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# THE CAUSES AND CONSEQUENCES OF ACCOUNTING FRAUD IN CHINA

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for the degree of Doctor of Philosophy (Accounting and Finance)

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Professor John Ashton

Professor Aziz Jaafar

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**Abstract**

The thesis aims to examine the causes and consequences of accounting fraud in Chinese listed firms between 2007 and 2014. This is important to market participants as the reliability of the financial reporting information affects their investment decisions. To achieve the aim, three main research questions are identified: including examining (i) recidivist fraudulent financial reporting, punishments and their association with institutional factors; (ii) the impact of different punishments for fraud on shareholder valuation of listed firms; (iii) the relationship between mutual fund investments and accounting fraud.

The thesis reports a high level of recidivism in accounting fraud with firms employing many fraud techniques simultaneously and repeatedly. Punishments increase with repeated offending and significant differences exist between different punishments and reoffending. The occurrence of recidivism is associated with a range of regulatory and institutional factors i.e. the self-regulatory measures do not prevent firms from recidivism, whereas firms with large proportion of institutional and state ownership are less likely to reoffend. Then, the thesis examines the effectiveness of punishments. It is reported investors perceive punishments involving monetary penalties more severely than non-monetary punishments. Stock market reactions are sensitive to the type of fraud committed with manipulation of income statements viewed more negatively by investors than fraud related to disclosure. Information leakage to capital markets prior to the announcement of punishments is also observed. Informed investors perceive fines to be more effective than 'name and shame' punishments used to combat fraud. To constrain and deter accounting fraud, the thesis suggests the development of mutual fund investment in corporate ownership structure, as mutual funds have significantly higher levels of fraud detection, reducing firms' propensity to engage in fraud. Open-end mutual funds outperform closed-end mutual funds in detecting fraud and reducing fraud commission; redeemable shares are also viewed to exert discipline on managers. This impact of mutual funds is moderated by the state ownership of listed firms: mutual funds cannot effectively detect fraud in firms with a state-owned background.

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# List of abbreviations

| | |
|---|---|
| 2-SLS | Two Stage Least Squares |
| AA | Audit Analytics |
| AAER | Accounting and Auditing Enforcement Releases |
| ACFE | Association of Certified Fraud Examiners |
| AIC | Akaike Information Criterion |
| AICPA | American Institute of Certified Public Accountants |
| AMAC | Asset Management Association of China |
| AR | Abnormal Returns |
| ASIC | Australian Securities and Investments Commission |
| CARs | Cumulative Abnormal Returns |
| CAS | Chinese Accounting Standards |
| CCER | China Center for Economics Research |
| CEO | Chief Executive Officer |
| CFRM | Center for Financial Reporting and Management |
| CR | Capture-Recapture |
| CSMAR | China Stock Market and Accounting Research |
| CSRC | China Securities Regulatory Commission |
| DCE | Detection Controlled Estimation |
| DOJ | Department of Justice |
| EMH | Efficient Market Hypothesis |
| EU | European Union |
| FCA | Financial Conduct Authority |
| FINRA | Financial Industry Regulatory Authority |
| FSA | Financial Services Authority |
| GAAP | Generally Accepted Accounting Principles |
| GAO | Government Accountability Office |
| GDP | Gross Domestic Product |
| GMM | Generalized Method of Moments |

| | |
|---|---|
| ICI | Investment Company Institute |
| IFRS | International Financial Reporting Standards |
| IMF | International Monetary Fund |
| IPO | Initial Public Offering |
| LIWC | Linguistic Inquiry Word Count |
| LR | Likelihood Ratio |
| MD&A | Management's Discussion and Analysis |
| MOF | Ministry of Finance |
| MOST | Ministry of Science and Technology |
| OECD | Organization for Economic Cooperation and Development |
| OLS | Ordinary Least Squares |
| PWC | PricewaterhouseCoopers |
| QFII | Qualified Foreign Institutional Investors |
| R&D | Research and Development Expenditures |
| ROA | Returns on Assets |
| SAIC | State Administration of Industry and Commerce |
| SCAC | Securities Class Action Clearinghouse |
| SEC | Stock and Exchange Commission |
| SOEs | State-owned Enterprises |
| SPC | Supreme People's Court |
| SSSR | Split Share Structure Reform |
| ST | Special Treatment |
| VIF | Variance Inflation Factor |

# 1. Introduction

## 1.1 Background and motivation

Accounting fraud has received considerable attention from the public, press, investors, business community, accounting professions, academicians and regulators (Rezaee, 2005, Nor et al., 2010). A wave of high profile accounting scandals such as Enron, WorldCom, Tyco, Qwest and Global Crossing in the early 2000s and the collapse of Lehman Brothers in 2008 caused a significant degradation of trust in capital markets and concomitant inefficient capital allocation decisions (Throckmorton et al., 2015). These fraudulent activities often performed either individually or collectively at the top level of organizations lead to an estimated loss of $460 billion in market capitalization (Cotton, 2002; Karpoff et al., 2008).

As the world's second largest economy, corporate fraud is a major concern for China and its regulators face the severe challenge of addressing this misconduct (Li and Wu, 2007; Yang et al., 2017). A series of accounting fraud cases have hit the Chinese stock markets in the last decade, including Yin Guangxia, Lan Tian, Ke Long, Liang Mianzhen. Amongst these notorious cases, financial statement fraud committed by Yin Guangxia has been seen as China's Enron, resulting in an unprecedented crisis of investors' confidence (Zhu and Gao, 2011).

Yin Guangxia was a biochemical firm listed on China's Shenzhen stock exchange. Yin Guangxia's stock price jumped 440% in 2000, resulting from a massive increase in its reported net profits. However, an article published by *Caijing* Magazine in 2001 unveiled that this high-growth firm was suspected of manipulating its accounting report, which immediately drew attention from the China Securities Regulatory Commission (CSRC). The CSRC found that Yin Guangxia fictitiously inflated profits by 771 million Yuan ($116 million) through fabricating purchase and sales contracts, exportation declaration forms, value-added tax invoices, duty-free documents and financial bills. The external auditor of Yin Guangxia: Zhongtianqin, one of China's leading accounting firms, was also found guilty of complicity in the manipulation of these accounts. The

announcement of this fraud led to devastating losses to investors and creditors, with the stock price of Yin Guangxia plunging from 38 Yuan ($5.7) to 6 Yuan ($0.9) through 16 unparalleled historical limit-downs (Tong, 2005; Yang et al., 2007). Such a rollercoaster of boom and slump struck a blow to new-fledged Chinese stock markets and raised substantial concerns regarding the integrity of accounting professionals and the effectiveness of punishment and corporate governance mechanisms in China (Zhu and Gao, 2011; Chen, 2015).

The aim of this thesis is to examine the causes and consequences of accounting fraud in Chinese listed firms from 2007 to 2014. This is important to market participants e.g. investors, creditors and analysts as they all make investment decisions based on financial statement information disseminated to markets by listed firms (Rezaee, 2005). To accomplish this aim, the thesis identifies three research questions. First, the thesis examines how fraudulent financial reporting, punishments and institutional factors are associated. In particular, specific fraud techniques and punishments are identified and compared between non-reoffending and reoffending groups to understand corporate and regulatory behaviours relating to accounting fraud. Second, the effectiveness of different punishments are examined based on the shareholder valuation of listed firms. This research question assesses the economic consequences of fraud and considers previously ignored non-monetary 'name and shame' punishments and the impact of information leakage on punishment announcements. To detect fraud, effective corporate governance mechanisms need to be established. The third research question thus examines the relationship between mutual fund investment and accounting fraud. A bivariate probit model is used to overcome the incomplete detection problem. The model generates new insights not only about the determinants that cause fraud but also the factors that attract more regulatory attention and can deter fraud.

Some important fraud concepts are defined as follows. Generally, the term fraud is used to describe such acts as deception, bribery, forgery, extortion, corruption, theft, conspiracy, embezzlement, misappropriation, false representation, concealment of material facts and collusion. While there is no single accepted definition of fraud, all

definitions in regulations and literature share a common feature: the existence of deliberate dishonesty or deceit (Bonini and Boraschi-Diaz, 2013). From an economic perspective, fraud can be a rational behaviour provided the negative incentives of engaging in such activities do not exceed the expected benefits (Becker, 1968). Fraud can be classified in several ways, with the most common category being fraudulent financial reporting and misappropriation of assets (Rezaee and Riley, 2010). The subject for this thesis is fraudulent financial reporting as it often causes the most severe loss compared to other types of fraud (see Figure 1.1 below). Based on the U.S. Statement on Auditing Standards No.99, fraudulent financial reporting refers to intentional mis-statements or omissions of amounts or disclosures in financial reporting, in order to mislead financial reporting users. This effect leads to situations where financial reporting is not presented, in all material respects, in conformity with the Generally Accepted Accounting Principles (GAAP) (AICPA, 2002). As fraudulent financial reporting often involves the intentional use of incorrect, indefensible and misleading accounting methods to record financial statement items and is a part of creative accounting, the terms 'accounting fraud' and 'fraudulent financial reporting' (financial statement fraud) are used interchangeably throughout the thesis (Erickson et al., 2006; Tracy and Tracy, 2011; Lennox et al., 2013; Popescu and Nişulescu, 2014; Lisic et al., 2015).
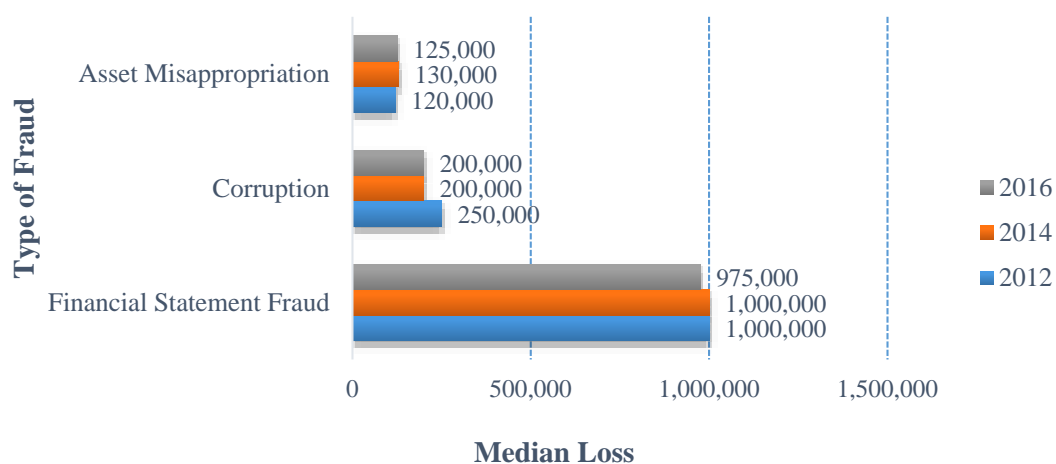


**Figure 1.1**: Median loss caused by different fraud (Association of Certified Fraud Examiners, hereinafter referred to as "ACFE", 2016).

The research context is explored for China due to the rapid development of the Chinese economy and capital markets. China began its economic reform four decades ago and has achieved a great success. After an average double-digit Gross domestic product (GDP) growth of 10.51% in the last decade, China has both the world's second largest economy and capital markets with economic output of $10.3 trillion and a market capitalization of $4.48 trillion in 2014 (World Bank, 2015, Xinhua, 2015). However, Chinese investor protection and law enforcement level is relatively weak (Chen et al., 2006; Chen et al., 2016). Public laws in China are often under-enforced or selectively enforced. For instance, securities law is an ineffective weapon for injured investors due to the negligible fines imposed by the CSRC. Private firms suffer from enforcement discrimination and receive a disproportionally large number of punishments from regulators. In addition, the Chinese court system is inefficient and bureaucratic and private enforcement often fails to compensate injured investors and deter potential misconduct (Xu et al., 2017). Subsequently, despite the rapid economic growth seen in China, a weak legal environment provides opportunities for the manipulation of financial statements (Jiang and Kim, 2015).

The thesis is also motivated by relatively high occurrence of repeat offences and the paucity of research on corporate recidivism. According to Aggarwal et al. (2015), 750 listed firms were punished for committing fraud between 2001 and 2011 and 172 of which were repeat offenders as identified by the CSRC. In addition, 111 firms were involved in fraud more than twice and one firm Fujian Sannong Co. Ltd was detected up to eight times during the 11-year sample period. The firm suffered from financial losses in several years and was ultimately acquired. There are several factors driving companies' recidivism, such as firms' accumulated financial pressure, the impact of peer misconduct and limited scrutiny by external auditors (Zheng and Chun, 2017). Besides these factors, limited punishments are arguably one of the main reasons for repeated fraudulent activities (Ding et al., 2012). Fredericks et al. (2016) find white collar criminals more likely to reoffend when they are given shorter sentences. However, as the impact of punishments on corporate recidivism receives little attention in Chinese

fraud studies, examining the association between recidivism and punishment has become a pressing policy concern.

When fraud is committed, punishments should be imposed on perpetrators. Punishment mechanisms are expected to cause substantial losses for fraudulent firms to increase the costs of committing fraud. The Association of Certified Fraud Examiners (ACFE) reports the typical organization losses 5% of its revenue to fraud each year with an estimated average loss of $2.7 million (ACFE, 2016). In China, the CSRC imposed administrative punishment decisions or gave pre-notifications of administrative punishments to 767 institutions and individuals in 2015, including monetary penalties and disgorgements totaling 5.4 billion Yuan (about $790 million) (CSRC, 2016). In addition to traditional monetary penalties, 'name and shame' enforcement mechanisms, have become a primary method of addressing accounting standards' enforcement in many nations, including China, Australia, the UK and the U.S.A. (Chen et al., 2005; Files, 2012; FCA, 2017; ASIC, 2017). Despite such sustained intervention by regulators, major accounting fraud cases continue to be uncovered, suggesting incentives to undertake fraud persist. Moreover, while the fines and 'name and shame' penalties are expected to provide a priori incentives for managers to refrain from fraudulent behaviours, the efficacy of these punishments remains an open question. Subsequently it is vital to assess the effect of different punishments on shareholder valuation of firms.

China's corporate ownership structure offers a unique research setting. Most Chinese listed firms have a highly concentrated ownership structure, with a single owner having the effective control of the listed firms. Many of these controlling shareholders are state and quasi-state institutions. The government also maintains a proportion of shares as minority shareholders in non-SOEs (Chen et al., 2016; Wu et al., 2016). State ownership has been previously portrayed as beneficial to Chinese listed firms by offering financial support (Wang and Yung, 2011), improving firm performance (Peng and Luo, 2000), attracting greater investments (Shen and Lin, 2016) and facilitating business in uncertain environments (Hou et al., 2013). However, whether there is a negative side of state ownership which needs examination, especially in relation to the intervention

of independent monitoring mechanisms and the occurrence of corporate fraud.

Compared to capital markets in western economies, Chinese capital markets are dominated by individual investors. As individual investors are affected by rumours and irrationality, Chinese stock markets display strong price fluctuations. Individual investors' herd-like behaviours can exacerbate the extent of earnings manipulation and reduce financial reporting quality (Dai et al., 2013). In response, the Chinese government has decided to encourage the development of institutional investors such as mutual funds two decades ago, in order to enhance corporate governance in listed firms and balance the rampant speculation by individual investors (Ding et al., 2013). Subsequently, mutual funds have considerably increased their ownership levels, with total net assets under mutual fund management increasing from $56 billion in 2005 to $1.3 trillion in 2016 (Aggarwal et al., 2015). However, whether mutual fund investment deters fraud remains an open question, as the level of investor protection in China's capital markets is low and prior studies provide mixed empirical evidence (Ding et al., 2013; Lin and Fu, 2017). Therefore, examining how mutual funds affect fraud can assist regulators in optimizing corporate ownership structure to achieve better financial reporting compliance.

## 1.2 Summary of main findings

This thesis empirically investigates the causes and consequences of accounting fraud in China between 2007 and 2014. Firstly, the thesis examines how recidivist fraudulent financial reporting, punishments and institutional factors are associated. Using content analysis, the thesis reports six major types of accounting fraud committed by Chinese listed firms, including false income statements, false balance sheets, false cash flow statements, improper financial statement consolidation, delayed disclosure of annual and interim reports and insufficient and false disclosure of information. 'Insufficient or false disclosure of information' has the highest incidence among the six types of

fraudulent financial reporting, which are mainly committed through insufficient and false disclosure of the related party transactions, investment status, accounting policies and accounting estimates. Accounting fraud is then divided into non-reoffending and recidivism groups and differences among preferred specific fraud techniques are compared. It is reported that first-time offenders prefer to omit or untruthfully disclose material information, while repeated-offenders prefer to manipulate revenue, cost and asset items.

Common forms of punishments imposed on fraudulent firms include rectification notices, fines and warnings. In contrast, self-disciplinary measures such as public criticism and public condemnation are used less frequently to punish firms. The association between recidivism and punishments is then descriptively examined. It is observed that the use of warnings and self-disciplinary measures appear to offer the least deterrence to future offending. This thesis also presents the features of offending and reoffending: 22% of offending firms are charged with fraud more than once and majority of recidivism occurs within two years. Moreover, regulators impose more severe punishments on repeat offenders. The relationship between recidivism and a range of regulatory and institutional determinants is also examined. This thesis finds self-regulatory measures (i.e. public condemnation) cannot prevent firms from engaging in recidivism, whereas firms with large proportion of institutional and state ownership are less involved in recidivism.

Secondly, the thesis examines the economic consequences of accounting fraud. Overall punishment has a significant and negative impact on the market value of fraudulent firms. The magnitude of the shareholder loss ranges from -0.5% to -1.1%, indicting a statistically but not economically significant impact on fraudulent firms. This is lower than previous Chinese studies (Chen et al., 2005; Firth et al., 2009), where fraud triggers -1% to -2% drop of cumulative abnormal returns (CARs), as data in these literature does not incorporate sanction decisions made by the CSRC regional offices. The thesis also finds information leakage occurs prior to the announcements of punishments. The magnitude of loss in the pre-event window is large and of a similar magnitude to the

largest loss reported around punishment announcements.

Using a fixed-effects model, the impact of different punishments on shareholder valuation of listed firms is examined. The thesis finds investors perceive punishments involving monetary penalties more severely than those without monetary penalties. Stock markets can also discriminate among different types of fraud and react less significantly to disclosure rather than income fraud. This is due to different perceptions of recognized and disclosed items, leading shareholders to value false recognition of income items more than false disclosure of items. As information leakage is indicated, the impact of punishments on shareholder valuation is then re-estimated in a pre-event period. It is observed that although non-monetary penalties trigger reputational losses, these costs have been moderated by information leakage. In contrast, monetary punishments 'speak very loudly', carry far greater reputational costs which are less affected by information leakage.

To prevent fraud, both preventative and punishment measures are proposed. Preventative measures refer to the establishment of effective corporate governance mechanisms. The thesis suggests the development of mutual fund investment in listed firms can improve financial reporting quality. Using a bivariate probit model, this thesis finds evidence that mutual fund ownership is associated with enhanced fraud detection, reducing firms' propensity to commit fraud. This supports Chinese regulators' efforts to develop mutual funds to address accounting fraud. Mutual funds can be divided into open-end funds and closed-end funds based on the redeemability of fund shares. It is reported that compared to closed-end funds, open-end funds help to deter fraud, indicating redeemability is a strong form of governance.

In terms of punishment measures, it is recommended that self-regulatory measures and rectification notices should be applied less frequently to address corporate offending and reoffending. Monetary penalties are relatively more effective methods of punishment with a significant impact on firm value and should be continuously used. A long term solution of improving enforcement systems in China is to encourage private enforcement relating to corporate fraud and introduce the U.S. style civil class action

mechanisms.

The thesis also finds that certain governance features and firm characteristics lead to more fraud. For instance, state ownership moderates the positive impact of mutual funds on fraud commission and fraud detection. Amongst firms with state-owned background, the ability of mutual funds to discipline managerial opportunistic behaviours is significantly reduced and mutual funds are more likely to tacitly collude with controlling shareholders or managers to expropriate minority shareholders' interests. In addition, firms with small supervisory boards and CEO duality are associated with higher fraud occurrence. It is also observed that firms with higher research and development expenditure intensity are caught less frequently by regulators, subsequently, lower costs of fraud detection provide these firms higher incentives to commit fraud. Accounting professionals and regulators should pay more attention to these governance mechanisms and firm characteristics and treat them as a signal of potential fraudulent activities.

## 1.3 Contributions

This thesis makes a number of contributions to the literature. Overall, three studies all use a hand-collected dataset of fraud and punishments based on regulatory sanction reports, opposed to commonly used electronic databases in China's corporate fraud studies (Hou and Moore, 2010; Liu and Li, 2015; Quan and Li, 2017) such as China Stock Market and Accounting Research (CSMAR) and China Center for Economics Research (CCER). This enables the thesis to avoid some of the problems associated with database deficiencies and underscores the importance of external validity checks for research that uses fraud data from the electronic databases. Specifically, a thorough comparision between hand-collected data and data available in the CSMAR or CCER database reveals several problems about the latter. For instance, these databases omit a few fraud events they are designed to capture; some of the events are unrelated to

accounting fraud and the efforts to cull non-fraud events may yield heterogeneous results among different studies (Karpoff et al., 2017); classification of fraud and punishment is ambiguous and over-simplistic; the initial public revelation date of fraud have errors. Yu et al. (2015) address this issue by employing hand-collected data of the first public disclosure of misconducts, but they have not identified instances of accounting fraud as distinct from other fraud. The thesis extends Yu et al. (2015) by manually coding and cross-checking each accounting fraud and punishment related data to ameliorate the problems arising from the use of electronic databases.

Prior studies on corporate fraud pay extensive attention to single fraudulent behaviours (Gerety and Lehn, 1997; Rezaee, 2005; Firth et al., 2011; Wu et al., 2016). Chapter four extends these studies by addressing corporate recidivism. Compared to an isolated incidence of misconduct, corporate recidivism is more culpable and has greater negative impact on firm reputation, market confidence, the image of accounting professionals and society as a whole (Zheng and Chun, 2017). There are prior studies examining optimal punishments imposed on recidivism based on theoretical models, with some suggesting harsher punishments imposing on repeat offenders while others suggesting the opposite (Rubinstein, 1980; Burnovski and Safra, 1994). The thesis uses empirical data and compares punishments imposed on both first-time and repeat offenders by Chinese regulators. It is observed the CSRC imposes more severe administrative punishments on repeat offenders although no regulation in China has required harsher punishments on recidivism. In addition, this is the first research that addresses the deterrence effect of self-regulatory measures in a China's context. Such findings can assist regulators in assessing the effectiveness of self-regulation and design more efficient penalty structure for misconduct.

Chapter five extends the work of Chen et al., (2005), Wu et al., (2016) and Quan and Li (2017) through providing a comprehensive examination of different punishments imposed by Chinese regulators on shareholder valuation of firms. 'Name and shame' non-monetary punishments are often omitted in assessments of accounting fraud, despite longstanding concerns that imposing fines can become unfair and inefficient

(Goodhart, 2017) or even amplify the behaviours of concern (Gneezy and Rustichini, 2000). Different from prior studies examining the effectiveness of fines, a fixed-effects regression is applied which overcomes the empirical and practical difficulties involved in conducting field experiments (Holmas et al., 2010). In addition, previous studies on information leakage commonly focus on analyst recommendations (Lin and Lu, 2015), mergers and acquisitions (Anagnostopoulou and Tsekrekos, 2015) and share repurchase (Hao, 2016). The thesis complements this stream of literature by addressing the impact of information leakage on regulatory punishments and providing new evidence that informed investors rationally give monetary penalties greater weights than others punishments. This enables policy setters to assess the effectiveness of punishments and set stringent regulations to curb information leakage and insider trading.

The literature on Chinese accounting fraud (Chen et al., 2005; Sun and Zhang, 2006; Zhu and Gao, 2011; Zheng and Chun, 2017) is extended by considering cases punished by the regional offices of the CSRC. The regional offices are an overlooked aspect of securities enforcement studies, despite accounting for more than 75% of the CSRC's staffing (Xu and Xu, 2017). They can issue both administrative and non-administrative sanctions and their annual enforcement outputs against fraudulent firms overwhelmingly outnumber those of the CSRC central offices (Xu et al., 2017). By incorporating sanction decisions of regional offices in this assessment, the thesis finds the CARs triggered by punishment announcements are lower than other Chinese studies (Firth et al., 2009; Wu and Zhang, 2014). This implies punishments imposed by regional offices do not generate economically significant impacts on listed firms. In addition, different supervisory measures they impose, which have never been discussed by previous studies, are addressed in this thesis. Empirical findings suggest these supervisory measures offer little deterrence against fraud and are not perceived as retributive punishments by investors. Subsequently, it underscores the importance for future studies to include these cases as they have a significant impact on the empirical results.

Chapter six contributes to the literature by alleviating ambiguity as to the monitoring

role of mutual funds in Chinese capital markets. Although mutual funds are often considered to be a monitor reducing information asymmetries, agency problems and maximizing shareholder value, the existing empirical evidence is mixed. For instance, Dai et al. (2013) express concerns as to mutual funds pursuing short-sighted investment behaviours, exacerbating earning management and decreasing earnings quality. Ding et al. (2016) find shareholdings held by mutual funds in China are too small for any effective monitoring role. Distinctly the thesis reports mutual fund investment is capable of disciplining firms detecting potential fraudulent behaviours. Moreover, the thesis contributes evidence as how open-end mutual funds are distinct from closed-end funds with regards to monitoring firms, extending Chan et al. (2014) work by showing redeemability is an effective form of governance.

The thesis also generates insights as to the role of state ownership in fraudulent firms. On one hand, firms with state-owned background are more likely to receive financial assistance from government authorities through the forms of bank loans or government subsidies, reducing the financial constraints and bankruptcy risks for such firms (Faccio et al. 2006; Chen et al., 2008). Subsequently, investors perceive the post-fraud performance of state-owned enterprises (SOEs) are more likely to recover and stock market reaction to fraud announcements is less negative in SOEs (Chen et al., 2016). On the other hand, the positive impact of mutual fund investment is moderated by state ownership. In China, the state either directly or indirectly owns virtually all mutual funds' management firms and more importantly, mutual funds engage in voting on behalf of minority shareholders. As a consequence, the state can apply pressure on mutual funds and the ability of mutual funds to discipline dishonest managers is significantly reduced (Firth et al., 2010).

Lastly, chapter six also contributes to the literature by addressing the partial observability problem through a bivariate probit model. Fraud studies often suffer from an incomplete detection problem: fraud is not observable until it has been detected. Prior studies using a standard probit or logit model, essentially treat detected fraud as all fraud and ignore firms that have committed fraud yet have not been caught (Jia et

al., 2009; Hou and Moore, 2010, Hou et al., 2013). In this thesis, the probability of detected fraud is considered to be the product of two latent probabilities: the probability of fraud commission and fraud detection. A bivariate probit model is thus adopted to quantify not only the determinants of fraud commission and detection but also the interaction between these two latent processes (Wang, 2013).

## 1.4 Thesis structure

The thesis is organized as follows. The next chapter provides a review of the related literature. The first section introduces the institutional background, including the four regulators of corporate disclosure, the CSRC enforcement procedures, common regulatory punishments and the unique features of Chinese stock markets, investors and corporate governance mechanisms. The next section elaborates the theoretical framework. Specifically, agency and fraud triangle theories are applied to explain the occurrence of fraud and recidivism. A theory of punishment, cost-benefit analysis and the efficient market hypothesis are used to interpret how to punish fraud. Also, both active and passive monitoring views are employed to examine whether mutual funds can deter fraud. The last section reviews prior empirical findings relating to research questions.

Chapter three outlines the research methodologies employed in the thesis. First, to examine the relationship between accounting fraud, punishments and recidivism, a content analysis, descriptive assessments and logistic regression models are used. Then, an event study and a fixed-effects model are adopted to examine the consequences of fraud and how effective are punishments for accounting fraud. Lastly, a bivariate probit model is applied to examine the monitoring role of mutual funds, which addresses a common problem in fraud studies: partial observability. The chapter reviews literature regarding research models used in similar studies and justifies the choices of the aforementioned models.

Chapter four examines the first research question: how fraudulent financial reporting, punishments and institutional factors are associated. Using a content analysis approach, the chapter first examines types and incidence of fraudulent financial reporting and compares the preferred fraud techniques between non-reoffending and reoffending firms. The association between punishments and recidivism and the characteristics of repeat offenders are then descriptively investigated. The occurrence of recidivism and its relationship with regulatory and institutional factors is also examined, in order to assist regulators design a more efficient penalty structure.

Chapter five examines the impact of different punishments for Chinese accounting fraud on shareholder valuation of listed firms. Using an event study approach, the overall impact of punishments on market value of fraudulent firms are first reported. The effectiveness of monetary penalties and non-monetary 'name and shame' penalties are then examined and it is proposed fines have been more effective. The chapter also discusses the effectiveness of punishments in addressing different types of fraud. This enables the research to explore whether investors give more weight to certain fraudulent behaviours than others. The impact of information leakage on punishment announcements is lastly discussed in order to identify whether reputational costs associated with punishments have been moderated by information leakage.

Chapter six examines the relationship between mutual fund investment and accounting fraud. Using a bivariate probit model, the likelihood of fraud is modelled as the outcome of two latent processes: fraud commission and fraud detection. The chapter first examines the role of mutual funds in detecting fraud and reducing fraud commission. Then, the research divides mutual funds into open-end funds and closed-end funds to compare which type of mutual funds can better discipline firms. Lastly, the impact of state ownership on mutual fund investment is discussed.

Chapter seven concludes the thesis. This chapter provides a summary of the main results and proposes policy recommendations for regulators and other gatekeepers. This chapter also discusses the limitations of the thesis and provides suggestions for future research. Figure 1.2 below presents the structure of the thesis.

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┌─────────────────────────────────────────────────────────┐
│              Chapter 1 Introduction                     │
│  The chapter introduces background, motivations, summary of │
│      findings, contributions and thesis structure       │
└─────────────────────────────────────────────────────────┘
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│            Chapter 2 Literature Review                  │
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│ incidence of │  │ for          │   │ between      │
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│            Chapter 7 Conclusions                        │
│  The chapter summarizes main findings, proposes         │
│  recommendations and discusses future research directions │
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**Figure 1.2**: Structure of the thesis.

## 1.5 Conclusions

Accounting fraud is a significant threat to the existence and efficiency of capital markets. This chapter identifies the research aim of the thesis: examining the causes and consequences of accounting fraud. To accomplish the aim, three research questions are structured and the motivation for these questions is addressed. First, as prior studies pay extensive attention to single fraudulent behaviours and overlook corporate recidivism, the thesis examines how recidivist fraudulent financial reporting, punishments and institutional factors are associated. Second, despite sustained intervention by regulators, major fraud cases continue to be uncovered, implying punishments may not produce sufficient disutility to outweigh gains from fraud. Subsequently, the effectiveness of different punishments are assessed through the shareholder valuation of listed firms. Third, China's capital markets are dominated by individual investors and the government authorities began to develop institutional investors two decades ago. However, whether institutional shareholdings in China can deter fraud remain an open question. Therefore, the thesis examines whether mutual fund investment can discipline managers and improve financial reporting quality.

This chapter also discusses the potential contributions the thesis makes to the literature. First, a hand-collected database is constructed to obtain fraud and punishment data, which overcomes the problems associated with using electronic databases. Second, this is the first research that assesses the relationship between corporate recidivism and punishments and the deterrence effect of self-regulatory measures in China. Third, the literature on Chinese accounting fraud and punishments is extended by considering cases punished by the regional offices of the CSRC using 'name and shame' non-monetary supervisory measures. Fourth, the thesis alleviates ambiguity as to the monitoring role of mutual funds in Chinese capital markets and the role of state ownership in fraudulent firms. Lastly, the thesis addresses the partial observability problem in fraud studies, which generates insights not only the determinants of fraud commission and detection processes but also the interaction between them. The next chapter reviews relevant literature relating to the research questions.

## 2. Literature review: the causes and consequences of fraud

## 2.1 Introduction

Accounting fraud is a deliberate attempt by firms to deceive and mislead financial reporting users by preparing and disseminating materially mis-stating financial statements (Zhu and Gao, 2011). Accounting fraud not only damages investors' economic interests but also undermines the integrity of the entire stock market (Conyon and He, 2016). This literature review chapter explores theories and empirical findings that are relevant to the research question: the causes and consequences of accounting fraud.

There are four major regulators of corporate disclosure in China i.e. CSRC, CSRC regional offices, stock exchanges and Ministry of Finance. The CSRC is the major securities regulator and its functions are similar to those of the U.S. Securities and Exchange Commission (SEC). Regulators can impose different punishments on fraudulent firms and the common punishments include fines, warnings, rectification notices, letters of warning, statements of regulatory concern, public criticism and public condemnation. China's capital market is dominated by short-sighted individual retail investors and the development of institutional investors such as mutual funds is encouraged by regulators (CSRC, 2016). Subsequently, regulators play an increasingly important role in protecting minority shareholders' interests.

The causes of fraud and recidivism are reviewed first. From an agency theory perspective, minority shareholders in Chinese listed firms face agency problems from both managers and state controlling shareholders. These agents may prioritize their own interests above minority shareholders, thus eliciting accounting fraud. As some firms repeatedly commit fraud, the motivations for fraud and recidivism are identified from the fraud triangle theory. Specifically, the interaction between corporate financial pressure, imperfect legal environment, the ineffectiveness of the CSRC and corrupt organizational cultures (i.e. high power distance and *Guanxi*) cause corporate fraud and recidivism.

The consequences of punishments for accounting fraud are then reviewed. Generally investors negatively view punishment information announced to the public. Subsequently, firms' share values fall significantly (Karpoff et al., 2008). The investor losses include both direct costs, such as regulatory fines and settlements and indirect costs such as lost reputation (Armour et al., 2017). Both direct and indirect costs of fraud should produce sufficient disutility to outweigh benefits from fraud to deter future fraud and make offenders pay a price for their offending (Becker, 1968). The effectiveness of fines is then discussed to identify whether fines should continue to be a feature of regulatory design.

The existence of accounting fraud has raised substantial concerns regarding the effectiveness of corporate governance in China. To reduce managers' fraudulent behaviours, good corporate governance codes need to be developed. Greater board independence, less CEO duality and larger accounting firms are expected to discipline managers. In addition, active institutional investors, such as mutual funds, have more incentives and abilities to monitor firms and minimize agency problems. Therefore, a review of prior findings associated with board characteristics, audit effectiveness, ownership structure and their impact on fraud are provided to suggest effective governance mechanisms for listed firms.

