to this association. We find that there is a positive association between the incidence of FSF and directors’ stock-based compensation. In consideration of remedy mechanism for FSF, we find a negative association between FSF and the average age of directors. Additionally, the size of board of directors, size/type of auditor, frequency of board meetings, and firm size all have a significant influence on the incidence of FSF. We contribute to corporate governance literature and critique the agency theory by advancing an alternative view that stock-based compensation for directors may harm shareholders by providing incentives for FSF. This has implications for corporations and their regulators regarding the design of directors’ compensation packages.

Keywords - Agency theory, corporate governance, directors’ compensation, financial statement fraud, stock-based compensation

Paper type - Research paper

5.3 Introduction

This study examines whether directors' compensation (i.e., total compensation¹⁸, and/or stock-based compensation) and corporate governance have an impact on the incidence of financial statement fraud (FSF) perpetrated by organisations. This is an important study because FSF has adverse consequences for all corporate stakeholders. Rezaee (2005) documents losses of USD 500.0 billion due to FSF suffered by market participants including creditors, employees, investors, and pensioners. In a similar vein, Karpoff et al. (2008) document losses, on the revelation of financial misconduct, to the tune of USD 4.08 for every dollar financially misrepresented. Palmrose et al. (2004) find evidence of negative returns in the case of restatements associated with fraud. The urgency to curb FSF is also evident in the heightened vigilance with respect to corporate governance in the US, which has culminated in the passing of stringent laws such as the Sarbanes–Oxley Act (2002) and enhanced governance requirements by stock exchanges.

Directors, as agents of shareholders, play a vital role in monitoring the management (Del Brio et al., 2013; Jensen & Meckling, 1976), and are a key corporate governance mechanism for aligning the interests of shareholders and managers (Boyd, 1995). Hence, it is important that directors' own interests are well aligned with those of the shareholders. However, if directors' self-interest overpowers this alignment, then the monitoring function of directors can be impaired (Dalton et al., 2007; Fama & Jensen, 1983), which in turn may induce accounting irregularities and manipulations such as FSF. Directors' self-interest is a function of their wealth, which is often dependent on their compensation, including the value of their share-based compensation as well as their shareholding in the corporation. Therefore, our main research question is, does

¹⁸ Directors' total compensation includes salary, bonus, fees earned or paid in cash, value of stock awards, incentive compensation, value of option awards, non-equity incentive plan compensation, change in pension value and non-qualified deferred compensation earnings, and all other compensation (as per US Securities and Exchange Commission (SEC) Form DEF-14A).

directors' compensation including share-based compensation and shareholding have an influence on the incidence of FSF?

This is an important research enquiry because while executives' characteristics and compensation, and accounting irregularities (including earnings management and restatements) have been widely researched, such research is seldom applied to directors. For instance, Chahine et al. (2021), employing the f-score to identify fraud firms, find that CEO network centrality has an inverse relationship with the likelihood of corporate financial fraud. Capalbo et al. (2018) report that CEO narcissism leads to earnings manipulation. Some of the studies on executive compensation and fraud include Erickson et al. (2006), Denis et al. (2006), and Efendi et al. (2007). However, this focus on executives alone does not provide a complete picture, as directors act as monitors of the executives/management. If the directors are effective in their monitoring function, which includes the oversight of financial statements via audit committees (Del Brio et al., 2013), then the chances of FSF can be expected to reduce, as the audit function is a vital governance mechanism to prevent this (Jin et al., 2011).

Prior research on directors' compensation (including Alkebsee et al., 2021; Archambeault et al., 2008; Kim et al., 2013; Persons, 2012; and Ye, 2014) has either examined non FSF type frauds (such as bribery, embezzlement, option back-dating, and securities fraud) or have looked at earnings management, restatements, and opportunistic timing of option grants. Further, the evidence provided by these studies is mixed on the impact of directors' compensation on fraud/earnings management/restatements. For instance: Archambeault, et al. (2008), Kim et al. (2013), and Ye (2014) document a positive association whereas Alkebsee et al. (2021) document a negative association. On the other hand, Persons (2012) does not document any association between directors' compensation (cash and stock) and fraud but reports a positive association between fraud and independent directors' stock-options.

This study differs from prior research in several ways. Firstly, we use a unique and large sample of 387 fraud firms from the US over a period of 15 years (2005-2019). Secondly, this study focuses on a different kind of fraud i.e. FSF. Also, this study uses a broader

definition of FSF by including cases of fraud both in the FSF and in offering documents (for the US market). Also, it should be noted that a misstatement in financial statements may not necessarily imply that a fraud has been committed (Hamilton & Smith, 2021). Thirdly, we use a different database for identification of fraud firms - Securities Class Action Clearinghouse (SCAC) which provides a larger sample for our study. Fourthly, our research takes a comprehensive look at directors' compensation by investigating the effect of both cash-based and stock/option-based compensation. Further, this study also bifurcates directors into three sub-categories namely executive, independent, and non-executive & non-independent directors and analyses each of them separately. In sum, this study extends prior studies by providing a new and comprehensive perspective on the impact of directors' compensation on FSF.

To examine the impact of director compensation on FSF, this study uses a sample of 387 fraud firms and 387 control firms (non-fraud firms) in the 15-year period from 2005 to 2019. Fraud firms were identified from SCAC and are listed on the National Association of Securities Dealers Automated Quotations (NASDAQ) and the New York Stock Exchange (NYSE). We focus on these two US stock exchanges because they are the largest in terms of market capitalisation of listed companies (Statista, 2021) and have a long operating history, hence they provide a wide coverage of industries and firms.

The results show that directors' share-based compensation has a significant positive association with the incidence of FSF, whereas directors' characteristics (i.e., age) has a negative association with the occurrence of FSF. These results hold even after controlling for governance and firm-based factors. Among the control variables, the size of the board of directors (BoD), size/type of auditor, meeting frequency of the board, and firm size have statistically significant associations with FSF. For additional analysis, directors are classified into three categories: executive directors (ED), independent directors (IND), and non-executive non-independent directors (NENID) and the results show that EDs' stock-based compensation drives the positive association between FSF and directors' stock-based compensation.

Our contributions are as follow. First, although prior studies have been conducted on executive compensation and accounting irregularities, empirical evidence with respect to directors' compensation is sparse and is divided on the subject. This study fills this gap in research by providing a comprehensive empirical evidence on the relationship between directors' compensation and FSF. It sheds light on how directors' compensation packages can be tailored to reduce the incidence of FSF. In addition, it examines whether there are any elements within the remuneration packages of directors that can induce them to commit FSF and thus have an adverse impact on their ability to set the tone of 'truthfulness' at all levels within the organisation. Second, as mentioned earlier, this paper complements but also differs from existing studies on executive compensation (Johnson et al., 2009; Armstrong et al., 2010; Erickson et al., 2006) and on directors' compensation (Alkebsee et al., 2021; Archambeault et al., 2008; Kim et al., 2013; Persons, 2012; and Ye, 2014) in the ways mentioned prior. Our broader sample also helped to increase the statistical power of the regression analysis. Third, the study contributes to the agency theorising of corporate governance. Particularly, the results of this study support the existence of agency issues between shareholders (as principals) and directors (as agents). However, unlike previous research, which has considered compensation a panacea for aligning the divergent interests of principals and agents (Jensen & Meckling, 1976; Hanlon et al., 2003), this study challenges such claims by finding a positive causal association between directors' stock-based compensation and FSF. The remainder of the paper is organised as follows. Section 2 reviews relevant literature and develops the main research hypotheses. Section 3 presents the research methodology. Section 4 describes the results and analysis, while section 5 concludes the study.

5.4 Literature review and hypotheses development

5.4.1 Corporate governance in the US

US follows the Anglo-American model of corporate governance. Engrained in market capitalism, this system believes that decentralised markets and self-interest can work together in a balanced manner and can self-regulate each other. Thus, the institutions

pursue profits and individuals pursue material success (Cernat, 2004). This philosophy is well aligned with the cultural and social constructs in the US, where individuals are predisposed to protect their self-interest due to a focus on virtues such as individual achievement, pragmatism, self-reliance, and acting in one's self-interest (Lubatkin et al., 2005). According to Ahmad and Omar (2016) the Anglo-American model draws from the shareholder perspective which postulates that corporate managers are responsible for maximising shareholders' wealth as it is the shareholders who bear the highest level of risk. Thus, this model is marked by separation of ownership and control, Further, high information asymmetries exist despite an array of laws and regulations to protect property rights. These create agency problems and necessitate the alignment of the divergent interests of agents and principals (Lubatkin et al., 2005). These agencies issues are dealt with internal governance mechanisms via the board of directors (BoD) (Chhillar & Lellapalli, 2015). The directors, acting as delegated monitors of the shareholders, are thus in an agency relationship with the shareholders (Andreas et al., 2012).

5.4.2 Corporate governance and compensation

Agency relationships tend to be marked by agency conflicts and corporate governance helps mitigate such conflicts (Dey, 2008). Compensation is regarded as one of the tools of corporate governance to deal with agency conflicts (Jensen & Meckling, 1976).

Ntim et al. (2015) find that larger boards are associated with higher executive pay and signify governance weakness in the form of poor decision-making, managerial monitoring, and communication. Further, higher debt usage and institutional ownership are associated with lower compensation, which reflects the roles played by creditors and institutional owners in reducing agency problems through enhanced monitoring of the management. McConvill (2006) argues against compensation, specifically pay for performance, as a remedy for agency problems. The study claims that reliance on compensation is misguided because it lacks an understanding of human behaviour and motivation. Psychological and social factors such as authority, cognitive dissonance, friendship, and team spirit also affect the quantity of

compensation packages. Further, in senior-level positions, 'work orientation' in the form of one's 'calling'¹⁹ becomes more significant than monetary reward for achieving the convergence of interests of principals and agents (McConvill, 2006). Masulis and Mobbs (2014) support the above view and provide evidence on how incentive/ self-interest in form of reputation, as represented by prestigious directorships held by directors, acts as a potent incentive for directors and has a direct impact on their monitoring effectiveness.

Balsam et al. (2017) conclude that related party transactions (RPTs) signify weak governance and RPTs of outside directors are significantly and positively related to CEO compensation. Further, RPTs are more likely in corporations with larger boards, a low proportion of busy directors, and a high proportion of inside directors. He (2008) argues that the application of incentives for aligning the divergent interests of managers and owners may not always be effective, as managers are not a homogeneous group of self-interested people; instead, they possess different intrinsic characteristics and attributes.

With respect to equity-based compensation, extant research on the role of such compensation as a means for aligning the interests of agents and principals is along two schools of thought – one advocating the use of stock-based compensation (Kim et al., 2019; Armstrong et al., 2010) and the other opposing it (Holderness et al., 2019; Ndofor et al., 2015; O'Connor et al., 2006; Zhang et al., 2008).

However, according to Pagano and Immordino (2012) compensation can be combined with superior audit quality to design corporate governance structures that are effective in curbing fraud. Thus, a review of impact on compensation on fraud, should also cover review of the linkages between fraud and corporate governance and those between fraud and compensation.

¹⁹ 'calling' (or vocation) is a passionate commitment to work for its own sake (McConvill, 2006, p. 422)

5.4.3 Fraud and corporate governance

It is widely accepted that the quality of corporate governance affects the propensity for fraud. According to Farber (2005), poor corporate governance as evidenced in fewer outside directors, fewer audit committee meetings, low-quality auditors, CEO duality, and fewer financial experts on the audit committee, are characteristics of fraudulent firms. Almadi and Lazic (2016) find that high-quality corporate governance can mitigate opportunistic behaviour like earnings management by CEOs. According to Choi et al. (2021a), fraud is an economic decision that is made only when subordinates and the CEO find it worthwhile, thus internal governance as evidenced in managerial dissent can reduce the likelihood of fraud. Also, unwarranted independence from external control may induce managers to adopt self-serving behaviours. Conversely, the extensive pressure emanating from external control and monitoring can lead to financial fraud by reducing managers' motivation and their focus on internal values (Shi et al., 2017). On the other hand, Yao et al. (2021) find that firms controlled by spouses are highly likely to engage in financial frauds. Further, that marital leadership creates agency conflicts between controlling and minority shareholders and thus has an adverse effect on corporate governance.

Compensation, as a corporate governance mechanism, has been widely recognised as a tool for controlling fraud and hence these subject warrants further attention.

5.4.4 Fraud and compensation

Corporate fraud (including financial restatements, and FSF) and earnings management and their linkages with compensation have been widely explored in prior research. However, the empirical results with respect to this association are mixed, with some studies arguing in favour and others against compensation as a means of fraud prevention. Also, compensation can be viewed from the perspective of the managers or that of the directors.

Directors' compensation assumes importance because the role of directors is of key importance in the governance function. Neville et al. (2019) argue that, as agents of

the shareholders, directors have the primary role of conducting monitoring that aims to avoid corporate misconduct. Further, effective monitoring by directors is a function of their motivation (in terms of incentives) and ability (in terms of adequate wherewithal).

In relation to executive compensation and fraud, Jiang et al. (2010) report a positive association between executive compensation and earnings management. Harris and Bromiley (2007) find that executive compensation coupled with poor corporate performance can induce firms to commit unethical behaviour, translating into financial misrepresentation. Hsieh et al. (2016) argue that CEOs are more likely to engage in earnings management with a view to maximising their equity-based compensation, around the time of announcing employee layoffs. BenYoussef and Khan (2018) suggest that managers act opportunistically by managing the timing of the release of adverse information in such a manner that they can maximise their stock-based compensation. Almadi and Lazic (2016) find that CEO compensation/incentivisation is positively related to earnings management. On the contrary, Laux and Laux (2009) do not find any clear relationship between accounting manipulation and CEO incentive pay.

However, when it comes to directors' compensation and fraud, as stated earlier, prior research provides mixed results (Archambeault et al., 2008; Alkebsee et al., 2021; Kim et al., 2013; Persons, 2012; and Ye, 2014).

5.4.5 Hypotheses development

This study employs the agency theory to investigate the linkages between directors' compensation, independent directors, board diversity, and FSF. Directors are delegated monitors and agents acting on behalf of the shareholders (Andreas et al., 2012). Jensen and Meckling (1976) propose the establishment of appropriate incentives for agents to limit the divergence of interests between principals and agents. However, compensation can also induce fraud. Barton (2001) finds evidence of earnings management by managers to increase their cash compensation. Similarly, Healy (1985) argues that managers select accruals and accounting procedures that

maximise the value of their bonuses, thereby implying that total compensation (including cash, bonuses, stocks, and options) could be a motivation for inducing self-serving/fraudulent behaviour. Hsieh et al. (2016) also report a positive association between the proportion of cash-based compensation and earnings management, whereas Ye (2014) finds a positive association between earnings management and independent directors' cash compensation. Beasley et al. (2001) identify misplaced compensation and incentives as one of the reasons for fraud. Thus, drawing from the agency theory, the first hypothesis is:

H1: Director compensation is positively associated with the likelihood of FSF.

This study also explores whether directors' shareholding has an impact on the incidence of FSF. Erstwhile research on this association is sparse. Among the few studies on directors' stockholding, one by Bhagat and Bolton (2008) finds that directors' median stock ownership and operating performance are positively related. Similarly, Hambrick and Jackson (2000) report that top-performing companies tend to have directors with substantial equity holdings in those companies, whereas companies that lag behind have insignificant equity stakes held by the directors. Kosnik (1987) reports that outside directors' equity interests are not a motivating factor in influencing directors' resistance of greenmail payments (a proxy for BoD ineffectiveness) when such equity ownership is small. Resistance to greenmail payments by the BoD is more likely when the outside directors' stock ownership is greater than their cash compensation (Kosnik, 1990). Yermack (2004) finds evidence of personal financial gain to outside directors when there is an increase in the market capitalisation of a corporation. Jensen (1993) argues that equity shareholding by directors can result in better alignment of interests of shareholders and directors, as substantial investment by board members in the equity of the corporation would compel them to realise that their decisions with respect to the corporation impact their personal wealth as well. Zhang et al. (2008) also argue that stock ownership by CEOs dampens their tendencies for earnings management. However, in an experimental study, Rose et al. (2013) report that when BoD discussions are less transparent, stock-

owning directors are more likely to agree to aggressive financial reporting by the management. Martin et al. (2019) conclude that CEOs resort to pension underfunding in order to avoid any risk to stock price and thereby to their option wealth. Davidson (2022) find that equity incentives of executives at fraud firms tend to be stronger as compared to those of executives at no-fraud firms. The above evidence suggests that there is some connection between directors' shareholding and FSF, as the firm's financial performance influences its market capitalisation and thereby has an impact on the value of directors' shareholding in the firm. Taking recourse to the agency theory, in the context of self-serving behaviour of the agents (Petrou and Procopiou, 2016), the next hypothesis is that:

H2(a): Directors' stockholding is positively associated with the likelihood of FSF.

Directors' remuneration packages may also include stock-based compensation such as restricted stock, shares, and options, amongst others. There are two schools of thought on the use of stock-based compensation. One view advocates the use of stock-based compensation, such as Armstrong et al. (2010) who argue that financial irregularities are less frequent when CEOs have high equity incentives. Kang and Kim (2022) also support agency theory stipulation of adequate incentives to align the interest of principals and agents. On the other hand, Erickson et al. (2006) do not report any association between equity incentives of executives and fraud. This view is also supported by Mayberry et al. (2021) who do not find any significant association between stock option vega and earnings management,

Proponents of the second view, such as Dalton and Daily (2001), argue against granting stock-based compensation to directors. Aligning with this view, Crutchley and Minnick (2012) argue against incentive pay (stocks and options). Harris et al. (2019) contend that CEOs engage in earnings management behaviour at high levels of equity incentives whereas Kim et al. (2022) claim a positive association between pay-performance sensitivities (PPS), on account of equity incentives of top management, and earnings manipulation. Research by Archambeault et al. (2008), Bergstresser and Philippon

(2006), Cheng and Farber (2008), Denis et al. (2006), and Peng and Röell (2008) also argues against the use to stock-based compensation/options.

Therefore, applying agency theory, our next hypothesis is that:

H2(b): Directors' stock-based compensation is positively associated with the likelihood of FSF.

Outside directors are considered independent as they have no relationship with a corporation other than as directors, and hence they can undertake a dispassionate evaluation of the CEO and his/her performance (Dalton et al., 2007). Therefore, independence of the BoD has long been touted as one of the panaceas for dealing with agency problems and independent directors are regarded as a key governance mechanism. Wright et al. (2002) find that active external monitoring by independent directors, security analysts, and institutional investors reduces self-serving acquisitive behaviour by CEOs. Also, corporations with outside directors dominating the BoD or with remuneration committees featuring larger proportions of outside directors tend to have greater alignment between firm performance and top management pay (Conyon & Peck, 1998). Also, when the BoD has a higher percentage of independent directors, a wider range of candidates are considered for the position of CEO and consequently, CEO appointments are in favour of shareholders' interests (Borokhovich et al., 1996). Goh et al. (2016) find that greater BoD independence is related to lower information asymmetry whereas Uzun et al. (2004) assert that the incidence of fraud and board composition/structure are significantly related as fraud firms have a lower number of independent directors. Bonini et al. (2022), Choi et al. (2021b), Elnahass et al. (2022), Fei (2022), and Gong et al. (2021) also argue in favour of reduction in agency issues and improvement in corporate governance with presence of independent directors on the BoD.

However, views on the independence of directors are mixed. Faleye (2017) argues that organisations with straightforward operations are more amenable to fully independent BoDs, whereas corporations that have substantial intellectual property

or that invest extensively in research and development need employee directors. According to Fogel and Geier (2007, p. 72), the role of independent directors should be limited to what they are best suited for – acting as “referees for conflicts of interest and affiliated transactions”. Fich and Shivdasani (2006) argue that corporations with a majority of outside directors who are busy (i.e. they hold three or more BoD positions) are valued less.

From a theoretical perspective, agency theory contends that independent directors improve the quality of voluntary disclosures (Lim et al., 2007) and financial statements (Peasnell et al., 2005). Thus, the next hypothesis is:

H3: The proportion of independent directors is negatively associated with the likelihood of FSF.

Several studies have found diversified BoDs to be more effective. The presence of female executives or directors is generally viewed to have a positive influence on corporations. Wahid (2019) asserts that firms with BoDs that are gender diverse fare better in avoiding financial misconduct. The presence of female directors/executives has been found to improve the quality of accounting numbers, reduce the probability of accounting fraud, and increase accounting returns (García et al., 2017; Post & Byron, 2015; Srinidhi et al., 2011). Gender socialisation theory proclaims an improvement in earnings quality with the presence of women due to gender differences in ethical outlook and risk-taking abilities (Harris et al., 2019). Borghans et al. (2009) find higher levels of risk aversion among women. Peni and Vähämaa (2010), and Duong and Evans (2016) find that female CFOs are associated with greater conservatism in reporting. Sun et al. (2021) suggest that there are differences ethical behaviour of men and women. They find that less profitable insider trades of female executives, despite their being in high ranked posts and commanding dominance on the BoD, is due to their higher ethical standards. Research by Abbasi et al. (2020), Oradi and E-Vahdati (2021), Zalata et al. (2022) also argues in favour of female directors. Contrarily, Harris et al. (2019) conclude that when equity-based pay is substantial, female CEOs diverge from their conservative and risk-averse outlook and can engage in earnings management.

Zalata and Abdelfattah (2021) find that non-executive female directors are positively associated with opportunistic management behaviour. Croson and Gneezy (2009) find that risk preferences do not differ between men and women. Further, there is also evidence of a decline in the market value of corporations with an increase in female participation on the BoD (Adams & Ferreira, 2009).

Age, a demographic characteristic, is another measure of BoD diversity. It has a bearing on decision-making (as it reflects individuals' motivation, experience, and cognition) and on ethical and risk-taking behaviour. Xu et al. (2018) conclude that the age of board members is negatively related to the probability of corporate fraud. According to Anderson et al. (2011), old directors provide diversity of ideas and greater stability to the BoD. Malik et al. (2021) find negative association between the average age of directors on the board risk committee and managerial risk aversion. Fan et al (2021) find that age similarity between independent directors and the CEO lowers the effectiveness of BoD monitoring and thereby leads to increase in earnings management. However, this positive association with earnings management diminishes as the age gap between the independent directors and the CEO increases. Agency theory argues that BoD diversity can result in better monitoring (Carter et al., 2010). Thus, using gender and age as two dimensions of BoD diversity, the next hypothesis is that:

H4: Diversified boards of directors are negatively associated with the likelihood of FSF.

5.5 Research method

5.5.1 Data and sample

The US regulatory environment is marked by both private enforcement (shareholder class action lawsuits such as SCAC) and public enforcement (Accounting and Auditing Enforcement Releases (AAER) via the US Securities and Exchange Commission (SEC)) (Sorensen & Miller, 2017). This study uses the SCAC database instead of AAER for two reasons. Firstly, because "private class action attorneys target disclosure violations more precisely than the SEC" (Choi & Pritchard, 2016, p. 46). Secondly, prior empirical

studies have used the SCAC database to identify fraud firms (Lenard et al., 2017; Chalmers et al., 2012; Choi et al., 2021a; Dyck et al., 2010). A limitation of using SCAC database could be that US is a very litigious society (Trowbridge, 1989). Though class-actions were coined so that people with similar grievance could file a common suit but it has become a breeding ground of greed for lawyers translating into a lot of unnecessary litigation (Greenberg, 2003). To mitigate this risk, the present research has excluded cases which were 'voluntarily dismissed' or 'dismissed with prejudice' or 'dismissed' or 'voluntarily dismissed as moot', thus limiting the extent of unwarranted cases to a large extent. However, cases which were voluntarily dismissed but a related case continued in another court are included in the sample.

The identified fraud firms are listed on the NYSE and NASDAQ, which are the top two stock exchanges in the US. The sample period is from 2005 to 2019. A control firm for each of the fraud firms is identified using data from Compustat. Three shortlisting criteria are used for identification of the control firms. Firstly, each control firm has to have the same standard industrial classification (SIC) code as that of the corresponding fraud firm (industry-level matching). Secondly, only firms which are not implicated in FSF during the sample period are included in the control group. Finally, the closest match to the fraud firm in terms of the market capitalisation, net sales, or total assets in the match year is chosen as the control firm.

The combined list of NASDAQ and NYSE cases resulted in 1,029 fraud firms. This sample was then randomised, and a smaller sample of 500 fraud firms was chosen for further analysis. Out of the randomised sample, compensation data was available for 396 fraud firms and their corresponding control firms. After removing duplicate cases, the final sample comprised 387 matched pairs of fraud and control firms. In the next step, directors' compensation and other details for the match year were manually collected from the SEC filings. Other databases used were Compustat and Thomson Reuters. The 387 fraud firms are from 156 industries. 'Pharmaceutical preparations' has the highest concentration in the sample, accounting for 6.2% (24 firms) of the total fraud firms. This is followed by 'biological products' at 5.68% (22 firms) and 'computer

programming and data processing' at 5.43% (21 firms). Of the 387 fraud firms, 149 firms are listed on the NYSE, and the remaining are listed on NASDAQ.

5.5.2 Research design

The study uses the matched pairs research design (Armstrong et al., 2010; Feng et al., 2011), as according to Ndofo et al. (2015, p. 1781), "the matching process itself controls for a number of possible differences in each pair of firms, in a manner similar to a repeated-measures regression". Regarding variable measurement, the year immediately preceding the first alleged fraud year (i.e. year preceding the class period start date in SCAC filings) is used as the match year (Erickson et al., 2006; Hass et al., 2016). The dependent variable, occurrence of FSF, is a binary dummy variable which is '1' for fraud firm and '0' for control firm (Hass et al., 2016; Crutchley & Minnick, 2012).

To test **H1**, this study uses directors' total compensation (Conyon & He, 2016), which is measured as the sum of salary, bonuses, fees earned or paid in cash, value of stock awards, incentive compensation, value of option awards, non-equity incentive plan compensation, change in pension value, non-qualified deferred compensation earnings, and all other compensation, as detailed in the SEC Form DEF-14A. To test **H2a**, directors' shareholding is used, which is measured as follows (Hass et al., 2016; Bhagat & Bolton, 2008):

$$\begin{aligned} \text{Directors' shareholding} \\ &= (\text{Number of shares beneficially held by directors}) \\ &\quad / (\text{Number of shares outstanding}) \end{aligned}$$

To test **H2b**, proportion of directors' stock-based compensation is used (Dalton & Daily, 2001; Crutchley & Minnick, 2012), which is measured as:

$$\begin{aligned} \text{Directors' stock-based compensation percentage} = & (\text{Value of Stock Awards} + \text{Value of} \\ & \text{Option Awards}) / (\text{Salary} + \text{Bonus} + \text{Fees Earned or Paid in Cash} + \text{Value of Stock Awards} \\ & + \text{Incentive Compensation} + \text{Value of Option Awards} + \text{Non-Equity Incentive Plan} \end{aligned}$$

Compensation + Change in Pension Value and Non-Qualified Deferred Compensation Earnings + All Other Compensation).

To test **H3**, the percentage of independent directors on the BoD is used as a proxy measure for board independence (Hass et al., 2016; Deutsch et al., 2011).

To test **H4**, diversity of the board is measured through gender diversity (proportion of female directors on the board) (Liao et al., 2019), and age diversity (average age of all directors on the board) (Xu et al., 2018).

This study controls for the impact of corporate governance factors and organisational performance. On the corporate governance front, board size, institutional ownership, proportion of executive directors on board, CEO duality, frequency of board meetings, ownership concentration, and being audited by a Big-4 auditor are controlled for (Ntim et al., 2015; Wright et al., 2002; Le, 2018; Hadani et al., 2011; Kim et al., 2016; Lennox & Pittman, 2010; Huang et al., 2013; Nguyen & Shiu, 2022. In terms of organisational performance, accounting performance (i.e., Return on assets (ROA)) and market performance (i.e., market value-to-book value) are also controlled for along with leverage (Hass et al., 2016; Conyon & He, 2016; Ntim et al., 2015) and firm size (Gao et al., 2017; Boumosleh, 2009). The definitions of all variables and their measurement are set out in the Appendix.

5.5.3 Regression models

To examine the impact of directors' compensation (**H1**), proportion of independent directors on BoD, and diversity of BoD on FSF (**H3** and **H4**, respectively), Model 1, as below, is used:

$$\begin{aligned} \text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_1 \text{DIR_COMP}_{i,t-1} + \text{IND_DIR\%} + \text{FEMALE_DIR\%} + \\ & \text{DIR_AGE} + \\ & \beta_1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \\ & \varepsilon_{i,t} \end{aligned} \quad (\text{Model 1})$$

In which, **Fraudi**_{*i,t*} is a binary dummy variable (Johnson et al., 2009; Harris & Bromiley, 2007; O'Connor et al., 2006).

To check the impact of directors' shareholding on FSF (**H2a**), Model 2 is used:

$$\begin{aligned} \text{Fraudi}_{i,t} = & \alpha_{i,t} + \theta_2 \text{ADSPi}_{i,t-1} + \text{IND_DIR\%} + \text{FEMALE_DIR\%} + \\ & \text{DIR_AGE} + \\ & \beta_1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,t} \end{aligned}$$

(Model 2)

To investigate the impact of directors' stock-based compensation on FSF (**H2b**), Model 3 is used:

$$\begin{aligned} \text{Fraudi}_{i,t} = & \alpha_{i,t} + \theta_3 \text{ADSCPRTi}_{i,t-1} + \text{IND_DIR\%} + \text{FEMALE_DIR\%} + \\ & \text{DIR_AGE} + \\ & \beta_1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,t} \end{aligned}$$

(Model 3)

Controls refers to control variables including firm-level characteristics and corporate governance variables.