## 2.2 Institutional background

### 2.2.1 Regulatory bodies of corporate disclosure

China adopts a centralized approach[1] to regulatory enforcement, in which the CSRC plays a key role by inspecting fraudulent activities committed by listed firms and

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[1] Compared to China's centralized approach, the enforcement of Securities Law in the U.S.A adopts a multi-enforcer approach to securities fraud deterrence. In particular, the SEC, Department of Justice, Financial Industry Regulatory Authority, state attorneys and class action lawyers can enforce the Securities Law independently (Xu and Zhu, 2017).

imposing administrative sanctions or non-administrative sanctions to deter corporate fraud. The CSRC was established in 1992 and is an institution of the State Council (Li et al., 2014). Regarding its regulatory territory, the CSRC is a combination of the U.S. Securities and Exchange Commission and the Commodity Futures Trading Commission (Firth et al., 2011; Huang and Schoenmaker, 2014). The primary duties of the CSRC are to improve the efficiency of the Chinese stock market and protect minority shareholders' interests by establishing corporate disclosure regulations and promoting corporate governance principles to listed firms (Qu et al., 2013).

The CSRC has 38 regional offices across the country which are responsible for regulating firms incorporated in their jurisdictions (Li et al., 2014).[2] In particular, the regional offices exercise front-line supervisory obligations based on laws, regulations and mandates granted by the CSRC central offices. These obligations include supervising securities related activities of listed firms, preventing and dealing risks, investigating and taking enforcement actions against corporate violations and promoting investors' protection (CSRC, 2016). The CSRC regional offices generally address non-severe infractions by listed firms, whereas the CSRC central offices investigate and impose sanctions on major and serious violations.[3] The regional offices were only allowed to issue non-administrative sanctions before 2011 and had negligible enforcement outputs. This situation changed in 2011 when CSRC headquarters launched a pilot project which allowed the Shanghai, Guangdong and Shenzhen regional offices to issue administrative sanctions. A further notice issued by the CSRC headquarters granted all regional offices full authority to issue administrative sanctions in October 2013. Subsequently, regional offices have taken a more active role in

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[2] The delegation of power to regional offices also exists in the U.S. SEC, where 11 regional offices are located throughout the country to shoulder the responsibilities for investigating and litigating potential securities misconducts (Xu et al., 2017).

[3] The CSRC central offices issue administrative sanctions, and the CSRC regional offices mainly issue non-administrative sanctions (Xu et al., 2017). Administrative sanctions are imposed based on the *Administrative Penalty Law* and the *Securities Law*. Details are available at: https://www.cecc.gov/resources/legal-provisions/peoples-republic-of-china-administrative-punishment-law-english-and, http://onlinelibrary.wiley.com/doi/10.1002/9781119197201.app3/pdf (last visited on 17 July, 2017).

regulatory enforcement (CSRC, 2013; Xu et al., 2017).

The Shanghai and Shenzhen stock exchanges are self-regulators in Chinese capital markets, conducting front-line and self-regulatory supervision over listed firms and business activities. They issue non-administrative sanctions and supplement the regulatory efforts of the CSRC central office and its regional offices (CSRC, 2016). Unlike the U.S. stock exchanges which operate independently from the SEC, the CSRC *de facto* has effective control over these stock exchanges (Liebman and Milhaupt, 2008). For instance, the senior staff of the stock exchanges are nominated and appointed by the CSRC. Subsequently, it is virtually impossible for stock exchanges to enforce regulations conflicting with the CSRC's priorities (Xu and Xu, 2017).

The CSRC also closely cooperates with the Ministry of Finance (MOF) to address fraudulent financial reporting (Fu, 2010). The MOF generally issues administrative sanctions and supervises the implementation of accounting standards. The MOF has been in charge of formulating a series accounting systems and standards based on internationally accepted accounting concepts and practices, such as the new *Chinese Accounting Standards* (CAS), which has largely converged with the *International Financial Reporting Standards* (IFRS). The issuance of new CAS represents a change in the objectives of financial reporting and corporate disclosure in Chinese listed firms from providing information to government authorities for planning purposes, to meeting the financial information needs of external non-state investors (Qu et al., 2013). The MOF has jurisdiction over financial reporting of all Chinese firms (both listed and unlisted) and accounting professionals such as auditors (Lisic et al., 2015). Together with the CSRC, they have made continuous efforts to confront accounting fraud and maintain market integrity (CSRC, 2013).


*2.2.2 Enforcement procedures*

CSRC's enforcement involves coordination of the enforcement bureau, regional offices and the administrative sanction committee (OECD, 2011). The enforcement bureau is

in charge of the investigation procedures (Li et al., 2014). Generally, the enforcement bureau detects and accepts case leads from their routine supervision, on-site inspections and media reports. For disputed leads, further investigation and evidence collection is required for verification. Undisputed leads are analyzed and assessed.[4] Case leads are generally divided into three groups: leads under official investigation, leads to be investigated and other leads. For case leads under official investigation, priority is given and timely investigation is conducted; for case leads to be investigated, a preliminary investigation should be initiated; and other case leads are transferred to other relevant departments (CSRC, 2013). The enforcement bureau then files the case and works with the regional offices to formally investigate. A public investigation announcement is made at the beginning of formal investigation.[5] Following a formal investigation, the CSRC conducts an internal review to classify cases. Administrative offences are referred to the administrative sanction committee and criminal offences are referred to the appropriate judicial authority (CSRC, 2015; 2016).

Administrative cases go through trial procedures after being accepted and filed by the Administrative Sanction Committee. Before an administrative sanction decision is made, a notice will be sent to concerned parties stating the facts, causes and grounds for the sanctions to allow a defence to be submitted. Hearings can be held depending on the requests of the parties. When the defense or hearing is completed, the CSRC issues an administrative sanction and discloses this on its website (Li et al., 2014; CSRC, 2016). This enforcement procedure is illustrated in Figure 2.1.

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[4] According to the *Interim Provisions on Reporting Securities and Futures Violations by Whistleblowers* issued in 2014 by the CSRC, the case leads are accepted only if they meet all following conditions. First, the reported case falls within the range of the CSRC and the CSRC regional offices' regulatory responsibilities. Second, the name, identity and other information on violators (individual or organization) are provided. Third, the specific facts, case leads or evidences on the violation of laws or regulations are provided.

[5] The important information arising from an investigation announcement is that a firm has probably committed fraud against regulations, which is a piece of qualitative information. Investors have no clue regarding the nature, the methods and the extent of fraud (Wu and Zhang, 2014).

This research also compares the differences between enforcement procedures employed by the U.S. SEC and the CSRC to better identify the unique characteristics of the CSRC enforcement actions.[6] For the U.S. SEC, following a trigger event such as firms' self-disclosure of misconduct, restatements, audit departures and whistle blowing, evidence is gathered through an informal investigation. If the SEC finds sufficient reason to believe corporate misconduct did occur, an informal investigation proceeds into a formal investigation. During a formal investigation, SEC staff are authorized to issue subpoenas and access to firms' documents (Karpoff and Lou, 2010). Facts are developed to the fullest extent through interviewing witnesses, examining accounting records and trading data etc. Following the investigation, the SEC issues a 'Wells Notice' to notify firms and individuals planned enforcement actions and potential respondents can present a 'Wells Submission' to defend themselves. When a final sanction decision is made, the SEC releases findings and penalties through its Administrative Proceedings and Litigation Releases (SEC, 2017).

There are two unique characteristics of the CSRC enforcement procedures. First, compared to the SEC, whistleblowers play a less significant role in triggering the CSRC regulatory investigation. This arises from less protection for whistleblowers in China. The U.S. regulators encourage whistle blowing by offering monetary rewards. For example, the SEC's whistleblower program awarded over $57 million to 13 whistleblowers in 2016 (SEC, 2016). In addition, the government has promulgated a series regulations to ensure whistleblowers are not subject to retaliation, such as the *Sarbanes-Oxley Act of 2002* and the *2010 Dodd-Frank Wall Street Reform and Consumer Protection Act* (Beller, 2011). Distinctly, Chinese legislators seem to be indifferent to the potential suffering of whistleblowers. Although a few vague regulations have emphasized the prohibition of retaliation by employers, few legal actions can be filed based on them (Rui, 2015). Coupled with China's imperfect legal

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[6] This research chooses U.S. for comparison because the U.S. Securities Laws, related regulations and the enforcement mechanisms have been a model for many emerging economies. Emerging economies establish own enforcement systems by imitating that of the U.S. mechanisms and China is not an exception.

environment and weak law enforcement, a culture of silence is created, making potential whistleblowers reluctant to report a firm's fraudulent behaviours.[7]

Second, there are limited differences between CSRC's informal and formal enforcement procedures than in the SEC's enforcement procedures. In particular, during the SEC's informal investigation process, staff do not have authority to compel testimony or the production of documents by subpoenas. Instead, they rely on the cooperation of firms and related individuals from which information is sought. Only when an informal investigation becomes a formal investigation, SEC staff have the power to issue subpoenas compelling testimony or the production of documents. The investigation process is generally conducted privately to prevent the fluctuation of share price from any unconfirmed cases (SEC, 2005). There are few differences with regards to the CSRC's enforcement systems. Investigation measures and techniques taken in an informal investigation process can also be used during a formal investigation process, such as reviewing documents, collecting materials, improving and solidifying evidences. As the CSRC cannot impose civil sanctions, there is no power for them to issue subpoenas in either an informal or a formal investigation. Information from an informal investigation is not disclosed to the public, but if a formal investigation is proceeded, the investigation notification is publicly announced (CSRC, 2007).

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[7] According to the CSRC, there is no lenient punishment for fraud firms that whistle blows (CSRC, 2012). Chen et al. (2011) report lenient punishments are imposed on firms based on the proportion of state ownership rather than whistleblowing actions.
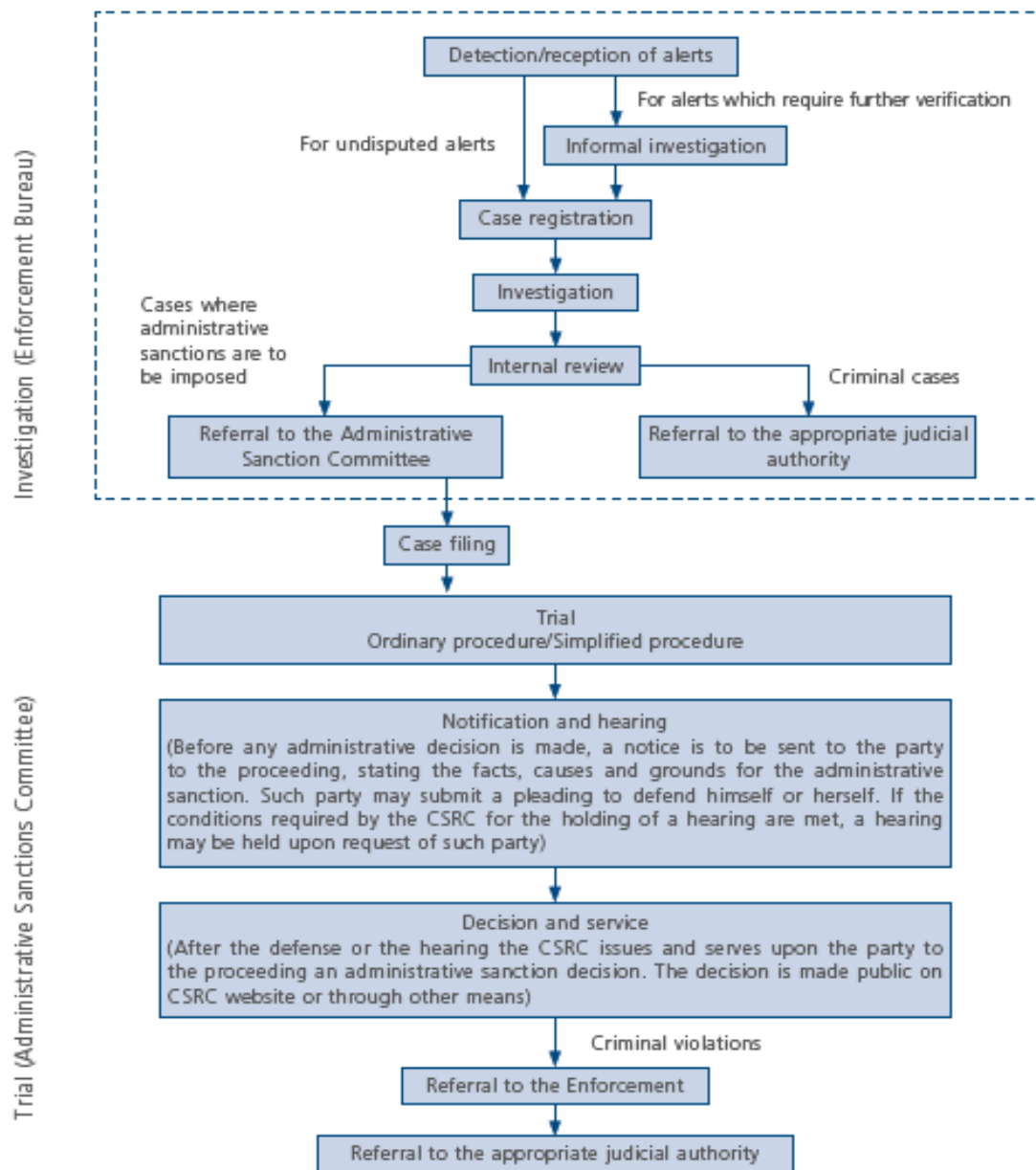
**Figure 2.1:** The CSRC enforcement procedures (CSRC, 2016)

*2.2.3 Regulatory punishments*

There are three types of regulatory punishments imposed by Chinese regulators to address accounting fraud, including administrative sanctions, supervisory measures and self-regulatory measures. These punishments overlap and differ in their nature and function. Supervisory and self-regulatory measures are non-administrative sanctions. Administrative sanctions include severe and conclusive punitive measures imposed by

the administrative organs, while non-administrative sanctions are less severe but time-sensitive measures implemented by regulators that perform front-line supervisory duties (CSRC, 2014).

Administrative sanctions include warnings, fines, disgorgement of illegal gains, orders to suspend operation, temporary suspension or rescission of permit or temporary suspension or rescission of license and administrative detention. The most frequently used sanctions are fines and warnings, punishments which regulators often use in combination. Other administrative sanctions are rarely adopted by the CSRC as they are not endorsed in the Securities Law. Administrative warnings are reputation-affecting punishments and are used to 'mentally alert' perpetrators (Zhang and Zhao, 2007). Fines are more severe than warnings, but there are statutory restrictions on the level of fine imposed by the CSRC. According to the Securities Law, fines imposed on listed firms for corporate misrepresentation range from 300,000 Yuan to 600,000 Yuan ($45,000 to $90,000).[8]

Supervisory measures are highly time-sensitive corrective measures implemented in connection with the compliance and prudence supervision of market entities to prevent risks and corresponding detrimental consequences from spreading (CSRC, 2014). In total, 18 different supervisory measures can be imposed by CSRC regional offices, including rectification notices, statements of regulatory concern, letters of warning, public statements and regulatory interviews etc.[9] Regarding the general problems detected by on-site inspection of a firm's financial statements, regional offices can issue statements of regulatory concerns. In moderately serious violations, regional offices can issue rectification notices, warning letters and public statements and conduct regulatory interviews with firms (CSRC, 2012).

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[8] The restrictions of monetary fines (300,000 Yuan to 600,000 Yuan) are imposed against corporate misrepresentation such as accounting fraud. In terms of market fraud such as insider trading, illegal income from insider trading is confiscated in addition to possible administrative monetary penalties up to five times the illegal income (Zhu and Wang, 2015).

[9] These measures are imposed mainly based on the *Administrative Measures for the Disclosure of Information of Listed Companies* and *Measures for the Spot Inspection of Listed Companies*.

There are two differences between supervisory measures and administrative sanctions. First, supervisory measures aim to stop and correct aberrant behaviours. The goal of administrative sanctions is to impose retributive punishments on violators for the damages they cause. In other words, regulators expect supervisory measures encourage fraudulent firms to return to a pre-fraud commission status. Therefore, violators only need to pay the costs that equal to the costs of returning to the status quo. In contrast, when an administrative punishment is imposed, violators not only make correction for their violations but also pay extra costs from legal penalties or reputational losses to ensure they do not reoffend. Second, an administrative sanction is a conclusive punishment imposed by the CSRC headquarters or the MOF, whereas a supervisory measure is temporary punishment decision made by the regional offices. Theoretically, if a listed firm does not amend their behaviours after supervisory measures are issued, more serious administrative sanctions will be applied (Hu, 2005).

Self-regulatory measures are imposed by the Shanghai and Shenzhen stock exchanges and common disciplinary measures include public criticism and public condemnation.[10] Public condemnation is a stronger sanction than public criticism, although these two punishments are both used to address minor offences. Self-regulators are more likely to impose public condemnation on violators in a bull stock market and impose public criticism on violators in a bear market (Lu and Wang, 2012).[11] Financial Industry Regulatory Authority (FINRA) is a self-regulator in the U.S.A. and different from China's stock exchanges, the FINAR imposes more severe sanctions on fraudulent firms. Firm suspension or expelling orders by FINAR are much more frequently used

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[10] There are other self-regulatory measures such as verbal warnings and business suspension, but these are rarely used by self-regulators.

[11] In a bull market, investors' demand and participation are higher. As the economy is performing well, managers are under pressure to report positive results, therefore they have a higher likelihood to commit fraud. Under such circumstances, self-regulators tend to issue more severe punishments such as public condemnation to punish fraudsters and reduce other firms' incentives to commit fraud. Conversely, in a bear market, firms' profitability fall, stocks are oversupplied and investor participation is low. Stock exchanges may issue less severe punishments such as public criticism as harsher punishments could further damage firm value and discourage market sentiment (Chen et al., 2011).

than those of China's counterparts. In addition, FINAR can impose monetary fines to discipline firms whereas China's self-regulators do not have the authority to impose fines (FINAR, 2017).

When self-regulatory measures work, administrative supervision would not intervene. However, when self-regulatory measures fail due to conflicts of interests between industry and minority shareholders, administrative supervision needs to be implemented to safeguard public interests. The CSRC, the regional offices, stock exchanges and MOF are required to position themselves based on their respective function and strictly carry out the aforementioned punishments. Although these punishments are different in their nature and applications, they should complement rather than replace one another (CSRC, 2014). If any of the administrative sanctions, supervisory and self-regulatory measures have been imposed on a fraudulent firm, corresponding punishments need to be documented within a firm's integrity record. The punishments would cause restrictions or have negative influence on firms' future administrative licensing, business innovation, refinancing and merger and acquisition activities. The CSRC also requires the provision of explanatory statements from fraudulent firms to ensure the stricter review of any future applications for administrative permission (CSRC, 2013).

A unique feature of China's enforcement mechanism is that regulators rely on administrative enforcement rather than civil charges to punish perpetrators. This is especially the case before 2002 when affected investors had no *de facto* rights to bring lawsuits against fraudulent firms for compensation. This situation changed after China's Supreme People's Courts (SPC) issued the *Notice Regarding Accepting Tort Cases Arising from Stock Market False Disclosure* (Notice) in 2002. This Notice conditionally allowed the lower courts to accept private litigation against corporate misrepresentations i.e. it required private litigation for compensation be based on the administrative sanction decisions made by the CSRC or the MOF, or on the courts' criminal judgments (Xu et al., 2017). This Notice has been criticized by scholars and investors for its 'administrative prerequisites', which prevents investors from bringing

meritorious civil charges.[12] In addition, only cases involving misrepresentation can be brought by harmed investors; cases associated with insider trading or market fraud are not allowed. Even if a case satisfies the prerequisite condition, it does not mean civil compensation claimed by investors is guaranteed. Only 25% administrative sanctions are brought to court (Huang, 2013) and 32% cases are either dismissed or have plaintiffs withdrawing cases without any compensation (Huang, 2017).

Unlike the U.S.A. where civil class action is an efficient enforcement mechanism to pool investors' claims into a single action, this mechanism is not endorsed within China's Securities Law. Chinese investors can only take individual or joint actions against fraudulent firms and as a result, retail investors face a collective action problem (Xu et al., 2017). Regulators claim timing is not appropriate to introduce class action mechanism in China since there is a lack of experienced judges and lawyers who comprehend accounting or securities matters. In addition, political concerns with maintaining social stability also contributes to local courts' reluctance to accept private litigation involving misrepresentation. The litigation accepted by courts includes conciliation, settlements or withdraw of lawsuits. Courts generally enter several rounds of meditation between firms and plaintiffs to ease investors' anger and minimize social impacts (Huang, 2017).

In order to better understand these enforcement mechanisms, the types of enforcement actions taken by the U.S.A., UK and China's securities regulators are compared in the Table 2.1. In the U.S.A., the SEC takes either administrative or civil actions against fraudsters. Similarly, the UK's Financial Conduct Authority (FCA) is also allowed to issue civil proceedings in the high court to address accounting fraud. However, the proportion of civil proceedings issued by the FCA is lower than the SEC. Overall, 57% cases were filed as civil proceedings by the SEC, 12 times higher than the number reported by the FCA (4.7%) in 2014. Civil actions are not allowed to be taken by the

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[12]  However, Huang (2017) advocates for the use of the administrative prerequisite for private enforcement. For instance, the prerequisite lowers the burden of proof for investors and benefits to local courts since such litigation demands a high level of professional knowledge.

Chinese securities regulators. The SEC has growingly relied on the monetary penalties with an average annual growth rate of 30% since 2000 (Steinway, 2014). In contrast, the FCA and the CSRC rely more on non-monetary penalties to punish perpetrators. For instance, the average use of financial penalties to the total enforcement actions taken by the FCA was 31% from 2011 to 2014 (FCA, 2015).

**Table 2.1**

A comparison of enforcement actions.

| Country | U.S. | UK | China |
|---|---|---|---|
| Securities regulator | SEC | FCA (FSA)[13] | CSRC |
| Civil actions can be taken by the securities regulator | Yes | Yes | No |
| Proportion of civil actions by securities regulator to total enforcement actions | High | Low | None |
| Major types of administrative sanctions | Cease and desist orders, suspension or revocation of broker-dealer and investment advisor registrations, censures, bars from association with the securities industry, monetary penalties and disgorgements. | Variation/ cancellation/ refusal of authorisation/ approval/permissions, financial penalties, public censure, prohibition and suspension | Warning, fines, disgorgement of illegal gains, order to suspend operation, temporary suspension or rescission of permit or temporary suspension or rescission of license and administrative detention |
| Greater reliance on monetary or non-monetary penalties? | Monetary penalties | Non-monetary penalties | Non-monetary penalties |

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[13] Since the 1st April 2013, the Financial Services Authority has been replaced by the Prudential Regulatory Authority and the Financial Conduct Authority.

The legal basis of the punishments includes both formal regulation and self-regulation. Self-regulation is imposed by the self-regulatory organizations (SROs). The SROs include organizations whose authority is recognized in law; membership-based organizations that act as *de facto* legal authorities by self-policing and creating rules and policies for their members (CFA, 2013). Subsequently, self-regulation refers to standards set and enforced by the SROs to govern and monitor their own members' conduct without the need for regulatory outside intervention (Dombalagian, 2006). In contrast, formal regulation refers to the standards that are established, specified, administered and enforced by the state or the state agencies (Bartle and Vass, 2005). In this thesis, laws and departmental provisions issued by the congress or government departments (e.g. CSRC and MOF) are recorded as formal regulation, whereas disciplinary rules issued by the stock exchanges are regarded as self-regulation.

Although the use of self-regulation may lead to more efficient stock markets and enable businesses to tap public equity and debt markets for capital at a reasonable cost, it has functional limitations (Carson, 2011). In particular, when there is a lack of effective competition, the SROs lack strong incentives to punish their own members and thus are reluctant to enforce self-regulation. In addition, minority shareholders have to go through a difficult process of damage claims and can barely afford costly actions. This is especially the case in China, where private litigations against corporate misrepresentation can be only accepted by courts if these are based on administrative sanctions decisions or criminal judgments rather than self-regulatory decisions (Xu et al., 2017). Moreover, compared to formal regulation, self-regulation contributes little in compensating investors for the losses result from the fraudulent activities. Subsequently, unlike in some Anglo-American jurisdictions, self-regulation plays a less important role in China (Zhou, 2014).

*2.2.4 Stock market, listed firms and investors*

The establishment of China's two stock exchanges: Shanghai and Shenzhen in 1990 and 1991 respectively is the consequence of economic restructuring i.e. state-owned enterprises reform. The objectives were to modernize the operation and management of listed firms. Subsequently, a large number of SOEs have restructured into joint stock companies and begun to raise capital funds by implementing initial public offerings (IPO). By issuing shares publicly, SOEs have been partially privatized while remaining under majority government control. This process allows SOEs to achieve economic profits that extend beyond their original social and political objectives (Yang et al., 2017).

Chinese stock markets are characterized by a unique classification of shares and trading restrictions. Shares issued by listed firms are classified into A-shares, B-shares and H/N/S/L-shares. A shares can only be sold to domestic investors and traded in Chinese Yuan, while B shares are issued to foreign investors and traded in either U.S. or Hong Kong dollars. H/N/S/L-shares are cross-listed shares traded on overseas stock exchanges (Yu and Ashton, 2015).

The A-shares are further categorized into state shares, legal person shares, employee shares and tradable-A shares. State shares are held by the State Asset Management Bureau (SAMB) of the central or local government and not publicly traded. Legal person shares are retained by domestic institutions including stock companies, state-private mixed enterprises, non-bank financial institutions and SOEs that have at least one non-state owner (Qu et al., 2013). Legal person shares are not traded and most are ultimately controlled by the state. Employee shares are retained by the workers and managers of listed firms. They are typically issued with substantial discounts within the initial public offerings (Su and He, 2012). Tradable A-shares, representing about 40% of a firm's total shares issued, are held by the public and are freely traded on stock exchanges (Yang et al., 2017).

The split share structure that divides the shares of listed firms into non-tradable and

tradable shares creates a misalignment of interests between state and private shareholders. Having realized the problems within the split share structure, the CSRC announced its Split Share Structure Reform (SSSR) in 2005 with the intention to carry out the conversion of non-tradable shares into freely tradable shares.[14] Although this conversion process has been completed, the state remains the controlling shareholder for most listed firms.[15] The state's retention of controlling stocks in a listed firm creates an agency conflict between itself and minority shareholders. State owners may expropriate the wealth of minority shareholders through asset misappropriation, facilitated by related party transactions and provision of guarantee events between listed firms and their parent entities (Qu et al., 2013). The state's dominant control of listed firms creates an absence of residual claimant property rights.[16] Subsequently, the state's incentives to monitor firm managers are weakened (Wong, 2014).

During its reforms, China has imported concepts and practices from western economies and produced a unique Chinese corporate governance structure. According to the *Company Law*, there are three important internal governance mechanisms, including general meetings, the board of directors and the board of supervisors. The appointment of the board of directors and supervisors is held during general meetings. The board of directors is a decision-making body and appoints senior managers, makes business

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[14] When a listed firm is selected to implement the reform, it begins with negotiations of compensation payout plan between non-tradable and tradable shareholders. Most Chinese listed firms completed their negotiation by the end of 2008, and correspondingly the non-tradable shares became tradable by the end of 2011 (Chen et al., 2016).

[15] As indicated in the 'Guidelines on the Reform of Listed Firms Split Share Structure', the main purpose of the SSSR is not necessary to terminate state ownership or control but to make state-owned shares more responsive to the stock market (Cumming et al., 2015). In other words, there is no selling of all state shares in the reform. By converting non-tradable shares into tradable shares, new criteria can be used to evaluate the performance of governments i.e. the market value of state-owned shares, instead of the book value of SOE assets as before the reform (He et al., 2017). The thesis examines the impact of SSSR on the empirical results. It is reported that firms completing the SSSR are related to greater occurrence of corporate recidivism and negative stock market reaction when the fraud is publicly revealed (see Appendices 1.11, 2.10 and 3.12 for detailed discussion).

[16] The government officials, who have control over state shares, are not the *de facto* residual claimants. Property rights were recognized in China's legislative system for the first time in 2004. However, the definition of property rights remains ambiguous and the violation of property rights by local governments remains common (Liu, 2015).

decisions, calls general meetings and determines internal governance mechanisms (Yang et al., 2017). The CSRC requires that independent directors should constitute no less than one-third of the board. The primary duties of board of supervisors are to supervise and assess directors and senior managers. In this capacity, supervisors attend board meetings as non-voting participants. Supervisors also oversee a firm's financial affairs and propose temporary shareholder meetings when necessary (Jiang and Kim, 2015). The CSRC also encourages the establishment of audit committees under the board of directors. However, this is voluntary rather than a mandatory requirement. Subsequently, many listed firms have not yet established audit committees (Lee, 2015).

Chinese stock market is dominated by individual retail investors, whose trading behaviour is characterized as speculative and irrational. Individual investors often have limited knowledge of stock markets and are likely to follow other investors. By the end of 2015, individual investors held 30% of total stocks while professional institutions held 14% of stocks in the A-share market. Individual investors also create 87% of the trading volume compared to only 10% for professional institutions (CSRC, 2016).[17] The dominance of individual investors in China's capital market arises from the high saving rate in China, where individual investors hold large amounts of money that can be invested. Chinese investors also have limited choices regarding investments and are often limited to bank deposits, real estate and stock markets. However, interest rates of bank deposits often lower than market rates and strict regulations are imposed on the private ownership of properties. As a result, stock market investment has become the preferred choice for individual investors (Hilliard and Zhang, 2015).

The short-sighted and less-knowledgeable nature of individual investors makes monitoring controlling shareholders and managers challenging. Institutional investors, who pool the investments of multiple individuals, have become an increasingly important vehicle to reduce the stock price fluctuations caused by herding behaviours of individual investors and protect minority shareholder interests. The CSRC has made

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[17] Besides retail investors and professional institutions, general institutions (e.g. state owners) held 56% of total stocks and create only 2% of the trading volume (CSRC, 2016).

substantial efforts to develop institutional investments since 2000s (Firth et al, 2016).[18] At the forefront of these efforts is the development of mutual funds. During the last decade, Chinese authorities have cultivated mutual funds. The first closed-end funds with 20% of the capital in bonds and 80% capital in stocks were introduced in 1998. Open-end funds were subsequently launched in 2001 (Xiang et al., 2014). Since then mutual funds have grown rapidly and have played an important role in the privatization and restructuring of Chinese transitional economy (Rao et al., 2016). Chinese regulators expect the introduction of mutual funds can stabilize high trading activities on secondary stock markets and improve the corporate governance of listed firms. By the end of 2016, China had 3867 mutual funds, including 3564 open-end funds and 303 closed-end funds. The scale of net assets under management of mutual funds reached to $1.3 trillion in 2016, up 9% from 2015 (AMAC, 2017; Wong, 2017). There were approximate 200 million retail investors in mutual funds and more than 85% of them held assets less than 50,000 Yuan (about $7,500). In terms of rate of returns, mutual funds have cumulatively provided about 1.5 trillion Yuan ($225 billion) since they were first offered (CSRC, 2017).

China started to open up its stock market to foreign investors via the Qualified Foreign Institutional Investor (QFII) program in 2002. Under the QFII mechanism, selected foreign institutional investors can invest in the domestic A-share market under a quota system. There are restrictions regarding the investments which can be made by the QFII. In particular, a single QFII licensee cannot hold more than 10% of a firm's shares and the total shares held by all QFII investors for any company can't exceed 30% of its total outstanding shares (SZSE, 2016). QFII has developed rapidly in the last decade i.e. the number of firms with QFII increased from 12 with a total investment of $1.9 billion in 2003 to 294 with investments amounting to $81.1 billion in 2015 (Jiang et al., 2017).

Securities firms in China include investment banks, brokerage firms and asset

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[18] Common institutional investors in China include mutual funds, Qualified Foreign Institutional Investors (QFII), securities firms, insurance firms, pension funds, trust firms, financial firms and others (Aggarwal et al., 2015).

management companies. The total assets and net assets of securities companies reached RMB 6.42 trillion ($1.02 trillion) and RMB 1.45 trillion ($0.23 trillion) in 2015, a year on-year increase of 59% and 60% respectively, demonstrating the rapid growth of the size of securities companies (KPMG, 2016).

Insurance firms have been permitted to hold equity positions since October 2004. During the past decade, Chinese regulators have gradually increased the proportion that an insurance firm can be allowed to invest into equity assets, from 5% to 30% (Aggarwal et al., 2015).[19] However, the proportion of insurance investment in the Chinese stock market is only one third that of the US capital market. Subsequently, insurance depth and density in China are much lower (Hu and Chen, 2016).[20] With respect to the size of insurance firms, there were 194 insurance firms with total assets under management reaching to RMB 123.6 billion ($19.6 billion) by the end of 2015 (Jiang et al., 2017).

Pension funds were allowed to invest in stock markets from 2003. The National Social Security Fund (NSSF) is the major type of Chinese public pension fund. This NSSF serves as a strategic reserve fund, accumulated by the central government to support future social security expenditures and other social security needs. However, their investment is limited. Under current regulations, the social security funds' investments in the capital market cannot exceed 40% of their total assets (Wang and Chen, 2017). The NSSF has grown significantly in its size and influence, for instance, the NSSF had secured a cumulative investment revenue of RMB 790.7 billion ($125 billion), boosting its total assets under management to a fresh high of RMB 1.91 trillion ($303 billion) by the end of 2015 (Lee, 2016). Nevertheless, the gap between the Chinese and US pension funds is still large: the assets under the management of US pension funds were 55 times

[19] Insurance firms are only permitted to invest in stocks indirectly through asset management products operated by fund institutions (Hu et al., 2018).

[20] Insurance depth is an area's insurance income accounts to its GDP. It reflects a country's insurance industry in the importance to macroeconomy. Insurance density refers to the insurance expense per capital based on the local population. It reflects the degree to which the area national insurance, the development level of a country's economy and the insurance industry.

larger than those of China and half of assets were invested in stocks (Hu and Chen, 2006). Subsequently, pension funds in the U.S.A. play a more important role in maintaining a competitive, efficient and stable stock market.

Trust firms have emerged since 1996 and gradually become an important institutional player in the Chinese capital market. The *Trust Law of the People's Republic of China* was enacted in 2001, which consolidated various forms of trust investments in the stock market. Trust firms were banned from opening new securities accounts in 2009 due to speculative use of multiple accounts held by trust companies in initial public offerings. However, they were allowed to invest in stocks again in 2012 as the CSRC would like to boost stock prices by increasing demand (Wang et al., 2013; Aggarwal et al., 2015). Guided by the laws and regulations, trust companies have also achieved remarkable growth in recent years. Total assets managed by Chinese trust companies reached RMB 16.3 trillion ($2.6 trillion) at the end of 2015, a 16.6% increase compared to 2014 (CTA, 2015). Such growth has slowed down recently due to broader economic slowdown and more competition from other corners of China's asset management segment (Lockett, 2016).

## 2.3 Theoretical framework

### 2.3.1 Why fraud and recidivism occurs?

Corporate fraud occurs when a firm's managers take actions to deceive investors and other stakeholders. It often involves corruption, lying about facts, insufficient or false disclosure of information, manipulation of assets and profits and covering up systematic problems (Baucus and Near, 1991). There are benefits that managers can obtain from their fraudulent actions such as improved performance or increases in compensation. However, fraud lowers market participants' confidence in audited financial reporting and damages minority shareholders' interests, particularly those who hold a firm's stocks for long-term (Shi et al., 2016). The common theoretical framework for

understanding the causes of fraud is agency theory. Principal-agent conflicts arise when agents cannot be effectively disciplined and prioritize their own benefits above those of principals (Fama and Jensen, 1983). Such conflicts are amplified when there is an absence of complete information and credibly enforceable-contracts, resulting in agents (i.e. managers) behaving opportunistically at the expense of principals (i.e. shareholders) (Conyon and He, 2016).

Agency costs associated with the separation of ownership and control are considerably higher when there are defects in corporate governance mechanisms. Inappropriate governance mechanisms elicit fraud as they cannot provide effective monitoring of management in the financial reporting process (Lin and Hwang, 2010). For instance, equity–based compensation can be a double-edged sword, inducing managerial effort but encouraging managers to manipulate earnings (Goldman and Slezak, 2006). Moreover, most independent directors in Chinese listed firms are *de facto* friends of the CEOs and are recruited without integrity checks. Subsequently, the recruitment process is just for 'window-dressing' the board and satisfying regulations (Clarke, 2006; Liao et al., 2009). The friendship ties between CEOs and independent directors are expected to increase board members' loyalty to CEOs, providing opportunities for fraud. A weak supervisory board can also lead to more fraud and higher agency costs. Supervisory boards in China are often described as a 'censored watchdog' and they cannot contribute significantly to firm efficiency (Yang et al., 2011).[21] Furthermore, supervisors are not equipped with the ability to select directors or veto firm decisions, making their roles more decorative than functional (Su and He, 2012).

Agency conflicts not only exist between managers and shareholders, but also between controlling and minority shareholders. This is particularly the case in Chinese listed firms where large controlling shareholders enable wealth to the tunneled from minority shareholders (Yu and Ashton, 2015). The dominant state and minority non-state

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[21] Concerns exist as the functions of supervisory board and internal audit committee both involve monitoring, having both a supervisory board and an audit committee may result in overlapping, redundancy and even conflicts between the two (Lee, 2015).

investors pursue disparate corporate goals with state owners pursuing political objectives (e.g. lower output price and higher employment rate) as corporate priorities (Song et al., 2015). These policy burdens reduce SOEs' performance, thereby increasing the probability of SOEs to commit fraud (Liu and Li, 2015). In addition, intervention from controlling state shareholders can reduce firms' demand for high-quality external auditing. Subsequently, firms often hire local small-scale accounting firms of lower quality, boosting the probability of fraud and sacrificing minority shareholders' interests (Wang et al., 2008).

The existing literature on financial fraud focuses on single fraudulent actions with recidivism receiving less attention. Some listed firms repeatedly commit fraud, which poses considerable threats to the existence and efficiency of capital markets. Corporate recidivism has devastating consequences: firms collapse, market confidence erodes, the image of the accounting profession becomes tarnished and managers are fired, prosecuted, and incarcerated (Kuang and Lee, 2017). Recent decades have witnessed a dramatic increase of corporate recidivism in China. According to the CSRC, 266 listed firms were punished for committing fraud between 2001 and 2008, and 93 of which were repeat offenders (CSRC, 2009). Therefore, the prevalence of recidivism and its devastating consequences are reasons for further investigation. The following section applies a fraud triangle theory from pressure, incentive and rationalization perspectives to interpret the causes of fraud and recidivism (see Figure 2).

Financial pressure contributes to the occurrence of corporate fraud and recidivism. Financial pressure generally stems from meeting third party expectations. The third party, such as stock exchanges and financial analysts, has substantial impact over investor opinion, stock price and listing status. Their decisions or forecasts can place excessive pressure on managers to achieve short-term performance targets in order to avoid negative stock market reactions. The pursuit of short-term financial targets results in managers repeatedly falsifying financial statements (Chen et al., 2016). In China, when a listed firm reports losses in two consecutive years, a Special Treatments (ST) label is added to its trading symbol. A *ST label is designated to a listed firm when it

incurs three-year consecutive losses, providing warning of being delisted (Yang et al., 2012). Subsequently, firms have strong incentives to participate in fraud repeatedly to prevent or remove detrimental ST or *ST status.

Financial pressure: meeting
third party expectations and
avoiding delisting

Reasons of corporate

fraud and recidivism

Opportunities: imperfect legal
environment in China and the
ineffectiveness of the CSRC

Rationalization: corrupt
organizational culture e.g. high
power distance and *Guanxi*
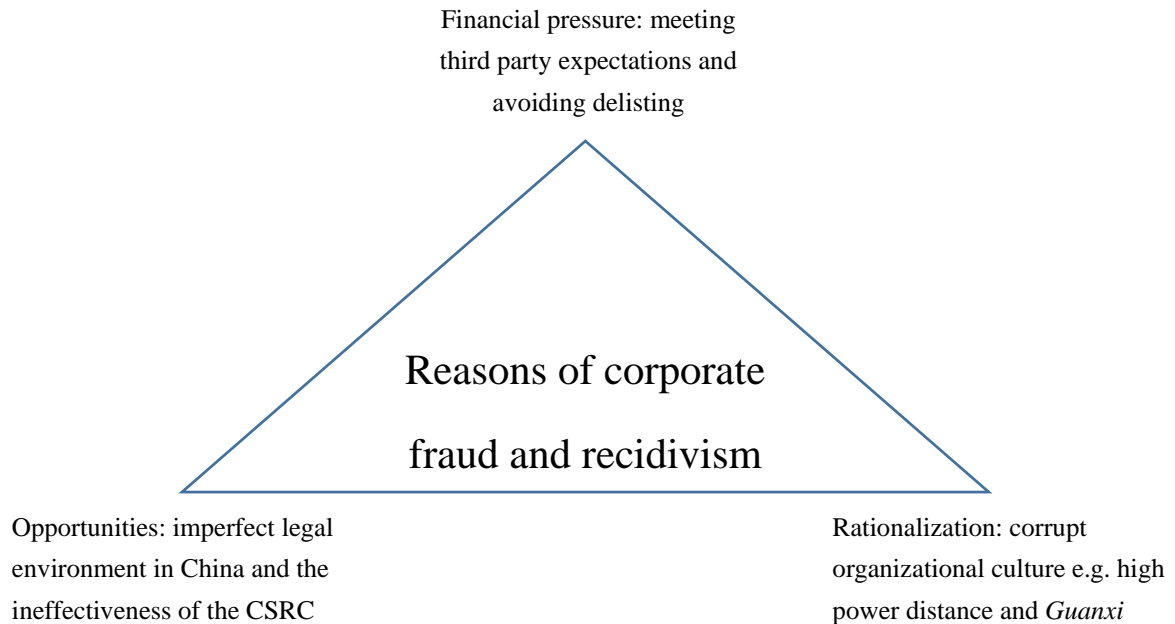
**Figure 2.2:** Main factors of the fraud triangle theory

An imperfect legal environment also provides opportunities for corporate fraud. A country's institutional and legal environment, including its process of enacting and enforcing laws and regulations, is crucial for reducing fraud and reoffending and creating corporate sustainable growth. Although China has issued many laws and regulations against accounting fraud during the past decade, investor protection remains weak (Jiang and Kim, 2015). According to a report issued by the China's Supreme People's Court, some judges and court staff enjoy privileges and remain indifferent to the rights of litigants. They take bribes and deliver wrong verdicts, damaging the interests of litigants, reducing trust in the legal system and engendering fraud (Xinhua, 2014). Relative to many western economies, investor protection in China is imperfect and law enforcement is weak allowing controlling shareholders in Chinese listed firms to tunnel wealth from minority investors (Chen and Rezaee, 2013).

A few studies develop indexes to measure the level of legal enforcement and investor protection in China. For instance, Allen et al. (2005) find relative to other major

emerging economies, shareholders and creditors receive lower protection in China. The measure of anti-director rights is only higher than India and Mexico. Allen et al. (2005) also compare China's law enforcement level to other countries reported in La Porta et al., (1998)'s samples and find China's law enforcement index value is significantly below the average.[22] Katelouzou and Siems (2015) compare the development of shareholder protection among 30 countries in last 24 years. They find China has the biggest increase in shareholder protection over last 24 years. However, 'law in books' and 'law in action' can be divergent and it is easier to enact laws and regulations than implement them. With one of the highest scores in the shareholder protection index, the level of legal effectiveness in China remains poor throughout the research period. In this regard, China suffers similar problems to those experienced by other developing economies: a weak legal environment. This increases the opportunity of corporate fraud and recidivism.

The ineffectiveness of the CSRC can also lead corporate fraud. In particular, limited regulatory resources make it difficult for regulators to effectively deter accounting fraud, increasing the likelihood of recidivism. By the end of 2015, the CSRC has 3,097 staff with an annual budget around 160 million USD.[23] In contrast, the U.S. SEC has 4,301 staff with an annual budget nearly 1,700 million USD. Although two regulators have a similar number of staff, the absolute budget of the CSRC is only about one tenth of that of the SEC (Xu and Xu, 2017). Even worse the CSRC has only approximately 300 staff in the examination division involved in enforcement activities. The SEC's enforcement division has more than 1100 staff, with about 50% being investigative attorneys.[24] The International Monetary Fund (IMF) Report (2012) documents: the CSRC's budget is

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[22] La Porta et al. (1998) compare the quality of legal system among 49 economies. They find common law countries have the strongest while civil law countries have the weakest legal protection of shareholders. China is not included in their sample.

[23] All revenues and expenses of the CSRC are included in the central government's budgets (CSRC, 2016).

[24] The report was issued by the U.S. Securities and Exchange Commission in 2009. Available at http://www.gao.gov/assets/290/288156.pdf (last visited 18 August 2017). However, this research cannot obtain the recent staffing number who work in the SEC's enforcement division based on the recent SEC's annual report.

sufficient to fulfill operational responsibilities, but it is limited in terms of the staff salaries; especially for attracting and retaining highly qualified employees. In addition, the CSRC's budget is largely based on historical expenditure levels. The increase in the CSRC budget is not linked to the size of the stock market they need to regulate, which weakens the incentives of the enforcement staff to effectively monitor firms, thus providing opportunities for corporate fraud and recidivism.

Rationalization strategies allow offenders in a corrupt culture to view themselves as moral and ethical individuals, which frees them from any pangs of conscience that would deter them from committing recidivism (Rabl and Kühlmann, 2009). If an organization develops a corrupt culture, employees may implement fraudulent transactions, uphold corrupt relationships and cover their tracks to protect the firm. Corrupt organizations may perceive themselves fighting a war, which results in their taken-for-granted assumption that 'the ends justify the means'. Subsequently, employees not only repeatedly commit fraud individually and collectively but also punish colleagues who refuse to engage in fraud (Campbell and Goritz, 2014). The following section introduces two important cultural elements: power distance and *Guanxi* and their impact on recidivism.

Chinese culture is characterized by high power distance. Power distance refers to the extent to which less powerful members of organizations within a country accept that power is distributed unequally (De Mooij and Hofstede, 2002). In a corporate setting, power is often centralized by directors and managers and subordinates unlikely to question those in authority (Hughes et al., 2009). High power distance in China weakens corporate internal monitoring and intensifies the agency problems in the corporate governance, providing opportunities for fraud and recidivism. This is especially the case for SOEs where operational objectives are set by the government authorities (Liu and Zhang, 2017). Subsequently, firms shoulder more policy burdens including controlling sensitive industries, improving employment rates and wages (Fan et al., 2007). Coupled with high power distance, independent directors and supervisors as corporate subordinates are unlikely to challenge managers' decisions incorporate

with political considerations and reveal fraudulent activities (Irwin, 2012).

*Guanxi* also plays an important role in Chinese organizational culture (Hwang et al., 2008). In Chinese, *Guanxi* refers to the networks of informal relationships and exchange of favours which influences business activities. *Guanxi* is deeply rooted in Chinese culture and is one of the primary factors governing business success. It is important that group members exchange favours with each other and meet the expectations of other members in the *Guanxi* circle. If they fail to do so a loss of reputation and trust will follow (Du et al., 2015). Many Chinese listed firms actively build *Guanxi* with regulators in order to derive gains from their connections (Wang et al., 2017). For *Guanxi*-connected firms, political resources can bring firms certain privileges in the regulatory outputs: punishments may be eased or even avoided (Wu et al., 2016). In addition, regulators are reluctant to trigger investigations and enforce regulations (Hou and Moore, 2010). Business *Guanxi* can also cause whistleblowers to forgo their independence and auditors to collude with managers and become willing participants of fraud (Pang and Lo, 2017). Subsequently, *Guanxi*-connected firms have less incentives to supply high-quality financial reporting, increasing the likelihood of corporate fraud and recidivism.

### 2.3.2 How to punish fraud?

When fraud is committed, people expect punishments are imposed on the perpetrators. Theories of punishments are also theories of how to justify the use of coercive state power to sanction people. By installing a sanctioning system, policy makers base their decisions on the idea that punishments prevent future violations and offenders pay a price. Such views are the primary goals of punishments, namely deterrence and retribution (Cotton, 2000).

Retribution is one of the oldest and basic justifications for punishments and is based on the principle of '*lex talionis*' (an eye for an eye and a tooth for a tooth) (Dutcher, 2005). The function of retribution is to punish perpetrators as 'payback' for their illegal

behaviours. Retribution emphasizes punishment fits the crime and fraudsters establish reciprocity by having the perpetrators suffer in proportion to the harm they have imposed on others. A retributivist punishes because the moral culpability of a fraudster justifies the imposition of proportional, just and moral punishments (Jiang and Wang, 2008). Therefore, punishments under a retributive view are also termed the 'just deserts' theory (Zhang et al., 2017). In contrast, deterrence justifies punishment on the basis that it creates disincentives for those contemplating committing fraud in the future (Hallevy, 2009; Rich, 2016). In particular, when a crime is committed, punishments should discourage them from offending or re-offending. A punishment thus succeeds in being a deterrent when it instills a sense of fear in the mind of the perpetrators and potential perpetrators (Henning, 2015; Sharma, 2016).

The way punishment influences moral norms is affected by how punishment is perceived. Mulder (2016) examines two competing preferences regarding the perception of punishments, including retribution and compensation. Punishments sometimes are regarded as retributive, implying punishments serve the perpetrator his or her just deserts. Alternatively they can be seen as compensatory, used to make up for the negative consequences of fraudulent activities. When a punishment is interpreted as retributive other than compensatory in nature, it is more likely to frame the undesired behaviours with respect to shared moral standards. Empirical support for this can be found in Kurz et al. (2014). Specifically, their experiment introduces a financial penalty imposed on participants who arrive late and examines behavioral differences between a group that punishments are framed in a retributive way and a group that punishments are framed in a compensatory way. Punishment notices are sent through emails using either retributive wordings or compensatory wordings to different groups.[25] It is observed that participants who read the retributive wordings arrive earlier than the

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[25] Participants in the retributive group read the following emails: 'latecomers will cause large inconveniences and for this reason, they will forfeit £2 if more than 15 minutes late'. In contrast, participants in the compensatory group read the emails as follows: 'arriving late might hamper the ability of completing the session, which has financial implications for the research project and as a means to compensate for this, latecomers will forfeit £2 if more than 15 minutes late'.

participants who read the compensatory wordings.

Severity of punishment represents how undesired the punished behaviours are. Logically, severe punishments trigger more retributive concerns than the mild punishments. Serious fraudulent behaviours are often more severely punished than less serious fraudulent behaviours. Subsequently, corporate compliance with regulations is higher when punishments are severe (Goslinga and Denkers, 2009). Mulder et al. (2009) find that severity of punishments affects moral disapproval regarding the punished behaviours. In particular, when certain fraudulent behaviours are severely punished, stronger moral norms are evoked regarding the rule-breaking behaviours and higher social disapproval towards rule-breakers than when such behaviours are mildly punished. This is especially the case when punishments are implemented by trustworthy authorities and in a fair way (Mulder, 2016). However, Varma and Doob (1998) argue that compliance with regulations depends more on the certainty of punishments than the harshness of punishments. In particular, they report the size of penalty is a less important determinant of tax evasion than the perceptions of the possibility of being apprehended.

Punishment of fraud also depends on cultural context. Cross-cultural differences in basic cognition have influences for beliefs about punishments. For instance, people from a collective culture might be more concerned by long-term consequences of punishments, while people from an individualistic culture focus more on the proximate consequences of punishments (Maddux and Yuki, 2006). Zhang et al. (2017) examine the differences in punishment beliefs among participants from China, Europe and America reporting Chinese participants display a stronger belief in retribution and a weak belief in deterrence than participants from other groups. Their results imply retribution plays a major role in punishment decisions for the Chinese. In addition, one of the most unique cultural characteristics in China: *Guanxi* can shape the results of punishment decisions.[26] *Guanxi* carries strong moral implications such that regulatory

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[26] There are a few approaches and proxies can be used to identify *Guanxi*-related firms. One way used in the thesis is the introduction of a political connection variable in Chapter 6. Political

institutions consider it necessary to defend *Guanxi-connected* firms even if they violate regulations. Such connections between corporate actors and government make both investigation and detection increasingly difficult. Subsequently, *Guanxi-connected* firms are treated favorably and punished less severely (Chen et al., 2011).[27]

The choice to engage in fraud and subsequent punishments are an economic decision involving a cost and benefit trade-off. Firms willfully choose to commit fraudulent activities when they perceive that the cost of fraud and the probability of getting caught are far less than the benefits obtained from the fraudulent activities (Zeidan, 2013). This is also known as Becker's (1968) inequality. For regulators to deter fraud which the corporate wrongdoers can gain benefits $\omega$, the following inequality must be satisfied.

$$\omega <= pD \qquad\qquad (2.1)$$

Where *p* refers to the probability of enforcement ($0<p<1$) and *D* refers to the size of financial penalty. According to the theory of optimal deterrence, the policymakers should adjust the right hand side of the inequality through either increasing the magnitude of financial penalties or the probability of enforcement. As these 'deterring factors' increase, potential offenders will transition out of fraud and into legal activities. Subsequently, the deterring factors serve to change the balance of costs and benefits so that fraud becomes an unattractive option (Zhang et al., 2017). In practice, the value of

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ties is a dummy variable that equals to one if the CEO of a listed firm is a current or former officer of the government, military, a member of the people's congress or the Chinese People's Political consultative conference and zero otherwise. This proxy of *Guanxi* has been widely used in the literature, such as Hung et al. (2015) and Wu et al. (2016). In contrast, the literature examining political connections in U.S.A often uses the amount of PAC contributions and lobbying expenditures made by the firms as a proxy. A PAC is a political committee that is organized to raise money to elect or defeat candidates and the decision to distribute PAC contributions typically belongs to the top executives of a firm (Correia, 2014).

[27] The intensive business-to-government *Guanxi* (relationships) could lead to corporate fraud in Chinese listed firms. *Guanxi* can cause potential whistleblowers to forgo their independence and ethical judgment and regulators to collude with fraudulent firms and maximize their personal interests (Pang and Lo, 2017). However, firms with *Guanxi* connections to governments can put them at an advantage compared with non-*Guanxi*-connected firms. This is especially the case in China where the capital market is featured as a lack of strong protection for property rights or market-supporting institutions needed by private firms (McMillan 1995). Retaining *Guanxi-connected* directors is a feasible and effective way for private firms to overcome financing obstacles and obtain favorable regulatory treatment from the government (Wu et al., 2016).

$p$ is small due to limited budgets to detect corporate scandals. Moreover, there are upper limits of financial penalties that can be imposed on the fraudulent firms based on related laws and regulations. As a result, '$\omega$' is higher than '$pD_{max}$' (Armour et al., 2017).

The low costs of fraud is especially the case in China, where the legal environment has lagged behind the rapid development of financial markets. In particular, the monetary penalties imposed by the CSRC are limited. The fines can be imposed on firms by the CSRC against corporate misrepresentation range from 300,000 Yuan to 600,000 Yuan ($45,000 to $90,000), which is limited for a regulator that only investigates major violations (Xu et al., 2017). [28] Besides limited monetary penalties, selective enforcement of the Securities Laws is another reason why the cost of fraud is low in China. Firms controlled by central governments have the highest probability of receiving the lightest penalties, whereas firms controlled by private owners have a higher likelihood of being punished severely (Xu et al., 2017). Selective enforcement of regulations based on regulators' own preference further reduces the $p$ and $D$ values in the Becker's inequality for firms with state-owned background.

However, if the announcement of a sanction decision brings an additional reputational penalty '$R$', the inequality can be satisfied again. The reputational penalty thus can help policymakers to increase the upper limits regarding the cost of fraud in the presence of limitations on the magnitude of feasible $p$ and $D$ (Armour et al., 2017).

$$\omega < p(D + R) \qquad (2.2)$$

Firms are conventionally required to meet the capital adequacy regulation in order to mitigate systemic risks and ensure they have sufficient assets to pay regulatory penalties $D$. However, the existence of reputational penalties have impact on the design of capital

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[28] There are many examples in China where notorious corporate fraud has led to only minor fines. For example, the Danhua Chemical Technology Co., Ltd paid 1.51 billion Yuan ($228 million) to its related party without holding a board meeting, nor did they disclose such a payment to the public between 2003 and 2006. The firm also reported fictitious bank deposits 205 million and 479 million Yuan ($31 and $72 million) in its 2003 and 2004 annual reports and a fictitious 100 million other monetary capital ($15 million) in 2003 annual report. For all of these misconducts, the firms was only subject to a warning and a fine of 300,000 Yuan ($45,000) (Jiang and Kim, 2015).

adequacy regulations. Different from financial penalties $D$, listed firms need to consider the extent of the 'true' punishments, including a reputational component ($D+R$). In other words, the capital requirements calibrated on $D$ alone are no longer effective.

There are two alternative approaches can be used to identify and measure reputational penalties, including a direct approach and an indirect approach. Under a direct approach, a firm's reputational penalties are estimated by subtracting the legal and private monetary penalties from the market-adjusted loss in the firm's equity value around the announcement of regulatory punishments. That is, any market value loss that exceeds total value of legal penalties and other measureable costs can be attributed to reputational damage (Karpoff and Lott, 1993). Reputational penalties are found to be large in Armour et al., (2017): the size of reputational losses are approximately nine times than the size of fines.

The indirect approach assumes that reputational penalties can be measured based on the actions of different stakeholders and other firm outcomes following the announcement of punishments (Haslem et al., 2017). Listed firms have been shown to terminate the CEOs and other senior managers (Desai et al., 2006) or increase the proportion of independent directors on board (Farber, 2005) to preserve their reputational capital. Suppliers and customers also change the terms with which they do business with fraudulent firms or even terminate business ties with them. Such disruption to relationships with suppliers and customers weakens a firm's competitive position and increases uncertainty about their future operations (Karpoff et al., 2008). Firms may face difficulties in acquiring external funds, incur higher financing costs and be unable to fund all profitable investments (Yuan and Zhang, 2016). There may then be a decline in institutional ownership and a loss of outside directorship by the CEOs following the revelation of fraud (Burns et al., 2010; Helland, 2006). These indirect measures of reputational damage do not quantify the magnitude of penalties, but they do identify whether the reputational damage has occurred.

Prior studies show that firm shareholders endure large losses when their firms are punished (Karpoff et al., 2008). Amiram et al. (2017) argue that penalties imposed on

firms make shareholders financially responsible for financial fraud rather than individual perpetrators i.e. managers. According to this argument, shareholders are victimized twice: once by the cheating managers and again when a firm suffers direct or reputational penalties when the fraud is publicly announced.

Generally, when a firm suffers a penalty, this will affect specific individuals. This perspective is the basis for the argument that firms should not be penalized for fraud, as the firm does not commit fraud. Rather, the individual managers engaging in fraudulent activities should be punished. Viewed this way, any investor who purchases stocks prior to the fraud is revealed, pays inflated prices and all shareholders pay when the firm has to make regulatory penalties and suffers reputational losses. Investors who pay the most are those who purchase stocks when the price is artificially inflated by the fraudulent financial reporting and continue to hold until the fraud is announced and punished (Amiram et al., 2017). This is especially the case in diffusely owned firms. In such firms, corporate managers can shift payments of their own liability to the firm itself and lawyers can direct the lawsuits to their own best advantage, making innocent shareholders bear huge financial burdens after fraud is revealed (Jackson and Roe, 2009). In China, it seems that current regulatory mechanisms make minority shareholders a victim of fraud while failing to punish the managers due to the restrictions of maximum penalties and a lack of private enforcement mechanisms.

While investors bear the direct and reputational costs, penalties imposed at the firm level can induce an efficient investment of resources to monitor and deter accounting fraud. Specifically, investors are victimized when managers engage in fraud and the firm pays a penalty, the expected costs of any potential fraudulent behaviours are priced into the stocks they purchase. Subsequently, investors are incentivized to invest optimally in corporate internal monitoring and fraud detection. In this way, the level of corporate governance is improved and the monitoring costs of fraud detection are lowered (Amiram et al., 2017).

A manager who engages in fraud may also face penalties personally including regulatory non-monetary penalties, monetary penalties and even job loss. The main

non-monetary penalties include public criticism, public condemnation, rectification notice, warnings, and the banning of market entry. Banning of market entry is the toughest sanction imposed by the CSRC on the individuals who commit the most egregious violations, thus, prohibiting the individuals from holding positions such as top management for a period of time, usually from 3 years to a life time (Firth et al., 2016). In terms of the monetary penalties, the fines that the CSRC could impose on corporate individuals for misrepresentation range from 30,000 to 300,000 RMB ($4,500 to $45,000). The threat of job loss is another consequence that perpetrators of fraud would suffer from. In the U.S.A, Hennes et al. (2008) find that outside director and top management turnover increases after restatements. Moreover, the dismissed executives suffer reductions in pay and benefits if and when they find new jobs. Fich and Shivdasani (2007) find that outside directors lose reputation if their firms engage in financial fraud. In China, Firth et al. (2011) report CEO turnover significantly increases in the year after financial restatement. This evidence supports the view that the current mix of firm governance, managerial labour markets, and regulatory oversight does discipline fraudulent behaviours (Karpoff et al., 2008).

Accounting fraud has an adverse impact on firm valuation when it becomes public. Firms that are charged with earnings manipulation by a regulator suffer negative stock market response. The average loss can be three times higher than the amount of market value that the firms inflate through their fraudulent activities (Karpoff et al., 2008). The punishment of fraud and its impact on firm value can be explained through the efficient market hypothesis. The efficient market hypothesis implies that in a semi-strong form efficient market, market price is supposed to reflect all publicly available information and investors cannot obtain any abnormal profits (Fama, 1970; Cox and Weirich, 2002). Normatively, the stock market should not price information differently for distinct punishments or fraud, recent literature suggests the opposite. For instance, penalties consisting of public condemnation lead to a larger wealth loss (Chen et al., 2005) and investors perceive recognized items as more pertinent than disclosed items (Michels, 2017). These findings imply that investors may rationally give some punishments or

fraud greater weight than others and fail to fully incorporate the relevant items into their investment decisions.

### 2.3.3 Fraud detection: Can mutual funds deter fraud?

Fraudulent behaviours by listed firms damage the economy generally and stock markets in particular. Investors are subject to costs due to falls in firm value, reducing faith in the integrity of capital markets (Jia et al., 2009). To develop healthy markets, a wide range of governance mechanisms have been proposed to help detect fraud. For instance, firms with separate persons serving as CEOs and chairmen can lower the propensity of fraud (Chen et al., 2006). A higher proportion of independent directors on a board can enhance the board's ability to monitor managers' behaviours (Beasley, 1996). Large blockholders of stocks improve the credibility of a firm's financial reporting by providing scrutiny (Dechow et al., 1996). Institutional investors can actively engage in monitoring essential processes that are associated with financial reporting (Tee et al., 2017). Active institutional investors, especially mutual funds, are generally believed to play a positive role in external monitoring. However, theories and findings are mixed regarding the roles of mutual funds in corporate monitoring. This is particularly the case in China where minority shareholders face a twin agency problem from both managers and state controlling shareholders (Huang and Zhu, 2015).

According to an 'active monitoring' view, mutual funds have more incentives and ability to monitor firms and minimize agency problems. Mutual funds control a magnitude of investments and are considered as sophisticated investors. They are better informed than individual shareholders due to their large-scale and analysis of private pre-disclosure information about listed firms (Al-Fayoumi et al., 2010). As large institutional shareholders, mutual funds are capable of persuading managers against business decisions that could damage firm value or expropriate minority shareholders' interests (Kaplan and Minton, 1994). An increase in mutual funds' shareholdings can

reduce information asymmetry between managers and minority shareholders, making it more difficult for managers pursuing self-serving behaviours. This reduces the needs for firms to window-dress financial statements and conceal their fraudulent activities (Chan et al., 2014). Khlif et al. (2016) argue mutual funds, as corporate outsiders, may not be able to directly oversee the activities of managers, but can elicit greater transparency by demanding more information disclosure from listed firms, given their decision-oriented focus.

Mutual funds are considered pressure-resistant institutions that are less likely to have business relationships or conflicts of interests with investee firms. Subsequently, they can pressure managers to maximize shareholder value (Lin and Fu, 2017). In addition, within emerging economies where ownership structure of listed firms is characterized by the dominance of controlling shareholders, mutual funds can reduce the influence of controlling shareholders. They also constrain the ability of entrenched corporate insiders affiliated with controlling shareholders to expropriate firm funds, assuming an active role of corporate governance (Bao and Lewellyn, 2017).

On the other hand, according to the 'passive monitoring' view, mutual funds are short-term speculators that are interested in obtaining short-term trading profits based on their information advantages (Lin and Fu, 2017). Subsequently, when firms perform poorly, mutual funds are more likely to sell their shareholdings rather than to expend their resources in monitoring and improving firms' performance. This creates continuous pressure on management to meet short-term earnings expectations. Therefore, firm managers have incentives to manage earnings aggressively and even commit fraud (Al-Fayoumi et al., 2010). Moreover, although mutual funds are the largest institutional investor in Chinese capital markets, the proportion of shareholdings is small, especially compared to the largest controlling shareholders that often own over one-third of the firms' shares. Mutual funds in China also have a high turnover,[29] and are more likely

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[29] For instance, the turnover rate of mutual funds in Chinese stock market was 319%, 260% and 207% respectively in 2009, 2010 and 2011 (Jiang and Kim, 2015).

to assume speculative roles and not monitor investee firms (Jiang and Kim, 2015).

When mutual funds have been found to exert influence over listed firms, it is often because the corporate ownership structure is diffuse. However, Chinese listed firms are characterized by a concentrated ownership structure with the largest shareholder often the state. Controlling shareholders have access to corporate internal information and as a result, they tend to provide less voluntary disclosure to shareholders as it may risk firms losing their competitive advantage (Tagesson et al., 2009). Moreover, firms with the state institutions as dominant owners are more likely to perform social and political objectives of the government, focusing less on monitoring shareholder interests. In return, firms can receive greater financial support from the state including preferential access to bank loans and subsidies. Subsequently, these firms are less dependent on the stock market for financing, reducing their accountability for minority shareholders. The influence of mutual funds in promoting financial reporting compliance is less pronounced in the firms with state-owned background as they are insensitive to external investors' demands (Chan et al., 2014).

## 2.4 Prior empirical findings

### 2.4.1 Accounting fraud

Accounting fraud can be committed in a variety of ways. The common accounting fraud techniques used by the management of U.S. and EU listed firms that have been detected since 2001 mainly include: recording fictitious revenues, changing the times at which revenues are recognized, improper valuation and reporting of assets, understating liabilities and expenses and improper financial statement disclosures (Badawi, 2005). Today, accounting fraud becomes even more complicated and increasingly difficult to detect. This is particularly the case when the fraud is collusive and committed by top managers capable of concealing their cronies.

The occurrence of fraud is typically coupled with ineffective boards and internal control mechanisms, failure of external auditors, dominant CEOs and the lack of a sound 'ethical tone at the top' policy within the listed firms (Soltani, 2014). In fact, different kinds of corporate scandals characterize different systems of corporate governance. According to Coffee (2005), a dispersed ownership system of governance (the Anglo-Saxon system) is prone to the forms of earnings management, but concentrated ownership economies (the European system) are much less vulnerable. Instead, the characteristic of corporate scandals in such systems is the appropriation of private benefits of control at the expense of minority shareholders.

Zhu and Gao (2011) investigate the nature, types and methods of accounting fraud committed by Chinese listed firms between 2002 and 2006. This study considers three types of fraud, including false income statement, false balance sheet and insufficient or false disclosure. In particular, the approaches to manipulate income statements (32.7%) involve: recording fictitious revenue, understating expenses and falsely increasing investment profits. The methods to falsify balance sheets (13.5%) include: fictitiously increasing and decreasing assets and fictitiously reducing liabilities. Insufficient or false disclosure is the most prevalent type of fraud (53.8%), which is primarily conducted through 'concealing warranties', 'concealing capital occupied by related parties' and 'false disclosure of the actual use of raised capital'. Most listed firms use more than two methods simultaneously to manipulate financial reporting. There are even three firms adopting 10 different tactics of accounting fraud at the same time. The common duration between initial revealing of fraud and the announcement of punishment is more than three years. Longer duration is mainly due to the complexity of social and institutional connections involved in the regulatory investigation process.

*2.4.2 Punishments and stock market reaction*

Stock markets generally react negatively to the announcement of regulatory punishments and corporate restatements. For instance, Palmrose et al. (2004) examine

the stock market reaction to a sample of 403 financial restatements from 1995 to 1999. They report a mean (median) CARs of -9.2% (-4.6%) over a 2-day (0, 1) event window. Marciukaityte et al. (2006) examine the investors' reaction to fraud announcements in U.S.A and report a significant 2-day mean (median) CARs of -5.01% (-1.98%). Consistent with these findings, Anderson and Yohn (2002) find revenue recognition is one of the most costly restatement types, triggering a market reaction of -11.04% during the (-3, 3) event window. In other words, revenue recognition restatements generate greater concerns on the part of investors about the firm value and the credibility of financial statements than other types of restatements. Gande and Lewis (2009) report an average CARs for shareholder-initiated class action lawsuits of -9.8% in a (-10, -2) event window. The significant and negative CARs value in the pre-event window implies that shareholders' lawsuit information has been leaked to capital market prior to its filling date.