5.6 Descriptive results

5.6.1 Descriptive statistics

Table 1 presents the descriptive statistics for all firms, whereas a comparative view of fraud and control firms is provided in Table 2.

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
DIR_COMP	772	15.27	1.25	7.24	22.79
DIR_SHRHLG	769	13.33%	0.19	0.00%	92.69%

Variable	Obs	Mean	Std. Dev.	Min	Max
DIR_STKCOMP	774	48.48%	0.25	0.00%	100.00%
EXDIR_COMP	765	14.91	1.47	0.00	22.65
EXDIR_SHRHLG	769	7.16%	0.14	0.00%	91.90%
EXDIR_STKCOMP	774	44.16%	0.28	0.00%	100.00%
INDIR_COMP	764	13.75	1.07	5.87	20.54
INDIR_SHRHLG	769	4.27%	0.10	0.00%	68.55%
INDIR_STKCOMP	774	53.08%	0.25	0.00%	100.00%
NON-EXNON- INDIR_COMP	208	12.18	1.44	6.91	19.29
NON-EXNON- INDIR_SHRHLG	769	1.90%	0.08	0.00%	84.06%
NON-EXNON- INDIR_STKCOMP	774	11.54%	0.26	0.00%	100.00%
IND_DIR%	774	76.51%	0.14	0.00%	100.00%
FEMALE_DIR%	774	12.30%	0.12	0.00%	100.00%
DIR_AGE	774	60.38	5.22	37.00	76.33
ROA	774	-1.67%	0.22	-154.41%	71.02%
MVBV	774	3.17	18.86	-332.41	145.83
BODS	774	9.06	2.60	1.00	20.00
EX_DIR%	774	17.13%	0.11	0.00%	100.00%
INSTL_OWNERSHIP	747	67.65%	0.31	0.00%	165.72%#
CDUAL	774	0.43	0.50	0.00	2.00
MLEV	774	0.19	0.23	0.00	1.63
ABIG4	774	0.78	0.41	0.00	1.00

Variable	Obs	Mean	Std. Dev.	Min	Max
NOBM	734	8.41	4.27	1.00	35.00
HHI	748	0.12	0.18	0.02	1.00
L_TA	774	6.96	1.96	0.18	13.64

This table presents the descriptive statistics related to the independent variables and control variables in this study. Column one represents the number of observations for each variable, column two represents the mean value of the variable, column three gives the standard deviation, whereas column four and five give the minimum and the maximum value of each variable, respectively.

#As per Wharton Research Data Services (WRDS), this data is taken from 13f filings and that institutional ownership can exceed 100%, in some cases, because of inclusion of data on long positions only. This study follows prior research by Garel et al. (2021), Hadani et al. (2011), and Lewellen (2011), which used institutional ownership data from 13f filings.

Variables are defined as follows: DIR_COMP (log of total compensation of all directors); DIR_SHRHLG (percentage shareholding held by all directors); DIR_STKCOMP (directors' stock-based compensation percentage); IND_DIR% (percentage of independent directors on bod); FEMALE_DIR% (percentage of female directors); DIR_AGE (average age of all directors); EXDIR_COMP (log of compensation of executive directors); EXDIR_SHRHLG (percentage shareholding held by executive directors); EXDIR_STKCOMP (share-based compensation percentage of executive directors); INDIR_COMP (log of the compensation of all independent directors); INDIR_SHRHLG (percentage shareholding held by independent directors); INDIR_STKCOMP (share-based compensation percentage of independent directors); NON-EXNON-INDIR_COMP (log of the compensation of all non-executive and non-independent directors); NON-EXNON-INDIR_SHRHLG (percentage shareholding held by non-executive non-independent directors); NON-EXNON-INDIR_STKCOMP (share-based compensation percentage of non-executive non-independent directors); ROA (return on assets); MV/BV (market price per share/ book value per share); bods (total number of directors); EX_DIR% (percentage of executive directors); INSTL_OWNERSHIP (percentage of shareholding with institutional owners); CDUAL (CEO duality); MLEV (modified leverage); ABIG4 (auditors from big 4 accounting firms); auditors from big 4 accounting firms (number of board meetings); HHI

(ownership concentration – Herfindahl - Hirschman index); L_TA (log of total assets); CEO_COMP (log of compensation of CEO); CEO_SHRHLG (percentage shareholding held by CEO); CEO_STKCOMP (share-based compensation percentage of CEO)

Table 2: Statistical Description of Fraud vs. No-Fraud Firms, 2005–2019

Variable	Fraud		Control		p-value	Fraud		p-value
	N	Mean	N	Mean		Median	Median	
DIR_COMP	387	15.32	385	15.22	0.27	15.43	15.26	0.06
DIR_SHRHLG	385	13.60%	384	13.07%	0.70	4.52%	4.18%	0.70
DIR_STKCOMP	387	50.55%	387	46.41%	0.02**	55.38%	47.92%	0.01**
EXDIR_COMP	384	14.94	381	14.89	0.65	15.13	14.88	0.08
EXDIR_SHRHLG	385	7.06%	384	7.27%	0.83	1.91%	1.88%	0.84
EXDIR_STKCOMP	387	46.17%	387	42.15%	0.05**	52.55%	44.49%	0.03**
INDIR_COMP	382	13.79	382	13.71	0.30	13.96	13.88	0.18
INDIR_SHRHLG	385	4.34%	384	4.21%	0.85	0.58%	0.68%	0.38

Variable	Fraud		Control		p-value	Fraud		p-value
	N	Mean	N	Mean		Median	Median	
INDIR_STKCOMP	387	54.60%	387	51.55%	0.09	57.35%	54.18%	0.05
NON-EXNON-INDIR_COMP	102	12.25	106	12.11	0.48	12.25	12.05	0.34
NON-EXNON-INDIR_SHRHLG	385	2.20%	384	1.59%	0.29	0.00%	0.00%	0.85
NON-EXNON-INDIR_STKCOMP	387	11.76%	387	11.33%	0.82	0.00%	0.00%	0.83
IND_DIR%	387	76.41%	387	76.62%	0.84	80.00%	80.00%	0.99
FEMALE_DIR%	387	11.89%	387	12.72%	0.33	11.11%	11.11%	0.49
DIR_AGE	387	59.53	387	61.22	0.00**	60.50	61.50	0.00**
ROA	387	-2.40%	387	-0.94%	0.35	2.50%	3.13%	0.20

Variable	Fraud		Control		p-value	Fraud		p-value
	N	Mean	N	Mean		Median	Median	
MVBV	387	3.09	387	3.24	0.91	2.57	2.36	0.12
BODS	387	9.02	387	9.09	0.70	9.00	9.00	0.61
EX_DIR%	387	16.89%	387	17.37%	0.53	14.29%	14.29%	0.78
INSTL_OWNERSHIP	378	69.78%	369	65.47%	0.06	79.30%	74.91%	0.02**
CDUAL	387	0.46	387	0.39	0.06	0.00	0.00	0.05
MLEV	387	0.20	387	0.18	0.23	0.13	0.10	0.28
ABIG4	387	0.78	387	0.79	0.60	1.00	1.00	0.60
NOBM	370	8.75	364	8.07	0.03**	8.00	7.00	0.01**
HHI	379	0.12	369	0.12	0.71	0.05	0.06	0.09

Variable	Fraud		Control		p-value	Fraud		p-value
	N	Mean	N	Mean		Median	Median	
L_TA	387	7.07	387	6.84	0.10	6.96	6.76	0.14

*This table provides a comparison of the various independent and control variables for the fraud and no-fraud/control firms. P-value of the mean and the associated significance is based on t-test whereas P-value of the median and the associated significance is based on Wilcoxon Rank-sum (Mann-Whitney) test. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

T-tests were also undertaken to check the robustness of the matched pairs. The results show that the matching was robust, as the p-values were insignificant, implying that the fraud firms and control firms were similar in size, as measured by the market capitalisation, net sales, and total assets.

Results from table 1 and 2 show that, the control firms paid lower compensation to directors compared to the fraud firms. Further, the stock-based compensation of directors is lower for the control firms compared to the fraud firms. The same phenomenon is also evident with respect to the compensation (total and stock-based) of executive directors, independent directors, and non-executive non-independent directors. With respect to diversity, the control firms are more diverse, with greater representation of women on the BoD and a higher average age of the BoD members.

On the governance front, CEO duality is lower for the control firms compared to the fraud firms. This is intuitive, as when the CEO also acts as the chairperson of the BoD, he/she can exercise greater control over the BoD, which can open the gateway for manipulation of financials. The control firms also have a greater percentage of independent directors on the board. However, on the number/frequency of board meetings, the fraud firms fare better, which is counterintuitive. With respect to performance in the financial markets, the fraud firms are valued less (have lower mean MV/BV values) than the control firms. Further, the control firms were less leveraged as compared to fraud firms.

Results of the correlation analysis (Table 3) exhibit high correlation between all directors' total compensation, stock-based compensation, and shareholding and that of EDs and INDs, respectively. This is understandable, as EDs' and INDs' total compensation, stock-based compensation, and shareholding are the largest subsets of the total compensation, stock-based compensation, and shareholding of all the directors. However, these high correlations do not affect the analysis, as models for EDs, INDs, and NENIDs are run separately. With respect to other variables, no issues related to multi-collinearity are expected as the largest correlation (0.631) in the sample is below the accepted threshold (0.70) (Deutsch et al., 2011).

Table 3: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
DIR_COMP (1)	1.00												
DIR_SHRHLG (2)	0.38***	1.00											
DIR_STKCOMP (3)	0.47***	0.18***	1.00										
EXDIR_COMP (4)	0.91***	0.36***	0.39***	1.00									
EXDIR_SHRHLG (5)	0.40***	0.74***	0.27***	0.37***	1.00								
EXDIR_STKCOMP (6)	0.50***	0.24***	0.88***	0.49***	-0.28***	1.00							
INDIR_COMP (7)	0.80***	0.41***	0.47***	0.61***	-0.42***	0.40***	1.00						
INDIR_SHRHLG (8)	-0.09**	0.50***	0.04	0.10***	-0.03	-0.04	-0.08**	1.00					
INDIR_STKCOMP (9)	0.33***	-0.09**	0.68***	0.25***	-0.21***	0.42***	0.41***	0.12***	1.00				
NON-EXNON-INDIR_COMP (10)	0.56***	0.27***	0.16**	0.37***	-0.33***	0.17**	0.58***	-0.16**	0.14**	1.00			
NON-EXNON-INDIR_SHRHLG (11)	-0.07*	0.41***	0.01	-0.04	0.01	-0.01	0.14***	-0.04	0.02	0.05	1.00		
NON-EXNON-INDIR_STKCOMP (12)	0.05	0.07*	0.09**	-0.00	-0.01	0.03	0.05	-0.02	0.18***	0.13*	0.21***	1.00	

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
IND_DIR% (13)	0.28***	- 0.38***	0.32***	0.23***	-0.39***	0.29***	0.44***	0.09**	0.22***	-0.02	- 0.30***	- 0.32***	1.00
FEMALE_DIR% (14)	0.21***	- 0.13***	0.13***	0.18***	-0.08**	0.15***	0.28***	-0.08**	0.02	0.10	-0.05	-0.06*	0.17***
DIR_AGE (15)	0.25***	- 0.27***	-0.01	0.27***	-0.16***	0.04	0.19***	- 0.21***	-0.03	0.09	-0.07**	-0.06*	0.24***
ROA (16)	0.05	-0.09**	- 0.16***	0.03	0.01	- 0.12***	0.01	- 0.19***	- 0.13***	-0.06	0.01	-0.06*	0.02
MVBV (17)	0.03	0.04	0.08**	0.01	0.04	0.06*	0.07*	0.01	0.09**	0.00	0.00	0.03	0.00
BODS (18)	0.51***	- 0.27***	0.13***	0.46***	-0.31***	0.17***	0.50***	-0.04	0.06*	0.27***	-0.03	0.07**	0.29***
EX_DIR% (19)	- 0.31***	0.35***	- 0.30***	- 0.23***	0.52***	- 0.25***	- 0.43***	-0.05	- 0.21***	- 0.22***	-0.05	-0.08**	- 0.63***
INSTL_OWNERSHIP (20)	0.35***	- 0.38***	0.29***	0.30***	-0.33***	0.28***	0.40***	- 0.13***	0.27***	0.26***	- 0.17***	-0.02	0.33***
CDUAL (21)	0.03	-0.01	- 0.11***	0.04	0.163***	- 0.10***	-0.03	- 0.15***	-0.06*	0.02	- 0.12***	-0.06*	0.02
MLEV (22)	0.20***	-0.03	0.05	0.21***	-0.10***	0.05	0.15***	-0.03	0.05	0.03	0.16***	0.05	-0.00
ABIG4 (23)	0.42***	- 0.26***	0.26***	0.35***	-0.29***	0.26***	0.43***	0.03	0.17***	0.25***	- 0.14***	-0.01	0.28***
NOBM (24)	0.09**	- 0.12***	0.03	0.08**	-0.15***	0.04	0.16***	-0.03	0.00	0.14**	0.00	-0.02	0.14***
HHI (25)	- 0.27***	0.28***	- 0.10***	- 0.22***	0.23***	- 0.12***	- 0.29***	0.13***	- 0.13***	- 0.23***	0.11***	0.03	- 0.22***

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
L_TA (26)	0.63***	- 0.39***	0.14***	0.56***	-0.31***	0.18***	0.56***	- 0.23***	0.02	0.33***	- 0.10***	0.01	0.26***

*Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Table 3: Correlation matrix contd.

Variables	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
FEMALE_DIR% (14)	1.00												
DIR_AGE (15)	-0.06*	1.00											
ROA (16)	0.07**	0.06	1.00										
MVBV (17)	-0.01	-0.04	-0.08**	1.00									
BODS (18)	0.25***	0.15***	0.05	-0.05	1.00								
EX_DIR% (19)	-	-	-0.07*	0.06*	-	1.00							
INSTL_OWNERSHIP (20)	0.10***	0.16***	0.19***	0.11***	0.45***	-	1.00						
CDUAL (21)	0.16***	0.16***	0.14***	0.02	0.03	0.11***	-0.04	1.00					
MLEV (22)	0.03	0.04	-0.03	-0.09**	0.12***	-0.09**	0.10***	-0.02	1.00				
ABIG4 (23)	0.01	0.05	-0.03	-0.09**	0.12***	-0.09**	0.10***	-0.02	1.00				
NOBM (24)	0.15***	0.11***	0.090**	-0.04	0.36***	-	0.31***	0.34***	0.04	0.14***	1.00		
HHI (25)	0.02	0.02	-	-0.03	0.17***	-	0.15***	0.09**	-0.05	0.11***	0.10***	1.00	
L_TA (26)	-	-	-	-	-	0.17***	-	-	-0.01	0.02	-	-0.04	1.00
	0.15***	0.29***	0.18***	0.18***	0.11***	0.17***	0.59***	-0.01	0.02	0.23***	-0.04	1.00	
	0.22***	0.29***	0.30***	-0.07**	0.60***	-	0.35***	0.27***	0.17***	0.22***	0.46***	0.11***	-
												0.28***	1.00

Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.

5.7 Empirical results

Regarding the first hypothesis, this study uses probit regression, as it is a very useful method in case of a binary dependent variable (Ullah et al., 2019). The results from table 4 do not support the notion that directors' total compensation is positively associated with incidence of FSF as the log of directors' total compensation (Dir_Comp) is not statistically significant (p-value = 0.25). Therefore, **H1** is rejected. This result is consistent with existing literature on financial reporting fraud, for example, Ndofor et al. (2015), who also did not find any significant association between CEO total compensation and fraudulent financial reporting.

Table 4: Probit Regression Results

	Model 1	Model 2	Model 3
Independent variables			
DIR_COMP	0.08 (0.25)		
DIR_SHRHLG		-0.02 (0.95)	
DIR_STKCOMP			0.55** (0.02)
IND_DIR%	-0.55 (0.26)	-0.48 (0.32)	-0.65 (0.19)
FEMALE_DIR%	-0.58 (0.22)	-0.58 (0.22)	-0.61 (0.20)
DIR_AGE	-0.07*** (0.00)	-0.07*** (0.00)	-0.07*** (0.00)
Control variables			
ROA	-0.44* (0.09)	-0.52** (0.05)	-0.34 (0.20)
MVBV	-0.00 (0.79)	-0.00 (0.84)	-0.00 (0.65)
BODS	-0.07** (0.01)	-0.06** (0.02)	-0.05** (0.04)
EX_DIR%	-0.93 (0.22)	-0.63 (0.41)	-0.60 (0.42)
INSTL_OWNERSHIP	0.43* (0.05)	0.51** (0.02)	0.39* (0.08)
CDUAL	0.19*	0.18*	0.21**

	Model 1	Model 2	Model 3
Independent variables			
	(0.06)	(0.08)	(0.04)
MLEV	0.18 (0.43)	0.18 (0.43)	0.20 (0.38)
ABIG4	-0.38*** (0.01)	-0.35** (0.01)	-0.40*** (0.01)
NOBM	0.03** (0.04)	0.02** (0.04)	0.03** (0.03)
HHI	-0.18 (0.62)	-0.13 (0.72)	-0.24 (0.51)
L_TA	0.12*** (0.00)	0.15*** (0.00)	0.14*** (0.00)
_cons	2.90*** (0.01)	3.73*** (0.00)	3.54*** (0.00)
N	715	710	715
Pseudo R ²	0.07	0.07	0.07

*This table gives the results of the probit regression for model 1, 2, and 3 to examine the linkages between directors' compensation, shareholding, and stock-based compensation and the incidence of FSF. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix. N denotes the number of observations. p-values in parentheses.*

In terms of second hypothesis, we expect that directors' stockholding is positively associated with the likelihood of FSF. However, the results from table 4 show that the coefficient of percentage shareholding of all directors (DIR_SHRHLG) is not statistically significant, we therefore cannot conclude the impact of directors' shareholding on the likelihood of FSF (**H2a** is rejected).

Interestingly, in relation to our third hypothesis, the results from table 4 show that variable - Directors' stock-based compensation (DIR_STKCOMP) has a positive and statistically significant coefficient (p-value = 0.02, coef = 0.55) (**H2b** is supported), implying that stock-based compensation is positively associated with FSF. Our result is in line with prior research such as Magilke et al. (2009), Harris and Bromiley (2007), and Deutsch et al. (2011). From a country-specific point of view, the US is marked by

an individualistic culture with focus on protection of one's self-interests. This coupled with the existence of high information asymmetries create agency problems which necessitate the alignment of the divergent interests of agents and principals (Lubatkin et al., 2005). Thus, there is stress on use of incentive mechanisms to achieve this alignment. However, the significant positive relationship between Directors' stock-based compensation and FSF in this study questions the efficacy of stock-based compensation. Thus, in line with Boumosleh (2009), it can be argued that stock-based compensation aligns directors' interests with that of the management and this convergence exhibits itself in increased likelihood of FSF. From a theoretical perspective, our results disagree with the agency theory prescription of using compensation and incentives to align the divergent interests of agents (directors) and the principals (shareholders) (Fama & Jensen, 1983; Kang & Kim, 2022).

The economic significance of the results is indicated by the fact the one standard deviation increase in directors' stock-based compensation increases the likelihood of FSF by 0.133 units.

In consideration of remedy mechanism, the results show no support for **H3**, which proposes a negative association between the proportion of independent directors and the likelihood of FSF, because the variable Independent Directors (IND_DIR%) is not significant in any of the regression models. This research finding is in line with Agrawal and Chadha (2005), and Abbott et al. (2004) who do not find any impact of the proportion of independent directors/outside directors on financial restatements. From a theoretical lens, no support is found for the agency-theory-based contention that the proportion of independent directors represents high-quality governance.

With respect to **H4**, the impact of diversified boards of directors on the likelihood of FSF, the results show that the coefficient of average age of all directors (Dir_Age) is significant and negative across all the models, suggesting that older directors increase the monitoring effectiveness of the BoD. This result supports the views of Xu et al. (2018), who argue that there exists a negative association between BoD age and corporate fraud. Also, older directors/executives tend to be more conservative and

ethical in their conduct (Xu et al., 2018; O'Connor et al., 2006; Adegbite, 2015). However, the result of percentage of female directors (FEMALE_DIR%) is insignificant across all the models, alluding to the absence of any impact of the presence of female directors on the incidence of FSF, which is in tune with prior research by Harris et al. (2019), and Croson and Gneezy (2009). Therefore, **H4** can be partially accepted, as age of the directors is significant whereas gender diversity is insignificant.

In case of model 1, economic significance of directors' age is indicated by 0.331 units decrease in the likelihood of FSF with one standard deviation increase in directors' age whereas in model 2, the decrease in likelihood of FSF is 0.336 units and in case of model 3, the decrease in FSF is 0.320 units with one standard deviation increase in directors' age.

It can be argued that the negative association between directors' age and the likelihood of FSF is the result of better monitoring by older directors due to their wider experience, ethical conduct, and conservative outlook. Thus, from a theoretical lens, this result supports the agency theory perspective of effective monitoring as a mechanism for aligning the divergent interests of the agents (directors) and the principals (shareholders).

Among the firm-level variables, MVBV, MLEV, and HHI are insignificant, implying that these firm-level characteristics have no influence on the incidence of FSF. However, *L_TA* is statistically significant with a positive coefficient, which implies that the incidence of FSF can be expected to increase with an increase in firm size. Choi et al. (2021a) also find significant positive association between firm size and fraud. Among the governance variables *ABig4*(-), *BoDS*(-), *INSTL_OWNERSHIP*(+), and *NoBM*(+) are statistically significant. *ABig4* is statistically significant with a negative co-efficient, which alludes to the superior quality of external monitoring provided by the Big-4 audit firms, a result also confirmed by Lennox and Pittman (2010). Further, the results imply that the size of the BoD enhances the effectiveness of the board in monitoring and thereby reduces the incidence of accounting fraud. This result finds support in Ye (2014) and in Lennox and Pittman (2010), who report a negative impact of board size

on earnings management and likelihood of fraud, respectively. NoBM is statistically significant with a positive coefficient implying that the frequency of BoD meetings can increase the likelihood of FSF. This outcome, although counter-intuitive, finds support in Chen et al. (2006). Positive impact of INSTL_OWNERSHIP on the incidence of FSF, though unexpected, has also been confirmed by Burns et al. (2010) who find that institutional ownership is associated with higher propensity of misreporting. Further, this association is driven by institutional investors who are less focussed on monitoring of the investee firms. This view is also echoed by Ward et al. (2020) as well, who contend that the monitoring effectiveness of an institutional investor depends upon the importance of the firm's stock in the institutional investor's portfolio. Thus, firms that do not form a large part of the institutional investors' portfolio receive less attention.

5.7.1 Additional tests

This study undertakes additional tests to investigate the impact of compensation and shareholding of the three sub-categories of directors on the incidence of FSF. Directors can be either executive or non-executive; however, the fiduciary duties of both are similar (Bugeja et al., 2016). But in terms of compensation there is a disparity, with EDs being paid more handsomely compared to non-executive directors (Lazar et al., 2014). In the US, EDs are generally the highest paid in the corporation, especially CEOs. In addition, by virtue of EDs playing a key role in the day-to-day operations of the corporation, they are in an influential position. Guangguo et al. (2019) argue in favour of EDs and conclude that they (when elected by controlling shareholders) lessen the information asymmetry between the shareholders and managers and hence reduce earnings management and increase pay-performance symmetry.

According to Adithipyangkul and Leung (2018), in the US incentive pay for non-executive directors is recommended. However, such incentive pay can fail, if it is not designed well and not backed by strong monitoring mechanisms. Hence, an additional analysis of the impact on FSF of EDs' compensation and shareholding as well as that of INDs and NENIDs is undertaken. In this study, directors occupying executive positions

(as per the executive compensation table) are classified as ‘ED’. Directors who are neither independent nor executive are classified as ‘NENID’.

Models 4 (a, b, c), Models 5 (a, b, c), and Models 6 (a, b, c) are used to test the impact of executive directors’, independent directors’, and non-executive non-independent directors’ compensation, shareholding, and share-based compensation respectively, on the incidence of FSF. Further, to confirm that the impact of directors’ compensation, shareholding and share-based compensation is over and above that of the CEOs’, additional analysis with **Models 7a, 7b, and 7c** is undertaken. The regression models are set out below:

$$\begin{aligned}
 \textbf{Fraud}_{i,t} = & \alpha_{i,t} + \theta 1 \text{EXDIR_COMP}_{i,t-1} + \text{IND_DIR\%} + \\
 & \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
 & \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,t}
 \end{aligned}$$

(Model 4a)

$$\begin{aligned}
 \textbf{Fraud}_{i,t} = & \alpha_{i,t} + \theta 2 \text{EXDIR_SHRHLG}_{i,t-1} + \text{IND_DIR\%} + \\
 & \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
 & \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,t}
 \end{aligned}$$

(Model 4b)

$$\begin{aligned}
 \textbf{Fraud}_{i,t} = & \alpha_{i,t} + \theta 3 \text{EXDIR_STKCOMP}_{i,t-1} + \text{IND_DIR\%} + \\
 & \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
 & \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,t}
 \end{aligned}$$

(Model 4c)

$$\begin{aligned}
 \textbf{Fraud}_{i,t} = & \alpha_{i,t} + \theta 1 \text{INDIR_COMP}_{i,t-1} + \text{IND_DIR\%} + \\
 & \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
 & \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,t}
 \end{aligned}$$

(Model 5a)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 2 \text{INDIR_SHRHLGi,t} - 1 + \text{IND_DIR\%} + \\
& \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 5b)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 3 \text{INDIR_STKCOMP}_{i,t} - 1 + \ln \text{IND_DIR\%} + \\
& \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 5c)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 1 \text{NON} - \text{EXNON} - \text{INDIR_COMP}_{i,t} - 1 + \\
& \text{IND_DIR\%} + \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 6a)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 2 \text{NON} - \text{EXNON} - \text{INDIR_SHRHLGi,t} - 1 + \\
& \text{IIND_DIR\%} + \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 6b)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 3 \text{NON} - \text{EXNON} - \text{INDIR_STKCOMP}_{i,t} - 1 + \\
& \text{IND_DIR\%} + \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 6c)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 1 \text{CEO_COMP}_{i,t} - 1 + \text{IIND_DIR\%} + \text{FEMALE_DIR\%} + \\
& \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 7a)

$$\begin{aligned}
\mathbf{Fraudi,t} = & \alpha_{i,t} + \theta 2 \text{CEO_SHRHLGi,t} - 1 + \text{IND_DIR\%} + \\
& \text{FEMALE_DIR\%} + \text{DIR_AGE} + \\
& \beta 1 \text{Controls (governance, ownership, performance and others)}_{i,t} - 1 + \varepsilon_{i,t}
\end{aligned}$$

(Model 7b)

$$\begin{aligned} \textbf{Fraud}_{i,t} = & \alpha_{i,t} + \theta_3 \text{CEO_STKCOMP}_{i,t-1} + \text{IND_DIR}\% + \\ & \text{FEMALE_DIR}\% + \text{DIR_AGE} + \\ & \beta_1 \text{Controls (governance, ownership, performance and others)}_{i,t-1} + \varepsilon_{i,i} \end{aligned}$$

(Model 7c)

The results of these tests are set out in **Table 5**.