A fine is a type of punishment which is used in multiple fields of law (e.g. administrative, civil and criminal). Generally, the use of fines is more severe than other 'name and shame' non-monetary punishments. Therefore, fines should result in greater investor losses and better to achieve the deterrent and retributive goals of punishment (Chen et al., 2011). However, prior empirical findings are mixed with regards to the efficiency of monetary fines (Holmas et al., 2010; Nosenzo et al., 2013).

Cherry (2001) provides evidence that financial penalties such as fines and forfeitures provide a considerable deterrent effect comparable to those provided by prison sentences. Cherry suggests policymakers should reconsider financial penalties as an alternative criminal sanction as it can significantly reduce criminal justice expenditure. Similarly, Nosenzo et al. (2013) examine the effectiveness of fines and bonuses in an inspection game. They find that fines are effective in deterring non-compliance with regulations, while the effect of bonuses on compliance is much weaker than expected. Empirical support for the effectiveness of financial penalty has also been reported by Kurz et al. (2014). They report that when a fine for late-coming is framed in a retributive way rather than a compensatory way, people experienced late-coming to a larger extent

as moral transgression (Mulder, 2016).

In contrast, Gneezy and Rustichini (2000) examine whether fines can reduce the occurrence of the late-arrival behaviour and report fines do not change the behaviour that was fined. Similarly, Holmas et al. (2010) analyze the impact of fining owners of long-term care institutions who prolong length of stay at hospitals. They find hospital length of stay is longer when monetary fines are introduced. This suggests that incentive schemes based on monetary punishments may produce counter-productive impacts. Different from Gneezy and Rustichini (2000)'s study where a removal of monetary punishments do not have the opposite effect of introducing the fines in the first place, Holmas et al. (2010) report a decrease in the hospital length of stay when the punishment scheme is removed.

*2.4.3 Effective governance mechanisms to detect fraud*

Effective corporate governance mechanisms can be a policy response to reduce the opportunistic behaviours of managers and improve the quality of financial reporting (Lo et al., 2010). For instance, a larger board is effective in monitoring managers. This is because large boards often include more experienced independent directors which can contribute more to supervising managers than those of the small boards (Sun et al., 2010). More frequent board meetings presumably result in a higher level of oversight as the board of directors can devote more time to performing their duties, thus improving the effectiveness of board monitoring.[30] Beasley (1996) finds when a firm has longer tenure of independent directors on board, greater shareholdings held by independent directors and fewer directorship obligations in other corporate boards held by independent directors of fraud firm, the likelihood of accounting fraud decreases. Besides board independence, the fact that different persons occupy the CEO and

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[30] The increased frequency of meetings could also be a signal that a firm is in trouble. This is particularly the case for firms that have engaged in accounting fraud as they need to hold meetings to solve various issues (Jia et al., 2009).

chairman positions are predicted to improve internal control systems and enhance financial reporting quality (Jensen, 1993; Carcello and Nagy, 2004; Chen et al., 2006).

The monitoring efficiency of supervisory boards affects financial reporting quality and the occurrence of fraud. In contrast to firms in the U.S. and UK, Chinese listed firms have a two-tier board structure consisting a supervisory board and a board of directors. Dahya et al., (2002, 2003) find supervisors have little incentive to serve as monitors and behave more like a 'censored watchdog'. They are more likely to play an advisory role in corporate governance and lack real power to discipline poorly performing managers (Ran et al., 2015). Jia et al. (2009) report that more severe sanctions are imposed on firms with larger supervisory boards. Moreover, firms face more severe punishments have more frequent supervisory board meetings.

An effective audit committee is also an indispensable part of internal control mechanisms. The audit committee strengthens a firm's corporate governance by overseeing the accounting and auditing processes, especially when financial experts are present on audit committees, which significantly constrains managers' fraudulent behaviours (Lo et al., 2010). Large public accounting firms are related to higher financial reporting quality, as they are concerned with preserving reputation. Auditors are also eager to identify accounting mis-statements and resist client pressure (Lennox and Pittman, 2010). They have superior knowledge, expertise and more resources to perform a high-level comprehensive audit service, thus better detecting accounting fraud (Lin and Hwang, 2010).

Different ownership structures imply different incentives to control and monitor a firm's management. For example, concentrated corporate ownership has influence on the level of information asymmetry between controlling and minority shareholders, which affects the reliability of financial information and managers' accounting choices (Firth et al., 2007). Transparency of corporate disclosure is lower in countries with high level of state ownership in listed firms and high risks of government expropriation of firms' wealth (Bushman et al., 2004). In China, SOEs possess a dominant status in capital market and have significant competitive advantages over non-SOEs, lowering

the incentives of managers to provide high quality information and adversely affects the way of SOEs addressing agency conflicts. From regulators' views, they are less likely to trigger investigation and enforcement actions when a potential offender has high level of state ownership (Hou and Moore, 2010; Chen et al., 2016).

Corporate insiders' shareholdings have an impact on listed firms' earnings manipulation activities. Bergstresser and Philippon (2006) find when CEOs' remuneration consist of more stock and option holdings, they are more likely to manipulate earnings and obtain private benefits at the expense of shareholders. Al-Fayoumi et al. (2010) report corporate misreporting only occurs when insiders own a large proportion of shares. When the proportion of shares is not high, corporate insiders' shareholdings can constrain earnings manipulation. With respect to independent directors' ownership, Cullinan et al. (2008) reveal that independent directors with stock options limit their effectiveness in the independent oversight of financial reporting process.

During the last decade, the Chinese government has undertaken a series of important reforms to incentivize the development of institutional investors. Active institutional investors are particularly beneficial to minority shareholders in Chinese capital market, which is characterized by weak legal enforcement and investor protection level (Lin and Fu, 2017). Professional institutions like mutual funds are masters in deterring fraudulent activities yet presents mixed empirical results (Grullon and Wang, 2001; Chan et al., 2014).

Aggarwal et al. (2015) note mutual funds face lower costs of monitoring and acquiring information and can conduct in-depth analysis when investing in stocks. They hire their own buy-side analysts to evaluate firms, which reduces the likelihood of collusion between sell-side analysts and firms. Subsequently, they have incentives and abilities to discourage financial fraud. Chan et al. (2014) show that mutual fund ownership helps to reduce the incidence of modified audit opinions. This is because investors attach a higher discount rate to listed firms with higher information asymmetry, which not only reduces the market value of less-transparent firms but also deteriorates the performance of mutual funds that invest in these firms. Under such circumstances, mutual funds have

incentives to actively monitor firms, assisting to avoid whistle blowing by external auditors through modified audit opinions.

On the other hand, mutual funds may make use of their information advantages and act as corporate insiders (Grullon and Wang, 2001). They overlook corporate fraud as long as they can benefit from it. Similarly, Wasiuzzaman and Lim (2017) find the belief that mutual funds discipline listed firms to safeguard minority shareholders' interests may not be completely true. They are short-term speculators and take advantage of the information asymmetry faced by individual investors for their own benefits. China's mutual funds are largely managed by solo fund managers rather than teams,[31] which makes easier for individual fund managers extracting private benefits at the expense of minority shareholders (Chen et al., 2017). A summary of important prior empirical findings are listed in Table 2.2.

## 2.5 Conclusions

Accounting fraud is a considerable threat to the existence and efficiency of capital markets. Accounting fraud not only impairs the basic trust between firms, regulators and market participants, but also undermines capital markets' core role of efficiently allocating resources. This literature review chapter elaborates the institutional background, theoretical framework and prior empirical findings relating to the causes and consequences of accounting fraud. In particular, the chapter reviews the causes of fraud and recidivism. The impact of punishment on shareholder value and how to punish fraud are then discussed. Lastly, the governance mechanisms to detect fraud are addressed.

The chapter initially reviews the institutional setting in China. There are four major

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[31] This contrasts with the mutual funds industry in the U.S.A where team management has become the dominant management structure. The proportion of single managed funds in China's mutual funds was approximately 70% in 2016 (Chen et al., 2017). In contrast, more than 70% domestic equity mutual funds have been team managed in U.S.A. (Patel and Sarkissian, 2015).

regulators of corporate disclosure, including the CSRC (headquarters), CSRC regional offices, stock exchanges and Ministry of Finance. The enforcement bureau, regional offices and administrative sanction committees work closely during the investigation and trial procedures, which improve the effectiveness of the CSRC enforcement actions. Once fraudulent activities are verified, regulators can impose different punishments on fraudsters. The common punishments include fines, warnings, rectification notice, letters of warning, regulatory concern, public condemnation and public criticism. Fines are more severe in nature than other 'name and shame' non-monetary punishments, but they all have negative impacts on firms' future administrative licensing, refinancing and merger and acquisition activities. Chinese capital markets are characterized as the dominance of individual retail investors. Generally, it is difficult for short-sighted investor to directly monitor managers' behaviours. As a result, institutional investors such as mutual funds have become an increasingly important vehicle to protect minority shareholders' interests.

Accounting fraud can be committed in a variety of ways and the common accounting fraud techniques adopted by Chinese listed firms include false income statements, false balance sheets and insufficient and false disclosure of information. Minority shareholders in Chinese listed firms face a twin agency conflicts from both corporate managers and state controlling shareholders. When these agents cannot be effectively disciplined, they may prioritize their own interests above shareholders and commit fraud. Some listed firms repeatedly commit fraud and recidivism significantly damage investors' confidence. The causes of fraud and recidivism are analyzed by applying the fraud triangle theory. In particular, financial pressure results from meeting third parties' expectations and regulatory thresholds has impact on fraud and recidivism. The imperfect legal environment in China and the ineffectiveness of the CSRC provide opportunities for fraud and recidivism. If an organization develops a corrupt culture, employees rationalize their behaviours and perceive fraud and recidivism as appropriate.

The choice to engage in fraud and subsequent punishments is a cost and benefit trade-off. To deter fraud and make offenders pay a price, punishments must produce enough

disutility to outweigh gains from fraudulent behaviours. The primary objectives of punishment are deterrence and retribution. However, the way a punishment affects moral norms is decided by how a punishment is perceived: it can be either retributive or compensatory. In China, punishment of fraud is also affected by *Guanxi* which brings favorite outcomes to politically connected firms.

Accounting fraud has economic consequences. Generally, the punishment of fraud results in negative impact on firm value: there are significant and negative drops of stock returns in the short-term event windows. A decline in firms' market value includes losses from monetary fines and reputational damage. Reputational penalties are found to be large in size and are about nine times than the size of fines. Monetary punishments have been widely used in regulatory laws, but recent literature shows mixed results on the effectiveness of monetary punishments. Some literature finds fines are effective in deterring non-compliance, yet other literature suggests managers may treat them as recurrent business losses and do not change underlying law-breaking behaviours.

To detect the opportunistic behaviours of managers, effective corporate governance mechanisms should be developed. Firms with larger board size, greater board independence and less CEO duality are generally expected to monitor managers effectively. Firms hire big auditors can improve their financial reporting quality. Moreover, firms with higher shareholdings from mutual funds can help to reduce the likelihood of corporate fraud. This is because mutual funds have incentives and abilities to monitor firms and persuade managers against opportunistic business decisions that may damage minority shareholders' interests. However, when there is substantial involvement of state ownership, the monitoring role of mutual funds is moderated. The literature review chapter provides the foundation for the research methodology chapter and the three separate empirical studies to which the thesis now turns.

**Table 2.2**

A summary of prior empirical findings.

**Panel A: Fraud and recidivism**

| Authors | Topic | Samples | Findings |
|---|---|---|---|
| Coffee (2005) | How corporate fraud in U.S. and EU differs | U.S. and EU firms | The characteristic of fraud in concentrated ownership economics is the appropriation of private benefits of control rather than earnings management. |
| Skousen et al. (2009) | Detecting fraud using fraud triangle theory | US firms (1992-2001) | Five pressure proxies and two opportunity proxies are significantly related to financial statement fraud. |
| Zhu and Gao (2011) | Methods of fraudulent financial reporting | Chinese listed firms (2002-2006) | The main types of fraud committed by listed firms are associated with insufficient or false disclosure, false income statements and false balance sheets. Most listed firms simultaneously commit several frauds. |
| Zheng and Chun (2017) | Determinants of corporate recidivism | Chinese listed firms (2001-2008) | Three factors affect corporate recidivism, including internal preconditioning, inter-organizational imitation and prevailing external evaluation. |

**Panel B: Punishments and stock market reaction**

| Authors | Topic | Samples | Findings |
|---|---|---|---|
| Anderson and Yohn (2002) | Restatements' impact on firm value | U.S. firms (1997-1999) | The negative stock market reaction is most pronounced for firms with revenue recognition issues. |
| Gande and Lewis (2009) | Class action lawsuits and shareholder loss | U.S. firms (1996-2003) | Stock market reacts negatively to shareholder-initiated class action lawsuits. Such information leaks to capital markets prior to its filling dates. |
| Armour et al. (2017) | Reputational loss | UK firms (2001-2011) | Punished firms' stock price experience significant losses. Reputational losses are nearly nine times the size of fines. |
| Nosenzo et al. (2013) | The effectiveness of fines and bonuses | Experiment design | Fines are effective in deterring non-compliance. The effect of bonuses on encouraging compliance is weaker than predicted. |
| Holmas et al. (2010) | The effectiveness of fines | Norway (2002-2005) | Hospital length of stay is longer in the hospital using fines to reduce length of stay compared to the hospital not using fines. |

**Panel C: Mechanisms designed to detect fraud**

| Authors | Topic | Samples | Findings |
|---|---|---|---|
| Beasley (1996) | Relationship between board composition and fraud | U.S. firms (1980-1991) | When outside director ownership and outside director tenure increase, and when the number of outside directorships in other firms held by outside directors decreases, the likelihood of accounting fraud decreases. |
| Hou and Moore (2010) | State ownership and regulatory enforcement | Chinese firms (1999-2008) | For the state-owned enterprises, larger state ownership is related to a lower level of enforcement actions. |
| Aggarwal et al. (2015) | Fraud and the role of institutional investors | Chinese firms (2001-2011) | Mutual funds are effective in deterring fraud and enhancing corporate governance. However, ownership by grey financial institutions has no impact on corporate fraud. |
| Chan et al. (2014) | Mutual funds and modified audit opinions | Chinese firms (2003-2008) | Mutual funds are effective in preventing managers from expropriating investors and manipulating earnings, which in turn reduce the incidence of modified audit opinions. |

# 3. Review of relevant methodology

## 3.1 Introduction

The previous chapter reviewed institutional background, theories and prior empirical findings related to fraudulent financial reporting. This chapter outlines the research methodologies that are employed in the thesis. First, to examine the relationship between accounting fraud, punishments and recidivism, a content analysis, descriptive assessments and logistic regression models are used. There are some common methods documented in prior literature with regards to studying fraud and punishment types, such as case studies (Zou, 2016), linguistic analysis (Churyk et al., 2009) and content analysis (Zhu and Gao, 2011). This thesis chooses a content analysis approach as it can examine all of the disclosure in different sanction reports instead of merely looking for the presence of particular words or cases. Also, the deficiencies in existing databases underscore the importance of using hand-collected data to identify specific fraudulent behaviours.

Second, to examine the consequences of fraud and how effective are punishments for accounting fraud, an event study and a fixed-effects model is adopted. The use of the event study can quantify the abnormal impacts of enforcement sanctions on the stock prices (Basdas and Oran, 2014). There are studies measuring the fraud consequences through the changes of bank loans (Chen et al., 2011) or CEO compensation (Conyon and He, 2016). This thesis uses short-term shareholder valuation of firms as it is a direct measure of fraud consequences and can capture both information leakage and investors' delayed response. Unlike most prior studies that adopt field experiments to examine the effectiveness of fines (Gneezy and Rustichini, 2000), a panel data regression is used in the thesis to overcome the empirical and practical difficulties involved in conducting field experiments.

Empirical research relating to corporate fraud faces the challenge that fraud is not observable until it has been detected. Standard probit or logit models cannot adequately address the problem of incomplete detection and tend to generate biased results. This

thesis uses a bivariate probit model to examine the monitoring role of mutual funds. Besides the bivariate probit model (Wang, 2013), a variety of other models have been used to address partial observability, such as statistical birth and death process to estimate cartels detection rates (Bryant and Eckard, 1991), sample restrictions based on firm size (Dyck et al., 2010), the Heckman two-step model (Tan et al., 2017), capture-recapture methods (Ormosi et al., 2014) and detection controlled estimation (Li, 2013). Compared to these models, the use of a bivariate probit model can better understand the interaction between fraud commission and fraud detection processes. Subsequently, it is selected in this thesis to assess optimal public policies to combat fraud.

This chapter is organized as follows. It starts with a description of data collection and data selection processes. Sections 3-5 review literature regarding the choices of models in prior studies and justify appropriate models used in the thesis relating to the three research questions. The final section concludes the chapter.

## 3.2 Data

### 3.2.1 Data collection

To carry out the analysis, data is collected from the following websites and databases. First, fraud and punishment related data is manually collected from the sanction reports issued by regulators. The sanction reports are publicly and freely available and can be downloaded from the CSRC, 'CNINFO' websites,[32] and the Shanghai and Shenzhen Stock Exchange websites. These sanction reports have been verified by regulators, which ensure the data and sample reliability. This thesis sources fraud data manually from hard copies of sanction reports as opposed to commonly used electronic databases such as the CSMAR and the CCER. This is because a thorough comparison of hand-

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[32] The 'CNINFO' website is authorized by the CSRC, as an information center, to provide a comprehensive coverage of companies' files for listed firms in China.

collected data with the data available in the CSMAR or CCER database reveals several problems with the latter. For instance, textual data related to fraud and sanctions is piecemeal, and sometimes inconsistent. Also, the classification of fraud and punishments provided by the CSMAR or the CCER can be ambiguous and over-simplistic. Fraud and punishment related variables include fraud types, fraud incidence, fraud duration, the date of the first announcement of fraud, punishment types and the legal basis of punishments.

Then, stock trading, corporate governance and firm characteristics data is collected from the CSMAR database.[33] Stock trading data includes individual stock returns, market returns and stock turnover. Corporate governance variables involve state ownership, institutional ownership, largest ownership, largest ownership form, CEO turnover, Chairman turnover, CEO duality, big auditors, board meetings, supervisory board size and political connections. Firm characteristics data is mainly associated with financial performance variables, including firm size, leverage, research and development expenditures, corporate growth rate and return on assets. In addition, different types of institutional ownership is downloaded from the Resset database,[34] which includes the ownership of mutual funds, Qualified Foreign Institutional Investors (QFII), securities firms, insurance firms, pension funds, trust firms, financial firms and other institutional investors.[35] As the new Chinese accounting standards were adopted in 2007, this thesis uses the cases from the period of 2007 to 2014 to ensure that all cases follow similar accounting standards.

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[33] The CSMAR database is the leading provider of China's accounting, finance and economic data and is developed by the Shenzhen GTA Information Technology Corporation.

[34] The Resset database (http://www.resset.cn) is published by the Beijing Gildata Resset Ltd. Some recent studies that use the Resset database include Wang et al. (2011), Jiang and Habib (2012) and Aggarwal et al. (2015).

[35] Other institutional investors in the Resset database include: state-owned asset management organizations, universities, government agencies, labour unions, research institutions, futures firms, banks and other asset management firms. However, as the database groups them all together, this thesis cannot obtain the details of their individual ownership. In contrast, other institutional investors in the CSMAR database refer to non-financial listed firms.

*3.2.2 Data selection*

This section describes the sample selection process for the three studies. The original accounting fraud samples consist of 557 firm-year observations from 438 firms between 2007 and 2014 that issue tradable A-shares.[36] In order to estimate the statistical models, the first study in chapter four requires non-missing data on control variables, including firm size, leverage, state ownership, institutional ownership and big four auditors. In addition, firms in the finance industry are excluded since control variables such as firm size and leverage are significantly different between financial and non-financial firms. As there are few fraudulent financial firms, the results are not significantly affected by this omission (Wu et al., 2016). For recidivist firms reoffending in the same firm-year, this chapter merges different cases into one case for that year. Overall, the selection procedure results in a final sample of 432 unique firms with 546 firm-year observations for the first study.

As the second study in chapter five examines the stock market reactions to punishment announcements, observations without available initial disclosure dates of regulatory punishments are excluded. This results in a reduction of 111 observations as the fraud cases are recorded in the files named *Summary of Announcements on Supervision Measures or Penalties or Rectifications Taken by Securities Regulatory Authorities and Stock Exchanges against the Firm in Past 5 Years*[37] rather than the corporate initial disclosure files of punishments. This chapter also requires sufficient stock return data and no missing corporate governance data and financial data for analysis. When two or more accounting fraud events occurred for a single firm in a period less than a year, only the final fraud event is retained. This is because the impact of previous fraud

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[36] If the same firm-year recidivism observations are included, the sample consists of 614 observations (438 firms). In addition, this research only includes fraudulent firms that issue tradable A-shares to ensure samples are comparable. For example, Huangshi Dongbei Electrical Appliance Co Ltd (900956) was punished by the CSRC in 2014 due to its insufficient and false disclosure of related party transactions. However, such a firm is not considered in the samples as it issues B-shares to foreign investors (CSRC, 2014).

[37] These files are issued by listed firms in order to summarize the punishments imposed on the listed firm in last five years. Corporate initial disclosure dates of misconducts cannot be obtained from such files.

announcements on stock prices have been incorporated in the estimation windows of market model. The final sample comprises 358 firm-year observations between 2007 and 2014.

To examine mutual funds' role in deterring fraud in the chapter six, a bivariate probit model is used to address partial observability problem. The application of the model requires the creation of a set of control samples, that is, firms that are not subject to regulatory punishments. Therefore, the initial sample includes all the firms listed on mainland two stock exchanges that issue A-shares from 2007 to 2014. This consists of 14,499 firm-year observations in total. This chapter then deletes 361 observations from the financial industry and 1,084 firm-year observations with missing corporate governance and financial performance data. The final sample includes 13,054 firm-year observations, with 503 observations for the fraud samples and 12,551 observations for the non-fraud samples respectively.[38]

## 3.3 Accounting fraud, punishments and recidivism: a content analysis method, descriptive analysis and a logistic regression model

To study fraudulent financial reporting, punishments and associated institutional factors in chapter four, a content analysis approach, descriptive assessments and a logistic regression model are used. The content analysis method is applied to examine the specific types of accounting fraud and regulatory punishments. The descriptive analysis explores the descriptive links between offending and recidivism, the forms of punishments and wider firm level and regulatory influences. The use of a logistic regression model can reveal how the occurrence of corporate recidivism is associated with a range of regulatory and institutional factors. The research samples are based on the enforcement sanction decisions issued by the regulatory authorities and the content

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[38] The yearly distribution of these fraud enforcement events are as follows: 2007: 34; 2008: 27; 2009: 51; 2010: 58; 2011: 59; 2012: 89; 2013: 113; 2014: 72.

of the enforcement sanction decisions often involves: (1) Date of issue. (2) Concerned parties, such as firms or individuals. (3) Fraudulent behaviours, including reasons of punishments, specific fraud techniques and duration of fraud. (4) Enforcement actions, such as monetary or non-monetary penalties and legal basis of sanction decisions (CSRC, 2014). A sample of the CSRC sanction decision bulletin is provided in the appendix 1.1.

### 3.3.1 Database deficiencies and methods used in prior studies

To evaluate the research objective, a content analysis approach is used to code financial statement fraud and punishments from the regulatory sanction reports. Content analysis is a research approach which draws inferences from data by systematically identifying characteristics within the data (Jones and Shoemaker, 1994). This is different from most prior fraud and punishment studies that collect data directly from databases and use a logistic or a probit model to analyze (Jia et al., 2009; Hou et al., 2013; Hab et al., 2015; Firth et al., 2016; Quan and Li, 2017). The heavy reliance on commonly used databases to construct samples of fraudulent firms may result in mis-specified tests and misleading results. Using a hand-collected dataset on U.S. financial fraud from 1978 to 2015 as a benchmark, Karpoff et al. (2017) report that the use of four traditional corporate fraud databases i.e. Government Accountability Office (GAO), Audit Analytics (AA), Securities Class Action Clearinghouse (SCAC) and University of California-Berkeley's Center for Financial Reporting and Management (CFRM) can impart large biases to sample construction. In particular, the initial disclosure dates of financial fraud identified by these databases are behind the actual initial revelation dates of fraud. Also, each database defines fraud differently and sometimes there are multiple events linked to the same underlying fraud case. Moreover, these databases only capture one type of fraud[39] and omit other fraud cases and events.

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[39] The GAO and AA databases capture only a firm's restatement announcements, the SCAC database captures only federal securities class action lawsuit filings and settlements, and the

Database deficiencies are also an empirical challenge for Chinese corporate fraud studies, which is the primary reason a hand-collect dataset is used. Specifically, for the commonly used fraud databases: CSMAR and CCER, each captures a different subset of the potential pool of financial fraud observations. In addition, each database contains extraneous fraud events, such as violations relating to environment pollution, price control and work safety, which calls for researchers to cull their samples to extract meaningful cases of financial fraud. Yu et al. (2015) find the dates of first announcements of corporate scandals covered in the CSMAR database have errors, which can bias the empirical results when analyzing the stock market reaction to fraud announcements. In other words, the use of fraud revelation dates documented in the CSMAR database could underestimate the true impact of fraud.

This thesis also finds that fraud classification provided by the CSMAR[40] and CCER databases is over-simplistic[41] and there is a significant amount of missing information regarding the types of punishments. High rates of omission is associated with punishments imposed by the CSRC regional offices, and their supervisory measures imposed on firms are simply recorded as 'others'. To overcome these database challenges, fraud and punishment data is collected from original sanction reports and several other sources are employed to crosscheck the reliability of the information.

A multitude of research methods have been previously used to examine the characteristics of firms and individuals that commit fraud or restate financial statements, including linguistic analysis, case studies and content analysis. For instance, Churyk et al. (2009) use a linguistic analysis of the required Management's Discussion and

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CFRM database captures only Accounting and Auditing Enforcement Releases (AAERs).

[40] In particular, the CSMAR database classifies fraud into following types: profits make-up, fabrication of assets, false statements, disclosure postponement, major failure to disclose information, fictitious disclosure (others), fraudulent listing, violations in capital contribution, unauthorized changes in use of funds, major shareholders/related parties' embezzlement of firms' assets, insider trading, illegal purchase and sale of shares, price manipulations, illegal guarantees, accounting mistakes and others.

[41] For example, the Jilin Zixin Pharmaceutical Industrial Co., Ltd was punished by the CSRC in 2014 for concealing the related party transactions, but the CSMAR database simply describes the fraud as 'failure of disclosing information' (CSRC, 2014).

Analysis (MD&A) part of the 10-K SEC filings to identify the characteristics of fraudulent fillings. They create a set of control firms that are not required by the SEC to restate financial statements to examine the differences of language-based cues between two groups. The Linguistic Inquiry Word Count (LIWC) software is applied to analyze the frequencies of the occurrences of language-based cues. They find fraudulent firms have a lower lexical diversity, lower positive emotion, lower use of present tense verbs, but a greater amounts of total words. Using a similar method, Humpherys et al. (2011) also examine the linguistic differences of the MD&A section in the Form 10-K between a sample of U.S. fraudulent and non-fraudulent firms. In particular, the software Agent99 Analyzer[42] is applied and two models of deception are used, including a 24-variable model and a reduced model of 10 variables. They find fraudulent firms use more activation language, words, imagery, pleasantness, group references and less lexical diversity than non-fraudulent ones.

Zou (2016) uses a case study approach to analyze a Chinese listed firm that committed fraud and later punished by the CSRC: Dandong Xintai Electric Co., Ltd (Xintai). Xintai started to apply for IPO in 2011 and became a listed firm in 2014. Xintai was punished in 2016 for illegal raising capital, manipulating a prospectus and annual reports and was given a warning and a fine of 8.32 million Yuan (about $1.26 million).[43] In particular, the firm fictitiously adjusted account receivables and other receivables, reduced bad debts and concealed the disclosure of significant related party transactions in both its prospectus and annual reports. Zou (2016) blames the failed regulatory enforcement system for providing opportunities for such a serious fraud. In other words, the firm has committed fraud prior to listing but neither the auditors, sponsors, lawyers nor the CSRC found any problems, resulting in the successful listing of the firm in 2014.

Cohen et al. (2010) adopt a content analysis approach to examine the role of managers'

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[42] The software Agent99 Analyzer is used to extract pertinent linguistic features from the MD&A sections.

[43] Xintai was punished with a fine of 7.72 million Yuan for fraudulent listing and illegal raising funds, and a fine of 0.6 million Yuan for manipulating financial statements (CSRC, 2016).

behaviours in committing fraud. They collect textual data from the Factiva database and use the evidence taken from press articles such as managers' quotes and journalists' analysis. For each case, they first find the name of managers involved in fraud and then use them as keywords to select articles relating to managers' personality traits. After identifying this information, a coding sheet is applied to the content analyzed. Based on the fraud triangle theory, three major categories of fraud indicators are identified, including incentives, opportunities and rationalization. Coders read the relevant pieces of information and allocate these information to the categories classified. Another coder is introduced to analyze the same press articles separately to enhance the credibility of coding process. They find managers' personality traits appear to be a major fraud-risk factor and suggest auditors should take strong interests in the behaviours and attitudes of managers into account when evaluating risks and detecting fraud.

### 3.3.2 Methods applied in the thesis

Content analysis is the method used to extract data in this research. Compared to aforementioned methods such as case studies and linguistic analysis, the advantage of content analysis is that all of the disclosures in different sanction reports are examined rather than only examining particular items or firms (Nielsen, 2008). Following the coding procedures used in previous studies (Abraham and Cox, 2007; Diaz-Rainey et al., 2014), the narrative descriptions of fraud and punishment types in the sanction report extracts are read manually and concurrently coded to allow quantitative analysis of the information. Information about punishments can be easily recorded from the sanction report extracts. However, information about the specific fraud techniques requires the coder to read the narrative for meaning and make a judgment about the categories classified. Weber (1990) recommends eight steps for creating, examining and implementing a coding scheme to mitigate the problem of rater bias in the coding procedures. The Weber's coding scheme has been widely referenced in the literature, albeit with minor modifications (Wolfe, 1991). Therefore, this thesis employs coding of accounting fraud based on Weber (1990)'s steps of coding text as displayed in Table

3.1.

**Table 3.1**

Steps in the coding context (Weber, 1990).

| Weber's steps of coding context |
| --- |
| 1. Define the recording units (e.g. word, phrase, sentence) |
| 2. Define the categories |
| 3. Test of coding on a sample of text |
| 4. Examine the accuracy or reliability of the sample coding |
| 5. Revision of coding rules |
| 6. Return to the step 3 until enough reliability is achieved |
| 7. Code all the text |
| 8. Assess achieved reliability or accuracy |

Content analysis of a sanction report involves coding words, phrases, and sentences. This thesis uses sentences as coding units as they provide more meaningful and reliable data than words or phrases (Bowman, 1984). Using key words or phrases in isolation of the meaning of the whole sentence either electronically or manually does not provide an appropriate unit of analysis and may lead to misleading results. For instance, considering a case: The Shahe Industrial Co., Ltd sent the financial statement to controlling shareholders prior to its public disclosure of such information. In this case, if 'financial statement' is identified as the key word, then the case is identified as financial statement fraud and included in samples. However, if the whole sentence is considered, the case should not be treated as financial statement fraud based on the definition of fraudulent financial reporting (AICPA, 2002). Considering another case: 'The firm delays the recognition of expenses'. In this case, if 'delay' is identified as the only key word, the coder may classify it as delayed disclosure of annual reports rather than a false income statement. In other words, using inappropriate or insufficient key words can cause over or under estimation of the incidence of fraud.

The thesis uses a manual content analysis rather than a software-based content analysis as the manual approach can be more precise, detailed and tailored to the specific research setting (Li, 2011). In addition, using qualitative software is not problem-free.

For instance, the Nudist software, only allows the articles to be filed in the text format. That is, some sanction reports documented in the forms like image file or PDF file cannot be performed. The GI software, restricts the content of a report in English only (Kothari et al., 2009; Hassan and Marston, 2010). This implies that sanction reports filed in Chinese language cannot be applied. The Linguistic Inquiry Word Count, which is more suitable to be used when the recoding units are words and phrases only. Subsequently, software-based content analysis is not conducted in this research.

Using the coded data, a univariate test and a logistic regression are employed to examine the relationship between recidivism, punishments and institutional factors. For the univariate tests, the work in chapter four checks if significant differences of punishments and institutional variables exist between reoffending firms and non-reoffending firms. In particular, Pearson chi-square, t and F tests are employed. Such descriptive assessments of variables have been used in several previous fraud studies. For instance, Cumming et al. (2015) compare the gender characteristics between fraud firms and non-fraud control firms using both t and Pearson chi-square tests and find fraud firms have a significantly lower proportion of female directors (10.59%) than the non-fraud firms (16.58%). Yang et al. (2017) examine the differences in means of corporate governance mechanisms between a sample of fraud and non-fraud firms using the F-statistic. They find fraud firms have significantly less concentrated shareholding, but significantly higher CEO duality and regulatory pressure than non-fraud firms.

A logistic regression is used to test punishments and firm characteristics' impact on recidivism. Logit regression models were developed for examining choice-based samples, which are constructed by sampling on a chosen variable rather than sampling from the population at random (Uzun et al., 2004). Logistic regression is appropriate for the chapter four because corporate recidivism, as the dependent variable, is dichotomous. This approach is also valid as the aim of the model is to explain other than to predict (Maddala, 1991; Yang et al., 2017). In addition, the use of logistic model in previous fraud studies, such as Beasley (1996), Feng et al. (2011), Chen et al. (2016) and Xu et al. (2017) provide empirical support for the application of such a model.

## 3.4 How effective are fines in addressing fraud? Event study method and fixed effects model

In chapter five, the impact of different punishments for Chinese accounting fraud on shareholder valuation of firms is examined using an event study method. The event study method is a forward-looking technique which focuses on identifying abnormal returns to firms based on a specific event. If the abnormal returns are large and statistically significant around the announcement of an event, stock markets regard the event as consequential (Chen and Siems, 2004). A wide range of literature has applied this methodology to examine stock price changes corresponding to a number of specific events, including stock splits (Baixauli, 2007), stock dividends (Nguyen and Wang, 2013; Lee et al., 2015), takeovers (Kabir et al., 1997), mergers and acquisitions (Hayward, 2002; Seth et al., 2002; Chen and Young, 2010), credit rating actions (Alsakka, et al., 2015), earnings announcements (Kaniel et al., 2012), seasoned equity offerings (Kim and Purnanandam, 2014) and war (Hudson and Urquhart, 2015). A summary of prior event studies are presented in Table 3.2.