Table 5: Additional Tests (Probit Regression)

	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)	Model 7(a)	Model 7(b)	Model 7(c)
Independent variables												
EXDIR_COMP	0.03 (0.55)											
EXDIR_SHRHLG		-0.36 (0.42)										
EXDIR_STKCOMP			0.43** (0.03)									
INDIR_COMP				0.04 (0.58)								
INDIR_SHRHLG					0.03 (0.95)							
INDIR_STKCOMP						0.31 (0.15)						
NON-EXNON- INDIR_COMP							-0.09 (0.30)					
NON-EXNON- INDIR_SHRHLG								0.79 (0.30)				
NON-EXNON- INDIR_STKCOMP									-0.17 (0.45)			
CEO_COMP										0.02 (0.73)		
CEO_SHRHLG											-0.22 (0.68)	
CEO_STKCOMP												0.37* (0.05)

	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)	Model 7(a)	Model 7(b)	Model 7(c)
IND_DIR%	-0.52 (0.30)	-0.51 (0.30)	-0.63 (0.20)	-0.55 (0.27)	-0.48 (0.33)	-0.54 (0.27)	-2.36** (0.05)	-0.26 (0.61)	-0.71 (0.20)	-0.45 (0.35)	-0.48 (0.32)	-0.62 (0.21)
FEMALE_DIR%	-0.58 (0.22)	-0.57 (0.24)	-0.62 (0.19)	-0.55 (0.25)	-0.58 (0.22)	-0.51 (0.28)	-1.69* (0.08)	-0.61 (0.20)	-0.54 (0.26)	-0.58 (0.22)	-0.53 (0.27)	-0.61 (0.20)
DIR_AGE	-0.07*** (0.00)	-0.07*** (0.00)	- 0.06*** (0.00)	-0.07*** (0.00)	-0.07*** (0.00)	-0.06*** (0.00)	-0.05** (0.03)	- 0.072*** (0.00)	- 0.06*** (0.00)	-0.07*** (0.00)	-0.06*** (0.00)	-0.07*** (0.00)
Control variables												
ROA	-0.49* (0.06)	-0.50* (0.06)	-0.37 (0.17)	-0.47* (0.07)	-0.52** (0.05)	-0.43 (0.10)	-0.37 (0.58)	-0.54** (0.04)	-0.51** (0.05)	-0.49* (0.06)	-0.47* (0.07)	-0.39 (0.15)
MVBV	-0.00 (0.87)	-0.00 (0.87)	-0.00 (0.69)	-0.00 (0.85)	-0.00 (0.83)	-0.00 (0.76)	0.04* (0.05)	-0.00 (0.80)	-0.00 (0.87)	-0.00 (0.81)	-0.00 (0.85)	-0.00 (0.73)
BODS	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.03)	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.02)	-0.02 (0.69)	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.01)	-0.06** (0.02)	-0.06** (0.03)
EX_DIR%	-0.94 (0.23)	-0.43 (0.58)	-0.74 (0.32)	-0.69 (0.36)	-0.63 (0.40)	-0.72 (0.33)	-3.07* (0.09)	-0.37 (0.64)	-1.01 (0.21)	-0.81 (0.28)	-0.75 (0.32)	-0.72 (0.33)
INSTL_OWNERSHIP	0.51** (0.02)	0.50** (0.02)	0.40* (0.06)	0.48** (0.03)	0.52** (0.02)	0.43** (0.05)	0.82* (0.09)	0.54** (0.01)	0.50** (0.02)	0.50** (0.02)	0.46** (0.03)	0.41* (0.06)
CDUAL	0.20* (0.05)	0.19* (0.06)	0.21** (0.04)	0.20* (0.05)	0.18* (0.08)	0.19* (0.06)	0.21 (0.34)	0.19* (0.07)	0.19* (0.07)	0.19* (0.07)	0.20* (0.06)	0.21** (0.04)
MLEV	0.23 (0.32)	0.18 (0.44)	0.21 (0.37)	0.18 (0.43)	0.18 (0.44)	0.19 (0.41)	0.86** (0.05)	0.13 (0.58)	0.19 (0.41)	0.19 (0.42)	0.19 (0.40)	0.20 (0.38)

	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)	Model 7(a)	Model 7(b)	Model 7(c)
ABIG4	-0.37*** (0.01)	-0.35** (0.01)	- 0.39*** (0.01)	-0.38*** (0.01)	-0.35** (0.01)	-0.37*** (0.01)	0.21 (0.45)	-0.33** (0.02)	- 0.37*** (0.01)	-0.35** (0.01)	-0.36*** (0.01)	-0.39*** (0.01)
NOBM	0.02** (0.04)	0.02** (0.04)	0.03** (0.03)	0.02** (0.05)	0.030** (0.04)	0.03** (0.03)	0.01 (0.79)	0.02** (0.04)	0.02** (0.04)	0.02** (0.05)	0.03** (0.03)	0.03** (0.03)
HHI	-0.03 (0.93)	-0.11 (0.76)	-0.23 (0.52)	-0.10 (0.79)	-0.13 (0.72)	-0.15 (0.68)	-0.03 (0.97)	-0.12 (0.74)	-0.16 (0.67)	-0.14 (0.70)	-0.16 (0.66)	-0.22 (0.55)
L_TA	0.14*** (0.00)	0.15*** (0.00)	0.14*** (0.00)	0.14*** (0.00)	0.15*** (0.00)	0.15*** (0.00)	0.09 (0.20)	0.16*** (0.00)	0.14*** (0.00)	0.15*** (0.00)	0.14*** (0.00)	0.14*** (0.00)
_cons	3.45*** (0.00)	3.79*** (0.00)	3.73*** (0.00)	3.30*** (0.00)	3.70*** (0.00)	3.50*** (0.00)	4.55* (0.02)	3.47*** (0.00)	3.93*** (0.00)	3.56*** (0.00)	3.75*** (0.00)	3.75*** (0.00)
N	709	710	715	713	710	715	195	710	715	711	713	715
Pseudo R ²	0.0705	0.0716	0.0730	0.0691	0.0710	0.0700	0.1254	0.0721	0.0685	0.0697	0.0679	0.0718

*This table gives the results of the probit regression for models 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), 6c (non-executive non-independent directors' stock-based compensation), 7a (CEOs' compensation), 7b (CEOs' shareholding), and 7c (CEOs' stock-based compensation) examining the relationship between the independent variables and the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * p<0.1, ** p<0.05, *** p<0.01. All variables are defined in the Appendix.*

With respect to executive directors, both ExDir_Comp and EXDIR_SHRHLG are statistically insignificant whereas EXDIR_STKCOMP is statistically significant and positive, implying that executive directors' stock-based compensation increases the incidence of FSF. The impact of compensation, shareholding, and share-based compensation of INDs, NENIDs, and CEOs is insignificant. CEO_STKCOMP is insignificant at 1% and 5% levels and significant only at 10% level. Among the firm-level variables and governance variables, the results mostly tally with those of Models 1, 2 and 3 (except for Model 6(a), in some cases, which could be due to fewer observations).

5.7.2 Robustness checks

Diagnostics tests for multi-collinearity (variance inflation factor -VIF) and heteroscedasticity are undertaken. The VIF values of all the variables, as well as the mean VIF value, are below 10, implying that there is no issue of multi-collinearity. Heteroscedasticity is tested using the Breusch–Pagan/Cook–Weisberg test and the White test. The results of these tests are mixed, hence a conservative approach is adopted by assuming presence of heteroscedasticity and this issue is addressed by calculating robust standard errors. Models 1, 2, and 3 are also tested using logistic regression and conditional logistic regression (Table 6a, 6b, 6c). The results reconfirm the positive impact of Directors' stock-based compensation (DIR_STKCOMP) and negative impact of average age of directors (Dir_Age) on the likelihood of FSF.

Table 6a: Conditional logistic, logit, and probit (Model 1)

	Clogit	Logit	Probit
Independent variables			
DIR_COMP	0.24* (0.08)	0.14 (0.25)	0.08 (0.25)
IND_DIR%	-0.93 (0.34)	-0.96 (0.23)	-0.55 (0.26)
FEMALE_DIR%	-0.15 (0.87)	-0.92 (0.24)	-0.58 (0.22)
DIR_AGE	-0.12***	-0.11***	-0.07***

	Clogit	Logit	Probit
	(0.00)	(0.00)	(0.00)
Control variables			
ROA	-0.91 (0.17)	-0.73* (0.10)	-0.44* (0.09)
MVBV	-0.00 (0.79)	-0.00 (0.78)	-0.00 (0.79)
BODS	-0.12** (0.03)	-0.11** (0.02)	-0.07** (0.01)
EX_DIR%	-2.78* (0.09)	-1.53 (0.22)	-0.93 (0.22)
INSTL_OWNERSHIP	0.32 (0.50)	0.70* (0.05)	0.43* (0.05)
CDUAL	0.17 (0.39)	0.31* (0.06)	0.19* (0.06)
MLEV	-0.06 (0.92)	0.28 (0.47)	0.18 (0.43)
ABIG4	-0.36 (0.25)	-0.61*** (0.01)	-0.38*** (0.01)
NOBM	0.03 (0.25)	0.04** (0.04)	0.03** (0.04)
HHI	-0.90 (0.21)	-0.30 (0.60)	-0.18 (0.62)
L_TA	1.77*** (0.00)	0.19*** (0.01)	0.12*** (0.00)
_cons		4.64*** (0.01)	2.90*** (0.01)
N	666	715	715

*This table gives the results of the conditional logistic regression, logistic regression and probit regression for model 1 examining the relationship between directors' compensation and the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Table 6b: Conditional logistic, logit, and probit (Model 2)

	Clogit	Logit	Probit
Independent variables			
DIR_SHRHLG	0.22	-0.02	-0.02

	(0.75)	(0.98)	(0.95)
IND_DIR%	-0.50 (0.61)	-0.84 (0.30)	-0.48 (0.32)
FEMALE_DIR%	-0.20 (0.82)	-0.92 (0.24)	-0.58 (0.22)
DIR_AGE	-0.12*** (0.00)	-0.11*** (0.00)	-0.07*** (0.00)
Control variables			
ROA	-1.11* (0.09)	-0.86** (0.05)	-0.52** (0.05)
MVBV	-0.00 (0.78)	-0.00 (0.82)	-0.00 (0.84)
BODS	-0.09* (0.06)	-0.10** (0.02)	-0.06** (0.02)
EX_DIR%	-2.20 (0.17)	-0.99 (0.42)	-0.63 (0.41)
INSTL_OWNERSHIP	0.49 (0.30)	0.84** (0.02)	0.51** (0.02)
CDUAL	0.14 (0.47)	0.29* (0.08)	0.18* (0.08)
MLEV	-0.09 (0.87)	0.28 (0.47)	0.18 (0.43)
ABIG4	-0.42 (0.18)	-0.56** (0.02)	-0.35** (0.01)
NOBM	0.02 (0.38)	0.04** (0.05)	0.02** (0.04)
HHI	-0.63 (0.38)	-0.22 (0.70)	-0.13 (0.72)
L_TA	1.82*** (0.00)	0.25*** (0.00)	0.15*** (0.00)
_cons		6.05*** (0.00)	3.73*** (0.00)
N	656	710	710

*This table gives the results of the conditional logistic regression, logistic regression and probit regression for model 2 examining the relationship between directors' shareholding and the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Table 6c: Conditional logistic, logit, and probit (Model 3)

	Clogit	Logit	Probit
Independent variables			
DIR_STKCOMP	1.80*** (0.00)	0.91** (0.02)	0.55** (0.02)
IND_DIR%	-0.80 (0.40)	-1.12 (0.17)	-0.65 (0.19)
FEMALE_DIR%	-0.23 (0.80)	-0.96 (0.22)	-0.61 (0.20)
DIR_AGE	-0.12*** (0.00)	-0.10*** (0.00)	-0.06*** (0.00)
Control variables			
ROA	-0.65 (0.34)	-0.56 (0.22)	-0.34 (0.20)
MVBV	-0.00 (0.69)	-0.00 (0.63)	-0.00 (0.65)
BODS	-0.07 (0.15)	-0.09** (0.04)	-0.05** (0.04)
EX_DIR%	-1.45 (0.37)	-0.98 (0.42)	-0.60 (0.42)
INSTL_OWNERSHIP	0.26 (0.60)	0.62* (0.08)	0.39* (0.08)
CDUAL	0.17 (0.38)	0.34** (0.04)	0.21** (0.04)
MLEV	0.06 (0.93)	0.31 (0.42)	0.20 (0.38)
ABIG4	-0.40 (0.20)	-0.64*** (0.01)	-0.40*** (0.01)
NOBM	0.04 (0.16)	0.04** (0.03)	0.03** (0.03)
HHI	-1.15 (0.11)	-0.40 (0.49)	-0.24 (0.51)
L_TA	1.90*** (0.00)	0.22*** (0.00)	0.14*** (0.00)
_cons		5.77*** (0.00)	3.54*** (0.00)
N	666	715	715

This table gives the results of the conditional logistic regression, logistic regression and probit regression for model 3 examining the relationship between directors' stock-based compensation and the incidence of FSF. N denotes the number of observations. p-values in

*parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

In this paper, we also address concerns with respect to endogeneity. Endogeneity can arise on account of omitted variables, simultaneity, reverse causality, or measurement error (Reeb et al., 2012; Roberts & Whited, 2013; Certo et al., 2016). To test for omitted variables, we use the STATA command 'estat ovtest, rhs' (Zahid et al., 2020). The insignificant p value in the test results, suggests that there are no omitted variables in the model.

We also employ the propensity score matching (PSM) to deal with other forms of endogeneity. Key benefit of using propensity score matched control sample is that it permits the observed effects to be attributed to the independent variable (Conyon et al., 2019; Luo & Wang, 2022; Yuan & Wen, 2018). Rosenbaum and Rubin (1983, p. 41) argue that 'propensity score is sufficient to remove bias due to all observed covariates'. According to Reeb et al. (2012) propensity score matching rectifies non-random treatment effects including reverse causality. Shipman et al. (2017) support propensity score matching on the ground that concerns with respect to model specification are reduced when PSM is used. PSM is argued to reduce structural issues in the data such as non-linear relationship among variables. Armstrong et al. (2010) argue that as an econometric approach 'propensity score' is superior to other methods of controlling for confounders. Further, propensity score helps determine how sensitive the observed effects for the independent variable are to correlated omitted/unobserved variables.

However, this method suffers from a limitation that at a particular propensity score there might be several treated firms and few untreated firms, which might make matching tough (Reeb et al., 2012).

In this study, following the PSM method, the sign of the coefficient and statistical significance remain unchanged across all the models for all variables. Further, the percentage of bias is mostly less than 5% and the p-values associated with t-tests are

insignificant across all the models, implying that matching is robust (see Tables 7a & 7b).

Table 7a: PSM based probit regression

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
Independent variables												
DIR_COMP	0.08 (0.25)											
DIR_SHRHLG		-0.02 (0.95)										
DIR_STKCOMP			0.55** (0.02)									
EXDIR_COMP				0.03 (0.55)								
EXDIR_SHRHLG					-0.36 (0.42)							
EXDIR_STKCOMP						0.43** (0.03)						
INDIR_COMP							0.04 (0.58)					
INDIR_SHRHLG								0.03 (0.95)				
INDIR_STKCOMP									0.31 (0.15)			
NON-EXNON- INDIR_COMP										-0.09 (0.30)		

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
NON-EXNON- INDIR_SHRHLG											0.79 (0.30)	
NON-EXNON- INDIR_STKCOMP												-0.17 (0.45)
IND_DIR%	-0.55 (0.26)	-0.48 (0.32)	-0.65 (0.19)	-0.52 (0.30)	-0.51 (0.30)	-0.63 (0.20)	-0.55 (0.27)	-0.48 (0.33)	-0.54 (0.27)	-2.36** (0.05)	-0.26 (0.61)	-0.71 (0.20)
FEMALE_DIR%	-0.58 (0.22)	-0.58 (0.22)	-0.61 (0.20)	-0.58 (0.22)	-0.57 (0.24)	-0.62 (0.19)	-0.55 (0.25)	-0.58 (0.22)	-0.51 (0.28)	-1.69* (0.08)	-0.61 (0.20)	-0.54 (0.26)
DIR_AGE	- 0.07*** (0.00)	-0.07*** (0.00)	- 0.06*** (0.00)	-0.07*** (0.00)	- 0.07*** (0.00)	- 0.06*** (0.00)	-0.07*** (0.00)	- 0.07*** (0.00)	- 0.06*** (0.00)	-0.05** (0.03)	-0.07*** (0.00)	-0.06*** (0.00)
Control variables												
ROA	-0.44* (0.09)	-0.52** (0.05)	-0.34 (0.20)	-0.49* (0.06)	-0.50* (0.06)	-0.37 (0.17)	-0.47* (0.07)	-0.52** (0.05)	-0.43 (0.10)	-0.37 (0.58)	-0.54** (0.04)	-0.51** (0.05)
MVBV	-0.00 (0.79)	-0.00 (0.84)	-0.00 (0.65)	-0.00 (0.87)	-0.00 (0.87)	-0.00 (0.69)	-0.00 (0.85)	-0.00 (0.83)	-0.00 (0.76)	0.04* (0.05)	-0.00 (0.80)	-0.00 (0.87)
BODS	-0.07** (0.01)	-0.06** (0.02)	-0.05** (0.04)	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.03)	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.02)	-0.02 (0.69)	-0.06** (0.02)	-0.06** (0.02)
EX_DIR%	-0.93 (0.22)	-0.63 (0.41)	-0.60 (0.42)	-0.94 (0.23)	-0.43 (0.58)	-0.74 (0.32)	-0.69 (0.36)	-0.63 (0.40)	-0.72 (0.33)	-3.07* (0.09)	-0.37 (0.64)	-1.01 (0.21)
INSTL_OWNERSHIP	0.43* (0.05)	0.51** (0.02)	0.35* (0.08)	0.51** (0.02)	0.50** (0.02)	0.40* (0.06)	0.48** (0.03)	0.52** (0.02)	0.43** (0.05)	0.82* (0.09)	0.54** (0.01)	0.50** (0.02)
CDUAL	0.19* (0.06)	0.18* (0.08)	0.21** (0.04)	0.20* (0.05)	0.19* (0.06)	0.21** (0.04)	0.20* (0.05)	0.18* (0.08)	0.19* (0.06)	0.21 (0.34)	0.19* (0.07)	0.19* (0.07)

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
MLEV	0.18 (0.43)	0.18 (0.43)	0.20 (0.38)	0.23 (0.32)	0.18 (0.44)	0.21 (0.37)	0.18 (0.43)	0.18 (0.44)	0.19 (0.41)	0.86** (0.05)	0.13 (0.58)	0.19 (0.41)
ABIG4	- 0.38*** (0.01)	-0.35** (0.01)	- 0.40*** (0.01)	-0.37*** (0.01)	-0.35** (0.01)	- 0.39*** (0.01)	-0.38*** (0.01)	-0.35** (0.01)	- 0.37*** (0.01)	0.21 (0.45)	-0.33** (0.02)	-0.37*** (0.01)
NOBM	0.03** (0.04)	0.02** (0.04)	0.03** (0.03)	0.02** (0.04)	0.02** (0.04)	0.03** (0.03)	0.02** (0.05)	0.03** (0.04)	0.03** (0.03)	0.01 (0.79)	0.02** (0.04)	0.02** (0.04)
HHI	-0.18 (0.62)	-0.13 (0.72)	-0.24 (0.51)	-0.03 (0.93)	-0.11 (0.76)	-0.23 (0.52)	-0.10 (0.79)	-0.13 (0.72)	-0.15 (0.68)	-0.03 (0.97)	-0.12 (0.74)	-0.16 (0.67)
L_TA	0.12*** (0.00)	0.15*** (0.00)	0.14*** (0.00)	0.14*** (0.00)	0.15*** (0.00)	0.14*** (0.00)	0.14*** (0.00)	0.15*** (0.00)	0.15*** (0.00)	0.09 (0.20)	0.16*** (0.00)	0.14*** (0.00)
_cons	2.90*** (0.01)	3.73*** (0.00)	3.54*** (0.00)	3.45*** (0.00)	3.79*** (0.00)	3.73*** (0.00)	3.30*** (0.00)	3.70*** (0.00)	3.50*** (0.00)	4.55** (0.02)	3.47*** (0.00)	3.93*** (0.00)
N	715	710	715	709	710	715	713	710	715	195	710	715

*This table gives the results of the propensity score based probit regression for models 1 (directors' compensation), 2 (directors' shareholding), and 3 (directors' stock-based compensation), 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), and 6c (non-executive non-independent directors' stock-based compensation), examining the relationship between the independent variables and the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Table 7b: PSM (% bias & p-values associated with t-tests)

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
Independent variables												
DIR_COMP	-3.60 (0.64)											
DIR_SHRHLG		-0.70 (0.93)										
DIR_STKCOMP			0.50 (0.95)									
EXDIR_COMP				0.30 (0.97)								
EXDIR_SHRHLG					-3.20 (0.67)							
EXDIR_STKCOMP						-0.10 (0.99)						
INDIR_COMP							-0.50 (0.95)					
INDIR_SHRHLG								3.10 (0.67)				
INDIR_STKCOMP									-0.10 (0.99)			
NON-EXNON- INDIR_COMP										-2.80 (0.84)		

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
NON-EXNON- INDIR_SHRHLG											-0.20 (0.98)	
NON-EXNON- INDIR_STKCOMP												-2.70 (0.73)
IND_DIR%	5.00 (0.52)	4.30 (0.58)	5.90 (0.45)	5.40 (0.49)	4.40 (0.57)	5.10 (0.52)	4.90 (0.52)	4.20 (0.59)	8.10 (0.30)	-8.60 (0.55)	6.60 (0.39)	3.80 (0.63)
FEMALE_DIR%	-5.00 (0.51)	-7.10 (0.36)	-4.30 (0.57)	-5.40 (0.48)	-6.70 (0.39)	-4.40 (0.56)	-6.80 (0.38)	-6.90 (0.37)	-3.70 (0.62)	1.40 (0.92)	-6.40 (0.40)	-4.00 (0.60)
DIR_AGE	4.50 (0.55)	6.30 (0.41)	3.50 (0.64)	6.80 (0.38)	6.40 (0.40)	3.40 (0.65)	6.10 (0.42)	6.30 (0.41)	6.10 (0.42)	1.20 (0.93)	8.00 (0.29)	6.10 (0.42)
Control variables												
ROA	-3.50 (0.65)	-4.60 (0.54)	2.40 (0.76)	-5.50 (0.47)	-4.10 (0.59)	2.70 (0.73)	-6.40 (0.39)	-4.20 (0.58)	3.20 (0.69)	19.10 (0.31)	5.80 (0.49)	-1.90 (0.81)
MVBV	-1.80 (0.81)	-1.80 (0.81)	-1.80 (0.81)	-2.70 (0.72)	-1.60 (0.83)	-1.90 (0.79)	-1.40 (0.86)	-1.70 (0.82)	-2.10 (0.78)	-1.90 (0.60)	-3.10 (0.68)	-2.40 (0.75)
BODS	-4.50 (0.55)	-5.10 (0.50)	-7.40 (0.32)	-4.20 (0.58)	-5.10 (0.50)	-5.80 (0.44)	-4.90 (0.52)	-5.20 (0.49)	-7.30 (0.33)	-9.50 (0.49)	-7.00 (0.35)	-5.20 (0.49)
EX_DIR%	-2.70 (0.71)	-1.70 (0.82)	-0.90 (0.90)	-2.70 (0.72)	-1.30 (0.86)	-1.80 (0.81)	-1.00 (0.89)	-1.70 (0.82)	-2.60 (0.73)	-5.70 (0.69)	-3.70 (0.62)	-2.90 (0.70)
INSTL_OWNERSHI P	5.20 (0.49)	3.60 (0.64)	5.20 (0.49)	4.20 (0.59)	2.80 (0.71)	4.20 (0.57)	2.70 (0.72)	3.80 (0.62)	4.90 (0.51)	-3.70 (0.79)	5.30 (0.49)	2.80 (0.71)
CDUAL	1.50 (0.85)	1.80 (0.82)	2.20 (0.77)	2.90 (0.71)	2.90 (0.71)	1.10 (0.88)	3.10 (0.69)	1.70 (0.82)	3.70 (0.63)	4.50 (0.76)	1.10 (0.89)	3.90 (0.61)
MLEV	-6.50	-6.30	-8.00	-6.40	-6.00	-6.80	-6.70	-6.30	-5.70	-1.60	-5.10	-6.40

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
	(0.40)	(0.41)	(0.30)	(0.40)	(0.44)	(0.37)	(0.38)	(0.41)	(0.46)	(0.92)	(0.52)	(0.41)
ABIG4	-0.40 (0.96)	0.20 (0.98)	0.40 (0.96)	1.00 (0.90)	-0.50 (0.95)	-0.70 (0.92)	-0.60 (0.93)	0.20 (0.97)	-0.20 (0.98)	1.00 (0.94)	-1.50 (0.84)	-0.20 (0.98)
NOBM	4.40 (0.58)	5.70 (0.47)	3.10 (0.71)	8.10 (0.31)	6.80 (0.39)	3.80 (0.64)	7.10 (0.37)	5.50 (0.49)	4.10 (0.62)	7.40 (0.61)	2.60 (0.75)	5.20 (0.51)
HHI	-3.40 (0.65)	-3.40 (0.67)	-4.00 (0.61)	-3.40 (0.67)	-2.60 (0.74)	-3.40 (0.66)	-1.20 (0.87)	-3.70 (0.64)	-5.50 (0.48)	6.40 (0.64)	-9.10 (0.26)	-2.70 (0.73)
L_TA	0.10 (0.99)	0.30 (0.97)	0.60 (0.94)	0.20 (0.98)	-0.30 (0.97)	1.40 (0.85)	-0.30 (0.97)	0.40 (0.96)	2.40 (0.75)	1.40 (0.92)	4.10 (0.59)	0.90 (0.90)

*This table gives the values of the %bias and related p-values of the propensity score based probit regression for models 1 (directors' compensation), 2 (directors' shareholding), and 3 (directors' stock-based compensation), 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), and 6c (non-executive non-independent directors' stock-based compensation), examining the relationship between the independent variables and the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

To deal with the issue of outliers, all variables are winsorized at 1% and 99% (Chhaochharia et al., 2012). The results set out in Table 8 show a consistent finding in relation to the positive impact of Directors' stock-based compensation (DIR_STKCOMP) and negative impact of average age of directors (Dir_Age).

Table 8: Winsorized variables

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
Independent variables												
DIR_COMP_WIN	0.10 (0.14)											
DIR_SHRHLG_WIN		-0.03 (0.93)										
DIR_STKCOMP_WIN			0.51** (0.03)									
EXDIR_COMP_WIN				0.07 (0.22)								
EXDIR_SHRHLG_WIN					-0.43 (0.35)							
EXDIR_STKCOMP_WIN						0.40** (0.04)						
INDIR_COMP_WIN							0.06 (0.47)					
INDIR_SHRHLG_WIN								0.02 (0.97)				
INDIR_STKCOMP_WIN									0.28 (0.21)			
NON-EXNON- INDIR_COMP_~N										-0.09 (0.33)		
NON-EXNON- INDIR_SHRHLG_WIN											0.89 (0.31)	

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
NON-EXNON- INDIR_STKCOMP~N												-0.17 (0.44)
IND_DIR%_WIN	-0.62 (0.21)	-0.55 (0.27)	-0.69 (0.16)	-0.60 (0.23)	-0.58 (0.24)	-0.68 (0.17)	-0.64 (0.21)	-0.54 (0.28)	-0.59 (0.23)	-2.34* (0.05)	-0.32 (0.55)	-0.77 (0.17)
FEMALE_DIR%_WIN	-0.56 (0.24)	-0.54 (0.25)	-0.57 (0.23)	-0.57 (0.23)	-0.53 (0.27)	-0.57 (0.23)	-0.52 (0.27)	-0.54 (0.26)	-0.47 (0.32)	-1.776* (0.07)	-0.57 (0.23)	-0.50 (0.29)
DIR_AGE_WIN	- 0.07*** (0.00)	- 0.07*** (0.00)	-0.06*** (0.00)	-0.07*** (0.00)	-0.07*** (0.00)	-0.06*** (0.00)	-0.06*** (0.00)	-0.07*** (0.00)	-0.06*** (0.00)	-0.05** (0.04)	-0.07*** (0.00)	-0.06*** (0.00)
Control variables												
ROA_WIN	-0.51* (0.07)	-0.61** (0.03)	-0.43 (0.13)	-0.57** (0.04)	-0.60** (0.03)	-0.46 (0.11)	-0.56** (0.05)	-0.61** (0.03)	-0.52* (0.06)	-0.48 (0.47)	-0.63** (0.02)	-0.60** (0.03)
MVBV_WIN	0.01 (0.48)	0.01 (0.36)	0.01 (0.52)	0.01 (0.44)	0.01 (0.35)	0.01 (0.47)	0.01 (0.35)	0.01 (0.36)	0.01 (0.42)	0.04** (0.04)	0.01 (0.37)	0.01 (0.33)
BODS_WIN	-0.07** (0.02)	-0.06** (0.03)	-0.05** (0.05)	-0.06** (0.02)	-0.06** (0.03)	-0.06** (0.04)	-0.06** (0.03)	-0.06** (0.03)	-0.06** (0.03)	-0.01 (0.77)	-0.06** (0.03)	-0.06** (0.03)
EX_DIR%_WIN	-0.92 (0.23)	-0.55 (0.48)	-0.56 (0.46)	-0.98 (0.22)	-0.32 (0.69)	-0.67 (0.37)	-0.60 (0.43)	-0.55 (0.47)	-0.67 (0.38)	-3.53* (0.06)	-0.30 (0.71)	-0.95 (0.24)
INSTL_OWNERSHIP_WIN	0.40* (0.07)	0.50** (0.02)	0.38* (0.09)	0.48** (0.03)	0.49** (0.03)	0.40* (0.07)	0.46** (0.04)	0.51** (0.02)	0.43* (0.05)	0.83* (0.09)	0.53** (0.02)	0.50** (0.02)
CDUAL_WIN	0.20** (0.05)	0.19* (0.06)	0.22** (0.03)	0.21** (0.04)	0.21** (0.05)	0.22** (0.03)	0.21** (0.04)	0.19* (0.06)	0.20** (0.05)	0.23 (0.30)	0.20** (0.05)	0.20* (0.05)
MLEV_WIN	0.15 (0.53)	0.16 (0.52)	0.18 (0.46)	0.18 (0.47)	0.15 (0.53)	0.18 (0.45)	0.16 (0.52)	0.15 (0.52)	0.17 (0.49)	1.04** (0.02)	0.12 (0.62)	0.17 (0.49)

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
ABIG4_WIN	- 0.37*** (0.01)	-0.34** (0.02)	-0.38*** (0.01)	-0.37*** (0.01)	-0.34** (0.01)	-0.38*** (0.01)	-0.37*** (0.01)	-0.34** (0.02)	-0.36*** (0.01)	0.19 (0.48)	-0.32** (0.02)	-0.36*** (0.01)
NOBM_WIN	0.03** (0.03)	0.03** (0.04)	0.03** (0.03)	0.03** (0.04)	0.03** (0.04)	0.03** (0.03)	0.03** (0.05)	0.03** (0.04)	0.03** (0.03)	-0.00 (0.94)	0.03** (0.04)	0.03** (0.04)
HHI_WIN	-0.14 (0.68)	-0.09 (0.81)	-0.19 (0.60)	-0.03 (0.94)	-0.07 (0.85)	-0.18 (0.61)	-0.06 (0.88)	-0.09 (0.81)	-0.11 (0.76)	-0.03 (0.97)	-0.08 (0.83)	-0.12 (0.75)
L_TA_WIN	0.12*** (0.01)	0.16*** (0.00)	0.14*** (0.00)	0.13*** (0.00)	0.16*** (0.00)	0.14*** (0.00)	0.14*** (0.00)	0.16*** (0.00)	0.15*** (0.00)	0.09 (0.24)	0.16*** (0.00)	0.15*** (0.00)
_cons	2.50** (0.02)	3.56*** (0.00)	3.41*** (0.00)	2.94*** (0.00)	3.62*** (0.00)	3.58*** (0.00)	2.94** (0.01)	3.53*** (0.00)	3.37*** (0.00)	4.60** (0.03)	3.30*** (0.00)	3.76*** (0.00)
N	715	710	715	709	710	715	713	710	715	195	710	715

*This table gives the results of the probit regression for models 1 (directors' compensation), 2 (directors' shareholding), and 3 (directors' stock-based compensation), 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), and 6c (non-executive non-independent directors' stock-based compensation), examining the relationship between the independent variables and the incidence of FSF with all independent and control variables winsorized at 1% and 99%. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * p<0.1, ** p<0.05, *** p<0.01. All variables are defined in the Appendix.*

Notably, years 2008 and 2009 (i.e. match years 2007 and 2008) are part of a global economic meltdown marked by many cases of fraud being brought to light. Hence, sub-sample analysis excluding match year 2007 and 2008 is performed. Under this analysis, the results (set out in Table 9) show the consistent findings in relation to positive impact of Directors' stock-based compensation and negative impact of average age of director.

Table 9: Excluding global melt-down

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
Independent variables												
DIR_COMP	0.12 (0.11)											
DIR_SHRHLG		-0.16 (0.63)										
DIR_STKCOMP			0.67*** (0.01)									
EXDIR_COMP				0.05 (0.35)								
EXDIR_SHRHLG					-0.51 (0.28)							
EXDIR_STKCOMP						0.54*** (0.01)						
INDIR_COMP							0.07 (0.41)					
INDIR_SHRHLG								0.06 (0.90)				
INDIR_STKCOMP									0.38 (0.11)			
NON-EXNON- INDIR_COMP										-0.09 (0.32)		

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
NON-EXNON- INDIR_SHRHLG											0.35	
											(0.65)	
NON-EXNON- INDIR_STKCOMP												-0.19
												(0.44)
IND_DIR%	-0.66	-0.59	-0.77	-0.61	-0.59	-0.75	-0.65	-0.57	-0.64	-3.00**	-0.46	-0.81
	(0.20)	(0.25)	(0.14)	(0.24)	(0.25)	(0.15)	(0.22)	(0.27)	(0.21)	(0.01)	(0.40)	(0.17)
FEMALE_DIR%	-0.68	-0.67	-0.69	-0.67	-0.65	-0.70	-0.63	-0.67	-0.58	-1.53	-0.68	-0.63
	(0.17)	(0.17)	(0.17)	(0.17)	(0.19)	(0.16)	(0.20)	(0.18)	(0.24)	(0.15)	(0.17)	(0.20)
DIR_AGE	-0.06***	-0.07***	-0.06***	-0.06***	-0.07***	-0.06***	-0.06***	-0.06***	-0.06***	-0.05**	-0.06***	-0.06***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)
Control variables												
ROA	-0.44	-0.55*	-0.33	-0.51*	-0.53*	-0.37	-0.48*	-0.55*	-0.45	-0.07	-0.56**	-0.54*
	(0.13)	(0.05)	(0.26)	(0.08)	(0.07)	(0.20)	(0.10)	(0.05)	(0.12)	(0.92)	(0.05)	(0.05)
MVBV	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.05**	-0.00	-0.00
	(0.77)	(0.86)	(0.63)	(0.88)	(0.88)	(0.68)	(0.86)	(0.84)	(0.75)	(0.03)	(0.82)	(0.88)
BODS	-0.07**	-0.06**	-0.06**	-0.07**	-0.06**	-0.06**	-0.07**	-0.06**	-0.06**	-0.01	-0.06**	-0.06**
	(0.01)	(0.02)	(0.04)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.88)	(0.02)	(0.03)
EX_DIR%	-1.29	-0.89	-0.85	-1.30	-0.65	-1.02	-0.89	-0.91	-0.99	-4.15**	-0.79	-1.31
	(0.11)	(0.28)	(0.29)	(0.12)	(0.44)	(0.20)	(0.27)	(0.27)	(0.22)	(0.03)	(0.36)	(0.13)
INSTL_OWNERSHIP	0.43*	0.52**	0.39*	0.53**	0.51**	0.41*	0.49**	0.54**	0.45**	1.15**	0.55**	0.53**
	(0.06)	(0.02)	(0.09)	(0.02)	(0.02)	(0.07)	(0.03)	(0.02)	(0.05)	(0.03)	(0.02)	(0.02)
CDUAL	0.25**	0.23**	0.27**	0.25**	0.25**	0.26**	0.26**	0.23**	0.25**	0.31	0.26**	0.26**
	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.03)	(0.02)	(0.19)	(0.03)	(0.03)

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
MLEV	0.15 (0.55)	0.15 (0.54)	0.17 (0.48)	0.21 (0.41)	0.14 (0.56)	0.18 (0.46)	0.15 (0.54)	0.14 (0.56)	0.15 (0.53)	0.91* (0.05)	0.13 (0.61)	0.15 (0.53)
ABIG4	-0.45*** (0.00)	-0.40*** (0.01)	-0.46*** (0.00)	-0.43*** (0.00)	-0.41*** (0.01)	-0.46*** (0.00)	-0.44*** (0.00)	-0.40*** (0.01)	-0.43*** (0.00)	0.10 (0.71)	-0.39*** (0.01)	-0.42*** (0.00)
NOBM	0.03** (0.03)	0.03** (0.04)	0.03** (0.02)	0.03** (0.04)	0.03** (0.04)	0.03** (0.02)	0.03** (0.05)	0.03** (0.04)	0.03** (0.03)	0.01 (0.80)	0.03** (0.04)	0.03** (0.04)
HHI	-0.17 (0.67)	-0.10 (0.80)	-0.22 (0.58)	0.01 (0.99)	-0.08 (0.84)	-0.21 (0.59)	-0.03 (0.94)	-0.11 (0.79)	-0.14 (0.73)	0.04 (0.97)	-0.11 (0.79)	-0.14 (0.73)
L_TA	0.11** (0.01)	0.15*** (0.00)	0.14*** (0.00)	0.13*** (0.00)	0.15*** (0.00)	0.14*** (0.00)	0.14*** (0.00)	0.16*** (0.00)	0.15*** (0.00)	0.06 (0.44)	0.16*** (0.00)	0.15*** (0.00)
_cons	2.46** (0.03)	3.83*** (0.00)	3.47*** (0.00)	3.28*** (0.00)	3.82*** (0.00)	3.72*** (0.00)	3.04*** (0.01)	3.68*** (0.00)	3.44*** (0.00)	5.33*** (0.01)	3.58*** (0.00)	3.94*** (0.00)
N	652	647	652	646	647	652	651	647	652	172	647	652

*This table gives the results of the probit regression for models 1 (directors' compensation), 2 (directors' shareholding), and 3 (directors' stock-based compensation), 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), and 6c (non-executive non-independent directors' stock-based compensation), examining the relationship between the independent variables and the incidence of FSF with match year 2007 and 2008 excluded from the sample, as these two years were marked by a global melt-down. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

In addition, following Efendi et al. (2007), we conduct another sub-sample analysis by excluding firms in the financial services sector as their corporate governance and financial ratios differ from that of other industries. The results (set out in Table 10) show Directors' stock-based compensation - DIR_STKCOMP(+) and average age of director- Dir_Age(-) are still significant.

Table 10: Excluding firms from financial services sector

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
Independent variables												
DIR_COMP	0.07 (0.31)											
DIR_SHRHLG		-0.04 (0.89)										
DIR_STKCOMP			0.57** (0.02)									
EXDIR_COMP				0.02 (0.69)								
EXDIR_SHRHLG					-0.42 (0.35)							
EXDIR_STKCOMP						0.43** (0.03)						
INDIR_COMP							0.04 (0.57)					
INDIR_SHRHLG								0.05 (0.92)				
INDIR_STKCOMP									0.28 (0.21)			
NON-EXNON- INDIR_COMP										-0.04 (0.66)		

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
NON-EXNON- INDIR_SHRHLG											0.78	
											(0.30)	
NON-EXNON- INDIR_STKCOMP												-0.17
												(0.46)
IND_DIR%	-0.62	-0.57	-0.73	-0.59	-0.60	-0.71	-0.62	-0.57	-0.62	-2.37**	-0.35	-0.79
	(0.21)	(0.25)	(0.14)	(0.24)	(0.23)	(0.15)	(0.22)	(0.25)	(0.21)	(0.05)	(0.51)	(0.16)
FEMALE_DIR%	-0.52	-0.51	-0.56	-0.51	-0.49	-0.56	-0.50	-0.51	-0.46	-1.21	-0.54	-0.49
	(0.28)	(0.29)	(0.25)	(0.29)	(0.31)	(0.25)	(0.31)	(0.30)	(0.35)	(0.24)	(0.27)	(0.31)
DIR_AGE	-	-	-	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-	-0.05**	-	-
	0.07***	0.07***	0.06***	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	0.06***	(0.03)	0.07***	0.07***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Control variables												
ROA	-0.44*	-0.51*	-0.34	-0.49*	-0.49*	-0.37	-0.47*	-0.51*	-0.44	-0.23	-0.53**	-0.51*
	(0.10)	(0.05)	(0.22)	(0.07)	(0.06)	(0.17)	(0.08)	(0.06)	(0.10)	(0.73)	(0.05)	(0.05)
MVBV	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.04*	-0.00	-0.00
	(0.86)	(0.90)	(0.71)	(0.94)	(0.93)	(0.76)	(0.92)	(0.89)	(0.84)	(0.06)	(0.86)	(0.93)
BODS	-0.06**	-0.06**	-0.05*	-0.06*	-0.06**	-0.05*	-0.06**	-0.06**	-0.05*	-0.04	-0.06**	-0.05*
	(0.04)	(0.04)	(0.08)	(0.05)	(0.04)	(0.06)	(0.05)	(0.04)	(0.05)	(0.46)	(0.04)	(0.06)
EX_DIR%	-0.68	-0.53	-0.34	-0.67	-0.30	-0.50	-0.42	-0.54	-0.48	-2.67	-0.28	-0.76
	(0.38)	(0.49)	(0.66)	(0.40)	(0.70)	(0.51)	(0.59)	(0.48)	(0.53)	(0.14)	(0.73)	(0.35)
INSTL_OWNERSHIP	0.45**	0.51**	0.41*	0.54**	0.50**	0.43*	0.50**	0.52**	0.46**	0.81*	0.55**	0.52**
	(0.04)	(0.02)	(0.07)	(0.02)	(0.02)	(0.06)	(0.03)	(0.02)	(0.04)	(0.10)	(0.01)	(0.02)
CDUAL	0.18*	0.18*	0.20*	0.19*	0.19*	0.20*	0.19*	0.18*	0.18*	0.23	0.18*	0.17*

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
	(0.09)	(0.09)	(0.06)	(0.08)	(0.07)	(0.06)	(0.08)	(0.09)	(0.09)	(0.31)	(0.08)	(0.09)
MLEV	0.15 (0.53)	0.15 (0.53)	0.17 (0.46)	0.20 (0.41)	0.14 (0.55)	0.17 (0.46)	0.14 (0.55)	0.14 (0.55)	0.16 (0.51)	0.88* (0.05)	0.09 (0.70)	0.14 (0.54)
ABIG4	- 0.38***	-0.36**	- 0.40***	-0.37***	-0.36***	-0.40***	-0.38***	-0.36**	- 0.38***	0.20	-0.34**	- 0.37***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.48)	(0.02)	(0.01)
NOBM	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0.02	0.03**	0.03**
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.48)	(0.03)	(0.03)
HHI	-0.10 (0.79)	-0.07 (0.86)	-0.16 (0.66)	0.05 (0.90)	-0.05 (0.90)	-0.15 (0.68)	-0.01 (0.98)	-0.07 (0.86)	-0.07 (0.85)	0.18 (0.83)	-0.06 (0.87)	-0.08 (0.83)
L_TA	0.13***	0.16***	0.14***	0.14***	0.16***	0.14***	0.14***	0.16***	0.15***	0.09	0.16***	0.15***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.24)	(0.00)	(0.00)
_cons	2.88***	3.66***	3.45***	3.43***	3.72***	3.65***	3.18***	3.61***	3.43***	4.05*	3.39***	3.83***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)
N	692	688	692	686	688	692	690	688	692	184	688	692

*This table gives the results of the probit regression for models 1 (directors' compensation), 2 (directors' shareholding), and 3 (directors' stock-based compensation), 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), and 6c (non-executive non-independent directors' stock-based compensation), examining the relationship between the independent variables and the incidence of FSF with firms from the financial services sector having been excluded from the sample. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * p<0.1, ** p<0.05, *** p<0.01. All variables are defined in the Appendix.*

Step-wise regression enables measurement of the impact of a single explanatory variable while holding other explanatory variables constant (Doti, 2021). According to Nazif et al. (2016, p.117) step-wise regression is ‘a step by step approach where insignificant variables are removed from the regression analysis allowing only important variables to be present in the prediction models’. The results of the step-wise regression for Models 1, 2, and 3 in this paper also reconfirm the significance of DIR_STKCOMP(+) and DIR_AGE(-) (set out in Table 11). Finally, a factor analysis (by instituting a binary variable ‘FAFD’, which is ‘1’ if the number of female directors is equal to or greater than 3 and ‘0’ otherwise) is also performed. However, the results (set out in Table 12) show that FAFD is insignificant across all Models 1, 2, and 3 whereas DIR_STKCOMP(+) and DIR_AGE(-) continue to be significant.

Table 11: Step-wise regression

	Model 1	Model 2	Model 3
DIR_STKCOMP			0.53** (0.02)
DIR_AGE	-0.06*** (0.00)	-0.07*** (0.00)	-0.06*** (0.00)
CDUAL	0.17* (0.10)		0.18* (0.07)
L_TA	0.15*** (0.00)	0.16*** (0.00)	0.12*** (0.00)
BODS	-0.06 (0.02)	-0.07 (0.01)	-0.05** (0.03)
NOBM	0.03** (0.04)	0.02** (0.04)	0.03** (0.01)
ABIG4	-0.36** (0.01)	-0.35** (0.01)	-0.39** (0.01)
INSTL_OWNERSHIP	0.51** (0.01)	0.49** (0.01)	0.36** (0.05)
ROA	-0.48* (0.06)	-0.49* (0.06)	

This table gives the results of the step-wise regression for models 1 (directors’ compensation), 2 (directors’ shareholding), and 3 (directors’ stock-based compensation). Significance levels are as follows:

** $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Table 12: FAFD as a new variable

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
Independent variables												
DIR_COMP	0.07 (0.29)											
DIR_SHRHLG		-0.03 (0.93)										
DIR_STKCOMP			0.54** (0.02)									
EXDIR_COMP				0.02 (0.62)								
EXDIR_SHRHLG					-0.40 (0.37)							
EXDIR_STKCOMP						0.42** (0.03)						
INDIR_COMP							0.04 (0.61)					
INDIR_SHRHLG								0.06 (0.90)				
INDIR_STKCOMP									0.31 (0.15)			

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
NON-EXNON- INDIR_COMP										-0.09 (0.27)		
NON-EXNON- INDIR_SHRHLG											0.78 (0.30)	
NON-EXNON- INDIR_STKCOMP												-0.16 (0.46)
IND_DIR%	-0.56 (0.25)	-0.50 (0.31)	-0.67 (0.18)	-0.53 (0.28)	-0.52 (0.29)	-0.65 (0.19)	-0.56 (0.27)	-0.50 (0.31)	-0.55 (0.26)	- 2.36** (0.05)	-0.28 (0.59)	-0.71 (0.20)
FAFD	-0.16 (0.29)	-0.17 (0.27)	-0.17 (0.28)	-0.17 (0.29)	-0.17 (0.26)	-0.18 (0.26)	-0.16 (0.29)	-0.17 (0.28)	-0.16 (0.30)	-0.53 (0.11)	-0.18 (0.25)	-0.16 (0.29)
DIR_AGE	- 0.06*** (0.00)	- 0.07*** (0.00)	- 0.06*** (0.00)	- 0.06*** (0.00)	- 0.07*** (0.00)	- 0.06*** (0.00)	- 0.06*** (0.00)	- 0.07*** (0.00)	- 0.06*** (0.00)	- 0.05** (0.03)	- 0.07*** (0.00)	- 0.06*** (0.00)
Control variables												
ROA	-0.43 (0.10)	-0.50* (0.05)	-0.33 (0.22)	-0.48* (0.07)	-0.48* (0.06)	-0.36 (0.18)	-0.46* (0.08)	-0.50* (0.06)	-0.42 (0.11)	-0.27 (0.67)	-0.52** (0.05)	-0.49* (0.06)
MVBV	-0.00 (0.83)	-0.00 (0.87)	-0.00 (0.70)	-0.00 (0.91)	-0.00 (0.91)	-0.00 (0.74)	-0.00 (0.89)	-0.00 (0.87)	-0.00 (0.80)	0.05** (0.04)	-0.00 (0.84)	-0.00 (0.90)
BODS	-0.06** (0.02)	-0.06** (0.03)	-0.05** (0.05)	-0.06** (0.03)	-0.06** (0.03)	-0.06** (0.04)	-0.06** (0.03)	-0.06** (0.03)	-0.06** (0.03)	-0.01 (0.80)	-0.06** (0.03)	-0.06** (0.03)
EX_DIR%	-0.86 (0.25)	-0.57 (0.45)	-0.55 (0.46)	-0.87 (0.26)	-0.35 (0.65)	-0.68 (0.36)	-0.64 (0.40)	-0.57 (0.45)	-0.67 (0.37)	-2.99* (0.10)	-0.31 (0.69)	-0.95 (0.23)

	Model 1	Model 2	Model 3	Model 4(a)	Model 4(b)	Model 4(c)	Model 5(a)	Model 5(b)	Model 5(c)	Model 6(a)	Model 6(b)	Model 6(c)
INSTL_OWNERSHIP	0.42* (0.05)	0.50** (0.02)	0.38* (0.08)	0.51** (0.02)	0.49** (0.02)	0.40* (0.07)	0.47** (0.03)	0.51** (0.02)	0.42* (0.05)	0.84* (0.09)	0.53** (0.01)	0.50** (0.02)
CDUAL	0.20* (0.06)	0.19* (0.07)	0.21** (0.04)	0.20** (0.05)	0.20* (0.06)	0.21** (0.04)	0.20** (0.05)	0.19* (0.07)	0.20* (0.05)	0.20 (0.37)	0.19* (0.06)	0.19* (0.06)
MLEV	0.18 (0.42)	0.19 (0.42)	0.20 (0.37)	0.24 (0.30)	0.18 (0.43)	0.21 (0.36)	0.18 (0.42)	0.18 (0.42)	0.19 (0.40)	0.86* (0.05)	0.13 (0.57)	0.19 (0.40)
ABIG4	- 0.38*** (0.01)	-0.35** (0.01)	- 0.40*** (0.01)	- 0.37*** (0.01)	-0.36** (0.01)	- 0.40*** (0.01)	- 0.38*** (0.01)	-0.35** (0.01)	- 0.38*** (0.01)	0.24 (0.37)	-0.34** (0.02)	- 0.37*** (0.01)
NOBM	0.03** (0.03)	0.03** (0.04)	0.03** (0.02)	0.03** (0.04)	0.03** (0.04)	0.03** (0.03)	0.02** (0.04)	0.03** (0.04)	0.03** (0.03)	0.01 (0.72)	0.03** (0.04)	0.03** (0.04)
HHI	-0.15 (0.67)	-0.11 (0.77)	-0.21 (0.56)	-0.01 (0.98)	-0.09 (0.81)	-0.20 (0.57)	-0.08 (0.83)	-0.11 (0.77)	-0.13 (0.72)	0.15 (0.86)	-0.10 (0.79)	-0.14 (0.71)
L_TA	0.12*** (0.00)	0.15*** (0.00)	0.14*** (0.00)	0.14*** (0.00)	0.15*** (0.00)	0.13*** (0.00)	0.14*** (0.00)	0.15*** (0.00)	0.15*** (0.00)	0.09 (0.23)	0.16*** (0.00)	0.14*** (0.00)
_cons	2.85*** (0.01)	3.61*** (0.00)	3.42*** (0.00)	3.37*** (0.00)	3.67*** (0.00)	3.61*** (0.00)	3.22*** (0.00)	3.57*** (0.00)	3.39*** (0.00)	4.34** (0.03)	3.35*** (0.00)	3.81*** (0.00)
N	715	710	715	709	710	715	713	710	715	195	710	715

This table gives the results of the probit regression for models 1 (directors' compensation), 2 (directors' shareholding), and 3c (directors' stock-based compensation), 4a (executive directors' compensation), 4b (executive directors' shareholding), 4c (executive directors' stock-based compensation), 5a (independent directors' compensation), 5b (independent directors' shareholding), 5c (independent directors' stock-based compensation), 6a (non-executive non-independent directors' compensation), 6b (non-executive non-independent directors' shareholding), and 6c (non-executive non-independent directors' stock-based compensation), examining the relationship between the independent variables and the incidence of FSF with a new variable 'FAFD' (which is '1' if the number of female directors is

equal to or greater than 3 and '0' otherwise). N denotes the number of observations. p -values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.

5.8 Discussion and conclusion

Contributions

This research enhances our understanding of the role played by compensation and corporate governance in inducing FSF. It contributes to governance and accountability literature by augmenting the limited empirical evidence available on directors' compensation and its effect on the incidence of FSF. Specifically, this study contributes to the literature on corporate governance, agency theory and fraud by combining the agency perspective (represented by compensation and the agency relationship between directors and shareholders) with the corporate governance perspective (represented by governance variables), which are both significant in the context of accounting fraud. The study also extends previous research by offering an alternate view to the agency theory, which conventionally supports the use of stock-based compensation (Jensen and Meckling, 1976; Boumosleh, 2009; Kang & Kim, 2022) as a means of aligning the interests of agents (directors) and principals (shareholders). Our view is that stock-based compensation may harm shareholders by providing incentives for FSF and thus can accentuate the principal-agent agency issues. Further, this study supplements the literature by providing evidence on how various measures of good corporate governance (such as auditor being among the big 4 audit firms, optimally sized boards, and older directors) lower the likelihood of FSF.

This study also contributes methodologically by employing a wider source of data. Unlike prior research, which has predominantly used data from the SEC to identify fraud firms, this study uses data from SCAC and also uses a broader definition of FSF by including corporations that have made misstatements in their offer documents.

Implications for theory

Agency theory is the main theory which has guided this paper. This theory provides two mechanisms to deal with agency issues: monitoring and incentive alignment (Fama

& Jensen, 1983; He & Wang, 2009; Sheikh et al., 2018). The results of this paper indicate a positive association between directors' stock-based compensation and financial statement fraud and a negative association between directors' age and FSF. These findings augment the monitoring view of agency prescription and advocate exercise of caution in use of stock-based compensation while designing directors' pay packages.

The results also indicate that CEO duality, institutional ownership, and frequent board meetings should be avoided whereas measures of good corporate governance such as auditor being among the big 4 audit firms, optimally sized boards, and older directors, should be used to reduce the likelihood of FSF.

Implications for practice and policy

From a practical perspective, the findings of this paper provide insights into effectively structuring and designing directors' compensation packages by arguing against the use of stock-based compensation for directors. The results also indicate that firms should consider the age of directors while selecting them as older directors provide better monitoring and thus help curtail the likelihood of FSF.

With respect to implications for policy, this research provides supplementary evidence to regulators on the inefficacy of stock based compensation to directors in dealing with agency issues. Thus, caution should be exercised while advocating use of such compensation.

Conclusion

The results of this study indicate that the incidence of FSF is significantly and positively related to directors' stock-based compensation but has a significant negative association with directors' age. These results are robust to alternative statistical

measures and to endogeneity tests. BoD size, auditor size/type, frequency/number of BoD meetings, and firm size are also significant factors affecting accounting fraud.

In terms of limitations, our study is restricted to the analysis of publicly listed companies only, due to the data constraints regarding corporate governance and compensation practices in case of private companies. Further, this research focuses on reported cases of FSF. However, there may be many cases that have either not been reported or not yet discovered. Another limitation of this study is with respect to the sample size. The initial sample of fraud firms included 1,029 firms listed on NASDAQ and NYSE. However, the data on directors' compensation and a number of other governance and demographic variables had to be hand collected from SEC filings as many of these firms were either delisted or were not covered by databases such as Boardex or Execucomp. For instance: Boardex provides compensation data only for S&P500 and NASDAQ listed firms which are presently alive/listed. Similarly, Execucomp also has limited coverage of US corporations. Hence, the initial sample was randomised to include 500 fraud firms only. Out of these, compensation data was available for only 396 matched pairs. However, the sample was still larger than many of the existing studies on compensation and fraud. In conclusion, as the extant research has focused on compensation (representing directors' self-interest) and fraud, an interesting extension of our study could to explore whether incentive/ self-interest in form of director's reputation (Masulis & Mobbs, 2014) has any effect on containing/reducing the incidence of FSF. Also, we call for further research on alternative ways of compensating directors to address agency issues besides stock based compensation.

5.9 Chapter summary

This chapter constituted the second empirical paper of this thesis and it examined the impact of directors' compensation and corporate governance on the incidence of FSF in the US. The results indicate that directors' stock-based compensation and young

directors increase the likelihood of FSF. Further, firm performance (ROA), BoD size, institutional ownership, CEO duality, type of auditor, frequency of BoD meetings, and firm size have a significant impact on the incidence of FSF.

The next chapter is the third empirical paper of this thesis and it compares fraud firms in China and the US. It also investigates the impact of directors' compensation and corporate governance variables on the incidence of FSF in a combined study of China and the US.