### 3.4.1 Event study and efficient market hypothesis

The event study method is based on the efficient market hypothesis (EMH) (Fama et al., 1969). The EMH assumes new information in the capital market fully reflects a firm's stock price and investors quickly process all available information to assess a firm's market value (Chen and Siems, 2004). Thus, changes in the equity value of firms can be taken as a measure of the discounted future profits or losses which are expected to accrue as a consequence of the event (Duso et al., 2010). In an efficient market, it is not possible for investors to earn a return higher than the market returns without taking higher risk and trade on inside information. The impact of irrational investors is negligible as irrational prices can be identified and eliminated by sophisticated investors through trading mispriced stocks (Degutis and Novickyte, 2014).

The application of an event study approach to examine market reactions to corporate

events may have contradictory findings relative to the EMH. For instance, Barth et al., (1992, 2003) and Michels (2016) find that disclosed rather than recognized information may not be fully valued by investors. This violates the EMH as disclosure items receive a lower valuation weight due to investors' higher costs of understanding. Information leakage also results in an inefficient market and occurs through individual transactions in response to rumors or press articles prior to event date, or insider trading on non-public material information associated with the announcement (Miller et al., 2008). Bhattacharya et al. (2000) report empirical evidence that stock markets do not react to the announcement of corporate news and information leakage causes stock prices fully incorporate related information prior to its public release.

The overreaction hypothesis proposed by De Bondt and Thaler (1985) is another challenge to on the EMH. De Bondt and Thaler (1985) find that the enforcement actions taken by regulatory authorities may lead to an overreaction by shareholders, causing stock prices to plummet and capital costs to rise (Jordan et al., 1999). In particular, shareholders tend to overweight recent information and underweight prior information, causing an excessive stock market reaction. Extreme movements of the stock price will be followed by subsequent changes of stock prices in the opposite direction. The more extreme the initial stock price movement, the greater the subsequent stock price adjustment. One way to interpret the overreaction hypothesis is that investors set the stock price before fully understanding the effect of a sudden punishment event. The uncertainty surrounding a punishment announcement results in the stock price being set at a lower price level until the uncertainty over the outcome of the punishment event is completely resolved (Brown et al., 1988). As a consequence, the risks a firm faces increase after the event date and then subside (Cox and Weirich, 2002).

There is also evidence that investors underreact to earnings news, a phenomenon known as the post-earnings-announcement drift (PEAD). The phenomenon of PEAD is initially addressed by Bernard and Thomas (1989, 1990). They attempt to discriminate between two competing explanations for the drift i.e. a failure to adjust abnormal returns fully for risks and a delay in the response to earnings announcements. Using

quarterly data from the US stock market during the period 1974-1986, they examine the magnitude of the drift, the relation of drift to size, and the longevity of the drift. They report that most of the drift occurs during the first 60 trading days after the announcement and conclude that their evidence is in line with a delayed response to accounting information. Such a slow reaction occurs because traders fail to assimilate information or certain costs exceed gains from immediate exploitation of information for a sufficiently large number of traders. Besides Bernard and Thomas (1989, 1990), several other studies can be used to explain investors' delayed response to new information. For instance, Barberis et al. (1998) suggest that market underreaction is consistent with conservatism in the psychology literature, defined as the slow updating of beliefs in the face of new information. Daniel et al. (1998) present a model in which investors overweigh the value of their private signals and underweigh the information content of important public information such as earnings announcements. Subsequently, a drift in stock returns occurs (Zhang, 2008).

**Table 3.2**

A summary of prior event studies.[44]

| Studies | Nature of event | Stock returns model | Firms analysed Sample size | CAR window | CARs (%) |
|---|---|---|---|---|---|
| Kabir et al. (1997) | Takeover defense | Market model | Dutch firms 44 | [0, 1] [0, 5] | -1.18 -2.27 |
| Hayward (2002) | Corporate acquisitions | Market model | U.S firms 278 | [-2, 2] | -1.00 |
| Seth et al. (2002) | Cross-border acquisitions | Market model | Firms from 11 countries 100 | [-10, 10] | 11.00 |
| Palmrose et al. (2004) | Restatement announcement | Market adjusted model | U.S. firms 403 | [0, 1] | -9.20 |
| Tipton et al. (2009) | Exposure of deceptive marketing | Fama-French-Carhart model | U.S Firms 170 | [0, 1] | -1.01 |
| Nguyen and Wang (2013) | Stock dividend | Market model | Chinese firms 3,006 | [-1, 0] [-2, 2] | 1.21 1.50 |
| Sturm (2013) | Operational loss | Market model | European financial firms 136 | [-1, 1] [-3, 3] | -1.25 -1.51 |
| Homburg et al. (2014) | Channel expansion | Market model | Firms from U.S., Germany, and China 240 | [-1, 0] | 0.46 |
| Kim and Purnanandam (2014) | Seasoned equity offering | Market model | U.S. firms 4,613 | [0, 1] [-2, 2] | -1.97 -1.68 |
| Alsakka et al. (2015) | Credit rating actions | Market model | EU banks 44 | [-1, 0] | -0.75 -0.62 |
| Hudson and Urquhart (2015) | World War Two | Mean adjusted returns model | UK 30 | [0, 1] | -0.23 0.21 |
| Lee et al. (2015) | Regulatory change of dividend payout | Market and market-adjusted models | Chinese firms 6,964 | [-5, 5] | 0.05 -0.17 |
| Armour et al. (2017) | Regulatory sanction | Market model | UK firms 40 | [0, 1] [-1, 1] | -1.16 -1.68 |

[44] Alsakka et al. (2015) find the CARs to the Moody's rating downgrades are -0.75% before July 2011 and are -0.62% after July 2011 (the establishment of a new regulatory regime) over a [0, 1] event window. In Hudson and Urquhart (2015)'s research, the cumulative average abnormal returns are calculated respectively between a series of negative events and positive events during the World War Two.

## 3.4.2 Event study method applied in the prior studies

There are six major procedures for conducting an event study (Mackinlay, 1997). First, the event of interest needs to be identified.[45] The event window is then defined. The event window refers to the number of days before and after the event announcement date.[46] A short event window can provide a reliable test of the market impact of an event (Morse et al., 2011). The sample of firms are assessed based on the particular event of interest. The normal returns are the expected returns without conditioning on the event taking place and can be calculated through different models, including the market-adjusted model, the market model, the Fama-French asset pricing model, the buy-and-hold abnormal return model and other approaches.[47] The market model is commonly used and requires the specification of an estimation window[48](Sorescu et al., 2017). The abnormal returns are subsequently calculated as the differences between actual returns and normal returns. Lastly, estimated abnormal returns during the event window can be aggregated to obtain CARs and t-statistics are frequently used to test the statistical significance of CARs (Konchitchki and O'Leary, 2011). A summary of the event study procedures are shown in Figure 3.1.

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[45] Firms or outside parties often make announcements about corporate or regulatory events and these announcements serve to inform the markets about a firm's plans, successes and failures.

[46] Including days prior to the event announcement captures possible information leakage, while including days after the event announcement captures the notion that it takes time for information to be received, understood and processed.

[47] The calculation of abnormal returns based on market-adjusted model and market model produces very similar results over short-term event windows (Brown and Warner, 1985). The Fama-French model and the buy-and-hold abnormal return model have been typically used in long-term event studies (Sorescu et al., 2017).

[48] The length of estimation period varies among different studies, and the average range of estimation period is [100, 300] for daily event studies (Basdas and Oran, 2014).
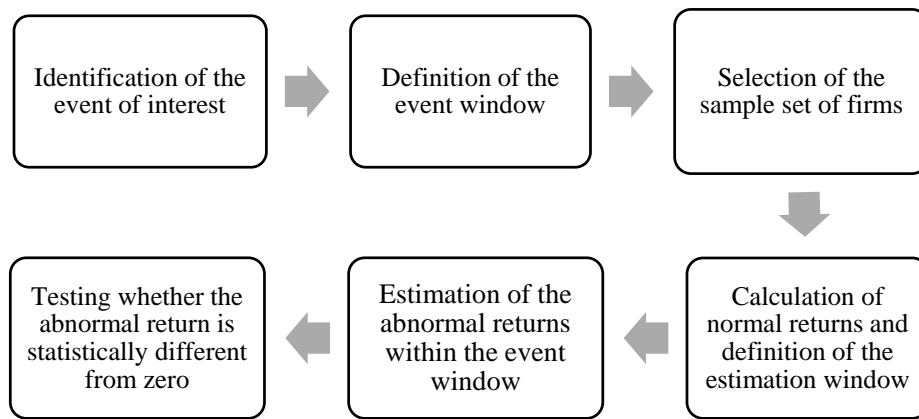
**Figure 3.1** A summary of the event study procedures (Mackinlay, 1997).

Information on accounting fraud and its consequences are typically conveyed to shareholders via a long sequence of events that can last over multiple years rather than a single event. For instance, the enforcement activities conducted by the U.S. SEC last about 41 months on average between the initial public revelation of fraud and the end of regulatory proceedings. Karpoff and Lou (2010) apply the event study method to examine market reaction around multiple regulatory announcements including fraud initial revelation, SEC informal inquiries, SEC formal investigations, Wells Notices, the initiation of regulatory proceedings, the initiation of class action lawsuits and bankruptcies. They find the initial disclosure of misconducts triggers the most negative stock market reaction and stock returns further decrease when additional information about the misrepresentation is revealed to the public.

Armour et al. (2017) address similar concerns in a UK context and note multiple events are not the case in studying investor losses to enforcement activities. This is because enforcement activities undertaken by the FCA and the London Stock Exchange only include one public announcement that contains complete information on legal penalties. In contrast, when addressing administrative offences in Chinese capital markets, the CSRC issues an investigation announcement prior to its formal sanction announcement. Unlike formal sanction announcements, investigation announcements only offer ambiguous information and investors have no idea about the specific means and extent of misconducts. Wu and Zhang (2014) use an event study method to examine the

differences of investor wealth losses between two separate events. They find that stock returns show a drop of 2% around formal sanction announcements and a drop of 6% around investigation announcements, implying investigation announcements causing more negative market reaction.

Although chapter five examines the consequences of fraud through the wealth of shareholders, there are studies going beyond market reaction and focus on how the disclosure of fraud influences firms' real activities. Graham et al. (2008) examine the effect of financial restatements on bank loan contracting through applying a variety of models.[49] They find compared to loans initiated before restatements, loans granted after the restatement of earnings have significantly higher spreads, shorter maturities, more covenant restrictions and a higher likelihood of being secured. Chen et al. (2011) explore Chinese listed firms' borrowing behaviours after the event of corporate fraud using an Ordinary Least Squares (OLS) model. They show compared to non-fraudulent firms, fraudulent firms have lower bank loan renewals and higher loan interest rates. Similarly, Yuan and Zhang (2016) investigate the impact of fraud revelation on corporate financing and investment policies. Using OLS and difference-in-differences regressions, they find disclosure of fraud causes decreases in both financing and investment.

Some studies attempt to quantify the economic consequences of fraud accrued to individuals instead of firms. For instance, Fich and Shivdasani (2007) examine the impact of financial fraud for outside directors using logistic regressions. They find outside directors experience a significant decline in other board seats held. This decline in other directorships is greater if the fraud case is more severe and outside directors bear more responsibility for monitoring fraud. Conyon and He (2016) estimate the relation between CEO compensation and corporate fraud through a firm-level fixed effects and a propensity score matching method. They report firms punish CEOs for

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[49] In particular, Ordinary Least Squares (OLS), fixed-effect, difference-in-differences, two-stage least square models are applied in Graham et al. (2008)'s paper.

fraud by lowering their compensation.

*3.4.3 Research methods used in the thesis*

This thesis focuses on firm-level fraud and uses short-term stock market reaction to measure the economic consequences of fraud. This is because market value loss is a direct measure of reputational costs and fraud consequences and the use of event study can capture both information leakage and investors' delayed response. In contrast, work considering fraud impact on bank loans or managerial compensation focus on long-term economic consequences. Subsequently, unobserved events may exist and bias the empirical results.

Having calculated the CARs during a short-term event window around the punishment announcements, regression analysis is then applied to examine the determinants of market reaction to fraud announcements. In the chapter five, punishment and fraud variables are used as test variables and regressed on CARs based on the fixed effects models. Such multivariate regression analysis has been widely used in the studies evaluating the determinants of market reaction. For instance, Zeidan (2013) assesses the impact of punishment severity and multiple violations on market reaction for public traded U.S. banks using OLS regression models and finds the market reaction does not vary meaningfully in accordance with the severity or repetitiveness of the violations. Similarly, Quan and Li (2017) explore the reputational damage of academic independent directors who have received regulatory punishments in a Chinese context. Using a fixed effects model, only fines appear to have a negative market reaction and the stock markets punish academic independent directors more severely than non-academic independent directors.

Besides the multivariate regression analysis, a few studies (See Gneezy and Rustichini, 2000; Holmas et al., 2010; Kurz et al., 2014) examine the efficiency of punishments through field experiments. For example, Gneezy and Rustichini (2000) conduct a field experiment on whether the introduction of penalties can reduce the behaviours that were

fined in a group of day-care centers. The overall period of their experiment is 20 weeks. In the first four weeks, the number of parents who arrive late are simply recorded. Since the beginning of the fifth week, a fine is introduced on parents who arrive late in randomly selected six of ten day-care centers. The fine is removed in the seventeenth week. Gneezy and Rustichini (2000) then analyze the late-arrival behaviours of parents, and find the introduction of a fine increases the behaviour that was fined. However, the application of field experiments has several unavoidable disadvantages, including the manipulation of independent variables, the ethics of the experiment and the practical difficulties (Furnham, 2005).[50] Subsequently, the multivariate regression analysis is adopted in the chapter five and a summary of prior studies using similar research methods are listed in Table 3.3.

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[50] The experimenter is working in a relatively complex natural setting where many events could occur simultaneously. Therefore the independent variable in the study must be obvious to potential participants. In addition, there are still debates regarding whether it is reasonable to involve participants in an experiment without their knowledge or permission. Moreover, as investigators in the field have less control over the majority of the events in the environment, unexpected events may bias the experimental results (Furnham, 2005).

**Table 3.3**

A summary of prior studies examining stock market reactions to fraud announcement.

| Studies | Subject | Country | Model | Findings |
|---------|---------|---------|-------|----------|
| Palmrose et al. (2004) | Market reaction to restatements | U.S.A | OLS model | More negative market reaction is related to restatements involving fraud, affecting more accounts, decreasing reported income and attributed to auditors or managers |
| Wang and Wu (2011) | Investor reaction and earning information | China | OLS model | Shareholders only capture the current year's earnings information while ignore the concurrently revealed correction of past financial information |
| Kouwenberg and Phunnarungsi (2012) | Corporate governance, fraud and market reaction | Thailand | OLS model | The stock market reaction is significantly negative when firms with low past violation records and low governance scores commit violations |
| Zeidan (2013) | Market reaction to violations | U.S.A | OLS model | Stock markets do not vary meaningfully in accordance with the severity or repetitiveness of the violations |
| Ewelt-Knauer et al. (2015) | Fraud cases and investor wealth | Germany | OLS model | Investor wealth reduces more if at least one board member resigns because of fraud case, but less if firms reject accountable employees and cooperate with legal authorities |
| Yu et al. (2015) | Spillover effect of fraud | China | Fixed-effects model | Good corporate governance in peer firms reduces the contagion effect of corporate scandals |
| Ang et al. (2016) | Post-scandal signal announcements | U.S.A | Fixed-effects model | After scandals, non-fraudulent firms differentiate themselves from the fraudulent firms by sending costly signals e.g. insiders purchasing shares, increasing dividends and going private |
| Chen et al. (2016) | Stock market reaction and state ownership | China | OLS model | The stock market reacts more negatively to corporate fraud announcements among NSOEs than SOEs |
| Finnerty et al. (2016) | Sustained supernormal performance and fraud | U.S.A | Fixed-effects model | Sustained supernormal good prior stock price performance up to five years prior to the commission is an important driver of financial fraud |
| Jaroszek et al. (2016) | Fraud risk and stock market performance | U.S.A | Fixed-effects model | Stocks with higher fraud risks earn significantly lower stock market returns |
| Quan and Li (2017) | Reputational loss of outside directors | China | Fixed-effects model | Stock market punishes academic independent directors more severely than non-academic independent directors for their violations |

## 3.5 Does mutual fund investment deter fraud? Partial observability and bivariate probit model

There are two types of errors relating to corporate fraud studies: type one and type two errors. A type one error refers to a frivolous or extraneous case being misclassified as a fraud case, as discussed in Section 3.3. A type two error is associated with a fraudulent firm failing to be identified. The problem of incomplete detection, or partial observability is inherent to any fraud study. In other words, accounting fraud can only be observed when it is committed and later detected by regulators (Yu, 2013b). Early studies (see Jia et al., 2009; Hou and Moore, 2010, Wang et al., 2017) on fraud typically use a simple probit or logit model, which estimates the likelihood of fraud being both committed and detected. However, such models ignore firms that have committed fraud but have not been caught. By implicitly treating detected fraud as all fraud, the true extent of fraud is underestimated (Shi et al., 2016).

### 3.5.1 A review of methods used in prior studies addressing partial observability

To reduce the biases resulting from partial observability, researchers have adopted several approaches. First, partial observability can be addressed through sample selection. For instance, Dyck et al. (2010) restrict their sample of fraudulent firms to those with a firm size more than $750 million. They argue large firms are subject to more public scrutiny and lawyers have strong incentives to reveal their fraudulent activities, thus it is less likely to have undetected fraud cases for large firms. Stuart and Wang (2016) examine the determinants of fraudulent financial reporting in Chinese private and high technology firms using a unique dataset with two set of financial books filed by the same set of firms in the same period of time. Two financial books include both financial statements submitted to Ministry of Science and Technology (MOST) and State Administration of Industry and Commerce (SAIC), which are required to be identical under Chinese laws. However, in practice, firms may overstate MOST for successfully applying innovation grants and understate SAIC for tax evasion.

Subsequently, discrepant reporting across two books are considered to be the evidence of financial fraud and common partial observability problem is addressed.[51]

The Heckman two-step model has also been applied in recent studies (e.g. Files, 2012; Tan et al., 2017) to address the partial observability concerns.[52] The Heckman two stage model involves estimation of a probit model for selection in the first step. The inverse Mills ratio (Lambda) is calculated from the probit model, capturing the unobservable factors affecting managers' decisions to commit fraud. In the second stage, an OLS regression model is performed with the Lambda using as an additional independent variable, in order to capture the effect of all the unmeasured fraud characteristics on the dependent variable (Heckman, 1979).

Using a Heckman two-step model with a dynamic Generalized Method of Moments (GMM) estimation, Tan et al. (2017) examine the relationship between corporate governance and performance whilst conditioning on corporate fraud. In particular, inverse Mills ratio capturing private fraud information is included in the dynamic GMM corporate governance and performance models as an exogenous regressor. Their findings show corporate governance and private fraud information has no statistical impact on firm performance. Although the Heckman two-step model remains popular in dealing with selection bias in fraud studies, there are problems with its application, including its use with dichotomous dependent variables, difficulties in calculating the hazard rate and mis-estimated standard errors. Thoughtful consideration is thus needed before using this technique (Bushway et al., 2007).

Incomplete detection is also an issue in 'cartel enforcement and competition policy'

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[51] Stuart and Wang (2016)'s paper relies on their hand-collected data by comparing two set of financial books rather than outputs of regulatory agencies. However, as they have no information on firms' true financial situation, it is possible that firms may report identical sets of fraudulent financial reporting to both state agencies. If this is the case, the incidence of financial fraud is higher than what their reported.

[52] Files (2012) examines the relation between cooperation and SEC enforcement actions whilst incorporating firm triggered investigation (into its accounting mis-statements) in the analysis. He finds after controlling for endogeneity, investigation still has positive and significant impact on the likelihood of SEC sanctions. The inverse Mill's ratio is insignificant in the regression, suggesting that self-selection is not a concern in his research.

studies. Some statistical models have been developed to estimate the detection rate of cartels. The first major study is by Bryant and Eckard (1991), who apply a model of statistical birth and death process to estimate the possibility of being caught for price fixing conspiracies. Based on a sample of U.S. cartels indicated by Department of Justice (DOJ) between 1961 and 1988, they find the annual probability of detection is between 13% and 17%. Using a similar model,[53] Combe et al. (2008) calculate detection duration and the likelihood of detection over the sample of the cartels convicted by European Union (EU) from 1969 to 2007. Their findings indicate that detection duration is about 7 years and the probability of detection in a given year is between 12.9% and 13.2%. Ivaldi et al. (2016) estimate the probability of cartel detection using samples from more than 20 developing countries between 1995 and 2013 and report an annual rate of 24%. This higher rate is mainly due to the stronger antitrust enforcement in recent years and greater cooperation among countries in detecting 'hard-core' cartels.

One of the major limitations of aforementioned estimates is that they provide a time-invariant detection rate, which is not the case in practice as detection rate changes over time with regulatory events and leniency programmes. Ormosi et al. (2014) adopt a capture-recapture (CR) method to examine time-dependent cartel detection and survival probabilities. In a CR analysis, the population size is estimated by taking two successive random samples from the same population. The first sample is marked and replaced into the population. If the population dos not change between two independent sampling processes and individual can be equally captured, then the percentage of marked subjects in the second sample is an unbiased estimation regarding the ratio of all marked subjects to population size. Ormosi et al. (2014) show that less than one fifth

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[53] Different from Bryant and Eckard (1991) who only introduce a birth and death process of cartels, Combe et al. (2008) consider three processes: one related to cartel birth, the other related to their natural death, and the last one governs cartel detection. This is because some cartels are detected when they are still active while others are detected after their death. Cartel inter-arrival time and duration between their birth and detection are distributed exponentially and independently across cartels. The model allows the calculation of instantaneous likelihood of cartel detection based on the maximum likelihood estimation.

of firms in EU cartels are detected between 1985 and 2009 and the EU-U.S. cooperation agreement triggers greater increase in detection rate than leniency programmes.[54] In addition, 75% cartelizing firms choose to cease and desist, or determine never to be in a cartel again, or become part of the sub-population which are never recaptured in the year following capture.

A bivariate probit model is another method to address partial observability. Poirier (1980) proposes a bivariate probit model with partial observability in which only two of the four potential outcomes are observed. He shows that the usual parameters of the bivariate probit model can also be identified with partial observability under certain conditions (Tennekoon, 2016). Following Poirier (1980), Wang (2013) applies a bivariate probit approach to examine the determinants of corporate securities fraud. The observed probability of detected fraud is modelled as the outcome of two latent processes: the probability of fraud commission and the probability of fraud detection. The model generates insights not only about each latent process but also how the two probabilities interact with each other. Using a sample of AAERs filed by the SEC between 1996 and 2005, Wang (2013) shows firms with high research and development intensity are less likely to be caught for fraud and thus more likely to engage in fraud. Financial analysts reduce a firm's incentive to commit fraud and increase the probability of fraud being detected. In addition, external financing need and growth are the most important motivators of securities fraud.

Feinstein (1990) develops a similar method: detection controlled estimation (DCE) to explore the determinants of violations of laws and regulations. This approach is later applied in Li (2013) on examining the interaction between corporate fraud and monitoring. Li (2013) shows that failure to account for incomplete detection can result in downward biases in assessing the impact of firm characteristics on the likelihood of

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[54] One limitation is that a fifth of cartels detection rate can only be explained as an upper bound. However, as long as the magnitude of this bias remains unchanged, time-dependent estimates are still useful in measuring the changes of detection likelihood over time.

fraud. In addition, factors such as regulatory budgets affect detection.[55] Bivariate probit and DCE models are fundamentally and economically similar and can be applied to address the partial observability concerns. However, they differ in estimation structure and in scope of variable interpretations. In particular, the bivariate probit model allows factors to directly affect fraud commission and detection procedures, whereas the DCE model allows the dependent variable of fraud equation to appear in the detection equation as an explanatory variable. In this respect, a bivariate probit model cannot address issues e.g. how a change in the probability of fraud affects the probability of fraud being detected yet a DCE model can (Yu, 2013b). A summary of prior studies addressing partial observability are listed in Table 3.4.

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[55] He further extends the DCE probit analysis to a DCE Tobit analysis that models the magnitude of fraud and finds coefficients of stock-based incentives remain positive.

**Table 3.4**

A summary of prior studies addressing partial observability.

| Studies | Subject | Method | Findings |
|---|---|---|---|
| Bryant and Eckard (1991) | Detection rate of cartels | Model of statistical birth and death process | The probability of cartels getting caught for price fixing conspiracies is between 13% and 17% a year in the U.S. between 1961 and 1988 |
| Dyck et al. (2010) | Effective mechanisms for detecting fraud | Sample restriction firm size > $750m | Fraud detection does not rely on standard governance actors e.g. investors, SEC and auditors, but rather relies on several non-traditional players e.g. employees, media and industry regulators |
| Li (2013) | Interaction between corporate fraud and monitoring | Detection controlled estimation | Failure to account for incomplete detection can result in downward biases in estimating the impact of firm characteristics on the likelihood of fraud |
| Wang (2013) | Determinants of corporate securities fraud | Bivariate probit model | The most important fraud motivator seems to be the strong needs for external financing and firm growth |
| Zakolyukina (2013) | Estimating undetected intentional manipulation | A structural approach | The probability of fraud detection is estimated to be 9% and the average fraud results in an 11% loss in managers' wealth if the fraud is revealed |
| Ormosi et al. (2014) | Probability of catching cartels | Capture-recapture method | Less than a fifth of firms in EU cartels are detected and the EU-U.S. cooperation agreement triggers greater increase in detection rate than leniency programmes |
| Khanna et al. (2015) | CEO connectedness and impact on fraud | Bivariate probit model | Appointment-based CEO connectedness is positively related to the likelihood of commission and negatively associated with the likelihood of detection |
| Stuart and Wang (2016) | Determinants of fraud in private and technology firms | Comparison between financial books filed to MOST and SAIC | Political connected firms are 18% more likely to commit fraud and those with venture capital backing are 19% more likely to do so |
| Kuang and Lee (2017) | Independent directors' connectedness and fraud | Bivariate probit model | With a one standard deviation increase in independent directors' connectedness, the likelihood of fraud detection decreases by 22.5% |
| Tan et al. (2017) | Examining firm governance and performance relation | Heckman two-step method | Corporate governance has no causal impact on firm performance when conditioning on corporate fraud |

*3.5.2 Methods used in the thesis*

This thesis applies a bivariate probit model to address fraud partial observability problem and examine the relationship between mutual funds and accounting fraud. The detected fraud is modelled as the outcome of two latent processes: fraud commission and fraud detection. Subsequently, the model can generate insights not only about each latent process but also how the two processes interact with each other. An increasing number of studies have used the bivariate probit model to mitigate the biases caused by incomplete detection of fraud. For instance, Wang and Winton (2014) examine how information interactions between firms within an industry influence firms' incentives to commit fraud. They find that lower product market sensitivity to individual firms' information and greater use of performance evaluation increase fraud commission. In addition, less collection of information about individual firms reduces the likelihood of fraud detection and increases the likelihood of fraud commission. Khanna et al. (2015) explore how CEOs and their connectedness within the executive suite and the boardroom affect corporate misreporting. Using a sample of U.S. firms between 1996 and 2006, they show appointment-based CEO connectedness is positively associated with the likelihood of fraud commission and negatively related to the likelihood of detection. Similarly, Kuang and Lee (2017) examine the impacts of independent directors' external social connectedness on corporate fraud. Their results show that well-connected independent directors do not affect the likelihood of fraud commission but significantly reduce the likelihood of fraud detection given the occurrence of fraud.

## 3.6 Conclusions

This chapter reviews different methodologies previously used relating to the three research objectives. Initially data is collected from the sanction reports, CSMAR and Resset databases and selected based on its availability. To examine the association between accounting fraud, punishments and recidivism, a content analysis, descriptive

assessments and a logistic regression model are used. A content analysis approach is selected for several reasons. Specifically, the database deficiencies such as the inclusion of extraneous fraud cases and the over-simplistic classification of punishments underscore the importance regarding the use of hand-collected dataset to analyze specific fraudulent behaviours. In addition, compared to prior studies using case studies or linguistic analysis, content analysis can analyze all of the disclosure in different sanction reports instead of merely looking for the presence of particular items or cases. This thesis uses a manual rather than a software-based content analysis and codes fraud based on Weber (1990)'s steps of coding text. Using the coded data, descriptive assessments and logistic regressions are then applied to examine fraud, punishments and their impacts on recidivism.

To examine the consequences of accounting fraud and how effective are fines in addressing fraud, an event study method and a fixed-effects model are applied. The consequences of fraud are explored based on the short-term shareholder valuation of firms using an event study. Although there are studies going beyond market reaction and focusing on how fraud affect firms' real activities such as bank loans and CEO compensation, the market value loss is a direct measure of the consequences of fraud. Moreover, the use of event study captures both information leakage and investors' delayed response. Having calculated cumulative abnormal returns during a short-term event window around punishment announcements, a fixed-effects model is used to examine how effective are punishments for accounting fraud. The panel data regression analysis is different from previous studies that employ field experiments to address the efficiency of monetary punishments (Gneezy and Rustichini, 2000; Holmas et al., 2010). However, as this thesis focuses on punishments imposed on firms rather than individuals and there are empirical and practical difficulties in conducting field experiments, the use of a fixed-effects model is appropriate.

Fraud studies often suffer from an incomplete detection problem. In other words, fraud can only be observed when it is committed and later detected. By treating detected fraud as all fraud using a simple logit or probit model, the firms that have committed fraud

but have not been caught are ignored. An increasing number of studies have been aware of this problem and addressed partial observability through a variety of models. These include the use of statistical birth and death process to estimate cartels detection rates (Bryant and Eckard, 1991), sample restriction based on firm size (Dyck et al., 2010), the Heckman two-step model (Tan et al., 2017), capture-recapture methods (Ormosi et al., 2014), detection controlled estimation (Li, 2013) and bivariate probit model (Wang, 2013). This thesis uses a bivariate probit model to examine mutual funds' role in deterring fraud as the observed likelihood of detected fraud can be modelled as the outcome of two latent processes: fraud commission and fraud detection. Subsequently, the model can generate new insights not only about each latent process but also how the two probabilities interact with each other. The next three chapters present three separate studies relating to the research aim.

# 4. Recidivism, punishment and accounting fraud

## 4.1 Introduction

This chapter examines the research question: is recidivism in accounting fraud influenced by regulatory punishments? Fraudulent financial reporting including intentional misstatements in financial reporting and presentation of financial reports without conformity with Generally Accepted Accounting Principles (AICPA, 2002) is a threat to public confidence and linked with inefficient capital allocation decisions (Throckmorton et al., 2015). Outside the important roles played by auditors in deterring fraud, there has been a surprising dearth of evidence on fraud prevention measures and their efficacy in limiting reoffending (Davis and Pesch, 2013). Using a unique hand collected data set of financial statement fraud and punishments for Chinese listed firms between 2007 to 2014, currently largely unexplored questions as to the relationship between punishments and accounting fraud are addressed.

Based on the analysis of Chinese listed firms between 2007 and 2014, this chapter finds that the level of recidivism in Chinese accounting fraud is high, with a diversity of offending and reoffending observed and many firms employing a wide range of fraud techniques simultaneously. Punishments are observed to increase with additional offending, with significant differences existing between different punishments and reoffending. Self-regulatory measures appear to offer the least deterrent to future offending. The occurrence of recidivism is associated with a range of regulatory and institutional factors. Specifically, a positive relationship between self-disciplinary measures and recidivism and a negative relationship between institutional or state ownership and recidivism are reported. The results imply self-regulatory measures do not have a deterrent effect and should be used less in addressing recidivism.

This chapter is motivated by the serious impacts arising from corporate fraud (Chen et al., 2005). Just in 2014 the CSRC imposed 158 administrative decisions involving monetary penalties and disgorgements of $76.3 million and addressing a number of high-profile cases (CSRC, 2015; Xinhua, 2015). This scale of financial statement fraud

remains a serious threat to investors' confidence in audited financial reports, accounting professions and capital markets in China (Zhu and Gao, 2011). As one of the main reasons for repeated fraudulent activities in China are the limited punishments for these activities (Ding et al., 2012), examining the association between recidivism and punishment has become a pressing policy concern.

Accounting fraud has been previously examined from a diversity of perspectives including assessing individual incentives and firm motivations for committing fraud (e.g. Beasley, 1996; Chen et al., 2006; Aggarwal et al., 2014), how fraud has changed over time and the financial and other implications of fraud (see Cooper et al., 2013). This chapter contributes to this growing literature by examining the relatively overlooked field of recidivism and punishment of accounting fraud, whilst accounting for contextual or institutional factors (see Gabbioneta et al., 2013) such as the type of regulator, whether the firm is state owned or otherwise and the types of fraud. This chapter also contributes to a further established yet divided literature on the design of efficient penalty structures for repeat offenders (e.g. Polinsky and Shavell 1998; Chu et al., 2000). As empirical tests of these theoretical predictions have been limited, this research extends this literature within the Chinese context.

The chapter is organized as follows. The next section presents the theoretical framework and reviews the relevant empirical literature. The third section presents the study methodology and data. The fourth section discusses the results and the final section concludes and provides policy recommendations.

## 4.2 Literature review: Accounting fraud, recidivism and punishments

The literature examining recidivism, punishment and accounting fraud is diverse. For brevity this section outlines the theoretical and empirical aspects associated with the research question: Is recidivism within accounting fraud influenced by regulatory punishments? This discussion explores why accounting fraud develops, how crime and

punishment are associated and the treatment of recidivism.

Fraudulent financial reporting is a deliberate attempt by individuals or organizations to mislead information users of firms' annual reports and can be committed in a variety of techniques. These include fictitious recording of journal entries, improper adjustments of accounting assumptions, omission or postponement of recognition of events or transactions, concealment or non-disclosure of the events, participating in complex financial transactions structured to misrepresent the firm financial performance and changes to records or terms associated with material and unusual transactions (Zhu and Gao, 2011).