Appendix: Variable definition and measurement*

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Dependent Variable				
Fraud	Fraud Firm (FF)/ Control Firm (CF)	"1" for fraud firm and "0" for control firm Source: SCAC, Compustat		Hass et al., 2016; Crutchley and Minnick, 2012
Main Independent Variables				

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Log of directors' total compensation	DIR_COMP	Log of total compensation of all directors; Source: SEC Filings	H1 (+)	Canyon and He, 2016; Hass et al., 2016
Shareholding of all directors (%)	DIR_SHRHL G	Percentage Shareholding held by all directors; No. of shares beneficially owned by all Directors (as per the SEC filing for the match year)/ Number of shares outstanding; Source: SEC Filings - beneficial ownership statistics, Compustat	H2a(+)	Bhagat and Bolton, 2008; Kosnik, 1990

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Directors' stock-based compensation percentage	DIR_STKCO MP	(Value of Stock Awards + Value of Option Awards) / (Salary + Bonus + Fees Earned or Paid in Cash + Value of Stock Awards + Incentive Compensation + Value of Option Awards + Non-Equity Incentive Plan Compensation + Change in Pension Value and Non-Qualified Deferred Compensation Earnings + All Other Compensation); Source: SEC Filings	H2b(+)	Crutchley and Minnick, 2012; Armstrong et al., 2010

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Percentage of Independent Directors on BoD	IND_DIR%	Percentage of Independent Directors; Source: SEC Filings	H3(-)	Neville et al., 2019; Hass et al. 2016
Percentage of Female Directors	FEMALE_DIR%	Percentage of Female Directors; Source: SEC Filings	H4(-)	Liao et al., 2019; Harakeh et al., 2019

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Average age of all directors	DIR_AGE	Average age of all directors; Source: SEC Filings	H4(-)	Xu et al., 2018
Other Independent Variables				
Log of Executive Directors' total compensation	EXDIR_COM P	Log of compensation of executive directors; Source: SEC Filings	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Shareholding of Executive directors (%)		Percentage Shareholding held by executive directors;		
	EXDIR_SHR			
	HLG	Formula same as for DIR_SHRHLG; Source: SEC Filings	(+)	
Executive Directors share based compensation percentage		Share-based compensation percentage of executive directors;		
	EXDIR_STKC			
	OMP	Formula same as for DIR_STKCOMP; Source: SEC Filings	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Log of Independent Directors' total compensation	INDIR_COM P	Log of the compensation of all independent directors; Source: SEC Filings	(+)	
Shareholding of Independent Directors (%)	INDIR_SHR HLG	Percentage Shareholding held by independent directors; Formula same as for DIR_SHRHLG; Source: SEC Filings	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Independent Directors share based compensation percentage	INDIR_STKC OMP	Share-based compensation percentage of independent directors; Formula same as for DIR_STKCOMP; Source: SEC Filings	(+)	
Log of Non-Executive Non-Independent Directors' total compensation	NON- EXNON- INDIR_COM P	Log of the compensation of all Non-Executive and Non-Independent directors; Source: SEC Filings	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Shareholding of Non-Executive Non-Independent Directors (%)	NON- EXNON- INDIR_SHR HLG	Percentage Shareholding held by non- executive non-independent directors; Formula same as for DIR_SHRHLG; Source: SEC Filings	(+)	
Non-Executive Non-Independent Directors share based compensation percentage	NON- EXNON- INDIR_STKC OMP	Share-based compensation percentage of non-executive non-independent directors; Formula same as for DIR_STKCOMP; Source: SEC Filings	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Control Variables				
Match Year ROA (%)	ROA	<p>Return on Assets (ROA);</p> <p>Calculated as $ROA = \text{Net Income} / \text{Total Assets}$;</p> <p>Source: Compustat</p>		Erickson et al., 2006; Hass et al., 2016
Match Year MV/BV	MV/BV	Market Price per share/ Book Value per share;		Conyon and He, 2016; Erickson et al., 2006

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
		Calculated as $MV/BV = \text{Closing Price}/\text{Book Value Per Share}$; Source: Compustat		
Total Number of Directors	BODS	Total Number of Directors; Source: SEC Filings	(-)	Ntim et al., 2015; Deutsch et al., 2011
Percentage of Executive Directors	EX_DIR%	Percentage of Executive Directors; Source: SEC Filings	(+)	Guangguo et al., 2019

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Institutional Ownership	INSTL_OWN ERSHIP	Percentage of shareholding with Institutional Owners; Source: Thomson Reuters Institutional (13f) Holdings - Stock Ownership Summary via Wharton Research Data Services (WRDS)	(-)	Ntim et al., 2015; Le, 2018; Nguyen & Shiu, 2022
CEO and Chair of BoD same person	CDUAL	"1" in case of CEO duality and "0" otherwise; Source: SEC Filings		Core et al., 1999; Dahya et al., 2009

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Match Year Modified Total Debt	MLEV	MLEV = Total Debt/Total Assets; Source: Compustat		Ntim et al., 2015; Hass et al., 2016
Auditors from Big 4 Accounting Firms or Not	ABIG4	"1" if auditor among the Big4 firms and "0" if auditor not among the Big4 firms; Source: Compustat	(-)	Lennox and Pittman, 2010
Number of Board Meetings	NOBM	Number of Board Meetings in the Match Year; Source: DataStream	(-)	Erickson et al., 2006

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Ownership Concentration	HHI	Ownership Concentration – Herfindahl - Hirschman Index; Source: WRDS Thomson Reuters Institutional (13f) Holdings - Stock Ownership Summary	(+)	
Firm Size	I_TA	Log of Total Assets; Source: Compustat		Markelevich and Rosner (2013); Gao et al. (2017)
Log of CEOs' total compensation	CEO_COMP	Log of compensation of CEO;	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
		Source: SEC Filings		
Shareholding of CEO (%)	CEO_SHRH LG	Percentage Shareholding held by CEO; Formula same as for DIR_SHRH LG; Source: SEC Filings	(+)	
CEO's share based compensation	CEO_STKCO MP	Share-based compensation percentage of CEO; Formula same as for DIR_STKCOMPDIR_STKCOMP;	(+)	

Variable Name and Definition	Label	Details	Hypothesis/ predicted association	References
Source: SEC Filings				

** All variables are measured as of the match year*

6. Paper 3 – ‘Do fraud firms differ? A comparative study of the United States and China

6.1 Chapter introduction

This chapter is the third empirical paper of this thesis and it compares China and the US on various variables representing the three prongs of the fraud triangle framework. It also investigates the impact of directors' compensation, and governance variables (firm level and country level) on the incidence of FSF in a combined study of China and the US.

6.2 Abstract

This article presents a comparative analysis of the incidence of financial statement fraud (FSF) in the United States (US) and China. It presents a theoretical comparison of the two countries on the corporate governance scenario, institutional and cultural background, legal orientation and systems, and compensation practices (specifically directors' compensation) in the first part. In the second part, it presents an empirical analysis of the incidence of FSF comparing the two countries on the three dimensions of the Fraud Triangle, namely motivation/pressure, rationalisation, and opportunity. We also conduct a propensity-score-matching-based regression analysis to identify factors that affect the incidence of FSF in the two countries. The results of our variance analysis indicate that the two countries differ significantly on all identified measures of the Fraud Triangle, except for external financing need and income disparity. Additionally, firm-level variables and governance measures such as leverage, independent directors, CEO duality, frequency of board meeting, and Big-4 auditor have a significant impact on the incidence of FSF whereas country-level variables such as education, income disparity, and rule of law do not affect the incidence of FSF.

6.3 Introduction

Ever since the high-profile financial statement frauds (FSF) of the early 21st century (such as Adelphia, Enron, Qwest Communications, Tyco, WorldCom, and Xerox) were uncovered, themes such as corporate governance, business ethics, and corporate transparency (Low et al., 2008) have come to the forefront of academic research. FSF has adverse repercussions for all corporate stakeholders, including auditors, creditors, customers, employees, investors, pensioners, regulators, etc. (Rind et al., 2022). Apart from the negative impact on cost of capital and on security prices, erosion in the market capitalisation of fraud firms to the tune of billions of dollars has been recorded (Rezaee, 2005).

The cases of impropriety in financial statements are not just limited to the developed economies; the emerging economies have had their own share of such distressing improprieties. For example, both the US and China continue to be marred by such scandals, albeit not of the same proportion as in the early 21st century, which is evident from the number of Accounting and Auditing Enforcement Releases (AAERs) released by the US Securities and Exchange Commission (SEC) and the number of cases reported by China Securities Regulatory Commission (CSRC). The SEC released about 194 AAERs²⁰ whereas CSRC reported 2,802 instances of violations²¹ between 2018 and 2019. Therefore, understanding the reasons for FSF assumes critical significance for devising methods for obviating such frauds in the future.

The Fraud Triangle (TFT) is one of the most eminent theoretical explanations to elucidate the why, who, and how fraud occurs. Propounded by Cressey (1953), TFT has three dimensions – motivation/pressure, rationalisation, and opportunity. The TFT model is used in this comparative study of the US and China to explore the reasons for FSF. We found that funding pressure, leverage ratio, directors' compensation and shareholding all represent motivation/pressure for FSF. Access to education, income disparity, and cultural differences depict rationalisation, whereas weakness in internal

²⁰<https://www.sec.gov/divisions/enforce/friactions/friactions2018.shtml>. Accessed in September 2021.

²¹<https://us.gtadata.com/>. Accessed in September 2021.

governance (represented by percentage of independent directors, CEO duality, board size, frequency of board meetings, auditor type, and institutional ownership) and governance at the country level (represented by rule of law) demonstrate opportunity for FSF.

Differential association/social learning theory argues that “if management fraud is to be reduced significantly, the ethics of business personnel will have to change significantly” (Cressey, 1986, p. 195). Ethics in turn are a function of education, social and cultural structure (You & Khagram, 2005). Thus, this study uses corruption culture (Liu, 2016), access to education, and income disparity (Chen, 2014) as measures of rationalisation of FSF. Opportunities for FSF are measured in terms of weakness in governance/controls at country and firm level (Chen et al., 2016; Ghafoor et al., 2019) whereas pressure is assumed to be a function of the level of reliance on external funding (Shi et al., 2017), level of leverage (Ghafoor et al., 2019), and directors’ compensation and shareholding (Choo & Tan, 2007; Ghafoor et al., 2019). This research focuses on directors’ compensation and shareholding which have some bearing on the incidence of FSF because directors are instrumental in monitoring management (Jensen & Meckling, 1976; Del Brio et al., 2013), and aligning the latter’s interests with shareholders.

The hypotheses are tested using a sample of 357 US and 903 Chinese fraud firms over the sample period from 2005 to 2018. Analysis of variance is used to compare the fraud firms from the two countries on the three dimensions of the fraud triangle. Propensity-score-matching-based probit regression is employed to find which variables of the fraud triangle have a significant influence on the incidence of FSF in the combined analysis of the US and China. The results of the analysis of variance (ANOVA) indicate that the fraud firms in the two countries differ significantly on all the identified measures of the fraud triangle (except for external financing need and income disparity) whereas the results of the propensity score matching highlight the significance of firm-level corporate governance variables in influencing the likelihood of FSF. Firm-level governance variables such as leverage, percentage of independent

directors, CEO duality, frequency of board meetings, and auditor type have a statistically significant impact on the incidence of FSF whereas country-level measures are insignificant.

There are several motivations to examine the reasons for FSF in a comparative study between the US and China. Firstly, the US and China are the two of the largest economies in the world in terms of GDP²². They also have the world's largest stock markets (New York Stock Exchange (NYSE), National Association of Securities Dealers Automated Quotations (NASDAQ), and Shanghai Stock Exchange)²³. Secondly, these two countries are culturally very different, with the US being an individualist society and China being marked by collectivism and hierarchy (Hofstede Insights, 2021). These differences are also visible in their management practices, where the US traditionally relies more on formal agreements and discreet contracts while China has traditionally relied more on informal/personal relationships and exchange of favours (Chai et al., 2018). On the corporate governance front also, there are apparent differences between the two countries. The US has been a front-runner in corporate governance whereas China is a late entrant with company law being introduced in the country only in 1994 (Fleckner et al., 2013). Further, CSRC (China) was formed in 1992 whereas the SEC (US) was established since 1934. Additionally, according to Franke and Richey (2010), in case of country comparisons, choosing countries which considerably vary in cultural dimensions can be helpful in identifying relationships. Sivakumar and Nakata (2001) support this assertion and argue that countries with maximum difference in cultural scores should be chosen to ensure that the impact on the dependent variable is attributable to the independent variable. US and China satisfy the above requirements as these two countries vary significantly on cultural variables. Finally, with respect to directors' compensation, the US has a broader perspective as it extends stock and option-based compensation to directors (Gordon, 2007) whereas in China, there is reluctance to use stock/option-based compensation (Adithipyangkul et al.,

²² <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>. Accessed on 8th September 2021.

²³ <https://www.statista.com/statistics/270126/largest-stock-exchange-operators-by-market-capitalization-of-listed-companies/>. Accessed on 8th September 2021.

2011), which was permitted by CSRC only from December 2005. Another interesting fact about these two countries is the extent of their inter-dependence on each other. In 2019, the US was the largest trade partner of China, accounting for 16.75% of China's total imports and exports, while China was the third largest trading partner of the US, accounting for 6.48% of the latter's total exports and imports in 2019²⁴.

This study differs from other comparative studies on governance, culture, and corruption/fraud, in that it specifically looks at the cases of FSF in China and US whereas existing research has looked either at broad indicators of corruption or at earnings management and has mapped them against national culture, such as Boateng et al. (2021), and Lewellyn and Bao (2017). Another distinctive feature of this study is that it focuses on directors' compensation and shareholding rather than on executive compensation. This shift in focus is vital because directors play a prominent role in the monitoring function and thus are the first line of defence for the shareholders. They are the quintessential internal control mechanism employed by shareholders to exercise control over management (Adams et al., 2010). Further, it is their primary duty to set the right tone at the top, which has implications regarding the truthfulness of financial statements (Schwartz et al. 2005). As truthful financial statements are vital from the perspective of all stakeholders, it is important that the directors' interests are well aligned with those of the shareholders and compensation is vital in achieving this alignment between agents and principals (Jensen & Meckling, 1976).

The main contribution of this study arises from its focus on FSF in a comparative study of two of the world's largest economies. It contributes to the literatures on corporate governance, agency theory, institutional theory, and accounting fraud. China differs considerably from Western countries in terms of culture and institutional and political conditions. However, there is a tendency to apply theories and practices of developed countries to the emerging markets, even if such application may not be most prudent as all countries differ culturally (Gladwin, 1981; Hofstede, 1993). Hence, it is important

²⁴ <https://wits.worldbank.org/CountryProfile/en/Country/CHN/Year/2019/Summary>. Accessed on 16 October 2021.

to investigate how the two countries differ on the factors that influence the incidence of FSF, which factors affect the occurrence of FSF in the two countries, and whether the governance prescriptions of the developed world are relevant to emerging economies like China. Further, given the high interdependence of these countries on each other, it is only natural for Chinese corporations to operate and get listed in the US and vice versa. Should that be the case, knowing and understanding factors which may distort the truthfulness of financial statements and devising ways and means to deal with them is a fundamental requirement. Additionally, this study focuses on two different governance paradigms in two countries at different levels of economic development (developed and emerging) and the results of this study can be extended to other international economies which share similar governance paradigms.

The remainder of the paper is organised as follows. The second section reviews relevant literature and develops the hypotheses. The research method is outlined in the third section, followed by the results in section 4. Section 5 provides the conclusion and implications of this study.

6.4 Theoretical framework, literature review and hypothesis development

6.4.1 The background of US vs China

Legal and political orientation

The legal orientation of the US is common-law-based, whereas China is civil-law-based (being derived from the German civil law). Compared to common law, civil law is marked by substantial government regulation and ownership, which may translate into greater corruption (La Porta et al., 2008). Common law, on the other hand, is associated with greater 'judicial independence', 'security of property rights', and 'better contract enforcement'. Common law can be said "to support private market outcomes" whereas civil law seeks to "replace such outcomes with state-desired allocations" (La Porta et al. 2008, p. 286). Ji et al. (2020) support this classification of

legal orientation by concluding that in China, legal protection for accounting standards and investor rights is not as developed as in Western countries.

With respect to political orientation, China is seen to be “rebuilding of a communist political system” (Mihalyi & Szelenyi, 2021, p.204), whereas the US continues to be a democratic state. Aidt et al. (2008) argue that the quality of political institutions determines the impact of corruption on growth. In countries with a superior quality of political institutions, corruption has a substantial negative effect on growth.

Socio-cultural differences

Aubert (1952, p. 264) contends that “white-collar crime seems to be one of those phenomena which are particularly sensitive to – and therefore highly symptomatic of – more pervasive and generalisable features of the social structure”. Lalwani et al. (2006) argue that individualist cultures (such as America) are marked by self-deception while collectivist cultures (such as in Asia) are marked by impression management.

Chand et al. (2012) conclude that Chinese accounting students display greater secrecy and conservatism as opposed to their Australian counterparts. Further, this difference in culture cannot be moderated even with similarity in education. Bik and Hooghiemstra (2018) document that collectivist cultures are negatively associated with auditors’ compliance with audit firms’ global procedures for fraud risk assessment.

Hofstede Insights (2021) provides six dimensions to national culture. China and the US have the following scores on these parameters of culture:

Hofstede Cultural Comparison

Cultural Dimension	China	US	Score Interpretation
Power Distance	80	40	High score implies inequality among people is acceptable and people accept a hierarchical order which doesn't have to be justified.
Individualism	20	91	High score indicates individualism wherein individuals take care of themselves. Low score implies collectivist culture wherein 'in-group' relationships take precedence and there is preference for 'we' than for 'I'.
Masculinity	66	62	High score (masculine) implies the society is driven by competition and has inclination towards achievement, assertiveness, and heroism whereas a low score (feminine) represents a society driven by caring for others, modesty, and cooperation.
Uncertainty Avoidance	30	46	Low score implies comfort with ambiguity whereas a high score represents discomfort with ambiguity and uncertainty.
Long-term Orientation/Future Orientation	87	26	High score reflects the society's focus on preparing for future through thrift, saving, and investing (pragmatic/ long-term approach). Low score indicates short-term/ normative orientation.
Indulgence	24	68	Low score signifies 'restraint' whereas a high score represents indulgent societies. Indulgence represents free gratification of human drives whereas restraint represents suppression of need for gratification.

Source: Hofstede Insights (2021)

As is evident from the table above, culture in China is marked by high degrees of collectivism and power distance, implying that the Chinese society accepts hierarchical order and focuses on 'we' rather than on 'I'. Though the Hofstede cultural index is criticised for its faulty assumptions as well as for its a restricted classification of culture (McSweeney, 2002), it is still useful in predicting behavioural issues (Smith, 2006; Chen, 2014).

Compensation practices

Canyon and Murphy (2000, p. 667), state that "The United States, as a society, has historically been more tolerant of income inequality, especially if the inequality is driven by differences in effort, talent, or entrepreneurial risk taking". On the other hand, in the context of China, traditionally a communist state, has worked on an egalitarian system of equitable pay (Adithipyangkul et al., 2011), however, following China's economic liberalisation, the country has transitioned to incentive-based pay/performance-linked pay systems. Further, though managerial compensation has increased considerably in China, it is still modest compared to developed countries (Jiang & Kim, 2015).

With respect to adoption of stock-options and stock-based compensation, there is still a marked difference between the two countries. In China, stock options are seldom offered (Adithipyangkul et al., 2011). Stock options were prohibited in China till 2005, after which they were allowed to be offered as long-term incentives by public corporations that had completed their structural reforms, whereas in the US, stocks and stock options are often part of compensation packages (Firth et al., 2014).

Corporate governance

On the corporate governance front, the Anglo-American model of governance, followed by the US, draws from the agency theory, which argues that governance conflicts are principal-to-agent conflicts and are due to separation between ownership and control, whereas in the case of China, the governance conflicts are primarily principal-to-principal conflicts between majority and minority shareholders (Habib &

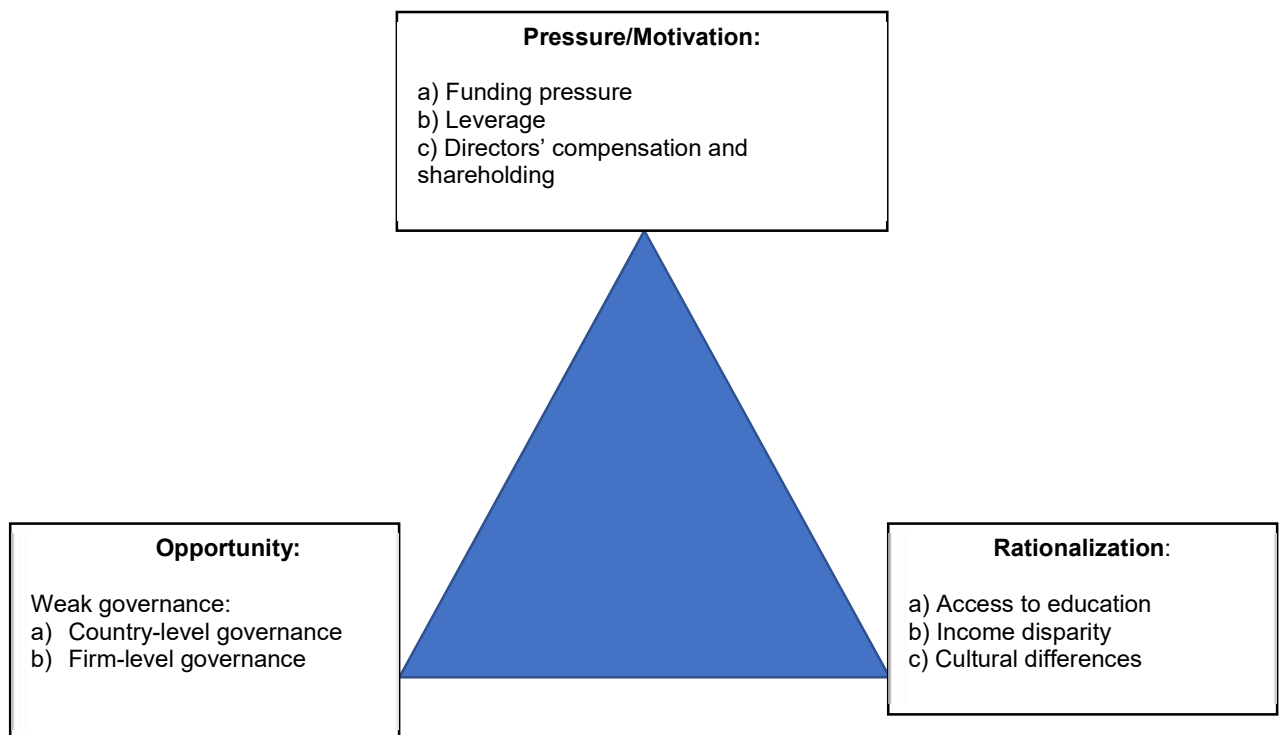
Jiang, 2015). principal-to-principal conflicts are the result of concentrated and family ownerships, weak legal environment, weak formal institutions, and weak external governance mechanisms. Further, in the case of agency conflicts, internal (such as compensation, board of directors, concentrated ownership) and external governance (such as takeover, product market competition, and labour market) mechanisms can be bundled up together to tackle the governance issues. However, the efficacy of such bundles depends upon the institutional structure of the country. For instance, in the case of China, 'concentrated ownership' is the very root of principal-to-principal conflicts whereas in the case of the US, 'concentrated ownership' is an internal governance mechanism (Young et al., 2008). Further, compared to the US, the ownership concentration is very high in China. Thus, in the case of China, high ownership concentration may reflect expropriation of wealth from minority shareholders (Jiang & Kim, 2015).

Additionally, CEO duality is less severe in China compared to the US (Jiang & Kim, 2015).

6.4.2 The theoretical framework

To understand the FSF incidences in two different countries (US vs China), this study follows Fraud Triangle framework as below.

Figure 1: The Fraud Triangle (TFT) framework



A fundamental theoretical tenet in literature is that corruption/unethical behaviour/fraud is a consequence of motivations and opportunities, which is also the basis of TFT framework. TFT makes an attempt to explain 'why fraud is committed'. Developed by Cressey (1953), this theoretical model is embedded in psychology and has three prongs – pressure, opportunity, and rationalisation. According to Dellaportas (2013), 'pressure' signifies the incentives/motivators to commit fraud and 'opportunity' provides the 'means' to take the fraudulent intent to its culmination, whereas 'rationalisation' assists in dealing with the cognitive dissonance associated with fraudulent behaviour. Further, the model is based on the assumption of an equilateral triangle wherein each element is equally weighted.

Among the three aspects of TFT, Dellaportas (2013) argues that opportunity rather than motivation is a better predictor of fraud, and the former also holds the key to control it. Thus, it pays to restrict the opportunities to commit fraud.

6.4.3 Hypothesis development

Pressure/Motivation

a) External financing need

Finance is essential for growth. According to Lee (2020) firms that depend on external finance grow slowly and availability of adequate finance can mitigate this negative effect of financial dependence on growth. Almaskati et al. (2020) argue that increased access to external financing reduces the probability of forgoing value accretive investments. Hence, need for finance can induce financial misconduct which is also confirmed by Shi et al. (2017) who find that high levels of financing need to finance growth can induce fraud. Bell and Carcello (2000) also identify rapid growth as a fraud risk factor. Linck et al. (2013) report that discretionary accruals can be used by financially constrained firms to raise debt and equity to fund valuable projects. In a similar vein, Chandra and Schneible (2019) conclude that earnings management precedes raising of external financing, to manage the expectations of investors. Alhadab et al. (2015) also find evidence of upward earnings manipulation by IPO firms using accrual and real earnings management whereas Efendi et al. (2007) provide evidence of misstatements by firms who raise external financing. Given Chinese firms' greater dependence on informal financing (Elston et al., 2016), the first hypothesis is that:

H1: Compared to China, the external financing need of US firms is likely to lead to higher probability of fraud committed by directors.

b) Leverage

Leverage can motivate fraud due to the need to either avoid non-compliance with debt covenants (Pittman & Zhao, 2020) or raise funds at a lower cost, or due to the sheer magnitude of debt on the books of accounts. Ghafoor et al. (2019) find that leverage is significantly and positively associated with the likelihood of fraud. Burns and Kedia (2006) find that restatement is more likely in firms that are highly leveraged. In

contrast, Dechow et al. (2011) do not find any significant effect of leverage on the misstatements and Gepp et al. (2021) find that higher debt is associated with fewer frauds. This could be due to enhanced monitoring by lenders in line with the agency theory (Jensen & Meckling, 1976). However, high leverage is a widely accepted indicator of financial distress.

In China, informal capital (family funding and personal savings) is the predominant source of start-up capital. Further, as compared to the US, the capital markets in China are not as developed, and are smaller (Elston et al., 2016). Thus, it is possible that the formal sector in China is unable to extend the required financial support. Chen (2004, p. 1341) finds that Chinese firms use a pecking order of “retained profit, equity, and long-term debt”. According to this study, Chinese firms have low levels of long-term debt and prefer short-term funding as compared to firms in developed economies. Fan et al. (2012) also find evidence of lowest debt maturities in China in their study involving 39 countries. With respect to the US corporations, Graham et al. (2015) find that the use of leverage has increased over the past decade and this increase can partly be explained by a decline in government borrowing (which reduces the supply of competing securities) and an increase in financial intermediation (which facilitates access to capital by reducing agency costs and information asymmetry). Thus, the next hypothesis is that:

H2: Compared to China, higher leverage of US firms is likely to lead to higher probability of fraud committed by directors.

c) Directors’ compensation and shareholding

Empirical investigation of linkages between executive compensation and fraud has provided mixed results, with one school of thought claiming that executive compensation can induce fraud (Goldman & Sleazak, 2006; Efendi et al., 2007; Davidson, 2022; Kim et al., 2022) and the second school of thought arguing against any such association (Armstrong et al., 2010; Erickson et al., 2006). Given the lack of any conclusive evidence, this subject warrants further investigation. Further, most of the

existing empirical evidence has focused on executive compensation. However, directors, as monitors of the management, have a significant role to play in the internal governance function of a corporation and hence in the prevention of fraud. Therefore, this study focuses on directors.

Directors perform the monitoring function on behalf of shareholders, and hence they can be construed to be agents of the latter. Agency theory propounds the institution of adequate incentives for agents for the alignment of their interests with those of the principals (Jensen & Meckling, 1976). However, directors can be induced into fraud due to either the nexus with management or the pursuit of goals of wealth maximisation. For instance, Khanna et al. (2015) assert that directors' connectedness with CEOs can increase the likelihood of fraud while there is evidence of earnings management to increase cash compensation. The above evidence implies that compensation can induce fraudulent behaviour.

Ye (2014) reports a positive association between independent directors' cash-based compensation and earnings management in China whereas in the case of the US, Persons (2012) did not find any association between independent directors' cash compensation and financial fraud. Therefore, the next hypothesis is that:

H3a: Cash compensation is likely to be a more significant influencer of FSF for China as compared to the US.

Directors' shareholding in the corporations they monitor is also an instrument of the formers' wealth. Hence, this paper investigates whether directors' shareholding has an association with the incidence of FSF. Though empirical evidence on this association is sparse, there is some evidence that directors' shareholding can make them compromise on their objectivity and independence, make BoD discussions less transparent, and make the directors acquiesce to aggressive financial reporting (Rose et al., 2013). Ye (2014) states that stock-based compensation to outside directors is more prevalent in the US than in China. In the US, following the liberalisation of Rule 16b-3 in 1996, firms now have greater discretion to grant stock and options to their

directors (Farrell et al., 2008) whereas in China, stock-based compensation was permitted only from December 2005.

Therefore, the next hypothesis is that:

H3b: Compared to China, higher levels of directors' shareholding in US is likely to lead to higher probability of fraud committed by directors.

Rationalisation

Rationalisation is the most difficult prong of the TFT to articulate and is influenced by the demographic characteristics of those who bear the risk (Troy et al., 2011). Hence, access to education, income disparity, and cultural differences between the US and China are included as measures of rationalisation.

a) Education

Access to education and ethical behaviour are intrinsically related. Evert et al. (2018) report a positive relationship between organisations' virtue orientation²⁵ and education. Troy et al. (2011) find that CEOs' business education is negatively related to accounting fraud. Chen (2014) finds that access to education has a negative effect on the willingness to justify unethical behaviour. According to Meyer (1977, p. 55), education prepares 'individuals to act in society' via schools which are 'organized networks of socializing experience'.

Yang et al. (2014) argue that in China, most of the education sources are controlled by the government, yet government expenditure on education has not kept pace with GDP growth and such insufficient investment results in a disparity in education access. Further, in China, public expenditure on education (as a percentage of GDP) has averaged around 3.75% per annum from 2010 to 2018²⁶ as compared to 4.25% in the

²⁵ A set of beliefs and values that supports virtuous behavior and ethical characteristics.

²⁶ <https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS>. Accessed on 12 November 2021.

US²⁷. Sahnoun and Abdennadher (2020) find that in developing countries, corruption renders public expenditure on education inefficient. Thus, the next hypothesis is that:

H4: Compared to the US, lower access to education in China is likely to lead to higher probability of fraud committed by directors.

b) Income disparity/inequality

Income inequality is argued to increase the level of corruption, and high levels of corruption further accentuate inequality (You & Khagram, 2005). Glaeser et al. (2003, p. 215) contend that inequality adversely affects social and economic progress via “subversion of legal, regulatory, and political institutions by the powerful”, and this subversion can exhibit itself in the form of intimidation, corruption, or other forms of influence. You and Khagram (2005) consider that very high CEO compensation packages, aimed at aligning their interests with those of the shareholders, increase income inequality and stimulate corporate corruption.