While there are multiple explanations of why accounting fraud and recidivism arises, the fraud triangle hypothesis (Cressey, 1953) is incorporated within accounting standards internationally[56] and widely applied by practitioners (Skousen et al., 2009; Chen et al., 2016). This theory intimates pressure, opportunity and rationalization of fraud determine the likelihood of wrongdoing (Campbell and Göritz, 2014; Chang and Lai, 2002). The fraud triangle hypothesis can be applied to the Chinese context where, firms face multiple financial pressures from breaching regulatory profitability thresholds[57] to the avoidance of delisting. Opportunity also exists within the imperfect legal environment of China, where local courts may refuse certain legal actions involving financial matters without solid or explicit legal grounds (Huang and Zhao, 2015).[58] In pursuing self-interest, firms may develop deviant cultures where fraudulent

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[56] See the Statement on Auditing Standards No. 99 and the International Standard on Auditing No.240. Available at: https://www.aicpa.org/research/standards/auditattest/sas.html#SAS84, https://www.frc.org.uk/getattachment/5dc29cef-bb77-40f9-88f5-4c1cec215f5c/ISA-(UK)-240-Revised-June-2016_final.pdf (last visited on 30 November, 2017)

[57] For firms seeking to list on the China's stock exchanges, they need to make profits for at least three continuous years with a cumulative profit of at least 30 million Yuan (approximate $4.356M) and an aggregate amount of operating cash flows exceeding 50 million Yuan (approximate $7.261M) or an aggregate operating income not less than 300 million Yuan (approximate $43.566M) for at least three consecutive years (PWC, 2015). For firms seeking to apply right offerings, they need to have a three-year mean return on equity no less than 10%.

[58] This is mainly due to a lack of applicable legal regulations, a weak ability of the courts understanding complicated financial matters, the background of China's transitional economy and judiciary self-interests.

activities become normalised (Campbell and Görtiz, 2014; Chang and Lai, 2002). This is particularly apposite for China, where *guanxi*, a system of interpersonal relationships and trading favours is an important factor governing business success (Du et al., 2015). Subsequently, fraud investigations can be complicated and institutional actors pressured to forgo their professional independence (Du et al., 2015). For accounting fraud where individuals offend for both individual and collective reasons this social atmosphere may be influential (Gabbioneta et al., 2013).

Corporate recidivism refers to repeated patterns of fraudulent behaviours in listed firms, which not only damage corporate reputation, yet also has a negative influence on peer organizations. Unfortunately, the few studies that have mentioned the persistence of fraud among listed firms, either dropped recidivists from their samples (Harris, 2007) or using recidivism as a control variable (Pfarrer et al., 2008). One exception is a study examining the determinants of corporate recidivism. Zheng and Chun (2017) report three specific factors drive corporate recidivism in China, including internal preconditioning, inter-organizational imitation and the prevailing external evaluation. Specifically, firms which engage in recidivism are more likely to be influenced by peer misconduct, accumulate stress due to their financial failure and have lower external evaluation from professional institutions and investors.

A substantial theoretical and developing empirical literature has considered how punishment and offending are linked. Since Becker (1968) the choice to engage in crime and appropriate punishments has been framed as an economic decision involving cost and benefit trade-offs. The decision to offend is associated with how much an economic actor can earn from the offence balanced against the costs and probability of being caught (Stigler, 1970; Fischer and Verrecchia, 2000). To deter crime, punishments should produce sufficient disutility to outweigh any gains (Werden, 2009). Firms and individuals therefore only undertake criminal acts if their private benefits from these actions exceed the external costs (Polinsky and Shavell, 1979). As higher expected punishments are assumed to reduce crime levels (Gneezy and Rustichini, 2000) fines should increase to the value of damage caused to victims adjusted upwards for the

probability of apprehension (Becker and Stigler, 1974). Subsequently, if every firm or person engaging in a crime could be apprehended at zero cost, then all offenders would be discovered and fined the cost they impose on society or other individuals.

Punishment should not only inconvenience offenders yet also deter future offending, be this though ignoring previous offences, using prior offences as a basis for imposing progressively more severe sanctions or increasing penalties for repeated offences up to proportional limit (Bagaric, 2014).[59] Subsequently in determining an appropriate level of punishment requires a calculation to deter future poor behaviours and limit the costs of regulation (Becker, 1968). Two period models of the first and subsequent incidences of crime have been used to examine this issue. For instance, Rubinstein (1980) reports deterrence is higher if the punishment for the first crime is lower than the punishment for the second crime. Polinsky and Shavell (1998) propose that if optimal deterrence in the first incidence of crime is not possible, maximum punishments should be reserved for subsequent offending. They also report young first-time offenders and old-second time offenders should be penalized with the maximum sanctions. Likewise, Mungan (2014) argues that if punishments for recidivism are sufficiently high, offenders may not only rationally forgo the opportunity to commit profitable fraud today but also avoid being punished as a repeat offender in the future.

Notwithstanding the intuition of these arguments the impact of increasing punishments is imprecise (Chu et al., 2000). Constraints on punishment can arise including limited marginal deterrence and unfairness of heavy punishments when capture is improbable; undermining and even amplifying offending activity (Stigler, 1970). The presence of risk aversion (Polinsky and Shavell, 1979), the wealth of the offending economic actor

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[59] In China, some academics and practitioners consider the Article 4 of the *Administrative Penalty Law* as an example of the application of the 'the principle of proportionality' (Weng and Jia, 2015). The Article 4 stipulates that:

*Administrative punishments should abide by the principles of being fair and just and open to public. The establishment and implementation of administrative punishments should take facts as the base and correspond to the facts, nature and seriousness of the illegal facts as well as to the extent of the harm thereby caused to the society.*

(Polinsky and Shavell, 1984) and the scale and form of enforcement costs (Polinsky and Shavell, 1992) also complicate this arrangements.

There are some empirical studies suggesting the opposite regulatory design in addressing recidivism. Burnovski and Safra (1994) report reducing punishments on subsequent fraud while increasing the penalties on the previous fraud can reduce the overall fraudulent activities. Motchenkova (2014) extends the previous *2-period* model to an *n-period* setting and finds: for individuals who commit crimes several times, the optimal punishment is a fine for first-time crime which equals the offenders' entire wealth and the fines are zero for all the subsequent crimes. In reality, firms actually confront smaller penalties from shareholders upon the announcement of repeat fraud than the first-time fraud. This is because the first-time fraud eliminates expectations that firms will return to the ethical modes of behaviours, thus lowering investors' expectations and reactions to the future acts of fraud (Moore et al., 2010). In summary, the interaction among pressure, opportunities and rationalization leads to the occurrence of accounting fraud. In order to increase the costs of fraud, punishments imposed by regulators should produce sufficient deterrence effect to dissuade future recidivism.

## 4.3 Data and methodology

A hand-collected textual dataset of regulatory determinations termed sanction reports, issued by the central CSRC office, regional CRSC offices, the Shanghai and Shenzhen Stock Exchanges and the Ministry of Finance are used in the analysis. This regulatory reporting extends previous contributions (Chen et al., 2005, Chen et al., 2006; Zhu and Gao, 2011; Wu and Zhang, 2014) through incorporating sanction decisions made by CSRC regional offices (Xu et al., 2017). The sanction reports were downloaded from the CSRC, 'CNINFO' websites, and the Shanghai and Shenzhen Stock Exchange official websites. The sanction reports are verified by the CSRC, the MOF and the stock

exchanges ensuring data reliability. The context of the sanction report is examined in detail in order to capture the specific corporate behaviours, and punishments relating to fraud. The research is based on an 8-year period from 2007 to 2014, providing a period of common Chinese Accounting Standards (Ke et al., 2016). Further and alike all similar studies, the assessment of recidivism is censored by the length of the sample considered. All estimates from therefore consider recent cases of recidivism.

As the study focuses on financial statement fraud, other regulatory cases are excluded. These excluded cases include corporate violations relating to securities fraud and environment pollution, cases where information is not published on time and fraud found in a firm's announcements (Chen and Rezaee, 2013). The research examines only listed firms that issue 'A' shares in the domestic stock exchanges. The final dataset covers 546 sanction decisions made by CSRC, CSRC regional offices, Shenzhen and Shanghai stock exchanges and Ministry of Finance against fraudulent firms.[60] Most of the sanction decisions considered are based on, '*Accounting Standards for Enterprises*' (20%), '*Securities Law*' (19%), '*Administrative Measures for the Disclosure of Information of Listed Companies*' (14%) and '*Rules of Stock Exchanges for the Listing of Stocks*' (14%) rather than '*Administrative Penalty Law*' (2%).

A multitude of methods have been previously employed to analyse fraud including case studies, content analysis and linguistic analysis (see Diaz-Rainey et al., 2014; Soltani, 2014; Humpherys et al., 2011). This thesis uses a content analysis method to categorize textual items from a large number of qualitative data sources (Holsti, 1969; Linsley and Shrives, 2006; Arnold et al., 2009; Zhu and Gao, 2011) to determine the incidence of fraudulent financial reporting and punishments.

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[60] There are 546 unique sanction decisions in the samples. If the same year recidivism is considered, it gives a total number of 603 sanction decisions. Among them, 102 decisions are issued by the CSRC, 374 decisions are issued by the regional offices, 32 decisions are issued by the Shanghai stock exchange, 78 decisions are issued by the Shenzhen stock exchange, 16 decisions are issued by the Ministry of Finance and 1 decisions are issued by the National Association of Financial Market Institutional Investors. For better understanding and regression applying concerns, this chapter incorporates the same year recidivism as one case in that year. Therefore, from 2007-2014, the number of firm fraud samples is 37, 34, 54, 62, 67, 99, 119 and 74 respectively.

Coding, the process of categorizing data into given groups (Holsti, 1969) is conducted following a manifest approach (Diaz-Rainey et al., 2014). Information about punishments is recorded from the report extracts, and information about the types of fraud requires the coder to read the narrative for meaning and make a judgment about the categories classified. This procedure selects the sentence as the coding unit, including meaning of the whole sentences (Li, 2010) rather than a dictionary approach of using words in isolation. In addition, manual content analysis is employed as opposed to commonly used software content analysis (Hassan and Marston, 2010). The manual content analysis tailors the research setting of studying specific fraud and punishments. This procedure based on Weber (1990)'s steps of coding text to mitigate rater bias (Duriau et al., 2007), is widely referenced in literature (Miller, 1998).

This research initially bases its categorization of financial statement fraud on Zhu and Gao (2011). For a fraud case that does not belong to any of the categories in Zhu and Gao (2011)'s paper, the additional groups are formulated. Subsequently, six major types of fraud are coded, including false income statements, false balance sheets, false cash flow statements, improper financial statement consolidation, delayed disclosure of annual reports and insufficient and false disclosure of information. Using a similar coding approach, within each of these six categories, a series of appropriate items are identified in order to establish relevant sub-categories. In total, forty sub-categories of specific fraud techniques are identified.[61]

This content analysis method is unavoidably subjective, and one way to increase reliability is to have more than one person code the documents (Abraham and Cox, 2007). Thus, an independent coder is introduced to separately read and code a randomly selected 10% of sanction reports (De Laat and Lally, 2004; Lombard et al., 2010).[62]

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[61] The steps of coding punishments follow Weber's steps of coding text. Based on Firth et al. (2016)'s classification, the researcher codes the samples. For a punishment that does not correspond to any of their groups, then the additional groups should be formulated. See appendix 1.2 for coding scheme and the classification of accounting fraud.

[62] The author would like to thank Jingwen Yang (Bangor University) for being as an independent coder.

Based on Linsley and Shrives (2006), training was provided and consisted of familiarising the coder with financial statement fraud terms and the coding procedures. The intercoder reliability coefficients are calculated to ensure that stability and reproducibility meet the acceptable criteria. Following Lombard et al. (2002) and Diaz-Rainey et al. (2014), this chapter uses the 'Cohen's Kappa' and the 'Krippendorff's Alpha' to calculate inter-coder reliability coefficients as they consider the possibility that coders' agreement may be occurred by chance. The Cohen's kappa (k) (Cohen, 1960) is stated as:

$$k = \frac{P_a - P_c}{1 - P_c} \qquad (4.1)$$

The $P_a$ refers to the percentage of cases that both coders agree and the $P_c$ refers to the percentage of cases that the agreement is expected by chance alone. Expected agreement by chance is calculated on the basis of the multiplicative marginal (Lombard et al., 2002). Krippendorff's Alpha (Krippendorff, 2007) is stated as:

$$\alpha = 1 - (\frac{D_o}{D_e}) \qquad (4.2)$$

Where $D_o$ is the observed disagreement among values assigned to units of analysis and $D_e$ is the disagreement one would expect when the coding of units is attributable to chance rather than to the properties of these units. The intercoder reliability is high with a Cohen's Kappa of 0.946, statistical significance at 1% and a standard error of 0.018; implying high reliability following the Landis and Koch (1977) criteria. The Krippendorff's Alpha is 0.932, also indicates high reliability and a bootstrapping procedure indicates an 0.002 chance that the Krippendorff's Alpha would below 0.800 if the whole population would be tested (See Appendix 1.3 and 1.4).

Using this coded data, the research question is addressed employing descriptive and inferential methods. Initially, the form and scope of accounting fraud are outlined. Secondly, the association between these activities and punishment is investigated using $\chi^2$, t and F tests. Lastly, the relationship between recidivism and punishment is examined using a logit model. This model is employed to analyse the dichotomous

dependent variable (Greene, 2003; Menard, 2002) of whether a regulatory case is a repeat offence or otherwise. This chapter also considers independent variables including forms and levels of punishments, contextual factors such as state ownership and features of the cases including the duration and the number of frauds. Therefore each response to the dependent variable may take one of the two values: 1 = a repeat offence or 0 = a first offence with $Y_i^* = \begin{cases} 1 & recidivist \\ 0 & one\ time\ fraudster \end{cases}$ expressing respondent $i$'s propensity to reoffend and letting $x_i$ represent the vector of independent variables. The logit model can be defined as the linear equation:

$$L_i = \ln\left(\frac{\pi_i}{1 - \pi_i}\right) = x_i'\ \beta + u_i \tag{4.3}$$

where, $\pi_i$ is the probability of an individual or firm $i$ reoffending, $x_i$ is vector of independent variables, $\beta_i$ is a vector of parameters containing an intercept and $L_i$ is the logit which is obtained by taking natural logs of the odds ratio ($\pi_i/(1 - \pi_i)$).

From these coding procedures a diversity of variables are defined including the characteristics of the accounting fraud, the punishments applied and institutional factors. The punishments vary in severity and incorporate pecuniary, reputational and regulatory elements. The context of regulatory investigation is important as China has developed a system of national and regional investigations similar to that seen in the U.S.A. and organisational configuration of regulators has long been viewed to influence the conduct of regulators (Masciandaro, 2006; Xu et al., 2017). Self-disciplinary measures are disciplinary and punitive measures implemented by self-regulatory organization on its members based on the general interests of the industry and in accordance with self-regulatory rules (CSRC, 2014). Self-disciplinary measures are considered to be non-administrative (thus less serious) punishment in nature and only result in reputational losses (Wu and Zhang, 2014).

Various firm level factors such as leverage, size and ownership could also influence fraud. For example, highly indebted firms may face greater pressure to undertake

accounting fraud. Listed firms in China normally have a highly concentrated ownership structure with state institutions often acting as major block-holders (Yu, 2013a) incentives may exist to tunnel wealth from minority shareholders. As SOEs are established to fulfill the political and social objectives such as controlling sensitive sectors (Clarke, 2003) and increasing employment rate and wages (Fan et al., 2007) and they are subject to political priorities (Wong, 2016). As the pursuit of shareholder interests' maximization is not the sole or even the primary mission of SOEs, SOEs may lack motivations to commit fraud. In addition, due to their direct links with government agencies, these firms may escape serious fraud sanctions (Wang and Yung, 2011) or alternatively could face limited incentives to undertake fraud (Chen et al., 2011). All institutional or control variables are lagged by one to reflect the period of adjustment to these influences. A description of the variables is included in Table 4.1 and descriptive statistics and a correlation matrix are provided in Table 4.2.

**Table 4.1**

Variable description.

| | Code | Variable name | Description | Source |
|---|---|---|---|---|
| Reoffending | Recidivism | Recidivism | Equals to one if a firm has committed accounting fraud more than once in the sample period and zero otherwise *Note: Only repeat offence is coded as 1, first-time offence is coded as 0* | Manual |
| Punishments | Self-measures | Self-disciplinary measures | Equals to one if a firm is subject to the self-disciplinary measures and zero otherwise | Manual |
| | Criticism | Public criticism | Equals to one if a firm is subject to the punishment of public criticism and zero otherwise | Manual |
| | Condemnation | Public condemnation | Equals to one if a firm is subject to the punishment of public condemnation and zero otherwise | Manual |
| Features of cases | Fraud cases | Number of fraudulent cases | Total number of fraudulent cases committed by a sample firm | Manual |
| | Lasting years | Lasting years of fraud | It is calculated from the first fraud year to the last fraud year referred in the sanction report | Manual |
| Institutional factors | Firm size | Firm size | Natural logarithm of the firm's total assets at the year t-1 | CSMAR |
| | Leverage | Leverage | Total liabilities divided by total assets, both measured at the year t-1 | CSMAR |
| | Institution | Institutional ownership | The number of shares held by institutional shareholders divided by the number of shares outstanding, both measured at the year t-1 | CSMAR |
| | State | State ownership | The number of shares held by state owners divided by the number of shares outstanding, both measured at the year t-1 | CSMAR |
| | Big 4 | Big four auditors | Equals to one if the firm is audited by a big four auditor and zero otherwise at the year t-1 | CSMAR |

**Table 4.2**

Descriptive statistics and correlation matrix.

| Variables | N | Frequency | mean | min | max |
|---|---|---|---|---|---|
| Recidivism | 546 | 113 | 0.209 | 0 | 1 |
| Self-measures | 546 | 103 | 0.189 | 0 | 1 |
| Criticism | 546 | 35 | 0.064 | 0 | 1 |
| Condemnation | 546 | 34 | 0.062 | 0 | 1 |
| Fraud cases | 546 | 546 | 2.397 | 1 | 11 |
| Lasting years | 546 | 546 | 2.044 | 0 | 15 |
| Firm size | 546 | 546 | 21.300 | 15.556 | 25.585 |
| Leverage | 546 | 546 | 0.745 | 0.017 | 18.940 |
| Institution | 546 | 546 | 0.042 | 0 | 0.573 |
| State | 546 | 546 | 0.092 | 0 | 0.971 |
| Big4 | 546 | 25 | 0.046 | 0 | 1 |

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| [1]Recidivism | 1.000 | | | | | | | | | | |
| [2]Self-measures | 0.086** | 1.000 | | | | | | | | | |
| [3]Criticism | 0.013 | 0.505*** | 1.000 | | | | | | | | |
| [4]Condemnation | 0.073* | 0.534*** | -0.067 | 1.000 | | | | | | | |
| [5]Fraud cases | 0.037 | -0.095** | -0.138*** | -0.016 | 1.000 | | | | | | |
| [6]Lasting years | 0.051 | 0.049 | 0.108** | 0.047 | 0.146*** | 1.000 | | | | | |
| [7]Firm size | -0.019 | -0.120*** | -0.109** | -0.122*** | 0.075* | -0.065 | 1.000 | | | | |
| [8]Leverage | 0.049 | -0.027 | 0.047 | -0.002 | -0.027 | 0.054 | -0.242*** | 1.000 | | | |
| [9]Institution | -0.084* | 0.039 | 0.019 | 0.043 | 0.073* | 0.050 | 0.117*** | -0.034 | 1.000 | | |
| [10]State | -0.125*** | -0.090** | -0.036 | 0.009 | 0.063 | -0.071* | 0.175*** | -0.002 | 0.108** | 1.000 | |
| [11]Big4 | -0.048 | -0.016 | -0.022 | 0.016 | -0.026 | 0.017 | 0.223*** | -0.035 | 0.051 | -0.024 | 1.000 |

Frequency refers to the incidence of a dummy variable that equals to one. All of the variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively.

## 4.4 Results and discussion

### 4.4.1 Fraudulent financial reporting

Table 4.3 shows the distribution of financial statement fraud during the reporting period. Panel A shows how listed firms have manipulated income statements. The most commonly used methods include recording fictitious revenue and recording fictitious costs and expenses. Within the sub-category of 'false revenue recognition', more than half of listed firms overstate revenue and about a quarter of listed firms recognize revenue in advance. Overstating revenue refers to recording sales that did not occur, which can be done through creation of phony invoices or increasing quantities or prices, while early recognition of sales is associated with the firm recording income prior to the finalization of sales (Deo and Liu, 2016). When recording fictitious costs and expenses, the most frequent techniques are understating costs and expenses, delaying the recognition of costs and expenses and mis-classifying the costs and expenses.[63]

Reducing bad debts, inventories and other impairment provisions are the fraud methods included in the category of recording fictitious asset impairment losses and this group accounts for about 15% of total income statement fraud cases. Firms are required to accrue such losses when recoverable amount of assets are lower than its carrying value. In 19 cases, firms falsify income statements through recording fictitious investment profits. This thesis also observes new fraud tactics that the firms use to window-dress income statements under the adoption of new accounting standards: recording fictitious non-operating income or expenses and improper accounting practices for sales returns, rebates and trade discounts. Fictitious non-operating income recognition includes the improper recognition of government subsidies. Improper accounting practices of sales returns and rebates is occurred when the firm does not adjust sales returns after the balance sheet date or when a firm's accounting treatment of sales returns and rebates

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[63] For firms mis-classifying costs and expenses, over-capitalizing costs and expenses is the most common tactic. Over-capitalizing costs and expenses provides a way to increase income and assets since they are amortized over a period of years rather than expensed immediately.

does not conform to accounting standards.[64]

The Panel B shows the types of fraud methods employed by the listed firms to falsify balance sheets. It indicates up to 70% cases record false assets and 29% cases record false liabilities to manipulate the financial position of balance sheets. There is only 1 case of recording false equities.[65] Common tactics of mis-classifying and improper accounting of assets include construction in process not carrying forward as fixed assets and the mis-classification of non-current assets as current assets. The assets that are most frequently manipulated in the sample are monetary assets, inventories, account or other or note receivables,[66] fixed assets and construction in process. The 'false liability valuation' accounts for approximately 20% of total committed balance sheet fraud and the preferred and easiest method of 'false liability valuation' is to simply fail to record them. There are 12 cases which mis-classify the journal entries of certain liabilities accounts and use improper accounting practices to record them. Timing difference is another method of manipulating balance sheets, however, either early or late recognition of assets and liabilities is infrequently adopted by listed firms.

Panel C lists the types of cash flow statement fraud. A firm's cash flow is divided into three sections: operating, investing and financing activities. Most of the fraudulent behaviours are related to a firm not recognizing the sub-items under the three major cash flows activities, while the common fraud tactic adopted in the group of 'false cash, cash equivalents and cash flow supporting materials' is associated with a firm recognizing fixed-term deposits as cash and cash equivalents.

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[64] According to Chinese Accounting Standards (No.14, Article 9), any sales return arising from goods which have been sold and of which the revenue from the sale has been recognized by the firm, the firm should offset against the current revenue from the sale of goods.

[65] The Guangdong Macro Co., Ltd. does not recognize the surplus reserves in 2010 annual report.

[66] Fictitious receivables are common among firms with financial problems and the schemes are more common around the end of the accounting period since the receivables should be paid in cash within a reasonable time.

**Table 4.3**

Types of fraudulent financial reporting.

| Types of Accounting Fraud | Total | Non-reoffend | Recidivism |
|---|---|---|---|
| **Panel A: False Income Statement** | | | |
| Fictitious revenue recognition | 69 | 49 | 20 |
| Fictitious operating costs and expenses recognition | 123 | 91 | 32 |
| Fictitious asset impairment losses recognition | 47 | 41 | 6 |
| Fictitious investment profits and losses recognition | 19 | 14 | 5 |
| Improper accounting for sales returns, trade discounts and rebates | 12 | 9 | 3 |
| Fictitious non-operating income and expenses recognition | 20 | 18 | 2 |
| Others | 17 | 14 | 3 |
| **Panel B: False Balance Sheet** | | | |
| Timing difference recognition of assets | 6 | 5 | 1 |
| False asset valuation | 60 | 46 | 14 |
| Mis-classification and improper accounting for assets | 53 | 40 | 13 |
| Timing difference recognition of liabilities | 3 | 3 | 0 |
| False liabilities valuation | 35 | 27 | 8 |
| Mis-classification and improper accounting for liabilities | 12 | 9 | 3 |
| False equities valuation | 1 | 1 | 0 |
| **Panel C: False Cash Flow Statement** | | | |
| False cash flow relating to operating activities | 7 | 6 | 1 |
| False cash flow relating to investing activities | 4 | 4 | 0 |
| False cash flow relating to financing activities | 3 | 3 | 0 |
| False cash, cash equivalents and cash flow supplement materials | 9 | 6 | 3 |
| **Panel D: Improper financial statement consolidation** | | | |
| Not bringing a subsidiary in the scope of consolidation | 13 | 7 | 6 |
| Internal transactions not fully eliminated | 9 | 8 | 1 |
| Bringing a subsidiary which the parent firm has loss of control | 4 | 3 | 1 |
| Others | 4 | 3 | 1 |
| **Panel E: Delayed disclosure of annual and interim reports** | 18 | 10 | 8 |
| **Panel F: Insufficient and false disclosure of information** | | | |
| Related party transactions | 195 | 152 | 43 |
| Investment status | 70 | 59 | 11 |
| Financial status and operating results in the director report | 18 | 12 | 6 |
| Mortgage, seal and freeze of assets or equities and restricted assets | 23 | 15 | 8 |
| Assets that haven't obtained the ownership certificates or use rights | 14 | 9 | 5 |
| Receivables or payables by types, amounts and risks | 28 | 22 | 6 |
| Contracts and the fulfilment of contracts | 26 | 21 | 5 |
| Guarantee events | 59 | 49 | 10 |
| Lawsuits events | 20 | 14 | 6 |
| Commitment events | 12 | 9 | 3 |
| Directors, supervisors and senior management information | 33 | 26 | 7 |
| Accounting policies and accounting estimates | 62 | 52 | 10 |
| Customers and suppliers | 19 | 13 | 6 |
| Shareholders, shareholding and actual controllers | 47 | 35 | 12 |
| Internal control and corporate governance | 13 | 7 | 6 |
| External loans events | 25 | 21 | 4 |
| Others | 97 | 82 | 15 |
| **Total** | 1309 | 1015 | 294 |

Non-reoffend refers to the fraud techniques used by first-time offenders. Recidivism refers to the fraud techniques used by the repeat offenders.

In Panel D there are 30 cases of fraudulent financial reporting by improperly consolidating financial statements. Nearly half of the firms in this group fail to bring subsidiaries into the scope of consolidation, while four parent firms still bring subsidiaries into the scope of consolidation when the parent firms have already lost control of the subsidiaries. Nine cases fail to eliminate their inter-company transactions when consolidating financial statements. The Panel E shows that there are 18 cases of failing to disclose the annual and interim reports in time. The CSRC stipulates that listed firms need to compile the annual report (half year report) within four months (two months) from the end of each financial reporting period and need to disclose financial reports through the websites and newspapers which are appointed by the CSRC (Xiang et al., 2015).

Accounting standards require that financial statements and notes include all information necessary to prevent a reasonably discerning user of financial statements from being misled. 'Insufficient and false disclosure of information' is the most common type of fraud committed by the Chinese listed firms as shown in the Panel F. The method of 'insufficient and false disclosure of the related party transactions' is most frequently adopted by listed firms. In particular, concealing and falsifying claims and debts matters with the related parties, the relationship of related parties, buying and selling goods between related parties and capital occupied by the related parties are the main tactics within this sub-category.[67] Panel F also shows that insufficient and false disclosure of guarantee events, accounting policies and accounting estimates are often employed by the listed firms. This category includes a few new fraud techniques which are rarely documented in the prior literature, such as insufficient and false disclosure of the internal control and corporate governance problems, customers and suppliers information, assets which have not obtained the ownership certificates or use rights and commitment events. Overall Table 4.3 indicates that approximately 60% listed firms

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[67] The firm has claims and debts matters with related parties include, for instance, capital collected from and paid for the related parties, capital borrowed from and lent to the related parties.

use more than one fraud techniques and 21% listed firms use four or more fraud techniques simultaneously to manipulate financial statements. There are even two companies which adopt 11 fraud techniques.

The major findings remain qualitatively similar when the samples are divided into non-reoffending and recidivist groups. However, differences exist with respect to the preferred specific techniques to manipulate financial statements. In particular, first-time offenders prefer falsifying financial reporting through insufficient or false disclosure of related party transactions (15.0%), providing fictitious costs and expenses (9.0%), insufficient or false disclosure of investment status (5.8%) and inappropriate accounting policies (5.1%). In contrast, repeat offenders prefer to use insufficient or false disclosure of related party transactions (14.6%), fictitious costs and expenses (10.9%), fictitious revenue recognition (6.8%) and false asset valuation (4.8%) to window-dress financial statements.[68] In other words, first-time offenders are more likely to choose disclosure fraud while repeat offenders are more likely to choose income statement or balance sheet manipulation. This is because the nature of disclosed information is easier to manipulate and auditors are less tolerate of mis-statements of recognized information than disclosed information (Michels, 2016). As a result, first-time offenders prefer to omit or untruthfully disclose material information. When they determine to repeatedly commit fraud, fraud techniques become more complex and hidden. Thus, the manipulation of recognized information is preferred. It is interesting to notice that delayed disclosure of annual report has increased dramatically in the recidivism group. Fraudulent firms are generally subject to losses from legal penalties or reputation after the first punishment announcement, which makes the operation of business even harder. Under such circumstances, managers have incentives to delay the disclosure of bad news relating to firm earnings. In this way, managers can create more time to deal with criticism from all sides, or take measures to improve the poor performance (Xiang et al., 2015).

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[68] See Appendix 1.5 for the proportion of each type of financial statement fraud between non-reoffending and recidivism groups.

*4.4.2 Punishments on fraud*

The forms of punishments are presented in the Table 4.4. Warning and fines are administrative sanctions account for 27% of total punishments and are highly correlated with a correlation coefficient of 0.7, suggesting regulators use two severe punishments in combination. The mean fines imposed on fraudulent firms are increasing, rising from 313,333 Yuan in 2007 to 432,568 Yuan in 2014 (about $47,320 to $65,330). These monetary penalties are considerably less than that in the U.S. markets and are capped at 600,000 Yuan (about $90,000) by the Chinese Securities Law.[69] Repaying tax is imposed by the MOF and it is a rarely used administrative punishment. Supervisory measures[70] including rectification notices, regulatory concerns, letters of warning, public statements and regulatory interviews are also recorded. Rectification notices are most frequently used, account for 46% of the total sample and are primarily adopted by CSRC regional offices. Regulatory interviews and public statement orders are seldom used accounting for 0.3% and 0.6% of punishments respectively. Self-regulatory measures include public criticism, public condemnation, verbal warnings and business suspension. Public criticism and public condemnation are imposed by the two stock exchanges and each accounts for 5% of total punishments. In contrast, verbal warnings and business suspension are seldom used.

Table 4.4 also reviews the descriptive links between recidivism, the forms of punishments and wider firm level and regulatory influences. Significant factors

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[69] According to the Article 193 of the Securities Law 2005, the CSRC is authorized to impose a monetary fine to listed firms that engaged in misrepresentation. The range of this fine is between 300,000 Yuan to 600,000 Yuan (about $45,000 to $90,000). However, there is no restrictions regarding the amounts of fines imposed on market fraud, such as insider trading, price manipulations etc. Xu et al. (2017) find that the penalties and disgorgements imposed by the CSRC is only about 2% of that imposed by the U.S. securities regulator SEC, which is extremely low considering the fact that the CSRC investigates serious and complex cases.

[70] Supervisory measures are highly time-sensitive corrective measures carried out in connection with the compliance and prudence supervision of market entities, which aim at preventing the risks and detrimental consequences from spreading (CSRC, 2014). Regarding the general problems detected in the on-site inspection of firm financial report, the CSRC regional office issues letters of regulatory concern. Regarding the relatively serious problems detected, the CSRC regional offices can issue rectification notices, letters of warning, public statement orders and other administrative supervisory measures (CSRC, 2012).

associated with recidivism include the use of reputational warning punishments and self-regulatory measures. All these measures appear to have a significantly lower deterrence to future offending than other punishments. More conventional punishments such a fines appear to have a limited influence on recidivism. Firm level factors are also significantly associated with recidivism and particularly firm ownership. It appears that state and institutional ownership are linked with significantly lower levels of recidivism.

Table 4.5 presents the features of reoffending. It is observed that 22% of offending firms are charged with financial statement fraud on more than one occasion during the sample period. As shown in Panel A, 18 firms involved in fraud are punished by the regulatory institutions more than twice and 2 firms are punished by the regulatory institutions more than three times. The Panel B shows that the interval between each punishment of the repeat offenders. More than 44% observations have the interval within one year and nearly 65% observations have the interval within two years between each punishment. The types and incidence of punishments imposed on recidivists between their first-time offences and repeating offences are shown in the Panel C. Rectification notices are most commonly imposed in both first-time and repeating offences. Moreover, the use of warning and fines is increasing for repeat offenders with more severe punishment for the repeat offenders. This suggests that previous offences justify incremental additions for the later punishments.

**Table 4.4**

Recidivism, punishments and institutional factors.

| | | Warning | Fines | Repay tax | Rectification notice | Regulatory concern | Letter of warning | Public statement |
|---|---|---|---|---|---|---|---|---|
| count | No reoffending | 47 | 80 | 1 | 242 | 56 | 24 | 3 |
| | Recidivism | 27 | 28 | 0 | 68 | 15 | 7 | 1 |
| | Total | 74 | 108 | 1 | 310 | 71 | 31 | 4 |
| % | No reoffending | 8.608 | 14.652 | 0.183 | 44.322 | 10.256 | 4.396 | 0.549 |
| | Recidivism | 4.945 | 5.128 | 0.000 | 12.454 | 2.747 | 1.282 | 0.183 |
| | Reoffending | 36.486 | 25.926 | 0.000 | 21.935 | 21.127 | 22.581 | 25.000 |
| | Pearson $\chi^2$ | 12.622 (0.000)*** | 2.076 (0.150) | 0.264 (0.607) | 0.484 (0.486) | 0.003 (0.956) | 0.058 (0.810) | 0.041 (0.839) |
| | | Regulatory interview | Criticism | Condemnation | Verbal warning | Business suspension | Self-measures | |
| count | No reoffending | 1 | 27 | 23 | 0 | 0 | 74 | |
| | Recidivism | 1 | 8 | 11 | 2 | 1 | 29 | |
| | Total | 2 | 35 | 34 | 2 | 1 | 103 | |
| % | No reoffending | 0.183 | 4.945 | 4.212 | 0.000 | 0.000 | 13.553 | |
| | Recidivism | 0.183 | 1.465 | 2.015 | 0.366 | 0.183 | 5.311 | |
| | Re-offending | 50.000 | 22.857 | 32.353 | 100.000 | 100.000 | 28.155 | |
| | Pearson $\chi^2$ | 1.030 (0.310) | 0.089 (0.766) | 2.889 (0.089)* | 7.607 (0.006)*** | 3.796 (0.051)* | 4.069 (0.044)** | |
| | | Firm size | Leverage | Institution | State | Big 4 | Fraud cases | Lasting years |
| average | No reoffending | 21.313 | 0.710 | 0.045 | 0.104 | 0.051 | 2.366 | 1.991 |
| | Recidivism | 21.250 | 0.876 | 0.029 | 0.049 | 0.026 | 2.518 | 2.246 |
| | F Test | 0.475 (0.491) | 1.506 (0.220) | 6.318 (0.012)** | 34.163 (0.000)*** | 5.200 (0.023)** | 0.123 (0.726) | 0.649 (0.421) |
| | T Test | -0.447 (0.655) | -1.141 (0.254) | 1.962 (0.050)** | 2.938 (0.003)*** | 1.117 (0.264) | -0.858 (0.391) | -1.190 (0.235) |

No reoffending (count) is the incidence of punishments imposed on first-time offenders. Recidivism (count) is the incidence of punishments imposed on repeat offenders. No reoffending (%) is the ratio of the incidence of punishments imposed on first-time offenders to the total number of observations. Recidivism (%) is the ratio of the incidence of punishments imposed on repeat offenders to the total number of observations. Re-offending (%) is the ratio of the incidence of punishments imposed on repeat offenders to the total number of punishments imposed on both first-time and repeat offenders. Self-measures include public criticism, public condemnation, verbal warning and suspend business. The control variables in no-reoffending and recidivism groups are calculated based on the mean values. Variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively.