Income disparity and education are also linked. According to Tuliao and Chen (2019, p. 828), “high economic inequality may undervalue the importance of education”, whereas “low economic inequality may encourage greater interest in education”. Thus, income disparity propels countries into a vicious cycle of corruption and inequality by fostering the “norm of corruption as acceptable behaviour” (You & Khagram, 2005, p. 136). Further, such inequality also undermines the corrective role that education can play in enhancing ethical behaviour. Treisman (2000) asserts that economic development, via the spread of education and rationalisation of private and public roles, reduces corruption. Though both China and the US are marked by income inequality (Saith, 2011), over the past decade, income inequality in China has surpassed the warning levels specified by the World Bank (Jung & Vijverberg, 2019). Therefore, the hypothesis is that:

²⁷ <https://data.oecd.org/eduresource/public-spending-on-education.htm>. Accessed on 12 November 2021.

H5: Compared to the US, higher social inequality in China is likely to lead to higher probability of fraud committed by directors.

c) Culture

Culture plays a significant role in shaping behaviour as well as in the acceptance/rejection of behaviours. For instance, East Asians/the Chinese have been found to avoid correspondence bias²⁸ and be more inclined towards situational/contextual explanations of behaviour as compared to their Western counterparts/Americans. Thus, the Chinese exhibit a more holistic cognition as compared to Americans (Ji et al., 2000).

Aubert (1952), in his study on white collar crimes and social structure, works on the premise that social norms are determinants of white-collar crimes. Cressey (1986) lays emphasis on the role of cultural ideologies, evident in certain verbalisations, which make dishonest behaviour acceptable. Wong-On-Wing and Liu (2007) find that cultural differences play a role in situational endorsement and acceptability of punitive measures associated with fraud. Parsons et al. (2018) also link culture to financial misconduct and conclude that culture affects misbehaviours such as financial misconduct. Culture and ethnic origins also affect managers' disclosure narratives during earnings conference calls. Managers from individualistic cultures are likely to be more optimistic and less apologetic compared to those from collectivist cultures (Brochet et al., 2019). Daniel et al. (2012) find that national culture impacts the institutional environment, which in turn impacts the corporate governance practices of a nation. In similar vein, Boateng et al. (2021) find that national culture and the quality of corporate governance determine the level of corruption in a country with national culture playing a more dominant role. Haxhi and van Ees (2010) contend that in case of cultures with higher power distance, the first issuer of corporate governance is likely to be the government as opposed to stock exchanges and investor groups in case of cultures with a lower value of power distance. Liu (2016) concludes that the

²⁸ Attribution error wherein behaviour is attributed to the object and not to the field, even when the behaviour is heavily influenced or produced some situational/contextual factor.

cultural background of the corporate insiders²⁹ determines the corporate culture, which in turn influences the likelihood of the corporates engaging in opportunistic behaviours such as accounting fraud, earnings management, insider trading, and options backdating. Corporations with high levels of corrupt culture are more likely to engage in corporate misconduct (Chand et al., 2012).

China provides a unique setting of corruption culture as it is marked by economic decentralisation and political centralisation, along with the direct control of regional governments over scarce resources. Further, the power of the local officials and the stress on social networking for doing business can breed corruption in China (Chen et al., 2020b; Xu, 2011). Therefore, the next hypothesis is that:

H6: Compared to the US, higher corruption in China is likely to lead to higher probability of fraud committed by directors.

Opportunity

Ndofor et al. (2015, p. 1793) state that “opportunity is both a necessary and a sufficient condition for financial malfeasance”.

a) Country-level and firm-level governance

Prior studies suggest that weakness in corporate governance is strongly related to fraud (Beasley et al., 2000). Further, country-level governance impacts firm-level governance by either substituting firm-level governance or by enhancing the effectiveness of the latter (Pagano & Immordino, 2012; Aguilera et al., 2015). García-Castro et al. (2013) also assert that national variables influence governance at firm level. Habib et al., (2021) state that corporate governance (such as board characteristics, external governance mechanism) have a significant impact on financial restatements. Chen et al. (2020b) argue that firms improve their earnings quality by employing better auditors, improving their internal controls, and more frequent management forecasts. In addition, Bell and Carcello (2000) identify a weak internal

²⁹ Corporate insiders include all directors and officers.

controls as a fraud-risk factor affecting the likelihood of fraudulent reporting of financials. Abbott et al. (2004) conclude that audit committee diligence, in terms of its independence and level of activity, is negatively related to the likelihood of restatements. However, there is some evidence of no significant impact of internal governance mechanisms in curbing earnings management (Katmon & Farooque, 2017).

Aggarwal et al. (2010) argue that governance is a function of both firm-level and country-level mechanisms. Further, firm-level governance is better in countries which have stronger investor protection and are financially and economically more developed. According to Ke and Zhang (2021), investor protection is weak in China whereas in the US it is stronger (Huang et al., 2013). Therefore, the hypotheses state that:

H7: Compared to China, better governance (country level) in the US is likely to lead to lower probability of fraud committed by directors.

H8: Compared to China, better governance (firm level) in the US is likely to lead to lower probability of fraud committed by directors.

6.5 Research method

6.5.1 Data and sample

The sample period is from 2005 to 2018. For China, data from China Stock Market and Accounting Research (CSMAR) is used to identify fraud firms. The preliminary list of fraud firms includes 2,344 cases. After removing duplicate cases and cases for which data were not available, the final China sample included 903 fraud firms.

With respect to the US, Securities Class Action Clearinghouse is used to obtain the initial sample of fraud firms. The focus is on fraud firms listed on the top two stock exchanges in the US – NYSE and NASDAQ. The preliminary list comprised 968 fraud firms. As the compensation data and data on some governance variables had to be hand collected, the sample was randomised to close to 500 fraud firms. After

accounting for duplicates and for cases for which data were not available, the final US sample comprised 357 fraud firms.

To undertake propensity score matching (PSM) based probit regression analysis, control firms for each of the FSF firms are identified in the US and China using data from Capital IQ and DataStream, respectively. Control firms were identified using three shortlisting criteria, namely industry matching (control firm had to have the same Standard Industrial Classification code as that of the corresponding fraud firm); control firm were firms not implicated of FSF during the sample period; and finally, the closest match in terms of total assets/net sales, or market capitalisation was chosen as the control firm.

In terms of the year of fraud, among the 357 fraud firms from the US, 13.2% of the fraud cases were in the year 2016, followed by the year 2015 at 11.8%. The year 2013 accounted for 10.1% of the fraud cases whereas the year 2011 accounted for 9.5% of the fraud cases in the US. In case of China, among the 903 fraud firms, 11.4% were in the year 2012, 10.9% in the year 2015 followed by 2011 and 2013 at 10.0% and 9.1%, respectively.

In terms of the industry profile, in the US sample, "Pharmaceutical preparations" accounted for the highest number of fraud firms at 5.88% followed by "Biological products except diagnostic" at 5.04%. "Computer and data processing services" accounted for 4.48% of the fraud firms whereas "Prepackaged software" and "Semiconductors and related devices" were at 2.80% each. On the other hand, in China the highest percentage of fraud firms were "operative builders" accounting for 5.76% of the fraud firms followed by "Pharmaceutical preparations" at 3.65%. "Semiconductors and related devices" and "Electronic components" accounted for 2.99% and 2.21%, respectively, of the fraud firms in China.

6.5.2 Research design

Variable measurement

Variables were measured as of the match year, i.e. one year preceding the class period start year (in the case of the US) and one year preceding the first year of fraud (in the case of China) (Erickson et al., 2006; Hass et al., 2016).

Dependent variable

The main dependent variable was occurrence of FSF, which is a dummy binary variable taking a value of '1' in the case of fraud firms and '0' in the case of control firms.

Independent variables

Independent variables were categorised into three broad categories emanating from TFT, viz. pressure, rationalisation, and opportunity.

Pressure was measured by level of firm leverage (Shi et al., 2017), funding pressure or external financing need (Shi et al., 2017), and directors' compensation and shareholding (Hass et al., 2016).

'Rationalisation' is viewed from a country perspective as this paper aims to compare how the two countries (the US and China) differ in circumstances which lead to FSF. Rationalisation was operationalised using level of/access to education (Chen, 2014), income disparity (Chen, 2014), and culture (Liu, 2016) wherein 'culture' measures the extent of corruption culture in the two countries.

Opportunity for FSF was operationalised using two measures, namely country-level governance indicated by 'rule of law'/quality of enforcement in the country (Leuz et al., 2003; Chen, 2016) and firm-level governance (indicated by percentage of independent directors, CEO duality, board size, frequency/number of BoD meetings, auditor type, and institutional ownership).

Control variables

For the PSM analysis, return on assets (ROA), market value/book value (MV/BV), and firm size are included as control variables (Adelopo et al., 2021).

The detailed measurement of all the variables is set out in **Appendix**.

6.6 Empirical Analysis

To test the differences between Chinese and US FSF firms on the eight hypotheses, analysis of variance (ANOVA) (Chand et al., 2012) is conducted.

Propensity score matching (PSM) based regression analysis to test the impact of the three prongs of TFT on the incidence of FSF is also undertaken. For this regression, occurrence of FSF is the dependent variable whereas pressure (represented by leverage, need for external financing, directors' compensation, and directors' shareholding), rationalisation (represented by level of education, income disparity, and national culture) and opportunity (represented by country-level governance and firm-level governance culture) are independent variables under two geographical settings – China and the US. The main regression model (**Model 1**) is:

$$\begin{aligned} Fraud_{i,t} = & \alpha_{i,t} + \theta_1 EFN_{i,t-1} + \theta_2 LEV_{i,t-1} + \theta_3 L_TCAD_{i,t-1} \\ & + \theta_4 ADSPRT_{i,t-1} + \theta_5 EDI_{i,t-1} + \theta_6 GINI_{i,t-1} + \theta_7 CUL_{i,t-1} \\ & - 1 + \theta_8 ROL_{i,t-1} + \theta_9 INDPRT_{i,t-1} + \theta_{10} CDual_{i,t-1} \\ & + \theta_{11} BoSi_{i,t-1} + \theta_{12} NoB_{i,t-1} + \theta_{13} ABig4_{i,t-1} \\ & + \theta_{14} IOPRT_{i,t-1} + \theta_{15} COO_{i,t-1} \\ & + \beta_1 Controls (firm\ size\ and\ performance)_{i,t-1} + \varepsilon_{i,t} \end{aligned}$$

(Model 1)

Multi-collinearity test and VIF analysis reveal that EDUCATION_INDEX and RULE_OF_LAW are highly collinear; hence, supplementary models introducing EDUCATION_INDEX and RULE_OF_LAW separately in the regression analysis have been built.

6.6.1 Descriptive results

The results of Table 1 show that the need for external financing is, on average, greater for the fraud firms from China as compared to the US fraud firms. Further, leverage, board size, frequency of board meetings, return on assets, and market-to-book value are also higher for the Chinese fraud firms as opposed to the US fraud firms.

On the other hand, directors' compensation and shareholding, access to education, social inequality, rule of law, percentage of independent directors, CEO duality, auditor among Big-4 audit firms, institutional ownership, and firm size are higher for the US fraud firms as compared to the Chinese.

Table 1: Cross-country comparisons of fraud firms and other variables related to fraud triangle

Variable	Obs	China				US				
		Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
EXT_FINANCING	903	0.03	0.19	-4.96	1.37	357	0.02	0.22	-0.58	2.45
LEVERAGE	903	0.27	0.19	0.00	1.31	357	0.20	0.23	0.00	1.63
DIR_COMP	899	12.08	1.01	8.39	15.22	357	15.28	1.38	7.24	22.79
DIR_SHARHLDG	903	10.53%	0.18	0.00%	88.83%	354	14.23%	0.20	0.00%	92.69%
EDUCATION_INDE X	903	0.61	0.03	0.52	0.65	357	0.89	0.01	0.86	0.90
INCOME_DISPARIT Y	903	40.77	1.87	38.50	43.70	357	40.95	0.41	40.00	41.50
CULTURE	903	22.72	17.60	3.20	41.00	357	47.82	32.83	7.10	76.00
RULE_OF_LAW	903	-0.45	0.09	-0.64	-0.27	357	1.61	0.02	1.54	1.65
IND_DIR%	903	37.06%	0.07	18.18%	70.00%	357	76.02%	0.15	0.00%	100.00%
CDual	903	0.01	0.10	0.00	1.00	357	0.46	0.50	0.00	1.00
BOD_SIZE	903	10.04	2.55	5.00	23.00	357	8.98	2.54	2.00	20.00
NoBM	903	9.54	3.85	0.00	32.00	341	8.64	4.08	1.00	35.00
ABig4	903	0.03	0.16	0.00	1.00	357	0.77	0.42	0.00	1.00
INST_OWNERSHIP	903	5.67%	0.07	0.00%	49.25%	348	68.70%	0.32	0.00%	165.72%
ROA	903	3.49%	0.08	-77.54%	125.23%	357	-1.96%	0.22	-140.95%	71.02%
MVBV	903	6.04	34.00	-121.13	816.06	357	3.21	17.29	-290.60	87.95
FIRM_SIZE	903	5.98	1.21	0.08	13.38	357	7.04	1.97	2.13	13.64

This table presents the descriptive statistics comparing fraud firms in China and the US. Column one represents the number of observations for each variable, column two represents the mean value of the variable, column three gives the standard deviation, whereas column four and five give the minimum and the

maximum value of each variable, respectively. The variables are as follows: *EXT_FINANCING* (external financing need), *LEVERAGE* (Leverage), *DIR_COMP* (log of directors' total compensation), *DIR_SHARHLDG* (shareholding of all directors (%)), *EDUCATION_INDEX* (education), *INCOME_DISPARITY* (income disparity), *CULTURE* (culture), *RULE_OF_LAW* (rule of law), *IND_DIR%* (% of independent directors on BoD), *CDUAL* (CEO and Chair of BoD same person), *BOD_SIZE* (total number of directors), *NOBM* (number of board meetings), *ABIG4* (auditors from Big 4 accounting firms), *INST_OWNERSHIP* (institutional ownership), *COUNTRY* (country of origin), *ROA* (return on assets), *MV/BV* (market value/ book value), *FIRM_SIZE* (firm size), *FEMALE_DIR%* (% of female directors), *DIR_AGE* (average age of all directors).

With respect to the comparison between fraud and control firms for China (Table 2a), it is found that Chinese control firms (non-fraud firms) are far better on several governance factors and are marked by lower leverage, higher board of director independence, higher institutional ownership, and being audited by Big-4 audit firms. Interestingly, the Chinese control firms are also characterised by higher directors' compensation and shareholding.

Table 2a: Comparisons of fraud firms and control firms by country of origin - China

Variable	Obs	China - Control Firms				Obs	China - Fraud Firms			
		Mean	Std. Dev.	Min	Max		Mean	Std. Dev.	Min	Max
EXT_FINANCING	903.00	0.06	0.11	-2.53	0.90	903.00	0.03	0.19	-4.96	1.37
LEVERAGE	903.00	0.22	0.23	0.00	3.97	903.00	0.27	0.19	0.00	1.31
DIR_COMP	901.00	12.15	0.98	8.07	15.21	899.00	12.08	1.01	8.39	15.22
DIR_SHARHLDG	903.00	10.62%	0.19	0.00%	83.00%	903.00	10.53%	0.18	0.00%	88.83%
EDUCATION_INDEX	903.00	0.61	0.03	0.52	0.65	903.00	0.61	0.03	0.52	0.65
INCOME_DISPARITY	903.00	40.77	1.87	38.50	43.70	903.00	40.77	1.87	38.50	43.70
CULTURE	903.00	22.72	17.60	3.20	41.00	903.00	22.72	17.60	3.20	41.00

Variable	China - Control Firms					China - Fraud Firms				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
RULE_OF_LAW	903.00	-0.45	0.09	-0.64	-0.27	903.00	-0.45	0.09	-0.64	-0.27
IND_DIR%	903.00	37.57%	0.07	20.00%	64.29%	903.00	37.06%	0.07	18.18%	70.00%
CDual	903.00	0.00	0.06	0.00	1.00	903.00	0.01	0.10	0.00	1.00
BOD_SIZE	903.00	9.99	2.38	5.00	22.00	903.00	10.04	2.55	5.00	23.00
NoBM	903.00	8.96	3.39	3.00	30.00	903.00	9.54	3.85	0.00	32.00
ABig4	903.00	0.04	0.21	0.00	1.00	903.00	0.03	0.16	0.00	1.00
INST_OWNERSHIP	903.00	6.35%	0.08	0.00%	75.10%	903.00	5.67%	0.07	0.00%	49.25%
ROA	903.00	5.47%	0.07	-20.82%	165.21%	903.00	3.49%	0.08	-77.54%	125.23%
MVBV	903.00	4.01	5.94	-53.66	91.64	903.00	6.04	34.00	-121.13	816.06
FIRM_SIZE	903.00	5.98	1.15	2.06	13.82	903.00	5.98	1.21	0.08	13.38

This table presents the descriptive statistics comparing fraud firms and no-fraud/control firms in China. Column one represents the number of observations for each variable, column two represents the mean value of the variable, column three gives the standard deviation, whereas column four and five give the minimum and the maximum value of each variable, respectively. The variables are defined in the Appendix.

Regarding the US companies (Table 2b), the control firms (non-fraud firms) are marked by higher board of director independence, larger board size, audited by Big-4 audit firms, lower leverage, low CEO duality, and lower frequency of board meetings as compared to the FSF firms.

Table 2b: Comparisons of fraud firms and control firms by country of origin - US

Variable	US - Control Firms					US - Fraud Firms				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
EXT_FINANCING	357.00	0.03	0.19	-0.61	1.63	357.00	0.02	0.22	-0.58	2.45
LEVERAGE	357.00	0.18	0.22	0.00	1.36	357.00	0.20	0.23	0.00	1.63
DIR_COMP	355.00	15.18	1.14	7.93	18.68	357.00	15.28	1.38	7.24	22.79
DIR_SHARHLDG	354.00	13.03%	0.19	0.00%	91.93%	354.00	14.23%	0.20	0.00%	92.69%
EDUCATION_INDEX	357.00	0.89	0.01	0.86	0.90	357.00	0.89	0.01	0.86	0.90
INCOME_DISPARITY	357.00	40.95	0.41	40.00	41.50	357.00	40.95	0.41	40.00	41.50
CULTURE	357.00	47.82	32.83	7.10	76.00	357.00	47.82	32.83	7.10	76.00
RULE_OF_LAW	357.00	1.61	0.02	1.54	1.65	357.00	1.61	0.02	1.54	1.65
IND_DIR%	357.00	76.52%	0.15	0.00%	94.74%	357.00	76.02%	0.15	0.00%	100.00%
CDual	357.00	0.40	0.49	0.00	1.00	357.00	0.46	0.50	0.00	1.00
BOD_SIZE	357.00	9.09	2.71	1.00	20.00	357.00	8.98	2.54	2.00	20.00
NoBM	336.00	8.07	4.04	1.00	32.00	341.00	8.64	4.08	1.00	35.00
ABig4	357.00	0.79	0.41	0.00	1.00	357.00	0.77	0.42	0.00	1.00
INST_OWNERSHIP	340.00	65.30%	0.30	0.01%	123.69%	348.00	68.70%	0.32	0.00%	165.72% [#]
ROA	357.00	-0.53%	0.22	-154.41%	62.03%	357.00	-1.96%	0.22	-140.95%	71.02%
MVBV	357.00	3.02	21.08	-332.41	145.83	357.00	3.21	17.29	-290.60	87.95
FIRM_SIZE	357.00	6.81	1.99	0.18	13.15	357.00	7.04	1.97	2.13	13.64

This table presents the descriptive statistics comparing fraud firms and no-fraud/control firms in the US. Column one represents the number of observations for each variable, column two represents the mean value of the variable, column three gives the standard deviation, whereas column four and five give the minimum and the maximum value of each variable, respectively. All variables are defined in the Appendix. [#] INST_OWNERSHIP data has been collected from

WRDS (Wharton Research Data Services), which in turn compiles this data from 13f filings. According to WRDS, institutional ownership percentage can be in excess of 100%, in certain cases, due to inclusion of data on long positions only.

Table 3a and 3b show that the highest correlation coefficient is 0.996 (between country of origin and rule of law) when all variables are included and it falls to 0.878 (between country of origin and percentage of independent directors) after excluding education and rule of law. Given the high correlation, VIF analysis to detect the impact of multi-collinearity is undertaken and it is found that the mean VIF is well below 10, when rule of law and education are excluded. To check the impact of correlation on the regression results, four models (Model 1a - excluding rule of law and education; Model 1b - including education; Model 1c - including rule of law; and Model 1- with all variables) are run separately.

Table 3a: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
EXT_FINANCING (1)	1.00								
LEVERAGE (2)	-0.13***	1.00							
DIR_COMP (3)	-0.00	-0.09***	1.00						
DIR_SHARHLDG (4)	0.05**	-0.18***	0.07***	1.00					
EDUCATION_INDEX (5)	-0.05**	-0.14***	0.83***	0.11***	1.00				
INCOME_DISPARITY (6)	0.01	0.06***	-0.08***	-0.09***	-0.08***	1.00			

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CULTURE (7)	-0.05**	-0.07***	0.52***	0.07***	0.55***	-0.37***	1.00		
RULE_OF_LAW (8)	-0.05***	-0.12***	0.80***	0.08***	0.98***	0.02	0.46***	1.00	
IND_DIR% (9)	-0.05***	-0.12***	0.75***	0.01	0.87***	0.02	0.44***	0.88***	1.00
CDual (10)	0.03	-0.07***	0.47***	0.04*	0.56***	0.02	0.238***	0.57***	0.52***
BOD_SIZE (11)	-0.02	0.11***	0.06***	-0.18***	-0.15***	-0.12***	0.02	-0.17***	-0.11***
NoBM (12)	-0.02	0.11***	0.01	-0.01	-0.07***	-0.11***	0.02	-0.09***	-0.05**
ABig4 (13)	-0.03	-0.05**	0.72***	-0.04**	0.76***	0.04*	0.38***	0.78***	0.74***
INST_OWNERSHIP (14)	-0.01	-0.07***	0.75***	-0.051**	0.82***	0.04*	0.43***	0.84***	0.80***
ROA (15)	0.43***	-0.06***	-0.11***	-0.00	-0.18***	0.03	-0.11***	-0.19***	-0.15***
MVBV (16)	-0.02	-0.03	-0.05**	-0.01	-0.03	-0.04**	0.01	-0.03*	-0.03*
FIRM_SIZE (17)	0.09***	0.18***	0.53***	-0.20***	0.32***	-0.11***	0.29***	0.29***	0.33***
COUNTRY (18)	-0.06***	-0.12***	0.79***	0.07***	0.97***	0.05**	0.44***	1.00***	0.88***

Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.

Table 3b: Correlation matrix contd.

Variables	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
CDual (10)	1.00								
BOD_SIZE (11)	-0.07***	1.00							
NoBM (12)	-0.08***	0.11***	1.00						
ABig4 (13)	0.48***	0.00	-0.06***	1.00					
INST_OWNER SHIP (14)	0.47***	-0.09***	-0.050**	0.75***	1.00				
ROA (15)	-0.03	0.07***	-0.07***	-0.10***	-0.07***	1.00			
MVBV (16)	-0.02	-0.01	0.01	-0.05**	-0.01	-0.01	1.00		
FIRM_SIZE (17)	0.28***	0.33***	0.13***	0.45***	0.37***	0.10***	-0.10***	1.00	
COUNTRY (18)	0.58***	-0.17***	-0.11***	0.78***	0.84***	-0.19***	-0.04*	0.28***	1.00

Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.

6.6.2 Empirical results

To compare fraud firms in the US and in China, ANOVA (Chand et al., 2012) is used. To test H1, the values of External financing need (EXT_FINANCING) across the US and Chinese fraud firms were compared using ANOVA. Similarly, H2 to H8 were tested using ANOVA on the identified variables (Table 4).

Table 4: Results of ANOVA between the US and Chinese fraud firms in the examination of factors inducing FSF under the context of the fraud triangle

Fraud Triangle Factor	Variable	US (Mean)	China (Mean)	Expected Direction	F	Significance Level
Pressure						
	EXT_FINANCING	0.02	0.03	No	1.56	0.21
	LEVERAGE	0.20	0.27	No	30.99	0.00
	DIR_COMP	15.28	12.08	No	2,049.89	0.00
	DIR_SHARHLDG	0.14	0.11	Yes	9.88	0.00
Rationalisation						
	EDUCATION_INDEX	0.89	0.61	Yes	23,216.39	0.00
	INCOME_DISPARITY	40.95	40.77	No	2.94	0.09
	CULTURE	47.82	22.72	Yes	305.89	0.00
Opportunity						
	RULE_OF_LAW	1.61	-0.45	Yes	1,70,000.00	0.00
	IND_DIR%	0.76	0.37	Yes	4,212.91	0.00

Fraud Triangle Factor	Variable	US (Mean)	China (Mean)	Expected Direction	F	Significance Level
	CDual	0.46	0.01	No	681.92	0.00
	BOD_SIZE	8.98	10.04	Yes	44.26	0.00
	NoBM	8.64	9.54	No	13.15	0.00
	ABig4	0.77	0.03	Yes	2,057.91	0.00
	INST_OWNERSHIP	0.69	0.06	Yes	3,033.44	0.00

This table provides the results of analysis of variance (ANOVA) examining the differences in the fraud firms in US and in China. Column one represents the prong of the fraud triangle that is being analysed. Column two specifies the name of the variable under each prong of the fraud triangle. Column three gives the mean value for the US fraud firms with respect to each variable whereas column four provides the mean value for Chinese fraud firms. Column five specifies whether the direction of the mean values is in line with the hypotheses. Column six gives the f-statistics whereas the significance level is presented in column seven. All variables are defined in Appendix.

The results of ANOVA reveal that the US and Chinese fraud firms differ significantly (statistically) on all variables (except for external financing need and income inequality) with p values less than 0.05. However, the expected direction of the difference is in line with the hypothesis only in the case of directors' shareholding, access to education, culture, rule of law, percentage of independent directors, board size, type/size of auditor, and institutional shareholding.

The results imply that the US fraud firms experience lower pressure on account of externally financing needs and leverage as compared to their Chinese counterparts. Further, directors' compensation and shareholding are more significant pressure points in the case of US fraud firms as compared to Chinese fraud firms.

With respect to rationalisation, as expected, lower access to education and higher corruption are more important rationalisations for FSF in China. Contrary to the expectation, social inequality is wider in the US compared to China.

A lower score on rule of law provides greater opportunity to perpetrate FSF in China compared to the US. With respect to firm-level governance, monitoring measures such as BoD independence, auditor among Big-4 audit firms, and institutional ownership are better for US firms. However, higher CEO duality, lesser frequency of BoD meetings, and smaller BoDs provide opportunity for FSF among US firms.

The follow-up Welch tests/Welch ANOVA also provide similar results (Table 5).

Table 5: Results of Welch t-test between the US and Chinese fraud firms in the examination of factors inducing FSF in context of the Fraud Triangle

Fraud Triangle Factor	Variable	US (Mean)	China (Mean)	Expected Direction	p-value (Ha: diff != 0)	t-statistics
Pressure	EXT_FINANCING	0.02	0.03	No	0.24	1.17
	LEVERAGE	0.20	0.27	No	0.00	5.14
	DIR_COMP	15.28	12.08	No	0.00	-39.79
	DIR_SHARHLDG	0.14	0.11	Yes	0.00	-3.04
Rationalisation	EDUCATION_INDEX	0.89	0.61	Yes	0.00	-230.00
	INCOME_DISPARITY	40.95	40.77	Yes	0.01	-2.60
	CULTURE	47.82	22.72	No	0.00	-13.69
Opportunity	RULE_OF_LAW	1.61	-0.45	Yes	0.00	-610.00
	IND_DIR%	0.76	0.37	Yes	0.00	-48.71
	CDUAL	0.46	0.01	No	0.00	-17.08
	BOD_SIZE	8.98	10.04	Yes	0.00	6.67
	NoBM	8.64	9.54	No	0.00	3.53
	ABig4	0.77	0.03	Yes	0.00	-32.27
	INST_OWNERSHIP	0.69	0.06	Yes	0.00	-36.03
N		357.00	903.00			

This table provides the results of Welch ANOVA examining the differences in the fraud firms in US and in China. Column one represents the prong of the fraud triangle that is being analysed. Column two specifies the name of the variable under each prong of the fraud triangle. Column three gives the mean value for the US fraud firms with respect to each variable whereas column four provides the mean value for Chinese fraud firms. Column five specifies whether the direction of the mean values is in line with the hypotheses. Column six gives the p-value whereas t-statistics is presented in column seven. N represents the number of observations. All variables are defined in Appendix.

To test the impact of the factors of the fraud triangle on the incidence of FSF, PSM based probit regression analysis is undertaken. To the existing list of identified variables in TFT framework, an additional independent variable, country of origin (COUNTRY) is introduced and return on assets (ROA), market-to-book value (MV/BV), and firm size (FIRM_SIZE) are also controlled for. The results, of the PSM are presented in Table 6 (regression results) and Table 7 (% bias and p-values associated with t-tests).