**Table 4.5**

Repeat offenders.

**Panel A: The times of punishments that fraudulent firms receive**

| Number of sanctions | 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|
| Number of fraudulent firms | 338 | 76 | 16 | 2 | 0 | 432 |
| Percentage (%) | 78.241 | 17.593 | 3.704 | 0.463 | 0 | 100 |

**Panel B: The interval between each punishment of the recidivists**

| Interval | 1 year | 2 years | 3 years | 4 years | 5 years | More than 5 years |
|---|---|---|---|---|---|---|
| Number of observations | 51 | 25 | 19 | 10 | 5 | 4 |
| Percentage (%) | 44.737 | 21.930 | 16.667 | 8.772 | 4.386 | 3.509 |

**Panel C: Types of punishments for recidivists**

| Types of punishments | Incidence of punishments | | Percentage (%) | | Description of the punishments | | | |
|---|---|---|---|---|---|---|---|---|
| | First-time | Recidivism | First-time | Recidivism | Imposed by which regulator | Nature of punishment | Severity | Legal basis |
| Warning | 8 | 27 | 7.547 | 15.976 | CSRC or MOF | Administrative sanction | | |
| Fines | 13 | 28 | 12.264 | 16.568 | CSRC or MOF | Administrative sanction | Severe | Laws |
| Repay tax | 0 | 0 | 0.000 | 0.000 | MOF | Administrative sanction | | |
| Rectification notice | 48 | 68 | 45.283 | 40.237 | Regional office | Supervisory measure | | |
| Regulatory concern | 10 | 15 | 9.434 | 8.876 | Regional office | Supervisory measure | | |
| Letter of warning | 5 | 7 | 4.717 | 4.142 | Regional office | Supervisory measure | Moderate | Departmental provisions |
| Public statement | 0 | 1 | 0.000 | 0.592 | Regional office | Supervisory measure | | |
| Regulatory interview | 0 | 1 | 0.000 | 0.592 | Regional office | Supervisory measure | | |
| Public criticism | 11 | 8 | 10.377 | 4.734 | Stock exchange | Self-regulatory measure | | |
| Public condemnation | 11 | 11 | 10.377 | 6.509 | Stock exchange | Self-regulatory measure | Minor | Self-regulations |
| Verbal warning | 0 | 2 | 0.000 | 1.183 | Stock exchange | Self-regulatory measure | | |
| Business suspension | 0 | 1 | 0.000 | 0.592 | Other self-regulator | Self-regulatory measure | | |

The sample includes 546 firm-year observations (432 firms), of which 432 observations are first-time offenders and 114 observations are repeat offenders. Regulators can impose one or multiple punishments on fraudulent firms depend on the severity of violations. Administrative sanctions are substantive and conclusive punitive measures imposed on severe offences. Supervisory measures are highly time-sensitive corrective measures imposed on less-severe offences. Self-regulatory measures are disciplinary measures implemented by self-regulators on their members. The interval of each punishment imposed on recidivists in Panel B is calculated as the time period between prior sanction date and current sanction date. The Panel C compares the types of punishments imposed on recidivists between recidivists' first-time offending and their re-offending. Other self-regulator in this chapter refers to the *National Association of Financial Market Institutional Investors*.

**Table 4.6**

Logistic regression model.

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6-PSM |
|---|---|---|---|---|---|---|
| Self-measures | 0.500** | | | 0.527** | | 1.129*** |
| | (0.255) | | | (0.259) | | (0.236) |
| Criticism | | 0.137 | | | 0.243 | |
| | | (0.422) | | | (0.442) | |
| Condemnation | | | 0.768** | | 0.771** | |
| | | | (0.392) | | (0.396) | |
| Fraud cases | | | | 0.079 | 0.071 | 0.006 |
| | | | | (0.063) | (0.065) | (0.077) |
| Lasting years | | | | 0.045 | 0.042 | 0.044 |
| | | | | (0.048) | (0.049) | (0.049) |
| Firm size | 0.086 | 0.069 | 0.087 | 0.087 | 0.092 | 0.029 |
| | (0.092) | (0.090) | (0.092) | (0.090) | (0.090) | (0.091) |
| Leverage | 0.080 | 0.072 | 0.079 | 0.080 | 0.078 | -0.043 |
| | (0.069) | (0.068) | (0.068) | (0.070) | (0.068) | (0.094) |
| Institution | -3.836** | -3.673** | -3.709** | -4.190** | -4.085** | -2.417 |
| | (1.857) | (1.809) | (1.816) | (1.933) | (1.898) | (1.592) |
| State | -2.189*** | -2.276*** | -2.313*** | -2.220*** | -2.337*** | -2.210*** |
| | (0.763) | (0.763) | (0.761) | (0.758) | (0.757) | (0.760) |
| Big4 | -0.736 | -0.727 | -0.786 | -0.726 | -0.763 | -0.214 |
| | (0.671) | (0.658) | (0.679) | (0.682) | (0.682) | (0.461) |
| Constant | -2.998 | -2.540 | -2.971 | -3.312* | -3.336* | -1.536 |
| | (1.970) | (1.925) | (1.968) | (1.938) | (1.924) | (1.965) |
| Wald chi$^2$ | 17.04*** | 14.49** | 17.71*** | 19.98** | 20.25** | 34.64*** |
| Pseudo R$^2$ | 0.036 | 0.030 | 0.036 | 0.041 | 0.040 | 0.061 |
| Pearson goodness-of-fit (P-value) | 0.447 | 0.481 | 0.462 | 0.419 | 0.450 | 0.397 |
| Observations | 546 | 546 | 546 | 546 | 546 | 516 |

Self-regulatory measures include public criticism, public condemnation, verbal warning and suspend business. Although verbal warning and suspend business are also self-regulatory measures, they are seldom used by self-regulators and only include 2 and 1 case respectively in this chapter. Therefore, verbal warning and suspend business are not examined in models for the concerns that few observations may bias the overall regression model. Model 1-5 include 546 observations and Model 6 includes propensity score matched 516 observations. All of the variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. The standard errors are adjusted for firm-level clustering. See results of marginal effects in Appendix 1.6 and 1.7.

*4.4.3 Regression results*

In Table 4.6 (Models 1-5) the logit model results are presented. Pearson goodness-of-fit statistic indicates that the models fit the data well. It is reported self-disciplinary measures is positively and significantly related to recidivism. The result shows that self-disciplinary measures imposed on offenders increase their reoffending behaviours. The major self-disciplinary measures include public criticism and public condemnation. This chapter finds a positive and significant relationship between public condemnation and recidivism, which indicates that public condemnation increases the likelihood of firms engaging in recidivism.

Self-disciplinary measures are imposed based on self-regulation. However, unlike some Anglo-American jurisdictions, self-regulation plays a less important role when compared to formal regulation in China (Zhou, 2014). Even though self-regulators have the power to regulate themselves, the state retains ultimate oversight authority in which it can override self-regulators' proposals (Brockman, 1998). The empirical results suggest self-regulation increases corporate recidivism in China.

Some of the firms' characteristics are significant. Institutional ownership is negatively and significantly related to recidivism, indicating institutional shareholders appear are better motivated to undertake the monitoring role, deterring offenders from repeatedly committing fraud. Distinctly state ownership is negatively and significantly related to recidivism with firms with large proportion of state ownership less involved in repeatedly committing fraud.

The existing literature indicates that political connections and government support, such as those enjoyed by firms with state-owned background, can be beneficial in terms of performance and competition. This chapter confirms government support for firms with larger state ownership reduces the likelihood of them engaging in recidivism. However, the flip side is that it also reduces the effectiveness of external supervision exerted by accounting professionals. This will not be beneficial for minority shareholders in these firms (Chen et al., 2016).

This chapter also includes observations that commit recidivism in the same firm-year into samples and re-runs the logit model (see Appendix 1.8). With a total of 603 observations,[71] it is observed that the results remain unchanged. In addition, the impact of administrative sanctions, supervisory measures and self-regulatory measures on corporate recidivism is examined (see Appendix 1.9). It is reported that self-regulatory measures are significantly and positively associated with recidivism, whereas the relationship between recidivism and administrative sanctions or supervisory measures is statistically insignificant.

The self-measures variable might be endogenous as there are observable differences between firms subject to self-regulatory measures and not subject to self-regulatory measures.[72] In order to alleviate self-selection concerns, a subsample is constructed based on the propensity-score matching approach (Yu and Ashton, 2015). This section first runs a logit model using self-measures as the dependent variable and all other control variables as regressors in order to derive a firm's propensity score. Then, observations are matched based on the computed propensity scores using the radius matching (r=0.005).[73] Subsequently, this chapter obtains 516 observations with a matched propensity toward firms' characteristics that are subject to self-regulatory measures.[74] With propensity score matched observations, the logit model is re-

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[71] The yearly distribution of these fraud enforcement events are as follows: 2007: 37; 2008: 38; 2009: 57; 2010: 70; 2011: 70; 2012: 109; 2013: 132; 2014: 90.

[72] For instance, firms commit less severe fraud are often punished by the stock exchanges using self-regulatory measures, whereas the CSRC is responsible for punishing more severe fraudulent activities. In addition, better corporate governance implies improved oversight and vigilance, leading to less severe sanctions being imposed on fraudulent firms by the regulators (Jia et al., 2009).

[73] In radius matching, the outcome of the control units matches with the outcome of the treated units only when the propensity scores fall in the predefined radius of the treated units. Besides a medium radius (r=0.005), a wide radius (r=0.01) and a tight radius (r=0.002) are also considered in this chapter. It is observed that the results remain unchanged.

[74] The difference between treated and control groups is 0.264 and is statistically significant at 1% level in the unmatched samples (t=5.56). After matching, the difference (also known as the average treatment on treated effect value) reduces to 0.224 and yet remains statistically significant at 1% level (t=3.75). The result indicates self-regulatory measures increase corporate recidivism. The balancing is good for all covariates as the t-tests are not significant in the matched samples. See Appendix 1.10 for the detailed matching results.

estimated and results are reported in Model 6. It is observed that the primary findings remain consistent: the adoption of self-regulatory measures increases corporate recidivism but state ownership reduces a firm's likelihood of repeatedly engaging in accounting fraud.

## 4.5 Conclusions

The Chinese economy and its financial market has experienced unprecedented growth in recent years, however, the quality of published financial reporting is a major concern to regulators and investors. The increasing incidence of fraudulent financial reporting may overshadow the growth and viability of Chinese listed companies. This chapter examines how recidivist fraudulent financial reporting, punishments and institutional factors are associated from 2007 to 2014, in order to better understand corporate and regulatory behaviours relating to financial statement fraud.

The key findings are summarized as follows. There are six major types of financial statement fraud committed by the Chinese listed firms, including false income statements, false balance sheets, false cash flow statements, improper financial statement consolidation, delayed disclosure of annual and interim reports and insufficient and false disclosure of information. 'Insufficient or false disclosure of information' has the highest incidence among the six types of fraudulent financial reporting, which is mainly committed through 'insufficient and false disclosure of the related party relationship and transactions' and 'insufficient and false disclosure of the investment status'. Compared to first-time offenders that prefer to omit or untruthfully disclose material information, repeat offenders are more likely to manipulate recognized information as their first choices.

Rectification notices, fines and warning punishments are most commonly imposed on the fraudulent firms. The use of warnings and self-regulatory measures appear to offer the least deterrent to future offending. With respect to repeat offenders, the majority of

observations have the interval within two years between each punishment. In addition, while no law or regulation in China has stressed more severe punishment is required for repeated fraudulent behaviours (Ding et al., 2012), the regulatory agencies impose more severe punishments on repeat offenders which suggests that previous offences justify incremental additions to later punishments in China. Moreover, the occurrence of recidivism is related to a range of regulatory and institutional factors. In particular, self-regulatory measures (i.e. public condemnation) increase the likelihood of firms engaging in recidivism, whereas firms with large proportion of institutional and state ownership are less involved in recidivism.

The findings provide some insightful implications for policy makers. First, in considering forms of punishments, self-regulatory measures are ineffective in preventing corporate recidivism. The protection provided by self-regulation has functional limitations. In particular, reputational punishments imposed by stock exchanges significantly increase recidivism engagement. Moreover, the use of self-regulatory measures in Chinese stock market contributes little in compensating investors' losses. In contrast, the FINRA, a self-regulator in the U.S.A, can impose much harsher punishments than the China's counterparts. For instance, the FINRA expelled and suspended 50 firms and collected more than 176 million USD fines in 2016 (FINRA, 2017). Therefore, this chapter suggests stock exchanges in China should be able to impose stricter punishments, including both monetary and non-monetary punishments to address accounting fraud. Besides self-regulatory measures, the rectification notices, the most common punishments imposed on both first-time and repeat offenders, do not prevent firms from repeatedly committing fraud. Regulators should aware of the ineffectiveness of the rectification notices and establish a more efficient penalty structure.

It is also recommended that private enforcement mechanisms should complement public enforcement mechanisms in China to curb corporate recidivism. Distinctly from

other nations civil class actions are not endorsed in China's Securities Law.[75] The CSRC can only impose administrative penalties rather than administrative and civil penalties. According to the *2002 Notice Regarding Accepting Tort Cases Arising from Stock Market False Disclosure* issued by the China's Supreme People's court, the lower courts can accept private litigations against misrepresentation in the stock market if these are based on the CSRC and the MOF administrative sanction decisions or prior criminal judgments (Xu et al., 2017).[76] With the development of the Chinese stock markets and legal environment, these hurdles need to be cleared in order for investors to better access the courts. In addition, private enforcement can be more efficient than public enforcement since private investors have less conflicts of interests than regulators who have dual responsibilities: guarding state property and protecting minority shareholder interests. Therefore, private enforcement should be developed to compensate defrauded investors and increase the costs of recidivism.

This chapter acknowledges higher state ownership and greater political connections with the government may enable some firms to evade detection by regulators. Firms with higher proportion of state ownership may also face less pressure to repeatedly commit fraud. Firms with higher level of state ownership have the competitive advantage of direct political connections with the government authorities (Chen et al., 2016). In a transitional economy which not provides strong protection for property rights, retaining the relationship with the government and government agencies seems an effective way to overcome the problem of financing. In addition, institutional investors can decrease the incidence of recidivism engagement. However, different from state owners, institutional investors achieve this through preventing firms from

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[75] Only individual and joint actions are allowed other than the class actions in China. Concerns exist the establishment of a civil class action system would result in some SOEs entering bankruptcy (Choi, 2004; Shen, 2009). Further, the limited ability of local courts to understand the complicated financial and securities matters may contribute to this reluctance to accept private actions (Huang and Zhao, 2015).

[76] The administrative and criminal prerequisite is largely criticized by researchers and commentators as it prevents the aggrieved shareholders from filing litigation. Huang (2013) finds that only around 25% of administrative sanctions or criminal judgments are brought to the local courts.

committing recidivism rather than preventing firms from being exposed to enforcement actions. The findings imply that government should continue to cultivate institutional investors and encourage regulators to maintain their independent and impartial roles in the fraud detection process (Wu et al., 2016).

Lastly, financial statement fraud has raised serious concerns on the effectiveness of corporate governance mechanisms in Chinese listed firms, the reliability of their financial statements, the integrity and ethical conduct of management and the adequacy and efficacy of corporate internal control. In fact, deterring financial statement fraud is more complex than other types of fraud. Traditional internal control mechanisms are unlikely to be effective since the management can use their authority to override internal controls (Zhu and Gao, 2011). Therefore, a high level of control and governance is required.

# 5. Money shouts! How effective are punishments for accounting fraud?

## 5.1 Introduction

How effective are punishments of accounting fraud? Effective punishments are a crucial element of any fraud prevention program and signal the regulator's anti-fraud stance. Punishments imposed on fraudulent firms must produce sufficient costs to outweigh the expected gains from fraud (Werden, 2009; Steinway, 2014); and if the punishments and enforcement mechanisms are effective the subsequent stock market reaction should increase the costs of fraud (Quan and Li, 2017). Using a unique hand collected data set of financial statement fraud by Chinese listed firms between 2007 and 2014, this chapter examines the link between a range of monetary and non-monetary 'name and shame' punishments and associated stock market reactions.[77]

It is reported that stock market reactions to all punishments have been significant and negative. Punishments involving monetary fines have a far stronger negative influence on stock market returns than other penalties. Stock market investors also discriminate among different types of fraud with investors reacting more negatively to the income statement fraud than the disclosure fraud. This chapter further identifies that information leakage occurs before the announcement of formal sanction decisions and informed investors using this leaked information, view fines more negatively than other punishments. It is proposed within an environment of information leakage the potency of 'name and shame' penalties is reduced relative to monetary punishments.

By examining such punishments in a Chinese context, this chapter provides three contributions to the literature examining the regulation of fraud. Initially, the impact of both monetary penalties such as fines and also non-monetary, 'name and shame' penalties are examined. The latter are often omitted in assessments of accounting fraud,

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[77] To provide a more accurate estimation of investor reaction, samples are restricted into financial statement fraud. Most previous research on the economic consequences of fraud in China brings all types of fraud into scope e.g. financial fraud, market manipulation, insider trading and even corporate environment pollution (Aggarwal et al., 2015). Given the differences in the nature of fraud, findings cannot be automatically generalized from the one to another.

despite longstanding concerns that imposing fines can become unfair and inefficient (Goodhart, 2017) or even amplify the behaviours of concern (Gneezy and Rustichini, 2000). Second, the literature on Chinese accounting fraud (Chen et al., 2005; Sun and Zhang, 2006) is extended by considering cases punished by the regional offices of the CSRC. These previously overlooked regional offices of the securities regulator account for more than 75% of the CSRC's staffing (Xu and Xu, 2017) and use non-monetary punishments more frequently than CSRC central offices. Lastly, this chapter contributes evidence as how investors perceive different forms of fraud and incorporates information leakage into this assessment.

This investigation is important as an effective punishment regime is essential for firms, regulators and investors. For firms, the public exposure of punishment underlines the unacceptability of the fraudulent behaviours and evokes public disapproval. Negative publicity can foster normative attitudes against fraud and increase their willingness to invest in 'beyond-compliance' behaviours (Parker, 2006). For regulators, when the public becomes aware punishments are imposed for fraudulent behaviours, confidence in market supervision increases. An effective punishment mechanism therefore augments the legitimacy of supervision, creating a 'tough' image of public enforcement. For investors, an effective punishment mechanism alleviates information asymmetries in capital markets and incorporates conduct risks within investment decisions (Van-Erp, 2014).

The remainder of the chapter is organized as follows. The next section reviews the relevant literature and outlines the context of the study. The third section develops hypotheses, discusses the data and the empirical approach. The fourth section reports the empirical results and the final section concludes the chapter.

## 5.2 Literature review

### 5.2.1 The effectiveness of punishments

The choice to participate in accounting fraud and subsequent punishments can also be viewed as an economic decision involving a cost and benefit trade-off. A manager's likelihood of committing fraud depends on his or her perception of the probability of detection, the severity of expected punishments and the gains from fraud (Becker, 1968). A manager will therefore commit fraud, when punishments and the probability of capture are lower than the benefits obtained (Baucus and Baucus, 1997). To deter fraud, punishments must therefore produce sufficient disutility to outweigh gains from fraudulent behaviours (Werden, 2009). Such a relationship is not straightforward and may be affected by psychological factors. For instance, using an 'inspection game', Nosenzo et al. (2013) report fines were more effective in deterring non-compliance, than bonuses were in encouraging compliance. In summary, the effectiveness of legal punishments in deterring offending depends on the certainty, severity and celerity of punishments (Becker, 1968).

While these direct rewards from fraud can be attractive to perpetrators, offending creates a diversity of costs. First, firms that engage in fraudulent behaviours incur direct costs including regulatory fines and court-imposed penalties (Zeidan, 2013). Second, fraudulent firms can face a wide range of reputational costs often exceeding legal penalties (Karpoff and Lott, 1993). The intangible reputational costs reflect the capitalization of expected losses resulting from deteriorated relationships with firm owners (shareholders), customers, financiers, managers and suppliers (Autore et al., 2014). For instance trading partners may become skeptical about the firm's future financial statements and adversely revise terms of trade increasing contracting costs. Similarly, finance providers may offer less generous terms to fraudulent firms (Armour et al., 2017) and customers may punish fraudulent firms through lower sales or boycott. For managers, punishments may redirect actions towards remedying the consequences of punishments rather than profitable projects (Aguzzoni et al., 2013).

For shareholders, a diversity of responses may arise. A damaged reputation can deter investment in the fraudulent firms and increase the cost of capital (Zeidan, 2013). Shareholders may also undertake legal actions against fraudulent firms. Equally, shareholders may sell shares in fraudulent firms, reducing the offenders' market valuation. This last issue has been the focus of a considerable international literature, assessing the reputational costs imposed by corporate punishments.

There are also geographical differences in stakeholders' perceptions of regulatory punishments specific to China. The existence of *Guanxi,* a Chinese term for personal relationships (Chen et al., 2014) may lessen the effects of fraudulent firms' relationship with stakeholders. With greater financial and regulatory resources from the state, stakeholders may perceive *Guanxi-connected* firms are more likely to recover from punishments and reevaluate their investment decisions accordingly (Chen et al., 2016).

The magnitude of reputational costs is large. For instance, firms that are punished by the SEC suffer a reputational penalty accounting for 72.86% of total market value (Karpoff et al., 2008). Similarly, Armour et al. (2017) report UK firms sanctioned by the Financial Service Authority (FSA) have a reputational loss of 1.41% of firm value, nine times higher than fines and compensation paid accounting for 0.15% and 0.12% of the firm value respectively.

In addition to severe reputational damage, accounting fraud has been shown to induce greater CEO turnover, trigger increases in firms' cost of capital, expand bid-ask spreads and increase the frequency of modified audit opinions (Firth et al., 2011). Autore et al. (2014) report that listed firms with a recent history of securities litigation are less likely to seek external debt and equity financing. These firms are observed to significantly reduce their investments in research and development and capital expenditures following litigation fillings. Consistent findings are also reported by Yuan and Zhang (2016), who report fraud-committing firms experience a drop in total financing (total investments) by 1.5% (0.8%) of total assets after fraud revelation.

When considering the costs imposed by different forms of punishments, fines have

often been the primary focus of interest due to their gravity and multiple effects. For instance, fines can impose large reputational costs (Sun and Zhang, 2006, Karpoff et al. 2007), directly reduce corporate cash flows and existing assets and alter investors' expectations of firm liquidity and future earnings. These monetary punishments are sometimes supplemented with non-monetary, 'name and shame' punishments. These punishments aim to directly degrade firm reputations through public denunciation (Zhang and Zhao, 2007), imposing a wider social costs on firms (D'Antoni and Galbiati, 2005) and deterring listed firms from committing fraud (Karpoff et al. 2007).

In China, the reason monetary fines are considered to have a stronger impact on investor reaction is that a monetary fine is a sign of a serious offense.[78] Although theoretically higher monetary penalties may produce larger investor losses, the monetary penalties imposed by the CSRC are capped at $90,000 for firms and $45,000 for individuals. In addition, the size of fraudulent firms and the wealth of fraudulent individuals are less likely to be the factors in setting the level of fines. Subsequently, fines may constrain poor firms and individuals from offending while encouraging the wealthier firms and individuals to break the law and bear the risk of paying what they perceive to be a relatively small amount of money as fines (Niv and Safra, 2002).

According to the CSRC regulatory documents, severe punishments are imposed on firms if their acts are particularly adverse, seriously disturbing the order of the securities market and incurring serious social impacts or damage to the interests of investors (CSRC, 2008). As a consequence, compared to non-monetary punishments, imposing

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[78] In comparison, the mechanism by which the SEC civil penalties have a bigger impact on stock returns (see Karpoff et al., 2008) is affected by both the severity of offence and the amounts of fines imposed on firms. In particular, there are three tiers regarding the maximum civil penalties imposed for the violations of the securities laws. For any small violations, a maximum fine of $80,000 for firms and $7,500 for individuals can be imposed. For violations involving fraud, deceit, manipulation or deliberate or reckless disregard of regulatory requirements, a maximum fine of $400,000 for firms and $80,000 for individuals can be imposed. For violations also involving a substantial risk of loss to market participants or gain to the violators, a maximum fine of $775,000 for firms and $160,000 for individuals can be imposed (Eisenberg, 2016). The amount of monetary sanctions imposed by the SEC are substantially higher than those imposed by the CSRC, considering the fact that the CSRC only investigates severe violations of the securities laws.

fines signal the seriousness of fraud, thus generating larger impact on a firm's stock prices.

The reputational effects these punishments impose been examined internationally within examinations of shareholder wealth losses such as CARs using event study approaches. Most work has considered market responses to regulatory announcements, with a smaller literature considering how markets respond to the imposition of different types of penalties.

Studies examining market responses to regulatory announcements have consistently reported negative responses to the disclosure of regulatory announcements (see Karpoff et al., 2008). For example, in the USA, abnormal returns of -5.3% on the announcement day of financial restatements have been reported (Palmrose et al. 2004). Similarly for the UK, Armour et al. (2017) report regulatory enforcement actions led to CARs of -1.26% on the event day and a CAR of -1.68% over a 3-day event window for offending firms. An increasing number of Chinese studies have also examined stock market reactions to the announcement of fraud was accompanied by a decline of -1% to -2% in affected firms' stock prices in a short-term event window (Wu and Zhang, 2014). For instance, Chen et al. (2005) identify 169 firms disciplined by the CSRC and two stock exchanges, reporting enforcement actions had a negative impact on the stock returns of -1.8% in a five-day event window. Similarly, Sun and Zhang (2006) examine the announcement of enforcement sanctions reporting the average CAR was -1.4%.

A smaller literature has examined the market reactions to individual punishments for fraud. For China, Quan and Li (2016) report fines had a negative influence on firm values. Examinations of the costs imposed by non-monetary penalties on firm value have been more piecemeal. For instance within China the effects of punishments imposed on independent directors was deemed to be significantly negative (Quan and Li, 2017) and that markets react more negatively to constraints placed on a director's current and future employment and promotion opportunities than monetary penalties (Hung et al. 2015).

Market reactions to regulatory announcements also vary with the type of fraudulent behaviours addressed such as income statement fraud, disclosure fraud and balance sheet fraud[79] (Zhu and Gao, 2011). Income statement fraud is thought to elicit the strongest negative response from investors, as such restatements affect core accounts and central business operations (Kravet and Shevlin 2010). Shareholders might perceive mis-statements of these accounts as inhibiting the ability to forecast future earnings and cash flows. Indeed, in China income performance is an important criteria for firm authorization of IPO and right issues and avoidance of delisting. Income statement fraud is also positively associated with the likelihood of shareholder litigation, suggesting that investors regard the income statement manipulation as serious fraud and signaling the capital market that management is incompetent (Palmrose and Scholz, 2004).

Compared to income statement items, balance sheet items are often regarded as difficult-to-estimate items. This is because several balance sheet items are based on managerial estimation rather than factual data. For instance, the valuation of financial instrument items requires assumptive estimation of model parameters by managers (Salavei, 2010). In addition, capitalization of expenses also involves subjective judgment. Some firms often fictitiously portray themselves as profitable business by manipulating these ambiguous accounts and concealing large losses. In China, auditors are also more likely to be sanctioned when they fail to detect income statement fraud compared with balance sheet fraud (Lisic et al., 2015). As a result, stock market reacts less to difficult-to-estimate restatements (*asset related restatements*) than to easy-to-estimate restatements (*revenue related restatements*) (Salavei, 2010).

Investors could also treat omitted or improperly disclosed and recognized information distinctly. Recognized information is reported in the consolidated financial statements, while disclosed information is stated in the notes to the financial statements and other

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[79] Based on Lisic et al. (2015), the term 'income statement fraud' and 'revenue related fraud' can be used interchangeably. In addition, the term 'balance sheet fraud' and 'asset related fraud' can be used interchangeably.

sections.[80] Due to its positioning investors may perceive recognized information as more reliable than disclosed information with the latter easier to manipulate and more tolerated by auditors (Michels, 2016). In addition, recognized information (i.e. accounting earnings) is typically specified in executive compensation contracts. Therefore, managers are likely to engage in fraud to meet the requirements of recognized information and obtain more performance-linked-salary (Li et al., 2013). Concerns can also arise when managers strategically obfuscate using legal jargon and technical accounting terms (Amel-Zadeh and Faasse, 2016). Such practices can create information overload for investors (Hirshleifer and Teoh, 2003); a practice seen to be particularly acute for disclosure items (Hirst et al., 2004). Subsequently, investors tend to underestimate the importance of disclosed information.

These effects have been observed within the USA, where revenue recognition restatements by firms have been relatively pronounced (Anderson and Yohn 2002). Similarly, Desai et al. (2006) state financial restatements caused by improper revenue (cost) recognition generate a large CARs of -14.89%. Comparable findings have also been reported for Canada, where earnings restatements have had a far greater negative influence than restatement of omitted and restated notes or disclosure (Robbani and Bhuyan, 2010).

## 5.2.2 Regulatory enforcement

Chapter 2 introduced the punishments Chinese regulators can levy in detail. This section provides a brief comparison of the different punishments and a review of the enforcement procedures.[81] Warnings are administrative sanctions used to caution listed

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[80] These sections include corporate governance, internal control, share changes and shareholders, important matters, reports of the board of directors and summary of accounting data and financial indicators sections. These sections are the contents and formats standards required by the CSRC with regards to compile annual reports (CSRC, 2014).

[81] The punishments of tax repayment, public statements, regulatory interview, verbal warnings

firms and enable relevant individuals (investors) to be 'mentally alert' (Zhang and Zhao, 2007). The rectification notices, regulatory concern and letters of warning are highly time-sensitive supervisory measures[82] (CSRC, 2014). For general problems CSRC regional offices can issue letters of regulatory concern. For moderately serious problems, the regulators can issue letters of warning or rectification notices to listed firms (CSRC, 2012; Firth et al., 2016). Public criticism and public condemnation are self-disciplinary measures[83] that apply only to non-serious fraud with relatively minimal effects (Xu et al., 2017). Monetary fines are regarded as a severe administrative punishment, with amounts ranging from 300,000 Yuan to 600,000 Yuan ($45,000 to $90,000) levied from firms against misrepresentation. Any punishment will result in increased regulatory scrutiny for the firm's future refinancing, merger and acquisition activities and can be considered within future judgments (CSRC, 2013; 2014).

Figure 5.1 shows the typical sequence of events within an enforcement action. Regulatory investigations are commonly triggered by whistleblowers, firms' self-disclosure of malfeasance, restatements, auditor departures, unusual trading and regulators' routine supervision (Karpoff et al., 2008). If an official investigation is undertaken, the case will be referred to the enforcement department and investigated. When a case is deemed an administrative offence, the investigation notification is disclosed to public. When a case is not considered to be an administrative offence, the initial investigation notification is not publically disclosed (CSRC, 2016).

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and business suspension are not included in this chapter. This is because firms that are subject to these punishments do not have sufficient stock returns, corporate governance or financial data for analysis.

[82] The details can be found in the *Rules of Listed Firms' on-site Inspections*. Available at: http://www.csrc.gov.cn/pub/csrc_en/newsfacts/release/200902/t20090203_69256.html (last visited on 17 July, 2017).

[83] See the *Implementation Details of Self-regulatory Measures and Disciplinary Actions* promulgated by the Shenzhen Stock Exchange and the Shanghai Stock Exchange. Available at: https://www.szse.cn/main/en/RulesandRegulations/SZSERules/GeneralRules/, http://english.sse.com.cn/laws/framework/c/3978489.pdf (last visited on 17 July, 2017).

**Table 5.1**

Types of punishments.

| Punishments | Commonly used by which regulator | Regulation basis | Nature of punishments | Severity level across groups | Severity level within group | Monetary or non-monetary punishment |
|---|---|---|---|---|---|---|
| Fines | CSRC central offices, Ministry of Finance | Laws | Administrative sanctions | Severe | Severe | Monetary punishment |
| Warning | | | | | Less severe | |
| Rectification notice | CSRC regional offices | Departmental provisions | Supervisory measures *(Non-administrative sanctions)* | Moderate | Severe | Non-monetary punishments |
| Letter of warning | | | | | | |
| Regulatory concern | | | | | Less severe | |
| Public condemnation | Stock exchanges | Self-regulations | Self-regulatory measures *(Non-administrative sanctions)* | Minor | Severe | |
| Public criticism | | | | | Less severe | |
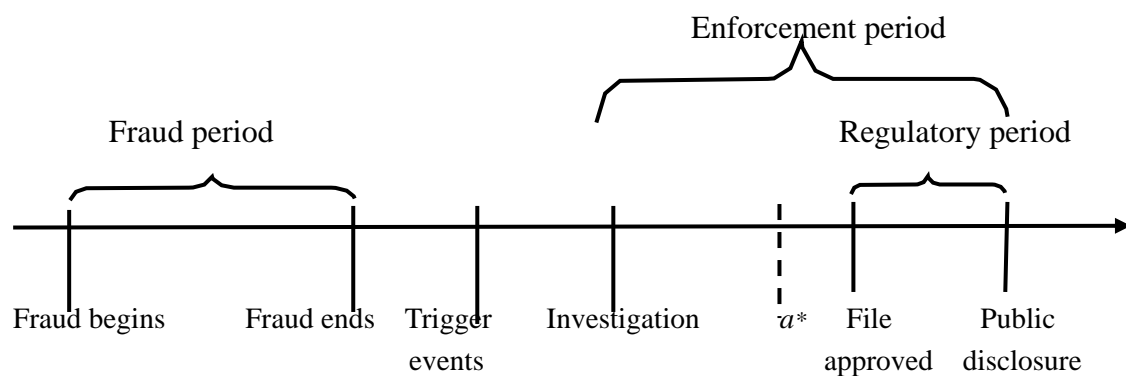


**Fig. 5.1** Timeline of an enforcement action. Notes: a* represents the announcement of advance notice of a sanction decision, which is only applicable when the sanction decision is administrative in nature (See Appendix 2.1).