Table 6: Results of PSM to test factors affecting FSF in the US and China under the context of the fraud triangle

	Model 1a	Model 1b	Model 1c	Model 1
EXT_FINANCING	-0.19 (0.26)	-0.19 (0.26)	-0.19 (0.26)	-0.19 (0.26)
LEVERAGE	0.48*** (0.00)	0.48*** (0.00)	0.48*** (0.00)	0.48*** (0.00)
DIR_COMP	-0.02 (0.58)	-0.02 (0.55)	-0.02 (0.60)	-0.02 (0.53)
DIR_SHARHLDG	0.17 (0.24)	0.17 (0.26)	0.18 (0.24)	0.17 (0.26)
EDUCATION_INDEX		0.31 (0.81)		0.66 (0.69)
INCOME_DISPARITY	0.01 (0.69)	0.01 (0.65)	0.01 (0.73)	0.01 (0.66)
CULTURE	0.00 (0.96)	-0.00 (0.96)	0.00 (0.96)	-0.00 (0.88)
RULE_OF_LAW			-0.05 (0.89)	-0.15 (0.73)
IND_DIR%	-0.62** (0.04)	-0.62** (0.04)	-0.62** (0.05)	-0.62** (0.04)
CDual	0.23** (0.02)	0.23** (0.02)	0.23** (0.02)	0.23** (0.02)
BOD_SIZE	-0.01 (0.51)	-0.01 (0.52)	-0.01 (0.51)	-0.01 (0.52)
NoBM	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
ABig4	-0.24** (0.02)	-0.24** (0.03)	-0.24** (0.02)	-0.24** (0.03)
INST_OWNERSHIP	0.29* (0.09)	0.29* (0.09)	0.29* (0.09)	0.29* (0.08)
COUNTRY	0.20 (0.27)	0.12 (0.74)	0.30 (0.69)	0.35 (0.64)

	Model 1a	Model 1b	Model 1c	Model 1
Control variables				
ROA	-0.61*** (0.01)	-0.62*** (0.01)	-0.61*** (0.01)	-0.62*** (0.01)
MVBV	0.00* (0.09)	0.00* (0.09)	0.00* (0.09)	0.00* (0.09)
FIRM_SIZE	0.03 (0.19)	0.03 (0.20)	0.03 (0.19)	0.03 (0.19)
_cons	-0.33 (0.70)	-0.56 (0.67)	-0.33 (0.70)	-0.82 (0.58)
N	2,454	2,454	2,454	2,454
Pseudo R ²	0.02	0.02	0.02	0.02

*This table gives the results of the propensity score based probit regression for models 1a (excluding EDUCATION_INDEX & RULE_OF_LAW), 1b (excluding RULE_OF_LAW), and 1c (excluding EDUCATION_INDEX), and 1 (including EDUCATION_INDEX & RULE_OF_LAW) to examine the impact of the factors of fraud triangle on the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * p<0.1, ** p<0.05, *** p<0.01. All variables are defined in the Appendix.*

Table 7: % Bias and associated p-values related to PSM

	Model 1a	Model 1b	Model 1c	Model 1
EXT_FINANCING	-5.40 (0.15)	-5.40 (0.15)	-5.40 (0.16)	-5.40 (0.16)
LEVERAGE	2.00 (0.61)	2.00 (0.60)	2.00 (0.62)	2.10 (0.60)
DIR_COMP	1.70 (0.68)	1.60 (0.69)	1.70 (0.67)	1.60 (0.69)
DIR_SHARHLDG	0.70 (0.86)	0.70 (0.86)	0.70 (0.86)	0.70 (0.87)
EDUCATION_INDEX		1.80 (0.66)		1.80 (0.66)
INCOME_DISPARITY	-1.50 (0.71)	-1.50 (0.71)	-1.50 (0.71)	-1.50 (0.71)
CULTURE	0.90 (0.83)	0.80 (0.84)	0.90 (0.83)	0.70 (0.85)

RULE_OF_LAW			1.60 (0.70)	1.50 (0.70)
IND_DIR%	1.20 (0.77)	1.20 (0.78)	1.20 (0.77)	1.20 (0.77)
CDual	0.70 (0.87)	0.70 (0.88)	0.70 (0.86)	0.70 (0.88)
BOD_SIZE	-0.80 (0.84)	-0.80 (0.83)	-0.80 (0.83)	-0.90 (0.83)
NoBM	-0.90 (0.83)	-0.90 (0.82)	-0.90 (0.82)	-1.00 (0.81)
ABig4	0.90 (0.81)	0.90 (0.82)	1.00 (0.81)	0.90 (0.81)
INST_OWNERSHIP	0.60 (0.89)	0.50 (0.90)	0.60 (0.89)	0.50 (0.90)
COUNTRY	1.50 (0.72)	1.40 (0.72)	1.50 (0.71)	1.40 (0.72)
Control variables				
ROA	-5.30 (0.19)	-5.30 (0.19)	-5.30 (0.18)	-5.40 (0.18)
MVBV	3.80 (0.15)	3.80 (0.15)	3.80 (0.15)	3.80 (0.15)
FIRM_SIZE	-1.80 (0.66)	-1.90 (0.64)	-1.80 (0.66)	-1.80 (0.65)

*This table gives the values of the %bias and the corresponding p-values with respect to the propensity score based probit regression for models 1a (excluding EDUCATION_INDEX & RULE_OF_LAW), 1b (excluding RULE_OF_LAW), and 1c (excluding EDUCATION_INDEX), and 1 (including EDUCATION_INDEX & RULE_OF_LAW) to examine the impact of the factors of fraud triangle on the incidence of FSF. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

The % bias is less than 5% and the p-values are insignificant indicating a robust matching. The regression results indicate that the firm-based governance variables have a statistically significant impact on the incidence of FSF whereas country-level variables such as EDUCATION_INDEX, INCOME_DISPARITY, CULTURE, RULE_OF_LAW, and COUNTRY are not statistically significant.

Leverage (LEVERAGE) has a positive co-efficient (0.48) with a p-value of 0.00, implying that leverage has a positive impact on the incidence of FSF, and is the only statistically significant pressure variable in TFT model.

With respect to rationalisation of FSF, none of the measures (EDUCATION_INDEX, INCOME_DISPARITY, CULTURE) are statistically significant.

On the opportunity front, the country-level measure, RULE_OF_LAW, is insignificant whereas firm-level governance variables IND_DIR%(-) and ABig4(-) have statistically significant coefficients of -0.62 and -0.24, respectively. Thus, IND_DIR% and ABig4 have a negative influence on the incidence of FSF. CDUAL(+), INST_OWNERSHIP (+), and NOBM(+) have statistically significant coefficients of +0.23, +0.29, and +0.02, respectively. Thus, CDUAL, INST_OWNERSHIP, MVBV, and NOBM have a positive influence on the incidence of FSF.

The percentage of independent directors (IND_DIR%) is not only lower for fraud firms in comparison to the control firms (for both the US and China) but is also significant, with a negative coefficient, implying that the presence of independent directors on the BoD has a negative influence on the incidence of FSF. This research finding is in line with agency theory (Fama & Jensen, 1983), according to which having a larger percentage of independent directors can increase the effectiveness of the BoD. ABig4 has a statistically significant and negative co-efficient, implying better quality external monitoring with Big-4 auditors. This result is supported by Lennox and Pittman (2010).

CDUAL has a positive and statistically significant coefficient, which is expected as the dual role of CEO (acting as both the chairman of the BoD and the CEO) can increase the likelihood of fraud (Conyon & He, 2016; Deutsch et al., 2011).

NOBM also has a statistically significant positive coefficient across all models, which implies that a higher number of BoD meetings can lead to FSF. Chen et al. (2006) also find a significant positive relationship between fraud and BoD meetings.

The economic significance of the results is presented below in Table 8 (unit change in likelihood of FSF due to one standard deviation change in the independent variable):

Table 8: Economic significance

Independent variable	p-value	Unit change in likelihood of FSF
LEVERAGE	(0.00)	0.11
IND_DIR%	(0.04)	-0.12
CDUAL	(0.02)	0.08
NOBM	(0.00)	0.09
ABIG4	(0.03)	-0.10
INST_OWNERSHIP	(0.08)	0.10

This table presents the economic relevance of the significant independent variables. Column two provides the p-values of the probit regression associated with each significant independent variable. Column three presents the value of unit change in the likelihood of FSF due to a standard deviation increase in the independent variable. All variables are defined in Appendix.

The above results indicate that firm-level governance plays a more vital role in affecting the propensity of FSF as opposed to country-level governance.

6.6.3 Robustness checks

Additional variables

To test the robustness of the results of the PSM, additional variables in the regression model pertaining to the diversity of the BoD namely FEMALE_DIR% and DIR_AGE are introduced, wherein FEMALE_DIR% represents the percentage of female directors on BoD, whereas DIR_AGE represents the average age of all directors on the BoD. The regression models are as follows:

$$\begin{aligned}
\text{Fraud}_{i,t} = & \alpha_{i,t} + \theta_1 \text{EXT_FINANCING}_{i,t-1} + \theta_2 \text{LEVERAGE}_{i,t-1} \\
& + \theta_3 \text{DIR_COMP}_{i,t-1} + \theta_4 \text{DIR_SHARHLDG}_{i,t-1} \\
& + \theta_5 \text{EDUCATION_INDEX}_{i,t-1} + \theta_6 \text{INCOME_DISPARITY}_{i,t-1} \\
& + \theta_7 \text{CULTURE}_{i,t-1} + \theta_8 \text{RULE_OF_LAW}_{i,t-1} \\
& + \theta_9 \text{IND_DIR\%}_{i,t-1} + \theta_{10} \text{CDual}_{i,t-1} + \theta_{11} \text{BOD_SIZE}_{i,t-1} \\
& + \theta_{12} \text{NoBM}_{i,t-1} + \theta_{13} \text{ABig4}_{i,t-1} \\
& + \theta_{14} \text{INST_OWNERSHIP}_{i,t-1} + \theta_{15} \text{COUNTRY}_{i,t-1} \\
& + \theta_{16} \text{FEMALE_DIR\%} + \theta_{17} \text{DIR_AGE} \\
& + \beta_1 \text{Controls (firm size and performance)}_{i,t-1} + \varepsilon_{i,t}
\end{aligned}$$

(Model 2)

In line with the results of Model 1, LEVERAGE(+), CDUAL(+), NOBM(+), ABIG4(-), INST_OWNERSHIP(+), ROA(-), and MVBV(+) are still significant. However, IND_DIR% becomes insignificant though it continues to have a negative coefficient. FIRM_SIZE and DIR_AGE become significant (Table 9).

Table 9: Probit regression with additional variables

	Model 1a	Model 1b	Model 1c	Model 1
EXT_FINANCING	-0.22 (0.22)	-0.22 (0.21)	-0.22 (0.22)	-0.22 (0.21)
LEVERAGE	0.45*** (0.00)	0.46*** (0.00)	0.45*** (0.00)	0.46*** (0.00)
DIR_COMP	-0.01 (0.74)	-0.02 (0.58)	-0.01 (0.73)	-0.02 (0.57)
DIR_SHARHLDG	0.12 (0.42)	0.11 (0.48)	0.12 (0.43)	0.11 (0.48)
EDUCATION_INDEX		1.00 (0.45)		1.31 (0.43)
INCOME_DISPARITY	0.00 (0.91)	0.01 (0.69)	0.00 (0.87)	0.01 (0.70)
CULTURE	0.00 (0.66)	0.00 (0.92)	0.00 (0.66)	0.00 (1.00)
RULE_OF_LAW			0.07 (0.84)	-0.14 (0.76)
IND_DIR%	-0.49	-0.50	-0.49	-0.50

	Model 1a	Model 1b	Model 1c	Model 1
	(0.11)	(0.11)	(0.11)	(0.11)
CDUAL	0.23**	0.23**	0.23**	0.23**
	(0.02)	(0.02)	(0.02)	(0.02)
BOD_SIZE	-0.01	-0.01	-0.01	-0.01
	(0.44)	(0.47)	(0.45)	(0.47)
NOBM	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
ABIG4	-0.26**	-0.26**	-0.26**	-0.26**
	(0.01)	(0.02)	(0.02)	(0.02)
INST_OWNERSHIP	0.30*	0.31*	0.30*	0.31*
	(0.08)	(0.07)	(0.08)	(0.07)
COUNTRY	0.36*	0.11	0.21	0.31
	(0.06)	(0.77)	(0.77)	(0.68)
Control variables				
ROA	-0.60**	-0.60**	-0.60**	-0.60**
	(0.01)	(0.01)	(0.01)	(0.01)
MVBV	0.00*	0.00*	0.00*	0.00*
	(0.09)	(0.10)	(0.09)	(0.09)
FIRM_SIZE	0.05**	0.05**	0.05**	0.05**
	(0.04)	(0.05)	(0.05)	(0.05)
FEMALE_DIR%	-0.14	-0.14	-0.14	-0.13
	(0.56)	(0.55)	(0.56)	(0.57)
DIR_AGE	-0.02***	-0.03***	-0.02***	-0.03***
	(0.00)	(0.00)	(0.00)	(0.00)
_cons	0.91	0.21	0.91	-0.02
	(0.32)	(0.87)	(0.32)	(0.99)
N	2,454	2,454	2,454	2,454

*This table gives the results of the propensity score based probit regression for models 1a (excluding EDUCATION_INDEX & RULE_OF_LAW), 1b (excluding RULE_OF_LAW), and 1c (excluding EDUCATION_INDEX), and 1 (including EDUCATION_INDEX & RULE_OF_LAW) to examine the impact of the factors of fraud triangle on the incidence of FSF with additional variable with respect to directors' age and percentage of female directors. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Winsorization

All variables are winsorized at 1% and 99% (Table 10) to deal with outliers (Chhaochharia et al., 2012). In line with the results for Model 1, LEVERAGE(+), IND_DIR%(-), CDual(+), NoBM(+), ABIG4(-), and MVBV(+) continue to be significant.

Table 10: Probit regression with winsorized variables

	Model 1a	Model 1b	Model 1c	Model 1
EXT_FINANCING	-0.90 (0.37)	-0.90 (0.37)	-0.90 (0.37)	-0.89 (0.37)
LEVERAGE	0.62*** (0.00)	0.62*** (0.00)	0.62*** (0.00)	0.62*** (0.00)
DIR_COMP	-0.01 (0.80)	-0.01 (0.79)	-0.01 (0.83)	-0.01 (0.76)
DIR_SHARHLDG	0.22 (0.15)	0.22 (0.15)	0.22 (0.14)	0.22 (0.16)
EDUCATION_INDEX		0.14 (0.91)		0.57 (0.73)
INCOME_DISPARITY	0.01 (0.52)	0.01 (0.53)	0.01 (0.59)	0.01 (0.54)
CULTURE	-0.00 (0.82)	-0.00 (0.80)	-0.00 (0.83)	-0.00 (0.72)
RULE_OF_LAW			-0.10 (0.78)	-0.19 (0.66)
IND_DIR%	-0.65** (0.04)	-0.65** (0.04)	-0.65** (0.04)	-0.65** (0.04)
CDUAL	0.25** (0.01)	0.25** (0.01)	0.25** (0.01)	0.25** (0.01)
BOD_SIZE	-0.01 (0.29)	-0.01 (0.29)	-0.01 (0.28)	-0.01 (0.29)
NOBM	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
ABIG4	-0.26** (0.02)	-0.26** (0.02)	-0.26** (0.02)	-0.26** (0.02)
INST_OWNERSHIP	0.26 (0.14)	0.26 (0.14)	0.25 (0.14)	0.26 (0.13)
COUNTRY	0.20 (0.28)	0.16 (0.67)	0.40 (0.59)	0.44 (0.56)
Control variables				

	Model 1a	Model 1b	Model 1c	Model 1
ROA	-0.53 (0.57)	-0.53 (0.57)	-0.53 (0.57)	-0.53 (0.57)
MVBV	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
FIRM_SIZE	0.05* (0.09)	0.05* (0.10)	0.05* (0.09)	0.05* (0.09)
_cons	-0.70 (0.41)	-0.81 (0.53)	-0.71 (0.41)	-1.13 (0.45)
N	2,454	2,454	2,454	2,454

*This table gives the results of the propensity score based probit regression for models 1a (excluding EDUCATION_INDEX & RULE_OF_LAW), 1b (excluding RULE_OF_LAW), and 1c (excluding EDUCATION_INDEX), and 1 (including EDUCATION_INDEX & RULE_OF_LAW) to examine the impact of the factors of fraud triangle on the incidence of FSF with all variables winsorized at 1% and 99%. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

Sector exclusion

Since the financial services sector is subject to different regulations, additional analysis is undertaken by excluding firms in this sector (Firth et al., 2011). LEVERAGE(+), IND_DIR%(-), CDual(+), NoBM(+), ABig4(-), INST_OWNERSHIP(+), and MVBV(+) continue to be significant (Table 11).

Table 11: Probit regression excluding financial services sector

Variable	Model 1a	Model 1b	Model 1c	Model 1
EXT_FINANCING	-0.19 (0.26)	-0.19 (0.26)	-0.19 (0.26)	-0.19 (0.26)
LEVERAGE	0.47*** (0.00)	0.47*** (0.00)	0.47*** (0.00)	0.47*** (0.00)
DIR_COMP	-0.02 (0.53)	-0.02 (0.51)	-0.02 (0.55)	-0.02 (0.50)
DIR_SHARHLDG	0.18	0.17	0.18	0.17

Variable	Model 1a	Model 1b	Model 1c	Model 1
	(0.24)	(0.25)	(0.23)	(0.25)
EDUCATION_INDEX		0.26		0.59
		(0.85)		(0.72)
INCOME_DISPARITY	0.01	0.01	0.01	0.01
	(0.63)	(0.61)	(0.68)	(0.62)
CULTURE	0.00	-0.00	0.00	-0.00
	(0.95)	(0.98)	(0.95)	(0.91)
RULE_OF_LAW			-0.05	-0.15
			(0.89)	(0.74)
IND_DIR%	-0.67**	-0.68**	-0.67**	-0.67**
	(0.03)	(0.03)	(0.03)	(0.03)
CDual	0.23**	0.23**	0.23**	0.23**
	(0.02)	(0.02)	(0.02)	(0.02)
BOD_SIZE	-0.00	-0.00	-0.00	-0.00
	(0.78)	(0.79)	(0.77)	(0.79)
NoBM	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
ABig4	-0.24**	-0.24**	-0.24**	-0.24**
	(0.03)	(0.03)	(0.03)	(0.03)
INST_OWNERSHIP	0.28	0.28*	0.28	0.29*
	(0.10)	(0.10)	(0.10)	(0.10)
COUNTRY	0.23	0.17	0.34	0.38
	(0.20)	(0.66)	(0.65)	(0.61)
Control variables				
ROA	-0.62***	-0.62***	-0.62***	-0.62***
	(0.01)	(0.01)	(0.01)	(0.01)
MVBV	0.00*	0.00*	0.00*	0.00*
	(0.09)	(0.09)	(0.09)	(0.09)
FIRM_SIZE	0.04	0.04	0.04	0.04
	(0.19)	(0.19)	(0.19)	(0.19)
_cons	-0.39	-0.58	-0.39	-0.83
	(0.65)	(0.65)	(0.65)	(0.58)
N	2,414	2,414	2,414	2,414

This table gives the results of the propensity score based probit regression for models 1a (excluding EDUCATION_INDEX & RULE_OF_LAW), 1b (excluding RULE_OF_LAW), and 1c (excluding EDUCATION_INDEX), and 1 (including EDUCATION_INDEX & RULE_OF_LAW) to

*examine the impact of the factors of fraud triangle on the incidence of FSF excluding firms from the financial services sector. N denotes the number of observations. p-values in parentheses. Significance levels are as follows: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All variables are defined in the Appendix.*

6.7 Discussion and conclusion

Implications for theory

The results of this research paper have implications for both theory and practice. From a theoretical perspective, this study adds to the existing literature on the fraud triangle, accounting frauds, and corporate governance. It contributes to agency theory perspectives by augmenting evidence in support of the 'monitoring' prescription of agency theory for addressing agency issues. According to the results of this study, independent directors provide effective monitoring (Rashid, 2015) and thus have a negative influence on the likelihood of FSF whereas CEO duality is an indicator of ineffective monitoring (Davidson III et al., 2004). With respect to the fraud triangle, the results of this study indicate that curbing the opportunity for FSF through effective monitoring is the most effective method to reduce the incidence of FSF. On the institutional theory front, the results indicate that irrespective of the institutional setting and the level of corruption in a country, strong firm level corporate governance is the best mechanism to prevent FSF.

Implications for practice

From a practice standpoint, the results align with the views of Dellaportas (2013) by reconfirming the significance of curbing the opportunities for FSF as the most effective remedy. Also, it is found that due attention needs to be paid to internal governance mechanisms as they are more significant in limiting the opportunities of FSF. Further, irrespective of the cultural background of a country, the key to controlling FSF lies in internal control and governance. These results also have repercussions for businesses seeking to expand to markets such as the US and China by highlighting the significance

of good governance practices as exhibited in independent boards, good quality auditors, lower leverage, and avoidance of CEO duality in establishing sustainable businesses.

Conclusion

The truthfulness of financial statements is quintessential to the existence of businesses and the confidence of investors and other stakeholders at a micro level. At the macro level, low quality financial statements in an economy may lead to reduced foreign direct investment, unavailability of the much-required capital for growth and expansion, and consequent economic slowdown. The economies and financial markets of the world today are interlinked; consequently, economic growth or slowdown of the largest economies in the world can have a cascading effect on other economies. Thus, ensuring high quality financial statements is one of the pre-requisites to good economic health.

Through the fraud triangle framework, this study explores the causes of the likelihood of financial statement fraud in two of the world's largest economies. The results indicate that China and US differ, significantly, on all measures of the fraud triangle except for external financing need and income inequality. Further, results of propensity score matching based on probit regression indicate that firm-level variables and governance mechanisms such as leverage, percentage of independent directors, CEO duality, frequency of board meetings, and being audited by Big-4 audit firms have a significant impact on the incidence of FSF, whereas country-level variables such as country of origin, access to education, social inequality, and rule of law do not affect the incidence of FSF.

Limitations and future research

This study relies on reported cases of fraud among listed corporations. However, there may be a large sample of private corporates subject to such fraud or listed corporations where such fraud has not yet been brought to light. Also, the fraud triangle model may be expanded to include additional variables to better explain the incidence of FSF and

to include more countries to improve the coverage of the study. Thus, future research may continue on this path of developing a comprehensive fraud triangle model for explaining the incidence of FSF.

6.8 Chapter summary

This chapter constituted the third empirical paper of this thesis and it compared China and the US on various variables representing the three prongs of the fraud triangle framework. It also investigated the impact of directors' compensation, and governance variables (firm level and country level) on the incidence of FSF in a combined study of China and the US. The results indicate that China and the US differ significantly on all measures of the fraud triangle, except for external financing need and income disparity. Additionally, firm-level variables and governance measures have a significant impact on the incidence of FSF whereas country-level variables do not affect the incidence of FSF.

The next chapter is the concluding chapter of this thesis and it discusses in detail the main findings, contributions, implications, recommendations, and limitations of the present work. It also provides a direction for future research.

Appendix: Variable definition and measurement*

Variable Name and Definition	Label	Details	References
Dependent Variable			
Fraud	Fraud Firm (FF)/ Control Firm (CF)	"1" if Fraud Firm and "0" if Control Firm; Source: SCAC, Capital IQ; CSMAR	Erickson et al. (2006); Hass et al. (2016)
Independent Variables/ Pressure Variables			
External Financing Need	EXT_FINAN CING	Need for external financing measured by growth rate in excess of growth which can be financed by internal resources. Calculated as: $ROA/(1-ROA)$	Shi et al. (2017)

Variable Name and Definition	Label	Details	References
Leverage	LEVERAGE	Total Debt (LEV)/ Total Assets (TAssets); Source: Capital IQ; DataStream	Shi et al. (2017)
Log of Directors' total compensation	DIR_COMP	Log of compensation of all directors; Source: SEC Filings; CSMAR	Conyon and He (2016); Hass et al. (2016)
Shareholding of all directors (%)	DIR_SHARH LDG	Percentage Shareholding held by all directors; Source: SEC Filings, beneficial ownership statistics; CSMAR	Bhagat and Bolton (2008);Lai, and Tam (2017)
Independent Variables/ Rationalisation Variables			

Variable Name and Definition	Label	Details	References
Education	EDUCATION_INDEX	<p>Average of expected years of schooling of children and mean years of schooling of adults. Expressed as an index.</p> <p>Source: United Nations Development Programme.</p> <p>http://hdr.undp.org/en/indicators/103706#.</p> <p>Accessed on: 21 Oct 2021</p>	Chen (2014)
Income Disparity	INCOME_DISPARITY	<p>Measure of income disparity. A value of 0 implies perfect equality and a value of 100 implies perfect inequality.</p> <p>Source: GINI Index (World Bank),</p> <p>https://data.worldbank.org/indicator/SI.POV.GINI.</p> <p>Accessed on: 21 Oct 2021</p>	Chen (2014)

Variable Name and Definition	Label	Details	References
		Corruption Index score. Higher score implies lower corruption.	
Culture	CULTURE	Source: Transparency International. Link: https://www.transparency.org/en/cpi/2020/index/nzl Accessed: 24 Oct 2021	Liu (2016)
Independent Variables/ Opportunity Variables			
Country – Governance	Level RULE_OF_LAW	Rule of law - Quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Leuz et al. (2003); Chen (2016)

Variable Name and Definition	Label	Details	References
		Source: World Bank; Link: http://info.worldbank.org/governance/wgi/ Accessed on: 25 October 2021	
% of Independent Directors on BoD	IND_DIR%	Percentage of Independent Directors; Source: SEC Filings; CSMAR	Firth et al. (2007b); Uzun et al. (2004)
CEO and Chair of BoD same person	CDUAL	“1” if CEO duality exists and “0” otherwise; Source: SEC Filings; CSMAR	Farber (2005); Erickson et al. (2006)
Total Number of Directors	BOD_SIZE	Total Number of Directors; Source: SEC Filings; CSMAR	Deutsch et al. (2011)

Variable Name and Definition	Label	Details	References
Number of Board Meetings	NOBM	Number of Board Meetings; Source: DataStream; CSMAR	Erickson et al. (2006)
Auditors from Four Big Accounting Firms or Not	ABIG4	Auditor among the Big 4 auditor Firms or not; "1" if Auditor among the Big4 firms and "0" if the Auditor not among the Big4 firms; Source: Capital IQ; CSMAR	Farber (2005)
Institutional Ownership	INST_OWNERSHIP	Percentage of shareholding with Institutional Owners; Source: Capital IQ; CSMAR	Wright et al. (2002); LeI (2019); Kim et al. (2016)

Variable Name and Definition	Label	Details	References
Country of origin	COUNTRY	Binary variable; “0” in case of China; “1” in case of U.S.	
Control Variables			
Match Year ROA (%)	ROA	Return on Assets (ROA); Source: Calculated using Capital IQ; DataStream	Erickson et al. (2006); Hass et al. (2016)
Match Year MV/BV	MV/BV	Market Value/Book Value; Source: Calculated using Capital IQ; DataStream	Agrawal and Chadha (2005); Zhang et al. (2008)
Firm Size	FIRM_SIZE	Log of Total Assets	Gao et al. (2017); Markelevich and Rosner (2013)

Variable Name and Definition	Label	Details	References
Additional Variables			
%Female Directors	FEMALE_DIR% R%	Percentage of Female Directors; Source: SEC Filings; CSMAR	Liu et al. (2016); Wahid (2019)
Average age of all directors	DIR_AGE	Average age of all directors; Source: SEC Filings; CSMAR	Xu et al. (2018)

** All variables are measured as of the match year*

7. Conclusion

7.1 Chapter introduction

In this chapter a summary of the research findings has been presented along with a discussion on the contributions, implications, limitations, and recommendations of the study. This chapter has six sections. The first section (7.2) provides the background and the objectives of the study. In the second section (7.3) a summary of the research methodology has been presented. Third section (7.4) provides a summary of the main findings. Section four (7.5) discusses the contributions, implications, and recommendations of this study. In the last section (7.6) limitations of the study and directions for future research have been discussed.

7.2 Background and objectives of the study

Over the past two decades there has been a heightened focus on the quality of financial statements and corporate governance which has further translated into passing of stringent laws and tighter listing rules apart from tougher penalties for the offenders (Roz, 2004). The quality of financial statements is vital as financial statements form the basis for - investment appraisal by present and potential investors/shareholders and lenders (Donelson, et al., 2017b), assessment of a firm's financial performance (Iatridis, 2010), and avoiding stock market bubbles/ speculation (Penman, 2003). Further, according to Fields et al. (2001) market imperfections can be efficiently addressed by accounting disclosures as accounting influences the quality of financial disclosures.

Thus, it can be concluded that financial statement fraud has ramifications for all stakeholders including employees, lenders, market authorities, regulators, and shareholders.

Corporates are managed by the management and owned by the shareholders. To oversee and monitor the management, the shareholders appoint directors as their agents. Thus, agency conflicts between the directors and the shareholders are

imminent. Compensation has long been viewed as a panacea for mitigating agency issues (Jensen & Meckling, 1976; Pereira, 2015). However, compensation can be described as a double edged sword which can mitigate as well as aggravate agency issues (Goldman & Slezak, 2006; Rose et al., 2013; Conyon & He, 2016; Zhou et al., 2018). Given the inconclusive nature of evidence on the efficacy of compensation in controlling financial statement fraud, it is vital to scrutinize this association further. This examination is vital, as FSF has proved to be a bane for economies the world over, resulting in huge losses for investors and a dip in market confidence. Its impact is more dramatic for developing economies as it hampers the inflow of foreign direct investment. Further, this study is a first in that it provides empirical evidence of the agency issues between directors and shareholders, which is an under researched area of corporate governance. Also, existing evidence on the efficacy of directors' compensation in controlling the incidence of fraud is limited. Further, such examination has focused, mostly, on the US market. Therefore, drawing upon agency theory, fraud triangle theory, and institutional theory, this study examines the impact of directors' compensation and shareholding, and corporate governance on the incidence of FSF in two of the world's largest economies – China and the US. This research focuses on China and US as these two countries, despite being two of the world's largest economies, present a stark contrast in their cultural orientation and corporate governance philosophies.

The purpose of this thesis is to: (a) examine the corporate governance mechanisms and directors' compensation practices under the two corporate governance models (2CGM) namely Chinese and American; (b) examine the causal relationship between directors' compensation, corporate governance mechanisms, and FSF under the 2CGM; and (c) offer recommendations for effective designing and packaging of directors' compensation.

7.3 Summary of research methodology

This study employs quantitative research methods and clubs it with the matched pairs research design. Under this design, two groups were created for each of the two countries (China and the US). The first group comprised the fraud firms and the second group no-fraud/control firms. The control firms were identified using a three-pronged matching criteria. The control firm had to be in the same industry as the fraud firm. The control firm should have not been implicated for financial statement fraud during the sample period and lastly, the control firm had to be the nearest match of the fraud firm in terms of the market capitalisation/ net sales/ total assets.

Fraud firms were identified using data from China Stock Market and Accounting Research database (CSMAR) in case of China and Securities Class Action Clearinghouse (SCAC) in case of the US. Control/no-fraud firms were identified using data from DataStream (China) and Capital IQ (US). The final sample consisted of 903 fraud firms for China and 387 fraud firms for the US. The data on directors' compensation and other key control variables was largely hand-collected in case of the US using SEC Edgar filings where as in case of China, this data was taken from CSMAR.

Various analytical techniques were employed to analyse the data. Descriptive statistics were used to describe the general characteristics of fraud firms and control firms. Correlation analysis and VIF analysis were conducted. Probit regression method was used and the robustness of the results was examined using alternate regression methods, sub-sample tests, winsorization, and introduction of additional variables. Propensity score matching, instrumental variables approach, and Ramsey RESET test were used to deal with endogeneity issues. Data analysis was conducted using statistical software package - STATA.

7.4 Summary of main findings

In this section the summary of the main research findings of this thesis, in view of the research objectives, is laid out.

7.4.1 Literature review

The review of the literature on corporate governance models of the US and China reveals that the US follows 'shareholder theory' where the main focus is on maximisation of shareholders' wealth. China, on the other hand, can be argued to follow 'stakeholders' approach to corporate governance as it has a dual board system with a board of directors and a supervisory board wherein the supervisory board has representation from the employees as well. However, 'shareholder primacy' is of significance in China.

US is embedded in market capitalism whereas China is inherently socialist and is now transitioning into market capitalism. Further, in the US the corporate governance issues emerge on account of separation between ownership and control (Gilson & Roe, 1993) and such issues represent the conflicts of interest between dispersed shareholders and controlling managers (Enriques & Volpin, 2007). In contrast, in China the corporate governance issues stem from concentration of ownership and these issues are primarily principal to principal conflicts between majority and minority shareholders (Habib & Jiang, 2015).

Further, corporate governance in China is relatively a new phenomenon and is still evolving when compared to the US. In China, the regulatory body, CSRC, was established in 1992 and corporate governance reforms started in 2001. US, on the other hand, established the SEC way back in 1934. Similarly, US passed the Sarbanes Oxley Act in 2002 whereas China passed its version of the Sarbanes Oxley Act in 2008 (Lu & Cao, 2018).

With respect to the corporate governance codes and rules, the Chinese corporate governance code does not provide any explicit regulations rather it lays down guiding

principles only (Jiang & Kim, 2015). On the contrary, in the US, NYSE stipulates mandatory corporate governance rules which are to be complied with (Calder, 2008).

The two countries also vary considerably in their legal and political orientation. US pursues common law whereas China is civil law based. According to La Porta et al. (2008) civil law is marked by greater corruption which emanates from substantial government regulation and ownership in countries following civil law. On the other hand, common law is marked by 'better contract enforcement', greater 'judicial independence' and 'security of property rights' (La Porta et al. 2008, p. 286). With respect to the political system, China follows the communist system (Mihalyi & Szelenyi, 2021) whereas US is a democratic state.

Cultural orientations of China and the US vary dramatically as well. As compared to the US, China scores high in power distance (implying acceptance of inequality among people), collectivism (i.e. 'we' takes precedence over 'I') and long-term orientation (focus on thrift, saving, and investing). Further, China has a low score on uncertainty avoidance implying that ambiguity is more acceptable in China as compared to the US. From a theoretical lens, agency theory and institutional theory are the two key corporate governance theories which have guided this work. Agency theory is relevant because the directors are in an agency relationship with the shareholders. Agency theory has been widely applied in academic research. However, its prime concern is alignment of conflicting interests of agents and principals. Institutional theory is important as we compare US and China which are embedded in different institutional frameworks. According to the institutional theory, organisational structures are influenced by institutional rules and the attitudes prevailing in the society (O'Connell, et al., 2005; Meyer & Rowan, 1977). In this context, China is marked by a weak legal environment and weak formal governance structures (Jiang & Kim, 2015; Estrin & Prevezer, 2011). From the fraud theories, the framework of the fraud triangle has been applied in this research. Opportunity for financial statement fraud is argued to be presented by weak firm level and country level governance. Motivation for FSF can come from compensation, funding pressure, or level of debt. Rationalisation for

financial statement fraud can take the form of cultural differences, income disparity, and low access to education.

On the compensation front too, the two countries have had historical differences in their approach. In the US inequality in pay is widely accepted (Conyon & Murphy, 2000) whereas China traditionally followed an egalitarian approach of equitable pay (Chow, 1992; Adithipyangkul et al., 2011). Further, stock-based compensation is relatively a new phenomenon in China and was allowed only from 2005 whereas in the US, stock based compensation is often a part of the pay structure (Adithipyangkul et al., 2011; Firth et al., 2014).

7.4.2 Paper 1 (chapter 4)

The first research paper of this thesis investigates the linkages between directors' compensation and shareholding, corporate governance, and FSF in China. Using a sample of 903 matched pairs, the results indicate that directors' shareholding has a significant positive impact on the likelihood of FSF and the shareholding of non-independent directors drives this positive association. Further, firm characteristics (such as leverage, ownership structure, and performance), type of auditor, and board characteristics (such as CEO duality, independence, and frequency of board meetings) are also significant determinants of the likelihood of FSF. From a theoretical perspective, we do not find support for the agency theory stipulation of alignment of interests of the agents (directors) and the principals (shareholders) through institution of adequate incentives including stock based compensation and shareholding. On the contrary, directors' shareholding worsens the principal–principal agency issues in China. However, agency theory stipulation of devising governance mechanisms to restrict the self-serving conduct of the agents is supported by results of this paper.

7.4.3 Paper2 (chapter 5)

The second research paper focuses on the incidence of FSF in the US and its linkages with directors' compensation and shareholding, and corporate governance. Using a sample of 387 matched pairs, a significant positive association is reported between

directors' stock-based compensation and FSF. Further, the key driver of this association is the stock-based compensation of the executive directors. However, it is interesting to note that CEOs' compensation and shareholding is insignificant. Further, board characteristics (such as board size, frequency of board meetings), type of auditor, CEO duality, and firm characteristics (such as firm size, return on assets, ownership structure) are also significant factors influencing the incidence of FSF in the US. Similar to the results of chapter 4, we do not find support for the agency theory stipulation of alignment of interests of the agents (directors) and the principals (shareholders) through institution of adequate incentives including stock based compensation and shareholding in the US. On the contrary, directors' stock-based compensation worsens principal – agent agency issues. However, agency theory stipulation of devising governance mechanisms to restrict the self-serving conduct of the agents is supported by results of this paper.

7.4.4 Paper 3 (chapter 6)

In the third research paper of this thesis, a comparative analysis of China and the US on the operationalised measures of the three prongs of the fraud triangle (TFT) framework, namely pressure, opportunity and rationalisation, is undertaken. The results indicate that the two countries vary significantly on all the measures of the TFT framework except for external financial need and income disparity. Further, firm level governance factors (such as percentage of independent directors, CEO duality, frequency of board meetings, type of auditor, ownership structure) and firm characteristics (such as leverage, ROA, MV/BV) are vital variables impacting the incidence of FSF.

From a theoretical perspective, we find support for agency theory stipulation of adequate monitoring mechanisms at firm level. The results of the study also do not support the institutional theory perspective of impact of institutional setting on the incidence of FSF. On the contrary, firm level governance is of significance in controlling the incidence of FSF irrespective of the country and its institutional framework (China or the US).

The results hold even after a series of robustness checks and other analysis.

7.4.5 *The research questions*

The table below provides the main findings with respect to the research questions.

S. No.	Research Question	Main Findings
1	Whether the quantum and structure of directors' compensation packages, under the two CG models, namely the American and the Chinese, (2CGM) has a role to play in tempting the directors to either connive in or overlook FSF.	The structure of directors' compensation has definite impact on the incidence of financial statement fraud. Financial statement fraud is likely to increase with inclusion of stock and stock-option based compensation in directors' compensation packages. Thus, it would be prudent to
2	Does the level of directors' stock ownership in the corporation influence FSF?	remunerate directors with stock-based compensation, cautiously. This evidence negates the agency theory stipulation of compensation and incentive pay (including shareholding and stock-based
3	Does the design of directors' compensation package such as the proportion of stock-based compensation affect FSF?	compensation) being a tool to align the divergent interests of agents and the principals. In contrast, effective monitoring has been found to be more efficient in controlling the incidence of FSF.

S. No.	Research Question	Main Findings
4	Do BoD characteristics such as independence and diversity influence the incidence of FSF?	<p>BoD diversity does not have any significant influence on the incidence of financial statement fraud in case of China. However, BoD independence, type of auditor, and shareholding of top 10 shareholders have a negative influence on FSF. On the other hand, CEO duality and frequency of BoD meetings have a positive influence on the incidence of FSF.</p> <p>In case of the US, BoD diversity represented by directors' age has a significant negative association with the incidence of FSF. Type of auditor and size of the BoD also negatively influence FSF. In contrast, institutional ownership, CEO duality, and number of BoD meetings positively impact the likelihood of FSF.</p> <p>In the combined analysis of the US and China, the percentage of independent directors and type of auditor, have been found to have a significant negative impact on the</p>

S. No.	Research Question	Main Findings
		<p>incidence of FSF. On the hand, CEO duality, frequency of BoD meetings, and institutional ownership have a positive impact on the incidence of FSF, Firm level factors such as leverage, firm performance (ROA), and firm valuation (MV/BV) have also been found to be significant.</p>
5	<p>What role do CG and firm-specific factors play in influencing the incidence of FSF?</p>	<p>Corporate governance and firm specific factors do have an influence on the incidence of financial statement fraud. However, the significant influence of these factors varies with the country under consideration. For instance: in case of China, firm performance (ROA), CEO duality, leverage, ownership structure, type of auditor, BoD independence, and frequency of board meetings have significant influence on the incidence of financial statement fraud.</p> <p>In case of the US, board size, firm performance (ROA), ownership structure (institutional ownership),</p>

S. No.	Research Question	Main Findings
		<p>CEO duality, frequency of board meetings, type of auditor, and firm size have significant influence on the incidence of financial statement fraud.</p> <p>In the combined analysis - leverage, BoD independence, CEO duality, frequency of Board meetings, type of auditor, institutional ownership, firm valuation (MV/BV), and firm performance (ROA) have significant influence on the likelihood of FSF.</p>
6	<p>Despite the overarching influence of culture & legal/institutional structures on the different CG systems, are there any best practices with respect to directors' compensation which can be adopted under the 2CGM to combat FSF? Also, is there an optimal structure of directors' compensation, or if not, what type of compensation is good enough?</p>	<p>Cultural, institutional, legal, and political structures vary significantly between the US and China. Even compensation practices between the two countries are different with US being more amenable to stock and option based compensation in comparison to China. However, the results of empirical analysis suggest that stock-based compensation & shareholding are significant provocateurs of fraudulent behaviour among directors. Hence, stock-based compensation and</p>

S. No.	Research Question	Main Findings
		shareholding should be used cautiously while designing the compensation packages of the directors.

7.5 Contribution, implications, and recommendations

Prior research on directors' compensation (including Alkebsee et al., 2021; Archambeault et al., 2008; Bebchuk et al., 2010; Cullinan et al., 2008; Cullinan et al., 2010; Kim et al., 2013; Persons, 2012; and Ye, 2014) has either examined frauds other than FSF (bribery, embezzlement, option back-dating, and securities fraud) or have looked at earnings management, restatements, and opportunistic timing of option grants. Further, the evidence provided by these studies is divided on the impact of directors' compensation on fraud/earnings management/ restatements. For instance: Archambeault, et al. (2008), Bebchuk et al. (2010), Kim et al. (2013), Ye (2014) document a positive association whereas Alkebsee et al. (2021) document a negative association. On the other hand, Persons (2012) does not document any association between directors' compensation (cash and stock) and fraud.

This inconclusive evidence has created a gap in research and has necessitated that more empirical evidence be produced on this topic. The present thesis addresses this gap in research.

The most important contribution of this study is that it provides empirical evidence with respect to the best compensation practices in relation to the directors, which can be adopted under each of the 2CGM (with or without modifications) to combat/reduce the incidence of FSF. Further, this thesis is a comparative analysis of two countries with very different corporate governance paradigms. This research provides empirical

evidence on how fraud firms in the US differ significantly from those in China on various parameters of corporate governance. The results indicate that the fraud firms in China tend to be more leveraged, have lower incidence of CEO duality, have lower percentage of independent directors, have larger boards, greater frequency of board meetings, have lower institutional ownership, offer lower compensation & lower percentage of shareholding to the directors, and have smaller auditors as compared to the fraud firms in the US. Further, this research provides evidence to support the assertion that irrespective of the cultural, political, institutional, and governance make-up of a country, firm-level measures of governance vitally influence the incidence of financial statement fraud. The other contributions of this study are as follows:

7.5.1 Contribution to the literature

This thesis contributes to literature in the following ways. First, this research opens up the dialogue between the literature on agency theory, institutional theory, and on the theory of fraud while exploring the causal relationship between directors' compensation, corporate governance, and financial statement fraud. It explores how these three theories supplement each other in case of financial statement fraud. This thesis documents that the agency relationship between the directors and the shareholders (wherein divergent interests are aligned using compensation) coupled with weak governance set the stage for financial statement fraud to occur. Second, the thesis also delves at length on the literature on different corporate governance systems and it also compares and contrasts two very different corporate governance paradigms/ philosophies – American and Chinese. Third, this research complements prior literature in this domain (Kim et al., 2013; Cullinan et al., 2008) by using a larger sample, wider definition of financial statement fraud, and longer sample period. Further, it provides additional evidence on a subject, the results of the prior research on which remain inconclusive. This study also takes into consideration the effect of the institutional environment via ownership structure (institutional ownership) in examining the impact of directors' compensation on the incidence of FSF.

7.5.2 Contribution to theory

This thesis explores various theoretical approaches in corporate governance and compensation literature and discusses how each of the theories in these fields informs research on fraud. The empirical chapters in this thesis specifically employ the agency theory, the theory of fraud triangle, and the institutional theory. The agency theory is relevant to this study as the directors are in an agency relationship with the shareholders. The theory of fraud triangle informs this research by providing insights into the motivation, opportunity, and rationalisation aspects of financial statement fraud. The institutional theory has relevance, as this thesis seeks to compare two countries namely China and the US which have very disparate institutional settings.

This thesis provides additional evidence on agency theory, institutional theory, and the theory of fraud triangle. The results of the study indicate that monitoring mechanisms rather than compensation (specifically stock-based compensation and shareholding) are more effective in controlling the incidence of fraud as effective monitoring curbs the opportunity for fraud. Further, the efficacy of firm level monitoring/ governance holds irrespective of the institutional setting.

7.5.3 Contribution to practice

This thesis contributes to practice in the following ways. First, this research provides evidence on design and packaging of directors' compensation so as to avoid or reduce the incidence of financial statement fraud. According to the results of this study, stock-based compensation and shareholding to the directors should be avoided in practice. Second, this research brings to light/ fore-front the importance firm level governance mechanisms in controlling the incidence of FSF. The comparative analysis of China and the US suggests that governance mechanisms represented by avoidance of CEO duality, BoD independence, frequency of board meetings, institutional ownership, and type of auditor are significant factors in influencing the incidence of FSF. Further, these factors hold fort irrespective of the cultural, institutional, legal, and political orientation of a country.

7.5.4 Contribution to policy

This study contributes to policy by providing additional evidence to regulators on the inefficacy of stock-based compensation and shareholding to directors in addressing agency issues. The results of this research suggest that rather than aligning the divergent interests of directors (as agents) and shareholders (as principals), stock and option based compensation and shareholding aggravate the agency problems. Thus, such compensation should be used with caution in case of the directors. Further, these results hold true under divergent institutional environments such as China and the US. Thus, regulators need to take cognizance of the heightened risk of FSF when allowing use of stock-based compensation and shareholding in directors' compensation packages.

7.5.5 Contribution to methodology

This thesis also contributes to methodology by employing a wider source of data. Unlike prior research, which has predominantly used data from the SEC to identify fraud firms in the US, this study uses data from SCAC. Further, this study also uses a broader definition of FSF by including companies/firms that have made misstatements in their offer documents (in case of the US). The study also addresses endogeneity issues in detail by employing analysis techniques such as RAMSEY RESET test, PSM, and instrumental variables approach. This thesis also supplements the literature on matched pairs research design.

7.5.6 Implications of the study

The results of this research project have implications for both theory and practice.

Theoretical implications

From a theoretical perspective, this study supplements research on corporate governance and on agency theory by examining the likely agency issues between directors (as agents) and shareholders (as principals) and the role of measures of good corporate governance in reducing the incidence of FSF. Thus, it combines the agency

perspective (represented by compensation and the agency relationship between directors and shareholders) with the corporate governance perspective (represented by governance variables), which are both significant in the context of accounting fraud. This research also supplements the existing literature on TFT and accounting fraud, by providing additional evidence on these two subjects. It provides additional evidence on agency theory with respect to effective monitoring by independent directors (Rashid, 2015) and negative impact of CEO duality (Davidson III et al., 1998). This research also finds that contrary to the agency theory stipulation of adequate compensation to solve the problems of moral hazard between agents and the principals, such compensation (specifically directors' stock-based compensation and shareholding) aggravate both principal-agent agency issues (in the US) and principal-principal agency issues (in China), as such compensation fails to motivate diligent monitoring and oversight by the directors. Further, effective monitoring curbs the opportunity for FSF (from perspective of the theory of fraud triangle) and such monitoring is efficacious irrespective of the institutional framework in which a firm is embedded (from the perspective of institutional theory).

Practical implications

From a practical perspective, this study enriches and provides additional evidence on the ongoing debate on the design and packaging of directors' compensation. The results from this research force one to look again at the efficacy of the share-based compensation and shareholding to directors. The results allude to the alternate view, which regards that share-based compensation and shareholding can aggravate agency issues and hence such compensation should be used with caution or should be at best avoided.

In line with Dellaportas (2013), the results reconfirm the significance of curbing the opportunities for FSF, which is the most effective remedy to control the occurrence of FSF. Further, we find that due attention needs to be paid to internal governance mechanisms as they are more significant in limiting the opportunities for FSF. Our results also have repercussions for businesses seeking to expand into markets like the

US and China by highlighting the significance of good governance practices (as exhibited in independent boards, good quality auditors, lower leverage, lower institutional ownership, lower frequency of BoD meetings, and avoidance of CEO duality) in establishing sustainable businesses. This study has significant implications for potential investors seeking to invest in China or the US. Investors' trust in capital markets is a function of the quality of financial statements and this study examines the issue of financial statement fraud in detail in these countries. The results of this study also have implications for policy makers/regulators who wish to improve the quality financial reporting and minimize the opportunities for FSF. This study has implications also for firms/corporates that wish to fortify their corporate governance with a view to enhance the quality of their financial reporting. Further, as FSF has substantial negative consequences for all stakeholders, the results of this study have implications for all stakeholders. This research also highlights that oversight and monitoring failure by the directors, increases fraud risk by increasing the opportunity for FSF as unmotivated directors may not pay the required attention to their fiduciary duties including ensuring adequate and effective internal controls, oversight of financial reporting process, and setting the right tone at the top. This study also offers an opportunity to strengthen the effectiveness of the American and the Chinese corporate governance systems and make use of governance mechanisms to reduce FSF.

Additionally, the results of this study can be extended to other developed and developing economies operating within the same corporate governance paradigms as that of China and the US. For instance, the results of the study on China could be relevant for other Asian countries with similar cultural, economic, and governance paradigms.

Thus, the results of this research are of relevance to academics, practitioners and policy makers.

7.5.7 Recommendations

This study makes two recommendations. First is exercise of caution, in use of stock-based compensation and shareholding in directors' compensation packages. Evidence from this research shows that directors' shareholding and stock-based compensation have the potential to compromise the objectivity of directors and hence can adversely affect their monitoring effectiveness, thereby leading to an increase in likelihood of FSF.

Second, keen focus on strengthening the corporate governance mechanisms at the firm level and tightening of internal controls is another important recommendation from this study. The results indicate that 'monitoring' is an effective tool to diminish the opportunities of committing FSF. Specifically, the study finds that independent boards, auditor being among big 4 audit firms, avoidance of CEO duality, lower leverage, and optimal number of board meetings represent some of the key indicators of good governance. This recommendation is in tune with the monitoring perspective of agency theory which recommends institution of appropriate monitoring mechanisms for protecting the interests of the shareholders.

7.6 Limitations and future research direction

7.6.1 Limitations of the study

This research is subject to several limitations which are listed below.

First, the focus of this research has been on examining the causal relationship between director's compensation, corporate governance, and financial statement fraud. To achieve this objective and to answer the research questions, this study has relied on empirical analysis and analysis of existing literature in the fields for fraud, corporate governance, and compensation. Thus, the main criticism of this research is that it is an exploratory research based on empirical analysis and thus it has paid little attention to development of theory. Second, this thesis focuses on the incidence of FSF in listed corporations. However, there may be a large pool of private corporations/firms that

may be ridden with financial statement fraud. It may be noted that unlisted firms could not be included in this study due to challenges in availability of data. Third, the focus of this research has been publicly reported or discovered cases of FSF and thus it ignores cases where FSF may have been committed but has not yet been discovered or brought to light. According to Amiram et al. (2018), partial observability is very common in research related to accounting misconduct and such observational bias has adverse implications on the ability of the study to address key issues. Further, methods (including F-score, and bivariate probit models) which can overcome observational bias have not been adopted in this research (Amiram et al., 2018). Fourth, some fraud firms had to be excluded from the sample due to non-availability of suitable control firms. Fifth, this study relies on financial numbers as provided in the annual filings of corporations or as provided in various databases and in doing so it makes an implicit assumption that such reported numbers are true, correct, and not misleading. However, this assumption may be invalid in some cases. Sixth, this study uses two variables namely age and gender to measure BoD diversity. However, other variables such as nationality and level of education can also be included as additional measures of diversity. Seventh, this study uses the PSM to deal with endogeneity, however PSM addresses endogeneity concerns arising out of model misspecification (Shipman, et al., 2017) and those arising from observed covariates. However, PSM may not be effective in addressing other forms of endogeneity such as endogeneity on account of unobserved factors. Also, according to Kane et al. (2019), PSM may entail removal of data on account of unmatched controls. However, removal of data from any study must be avoided. Further, the quality of PSM depends upon the quality of confounding predictors used in the PSM model. Also, findings from PSM are sensitive to design choices and in case of limited overlap, PSM may lead to exclusion of observations from the sample due to non-availability/ lack of counterfactuals (Shipman, et al., 2017). Eighth, with respect to chapter 4, China represents a unique institutional setting. Features such as 'guanxi' (informal relations) between the CEO and the directors (Zhang, et al., 2017) and politically connectedness of the directors (Kong, et al., 2019) may affect directors' fraudulent behaviour. Though in chapter 4, directors' political

connectedness has been controlled for, 'guanxi' is not part of this study. Further, appointment of friendly independent directors (Wintoki & and Xi, 2019) or co-opted directors (Zaman et al., 2021), may also adversely affect the monitoring effectiveness of the directors. However, these factors have not been covered in this research. Ninth, with respect to chapter 5, the initial sample of fraud firms for the US included 1,029 firms listed on NASDAQ and NYSE. However, the data on directors' compensation and a number of other governance and demographic variables had to be hand collected from SEC filings as many of these firms were either delisted or were not covered by databases such as Boardex or Execomp. For instance: with respect to the US, Boardex provides compensation data only for S&P500 and NASDAQ listed firms which are presently alive/listed. Similarly, Execomp also has limited coverage of US corporations. Hence, the initial sample was randomised to include 500 fraud firms only. Out of these, compensation data was available for only 396 fraud firms and their corresponding control firms. Thus, the sample size for the US paper was reduced considerably which might have affected the results. However, the sample was still larger than many of the existing studies on executive compensation and fraud. Tenth, chapter 6 (comparative study of the US and China), uses the ANOVA and matched pairs research design for analysis. ANOVA is used to compare the fraud firms in the two countries while matched pairs design is used examine the impact of compensation and corporate governance on the incidence of FSF in the two countries. Though the research design is robust, it may not be able to detect all the differences between the two countries on various aspects of corporate governance. For instance: the difference in approach with respect to corporate governance in the US and China (which is evident in US adopting a rule like approach by stipulating mandatory corporate governance rules and on the other hand, China laying down just guiding principles with respect to corporate governance), cannot be detected under the present research design. This is so because all firms in China would take a constant value while all firms in the US would take another constant value thereby making the comparison meaningless. Eleventh, this study uses the single probit model for regression analysis. However, such models capture only caught cases of fraud and overlook those cases which have not yet been caught (Wang et al., 2022).

Hence, this study may be subject to bias due to incomplete selection. Twelfth, the definition of what constitutes a financial statement fraud may vary between the two countries (China and the US) due to differences in generally accepted accounting principles (GAAP) of these countries. Hence, what might be an acceptable accounting practice in US may not be acceptable in China. For instance: according to Amiram et al. (2018, p. 733), in the US the 'securities laws that define fraud are situational and define fraud variously'. Further, according to Chen et al. (2002) even harmonised accounting standards may not result into harmonised accounting policies. Thirteenth, this study focuses on a specific kind of financial reporting misconduct - financial statement fraud. However, financial reporting misconduct can take several other forms including earnings management, financial misrepresentation, and financial misreporting which are not covered in this study. Fourteenth, this study uses data from SCAC to identify the fraud firms for the US. Karpoff et al. (2017) argue that the results of the empirical analysis, with respect to research on financial misconduct, depend on the database used. This is so because the various databases such as SCAC, U.S. Government accountability office (GAO), accounting and auditing enforcement releases (AAERs) and audit analytics (AA) differ in the scope of their coverage and in the dates of initial revelation of the fraud/misconduct. Also, the databases differ in what each of them classifies as fraudulent. These databases also have a high rate of omitted information/cases/data which further translates into biased results. Thus, the results of the present study are likely to differ, if a database other than SCAC is used to identify fraud firms in the US. However, according to Karpoff et al. (2017), SCAC has the least percentage of completely omitted cases at 9% whereas the highest omission rate was 32.8% in case of AAERs. Fifteenth, this study has focused on two countries - US and China for comparison. However, a larger sample of countries and consequently a bigger dataset would increase the statistical significance of the results. Sixteenth, in China the compensation data disclosed is sparse. For instance: Chinese corporations pay substantial amounts in perks and in-kind benefits, and these have not been included in this study (Chen et al. 2010; Ting & Huang, 2018).

7.6.2 Future research

This exploratory research has potential for expansion in its scope in terms of countries covered, variables analysed, and methodology used.

Future research can be directed towards expanding the sample of countries used for comparison. This expansion in sample can be from two perspectives. Firstly, all countries following different corporate governance models namely Anglo-American, Latin, German, and Asian can be analysed. Another comparison can be from the perspective of the approach to corporate governance. There are two approaches to corporate governance – rule based or principle based. Countries can be grouped on the basis of the approach they follow and then analysed. Secondly, coverage of variables analysed can be increased or changed. For instance: the current thesis has focused on directors' compensation (representing directors' self-interest), corporate governance, and fraud. An interesting extension to this line of research could be exploring whether incentive/ self-interest in form of director's reputation (Masulis & Mobbs, 2014) has any effect on containing/reducing the incidence of financial statement fraud. Also, the measurement of variables can be changed. For instance: the present research uses the percentage of female directors and directors' age as measure of BoD diversity. However, factors such as nationality and level of education can also be included as additional measures of BoD diversity. Future research can also employ analytical models different from those used in this study.

7.7 Chapter summary

This chapter concludes this thesis by outlining the main findings, contributions, implications, recommendations, and limitations of the present work and providing a direction for future research

8. References

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