Before deciding to impose any administrative penalties, regulators have responsibilities to notify the facts, grounds and regulatory basis of judgments (National People's Congress, 2009). Once punishment files are approved by regulators, these are first sent

to the listed firms and then made to public through designated national financial newspapers or the regulators' official websites.

## 5.3 Development of hypotheses, data and methods

### 5.3.1 Hypotheses development

This chapter assumes fraud occurs as perpetrators believe the benefits obtained from fraud outweigh the costs of punishment and probability of being caught. As a fine is one of the most severe administrative punishments which can be imposed on a listed firm (Firth et al., 2016), monetary penalties should lead to larger impacts on shareholder wealth than non-monetary penalties. Therefore, this chapter posits the following hypothesis.

> *$H_1$:    Fines result in a more negative stock market reaction than non-monetary punishments.*

As different types of fraud illicit distinct market reactions, the type of fraud perpetuated is examined (Michels, 2016). It is proposed investors may react more to punishments for income rather than disclosure fraud. This chapter therefore posits the following hypothesis.

> *$H_2$:    Markets react more negatively to income fraud than disclosure fraud.*

Previous studies in Chinese capital markets report significant abnormal returns prior to mergers and acquisitions (Anagnostopoulou and Tsekrekos, 2015) and share repurchase announcements (Hao, 2016). This intimates announcements are leaked to the capital market before disclosure and involve illegal insider trading activities. Unlike many global stock markets, trading on Chinese capital markets is mostly undertaken by individuals rather than institutional investors (Reuters, 2015). This exacerbates free-rider problems, increases information asymmetries and enhances the possibility of information leakage. Therefore, information leakage occurring prior to the punishment

announcements is expected.

Information leakage may also be used tactically by managers to soften the impact of regulatory announcements. If investors evaluate managers' ability using all available information and replace managers if their evaluation is low, managers have incentives to leak punishment news to selected influential investors (i.e. controlling shareholders and board of directors) who may trade on this news prior to its public announcement (Campbell et al., 2016). Additionally, regulatory insiders could leak punishment information to their stakeholders and profitably trade on such information (Huang, 2007). Within an environment with information leakage, informed investors perceive fines as the most severe punishment, as fines are retributive rather than compensatory (Kurz et al., 2014). Therefore, this chapter posits the following hypothesis.

> *H3:* *There is information leakage prior to the announcement of punishment information and informed investors perceive fines more severely than other punishments.*

*5.3.2 Data, event study methodology and variable definition*

This chapter uses a hand-collected dataset of regulatory determinants (i.e. punishments, fraud and duration) based on the sanction reports issued by regulators. The stock returns, financial and corporate governance data are collected from the CSMAR database. The sample period runs from 2007 to 2014 to accommodate new accounting standards adopted in 2007. Cases where initial announcement dates are unavailable are excluded; the final sample contains 358 fraud cases.[84]

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[84] The initial search reports 614 available fraud cases, and this chapter excludes 111 cases that initial disclosure dates of punishments are unavailable. These 111 cases are only shown in the files named *Announcement on Supervision Measures or Penalties or Rectifications Taken by Securities Regulatory Authorities and Stock Exchange against the Company in Past 5 Years*, which are separate files issued by listed firms in order to summarize the punishments imposed on the listed firm in last five years. Then, this research downloads stock return data and finds 379 fraud cases have enough daily trading data for analysis. For firms that are punished by regulators multiple times in the same reporting year, the final punishment case of each firm is included because the impacts of previous punishment announcements on stock prices have been incorporated in the estimation windows of market model.

An event study methodology is used as it measures the impact of unanticipated events on stock prices. The event date is defined as the earliest date that the market learns a firm is subject to a sanction decision. This chapter chooses a 140-day estimation period comprising trading days [-155, -16] and several different event windows, (i.e. [0, 1], [-1, 1], [-2, 2], [-3, 3], [-5, 5]) to capture the shareholder wealth effect of punishments (Chen et al., 2005). For a stock to be included in the sample, it must have no missing return data in the event window and at least two-thirds of daily stock return data available in the estimation window (Agrawal and Cooper, 2015). The returns of the value-weighted market index (Shanghai and Shenzhen) is used as benchmark returns. Moreover, the daily stock returns have been adjusted for cash dividends reinvested (Cheung et al., 2010).

Normal returns are estimated based on the market model (see MacKinlay, 1997), which reflects a linear relationship between individual stock returns and the benchmark market returns.

$$E\left(R_{i,t}\right) = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{5.1}$$

Where $R_{i,t}$ is the actual rate of return of stock $i$ on day t, $R_{m,t}$ is the rate of return of a market portfolio of stocks on day t, $\alpha_i$ is the intercept term, $\beta_i$ is the systematic risk of stock $i$, $\varepsilon_{i,t}$ is the error term. The difference between actual and normal stock returns represents the stock market reaction to the announcement of sanction decisions and is termed abnormal returns (Kouwenberg and Phunnarungsi, 2013). Having obtained the abnormal returns for stock $i$, all the abnormal returns over the time period can be aggregated to the value of cumulative abnormal returns.

$$AR_{i,t} = R_{i,t} - E\left(R_{i,t}\right) \tag{5.2}$$

An appropriate empirical approach is determined following pre-testing of the data. Heteroskedasticity and autocorrelation are assessed using Modified Wald and Wooldridge tests. The dataset displays heteroskedasticity but no serial correlation. Therefore, a panel data regression is adapted to examine the effectiveness of punishments. A Hausman test indicates that a fixed effects model is appropriate, a

Breusch-Pagan Lagrange multiplier test confirms that a random effect model is not appropriate and further tests verify time or industry fixed effects are not required.[85] Subsequently, following Kim and Zhang (2016), a firm fixed effects regression model is used. Standard errors are adjusted for firm-level clustering as some firms have repeatedly committed fraud over years (Ewelt-Knauer et al., 2015; Zhang, 2016). The regression model is estimated as follows (Yu, 2013a).

$$CARs_{it} = \beta_0 + \beta_i test\ variables_t + \gamma_i control\ variables_{t-1} + \alpha_i + \varepsilon_{it} \qquad (5.3)$$

$\beta_i$ and $\gamma_i$ represent the coefficients to be estimated, $\alpha_i$ is the firm fixed effects and $\varepsilon_{it}$ is the error term. When examining the relationships between stock market reaction and different punishments or fraud, the dependent variable CARs is based on a (0, 1) event window. This is undertaken as the punishment announcement on day 0 may not be disclosed until the close of trading and the stock market reaction occurs on day 1.[86] To examine information leakage, CARs over a pre-event window [-15, -6] are used as the dependent variable. Test variables include both punishment and fraud dummy variables. There are seven punishment variables including criticism, warnings, condemnation, fines, rectification notices, regulatory concern and letters of warning. The fraud variables capture the type of fraud including income statement fraud, balance sheet fraud and disclosure fraud.[87]

Fraud duration reflects the effectiveness of internal control and external supervision and is used as a control variable. As greater fraud duration signals the ineffectiveness

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[85] Joint F tests indicate that the coefficients for all years (and industries) are jointly equal to zero, therefore no time fixed effects or industry fixed effects are needed in this case. This test is undertaken using the Stata procedure TestParm (Ashton and Hudson, 2014).

[86] Following the Sorokina et al. (2013), this chapter neither truncates nor winsorizes the largest and smallest observations for the dependent variable. See robustness tests for the detailed discussion.

[87] Following Zhu and Gao (2011), a content analysis method is used to code different types of fraud. Under a double-entry accounting system, a false income statement results in a false balance sheet. The thesis only focuses and codes the direct source that the fraud occurs. Common fraud techniques include income statement fraud, balance sheet fraud and disclosure fraud. False cash flow statements and improper financial statement consolidation are not included as the corresponding firms have missing stock return, corporate governance or financial data. Subsequently, these cases are excluded from the samples.

of corporate internal control mechanisms and the likelihood of further bad news, this variable is expected to be negatively associated with investor reaction (Zhu and Gao, 2011). Firm size is also considered, as larger firms are better equipped to bear the expenses of monetary penalties and defending lawsuits after fraud announcements.

Chairman and CEO changes and big ten auditors are also added as control variables. The Chairman and CEO variables are consolidated to determine whether investors perceive such changes as a symbolic gesture or a substantive act for a firm to start fresh (Moore et al., 2010). Moreover, when there is a chairman or CEO change, time is needed to address the fraud and take corrective measures. Therefore, investors are expected to have less confidence in new chairmen and managers leading firms after the announcement of punishments. The big ten auditors are included as these institutions may produce higher quality audits and apply stricter external monitoring, alleviating reputational costs and possible litigation (Chen et al., 2005).[88] Past evidence also suggests fraudulent firms are less likely to hire big external auditors (Ma et al., 2016).

Following Aggarwal et al. (2011) this chapter assumes institutional ownership captures the monitoring function played by the institutional investors. In contrast to U.S. stock markets, corporate ownership is highly concentrated in China with state institutions major block-holders (Lin et al., 2016). As state-owned firms are likely to receive greater government financial support and face lower default risks, a positive relationship between the type of shareholders (i.e. firms with state-owned background) and CARs may occur (Chen et al., 2016). Therefore, largest ownership and ownership form are also used as control variables. Except for fraud duration, the control variables are lagged by one year to avoid endogeneity problems. Table 5.2 summarizes the definition and sources of the variables.

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[88] The variable big 10 is used in Chapter 5 due to relatively small sample size. Specifically, there are only 9 observations choosing big four auditors during the sample period. In other words, if big 4 is included in the regression equation, results would be biased. See Appendix 2.2 for detailed discussion regarding big 4 and big 10.

**Table 5.2**

Variable definition and sources.

| Variable | Variable name | Description | Source |
|---|---|---|---|
| Dependent variable | CARs | Cumulative abnormal returns is measured over a (0, 1) event window | CSMAR |
| Test variables-punishments | Criticism | Equals to one if a firm is subject to public criticism and zero otherwise | Manual |
| | Warning | Equals to one if a firm is subject to a warning and zero otherwise | Manual |
| | Condemnation | Equals to one if a firm is subject to public condemnation and zero otherwise | Manual |
| | Fines | Equals to one if a firm is subject to fines and zero otherwise | Manual |
| | Rectification notice | Equals to one if a firm has received a rectification notice from a regulator and zero otherwise | Manual |
| | Regulatory concern | Equals to one if a firm has received a regulatory concern from a regulator and zero otherwise | Manual |
| | Letter of warning | Equals to one if a firm has received a letter of warning from a regulator and zero otherwise | Manual |
| Test variables - fraud | Income fraud | Equals to one if a firm manipulates its income statement items and zero otherwise | Manual |
| | Balance sheet fraud | Equals to one if a firm manipulates its balance sheet (i.e. assets, liabilities and equities) and zero otherwise | Manual |
| | Disclosure fraud | Equals to one if a firm conceals or untruthfully discloses information in the financial statement or delays the disclosure of its interim or annual report and zero otherwise | Manual |
| Control variables | Duration | Calculated from the first fraud year to the last fraud year reported in the sanction files | Manual |
| | Firm size | The natural logarithm of the firm's total assets in the year t-1 | CSMAR |
| | Largest ownership | The number of shares held by the largest shareholder divided by the number of shares outstanding, both measured at the year t-1 | CSMAR |
| | Ownership form | Equals to one if the nature of the largest shareholder is state-owned and zero otherwise at the year t-1 | CSMAR |
| | Institutional | The number of shares held by institutional investors divided by the number of shares outstanding, both measured at the year t-1 | CSMAR |
| | Chairman change | Equals to one if a firm experiences chairman turnover in the year t-1 and zero otherwise | CSMAR |
| | CEO change | Equals to one if a firm experiences CEO turnover in the year t-1 and zero otherwise | CSMAR |
| | Big ten audit | Equals to one if a firm is audited by 'Big10' auditors in the year t-1 and zero otherwise | CSMAR |

## 5.4 Empirical results

### 5.4.1 Descriptive statistics

Table 5.3 presents descriptive statistics of the variables used.[89] The mean of CARs is -0.5% over a 2-day (0, 1) event window and smaller than comparable U.S. findings (Palmrose et al., 2004). Rectification notices are the most common punishments, accounting for 54.5% of the sample. On average, 16.8% and 13.1% of fraudulent firms have received administrative fines and warnings respectively. Firms subject to public criticism and condemnation account for 6.1% and 4.5% of all listed firms during the sample period, suggesting self-disciplinary measures are applied relatively less frequently. The table also provides statistics of fraud type. Consistent with previous Chinese studies (see Zhu and Gao 2011), disclosure fraud has the highest incidence and income statement fraud is more prevalent than the balance sheet fraud. Most firms use more than one technique to manipulate financial statements.

On average, the duration of fraud is more than 2 years, with the longest fraud being 15 years. The average firm size, based on a firm's total assets is $803 million; institutional investors held 4.5% of the shares of fraudulent firms; lower than many other financial markets. Chinese listed firms usually have large controlling shareholders and the largest shareholder on average holds 33.1% of the total outstanding shares. Moreover, the state is the largest shareholder in 22.6% of sample firms. Overall, 17.3% of and 22.1% of firms have changed Chairmen and CEOs in the year prior to the fraud announcement. Firms that employ one of the big-ten auditors account for 35.2% of the sample.

In a correlation analysis of the variables,[90] this chapter finds that warnings are significantly positive correlated with fines, implying regulators use these punishments in combination. The variance inflation factor (VIF) statistics indicate that

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[89] Frequency refers to the incidence of a dummy variable that equals to one. Warnings and Fines can be imposed either separately or in combination (see Panel A of Table 5.8 for additional analysis). For firms subject to multiple punishments, only the most severe punishment is used in the regression analysis.

[90] See Appendix 2.3 for detailed results.

multicollinearity problems are minimal.[91]

**Table 5.3**

Descriptive results.

| Variable | N | Frequency | Mean | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| CARs | 358 | 358 | -0.005 | -0.025 | -0.006 | 0.015 |
| Criticism | 358 | 22 | 0.061 | 0 | 0 | 0 |
| Warning | 358 | 47 | 0.131 | 0 | 0 | 0 |
| Condemnation | 358 | 16 | 0.045 | 0 | 0 | 0 |
| Fines | 358 | 60 | 0.168 | 0 | 0 | 0 |
| Rectification notice | 358 | 195 | 0.545 | 0 | 1 | 1 |
| Regulatory concern | 358 | 25 | 0.070 | 0 | 0 | 0 |
| Letter of warning | 358 | 20 | 0.056 | 0 | 0 | 0 |
| Income fraud | 358 | 56 | 0.156 | 0 | 0 | 0 |
| Balance sheet fraud | 358 | 32 | 0.089 | 0 | 0 | 0 |
| Disclosure fraud | 358 | 179 | 0.500 | 0 | 1 | 1 |
| Duration | 358 | 358 | 2.093 | 1 | 1 | 3 |
| Firm size | 358 | 358 | 21.417 | 20.573 | 21.306 | 22.016 |
| Largest ownership | 358 | 358 | 0.331 | 0.213 | 0.310 | 0.433 |
| Ownership form | 358 | 81 | 0.226 | 0 | 0 | 0 |
| Institutional | 358 | 358 | 0.045 | 0.002 | 0.016 | 0.053 |
| Chairman change | 358 | 62 | 0.173 | 0 | 0 | 0 |
| CEO change | 358 | 79 | 0.221 | 0 | 0 | 0 |
| Big ten audit | 358 | 126 | 0.352 | 0 | 0 | 1 |

*5.4.2 Univariate analysis*

Panel A of Table 5.4 presents the stock market reaction to punishment announcements over a variety of event windows. A large portion of reported CARs are significantly negative, suggesting stock markets view the announcement of sanction decisions negatively.[92] For example, the CARs is -0.7% over a 3-day [-1, 1] event window and statistically significant at the 1% level. In addition, 58.38% of observations have negative CARs among the full sample. The shareholder wealth loss represents investors'

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[91] The values of mean VIF are less than two for the different models.

[92] Robustness of the results are also tested by using the market adjusted return model. The significant CARs are -0.38%, -0.53% and -0.52% over the [0, 1], [-1, 1], [-2, 2] event windows.

loss of confidence about the firms' future performance, the increase of firm's future costs due to punishments, or the negative reputation generated by the adverse publicity (Chen et al., 2005). In Panel A, CARs range from -0.5% to -1.1% for the overall sample and are statistically but not economically significant.[93] This is lower than other Chinese studies (Firth et al. 2009; Wu and Zhang 2014), where fraud announcements trigger -1% to -2% CARs in short-term event windows, albeit for data which does not incorporate sanction decisions made by CSRC regional offices.

Panel B presents the average abnormal return (AR) around the punishment announcement. The mean AR is -0.4% on the announcement day and statistically significant at the 5% level. Overall, 58.66% of observations have negative ARs on day 0. Panel C and D pertain to information leakage. Panel C shows statistically significant (5%) CARs of -1.1% over a 10-day event window [-15, -6]. Moreover, 59.22% observations have negative CARs, suggesting information leakage prior to the announcement of punishment information is widespread. The magnitude of loss in the pre-event window is large and of a similar magnitude to the largest loss reported around the punishment announcement. Panel D reports the average abnormal return prior to punishment announcements with a mean AR of -0.3% on both event days, -14 and -13, indicating punishment information begins to leak to the market almost 13-14 days prior to its official announcement.

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[93] Economic significance is not the same thing as statistical significance. Specifically, statistical significance refers to the use of a sample to carry out a statistical test to determine whether or not to reject the null hypothesis (e.g. the coefficient of interest is equal to zero) at a certain level of significance. Economic significance is a measure of the importance of a relationship and considers the magnitude of the estimated coefficients (Zaliak and McCloskey, 2013). In other words, a coefficient is statistically significant when it is precisely estimated and economically significant when it is important. In this chapter, the CARs for overall sample range from -0.005 to -0.011, indicating the market value loss is not economically significant for fraudulent firms. In contrast, the negative stock market reaction to monetary fines is about -0.070, indicating investors perceiving monetary penalties more economically significant and severely than non-monetary penalties.

**Table 5.4**

Market reaction to punishments announcements.

| Panel A CARs around different event windows | | | | | | | |
|---|---|---|---|---|---|---|---|
| Event windows | No. | Coefficient | Std. Err. | t-stat | P>\|t\| | %(CAR<0) | Wilcoxon z |
| [-5, +5] | 358 | -0.010* | 0.006 | -1.66 | 0.099 | 54.749% | -5.657*** |
| [-3, +3] | 358 | -0.008 | 0.005 | -1.49 | 0.138 | 51.955% | -3.815*** |
| [0, +5] | 358 | -0.004 | 0.004 | -1.07 | 0.287 | 53.911% | -3.343*** |
| [-2, 2] | 358 | -0.011** | 0.005 | -2.44 | 0.015 | 56.145% | -6.385*** |
| [-1, 1] | 358 | -0.007*** | 0.003 | -2.73 | 0.007 | 58.380% | -5.822*** |
| [0, 1] | 358 | -0.005** | 0.002 | -2.30 | 0.022 | 60.894% | -4.590*** |
| Panel B Average abnormal return on different event days | | | | | | | |
| Event day | No. | Coefficient | Std. Err. | t-stat | P>\|t\| | %(AR<0) | Wilcoxon z |
| -5 | 358 | -0.003** | 0.001 | -2.28 | 0.023 | 58.101% | -3.172*** |
| -4 | 358 | -0.002 | 0.002 | -1.02 | 0.307 | 58.101% | -1.936* |
| -3 | 358 | 0.001 | 0.001 | 1.01 | 0.314 | 50.838% | 0.350 |
| -2 | 358 | -0.001 | 0.002 | -0.76 | 0.449 | 55.866% | -0.829 |
| -1 | 358 | -0.001 | 0.001 | -1.48 | 0.139 | 56.983% | -2.708*** |
| 0 | 358 | -0.004** | 0.002 | -2.46 | 0.014 | 58.659% | -3.343*** |
| 1 | 358 | -0.002 | 0.002 | -1.12 | 0.263 | 55.587% | -1.552 |
| 2 | 358 | -0.003 | 0.002 | -1.43 | 0.155 | 55.307% | -2.180** |
| 3 | 358 | 0.002 | 0.001 | 1.46 | 0.146 | 50.838% | 0.379 |
| 4 | 358 | 0.001 | 0.001 | 0.84 | 0.399 | 50.000% | -0.135 |
| 5 | 358 | 0.001 | 0.001 | 0.52 | 0.602 | 51.676% | -0.690 |
| Panel C CARs prior to punishment announcements | | | | | | | |
| Event windows | No. | Coefficient | Std. Err. | t-stat | P>\|t\| | %(CAR<0) | Wilcoxon z |
| [-15, -6] | 358 | -0.011** | 0.005 | -2.40 | 0.017 | 59.218% | -9.604*** |
| Panel D Average abnormal return on different pre-event days | | | | | | | |
| Event day | No. | Coefficient | Std. Err. | t-stat | P>\|t\| | %(AR<0) | Wilcoxon z |
| -15 | 358 | -0.001 | 0.001 | -0.80 | 0.425 | 51.955% | -1.059 |
| -14 | 358 | -0.003** | 0.001 | -1.96 | 0.050 | 52.793% | -1.724* |
| -13 | 358 | -0.003** | 0.001 | -2.34 | 0.020 | 59.497% | -3.303*** |
| -12 | 358 | 0.002 | 0.002 | 0.86 | 0.389 | 54.749% | -1.642* |
| -11 | 358 | -0.001 | 0.001 | -0.53 | 0.597 | 53.352% | -2.233** |
| -10 | 358 | -0.003* | 0.002 | -1.70 | 0.090 | 55.307% | -2.428** |
| -9 | 358 | 0.002 | 0.001 | 1.63 | 0.103 | 51.117% | 0.417 |
| -8 | 358 | -0.001 | 0.001 | -0.35 | 0.729 | 55.028% | -1.698* |
| -7 | 358 | -0.001 | 0.001 | -0.17 | 0.861 | 53.073% | -1.026 |
| -6 | 358 | -0.003** | 0.002 | -2.23 | 0.027 | 55.307% | -2.034** |

***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively.

Apart from parametric t-tests, a nonparametric test: Wilcoxon Signed-rank test is also applied. The test bears null hypothesis of an equal number of positive and negative cumulative abnormal returns for a given event window under the framework of binominal test. In addition, the Wilcoxon Signed-rank test considers both the sign and magnitude of abnormal returns and does not assume normality or infer the value of any population parameter (Hwang, 2013).[94] The Wilcoxon Z-statistics for all CARs over different event windows and ARs on event day -13, -12, -11, -10, -8, -6, -5, -4, -1, 0, 2 are significant in Table 5.4, implying the rejection of null hypothesis and the results are not driven by the outliers (Modi et al., 2015).

*5.4.3 Multivariate analysis*

Model 1 of Table 5.5 produces findings consistent with hypothesis 1; i.e. fines are significantly and negatively related to stock market reaction and 'name and shame' measures including public criticism, condemnation, warning, rectification notice and regulatory concern are positively related to stock market reaction. Therefore, investors perceive monetary penalties more severely than non-monetary penalties.

Model 2 examines hypothesis 2; a negative coefficient of -0.028 is reported for income fraud and a positive coefficient of 0.024 is estimated for disclosure fraud; both coefficients are statistically significant. Consistent with hypothesis 2, investors perceive false recognized values in the income statements more severely than false disclosed items. All these findings remain unchanged in Model 3 when test and control variables are included.

Turning to the control variables in Models 1-3, the coefficients for fraud duration are

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[94] In particular, the absolute values of CARs (ARs) are firstly ranked in each sample. Then signs are allocated to observations. Afterwards, the additions of ranks with positive and negative signs are computed. Lastly the sum of these two figures is calculated for the purpose of determining whether or not the null hypothesis of zero median CAR (AR) is rejected.

all negative and significant, implying longer fraud cases are associated with negative stock market reactions. All models report largest ownership has a significantly positive association with market reaction. The largest ownership form is positive and significantly related to CARs. This is because investors perceive the post-fraud performance of the state-owned firms to be more likely to recover and less likely to deteriorate. The three models report that chairman and CEO change is significantly negative related to market reaction. The coefficients for big ten auditors are positive and statistically different from zero in three models. This implies that if a firm is audited by one of the big ten auditors, a reduced negative market reaction to fraud announcement is experienced.

As information leakage is indicated, informed investors may transact to garner profits. CARs [-15, -6] are then used as the dependent variable to re-estimate the previous models and test the hypothesis 3. As shown in Models 4-6, monetary fines are negatively and statistically significant related to CARs. Non-monetary penalties, such as criticism and warnings have a significant positive association with CARs, consistent with hypothesis 3. This implies informed investors with private information perceive monetary penalties more severely than the non-monetary penalties. Compared to the magnitude of stock market reaction between pre-event and event periods, the negative market reaction to fines is significantly stronger in [-15, -6] pre-event period (-20.7%) than the [0, 1] event period (-7.0%). Monetary penalties have therefore resulted in greater shareholder wealth losses prior to punishment announcements, and at the formal announcement stage, the investor loss is lower. Models 6 reports insignificant coefficients of fraud variables, which suggest that informed investors are not sensitive to specific fraudulent behaviours.

**Table 5.5**

Regression results.

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| Criticism | 0.083*** | | 0.075*** | 0.089* | | 0.091* |
| | (0.028) | | (0.023) | (0.054) | | (0.054) |
| Warning | 0.130*** | | 0.140*** | 0.218*** | | 0.252*** |
| | (0.027) | | (0.026) | (0.051) | | (0.054) |
| Condemnation | 0.033 | | 0.036** | -0.033 | | -0.035 |
| | (0.020) | | (0.017) | (0.057) | | (0.059) |
| Fines | -0.070*** | | -0.077*** | -0.207*** | | -0.247*** |
| | (0.023) | | (0.022) | (0.041) | | (0.050) |
| Rectification notice | 0.036** | | 0.036** | 0.002 | | 0.001 |
| | (0.018) | | (0.015) | (0.028) | | (0.030) |
| Regulatory concern | 0.054* | | 0.032 | 0.078 | | 0.083 |
| | (0.030) | | (0.028) | (0.050) | | (0.059) |
| Letter of warning | 0.025 | | 0.023* | -0.038 | | -0.040 |
| | (0.016) | | (0.013) | (0.046) | | (0.044) |
| Income fraud | | -0.028* | -0.036*** | | 0.002 | 0.016 |
| | | (0.016) | (0.013) | | (0.047) | (0.047) |
| Balance sheet fraud | | 0.009 | 0.056** | | -0.046 | 0.061 |
| | | (0.021) | (0.024) | | (0.104) | (0.059) |
| Disclosure fraud | | 0.024** | 0.022*** | | -0.001 | -0.012 |
| | | (0.011) | (0.008) | | (0.035) | (0.033) |
| Duration | -0.012*** | -0.010** | -0.009*** | -0.026*** | -0.025*** | -0.026*** |
| | (0.004) | (0.005) | (0.003) | (0.006) | (0.009) | (0.006) |
| Firm size | -0.015** | 0.001 | -0.006 | -0.012 | 0.006 | -0.017 |
| | (0.006) | (0.006) | (0.006) | (0.012) | (0.017) | (0.015) |
| Largest ownership | 0.629*** | 0.392** | 0.626*** | 0.939*** | 0.400 | 0.977*** |
| | (0.109) | (0.195) | (0.096) | (0.297) | (0.355) | (0.284) |
| Ownership form | 0.076*** | 0.078*** | 0.085*** | 0.008 | -0.020 | 0.003 |
| | (0.012) | (0.010) | (0.008) | (0.037) | (0.034) | (0.033) |
| Institutional ownership | 0.345** | 0.330 | 0.310** | 0.705 | 0.663 | 0.750 |
| | (0.152) | (0.231) | (0.127) | (0.491) | (0.555) | (0.472) |
| Chairman change | -0.079*** | -0.073*** | -0.084*** | -0.132** | -0.102 | -0.130* |
| | (0.016) | (0.022) | (0.013) | (0.067) | (0.078) | (0.066) |
| CEO change | -0.033*** | -0.040*** | -0.043*** | -0.033 | -0.035 | -0.036 |
| | (0.006) | (0.009) | (0.007) | (0.032) | (0.032) | (0.036) |
| Big ten audit | 0.068*** | 0.073*** | 0.077*** | 0.095*** | 0.068 | 0.100*** |
| | (0.014) | (0.021) | (0.011) | (0.032) | (0.052) | (0.033) |
| Constant | 0.057 | -0.174 | -0.158 | -0.049 | -0.233 | 0.046 |
| | (0.109) | (0.120) | (0.114) | (0.232) | (0.372) | (0.293) |
| Observations | 358 | 358 | 358 | 358 | 358 | 358 |
| R-squared | 0.806 | 0.658 | 0.877 | 0.522 | 0.268 | 0.540 |
| F-statistics | 11.03*** | 14.59*** | 14.58*** | 4.67*** | 1.06 | 7.12*** |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |

All of the variables are defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The dependent variable is CARs over a [0, 1] event window in the Model 1-3, and over a [-15, -6] pre-event window in the Model 4-6. Firm fixed effects are controlled.

The 'name and shame' punishments can be divided into three groups, including administrative sanctions, supervisory and self-disciplinary measures. In terms of administrative sanctions, the coefficients of warning are significantly positive in all models. The positive signs are mainly caused by information leakage. In particular, when a case considered to be an administrative offence, an investigation notification is publicly disclosed prior to a sanction notification.[95] In other words, investors have already learnt that a firm is suspected of committing fraud. When a formal sanction is made to punish firms through less severe warnings, investors may feel relieved, thus reacting the news positively. In addition, the significant and positive coefficients of warnings may also result from investors' expectation of obtaining compensation through civil lawsuits. If this is the case, private enforcement of the securities laws adds certain marginal deterrence against accounting fraud.

With respect to supervisory measures, there is a significant and positive relationship between rectification notice, regulatory concern and stock market reaction in the Model 1. The thesis expects the positive coefficients are result from information leakage. However, non-significant coefficients of three supervisory measures are reported in the Model 4-6 by estimating CARs over a [-15, -6] pre-event window. This section re-runs the model by selecting CARs over a shorter and concentrated pre-event window [-14, -7].[96] This is because a shorter pre-event window can better capture the potential information leakage of punishments, as stock prices may quickly absorb the leaked information.

The results are presented in the following Table 5.6. It is reported that the letter of warning and rectification notice are relatively severe punishments and the regulatory concern is the least severe punishment within the group. This finding is evidenced by the significantly negative coefficients for letters of warning and rectification notices

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[95] The average duration between the CSRC initial investigation and regulatory announcement dates is about 2.2 years and the average duration between the CSRC sanction file date and the regulatory announcement date is about 22 days.

[96] This section chooses -14 as the beginning pre-event date because punishment information starts to leak to capital market 14 days prior to the formal regulatory announcements.

and non-significant coefficient for regulatory concerns. These findings are in line with related guidance specified in the CSRC's regulatory manual, in which the CSRC regional offices are instructed to issue statements of regulatory concern when there are general problems detected during the inspection of a firm's financial statements. For more severe problems, they are instructed to issue letters of warning or rectification notices or adopt other supervisory measures (CSRC, 2012).

In terms of self-disciplinary measures, the coefficients of public criticism are significantly positive in both event windows and pre-event windows, which indicates the capital market views them as non-severe punishments. Table 5.6 indicates that public condemnation is a severe punishment relative to public criticism, as evidenced by the significant and negative coefficient of public condemnation over the [-14, -7] pre-event window. This is consistent with Firth et al. (2016)'s argument that public condemnation should be used to punish relatively severe offences.

The test indicates that although non-monetary punishments, such as public condemnation, rectification notices and letters of warning carry some reputational losses to the fraudulent firms during the pre-event period, the costs are relatively limited. If the managers can manage the punishment information disclosure and firms' stock prices can quickly absorb leaked information in the capital markets, the reputational costs are moderated following the regulatory announcements. Subsequently, the coefficients of these non-monetary punishments are significant and negative in the pre-event period, but become either non-significant or positive after fraud events are announced. On the other hand, monetary punishments carry far greater reputational costs to the fraudulent firms in both pre-event period and event period, as evidenced by the magnitude and sign of coefficients of fines. As a result, monetary punishments are less affected by information leakage and are more effective in addressing accounting fraud.[97]

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[97] There are 358 firm-level fraud cases in the sample. The Chinese regulatory institutions can punish both firms and individuals, but in some cases, they punish either the firms or the individuals, not both parties. In particular, 3.9% of the total cases only the fraudulent individuals

**Table 5.6**

Regression results: CARs over [-14, -7].

| Variables | [-14, -7] CARs |
|---|---|
| Criticism | 0.003 |
| | (0.040) |
| Warning | 0.066* |
| | (0.034) |
| Condemnation | -0.086** |
| | (0.042) |
| Fines | -0.090*** |
| | (0.032) |
| Rectification notice | -0.051** |
| | (0.022) |
| Regulatory concern | 0.009 |
| | (0.043) |
| Letter of warning | -0.059* |
| | (0.031) |
| Duration | -0.016*** |
| | (0.005) |
| Firm size | -0.005 |
| | (0.010) |
| Largest ownership | 0.418** |
| | (0.194) |
| Ownership form | 0.016 |
| | (0.035) |
| Institutional ownership | 0.332 |
| | (0.411) |
| Chairman change | -0.084 |
| | (0.056) |
| CEO change | 0.012 |
| | (0.023) |
| Big ten audit | 0.026 |
| | (0.028) |
| Constant | 0.019 |
| | (0.170) |
| Observations | 358 |
| R-squared | 0.337 |
| F-statistics | 4.74*** |
| Firm fixed effects | Yes |

All variables are defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The dependent variable is CARs over a [-14, -7] event window in the Table 5.6. Firm fixed effects are controlled.

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are punished. In other words, there is no firm-level punishment. Subsequently, these cases are selected as the reference group. This thesis finds negative and significant coefficients of fines. That is, regulatory fines trigger more negative stock market reaction than the reference group of firms receiving no firm-level punishment. The thesis also notes that changing the reference group has no impact on the sign or the significance level of fines. For instance, if this chapter deletes 3.9% cases that only individuals are punished and selects warnings as the reference group (see Appendix 2.11 for details). It is reported that the results remain similar. To examine different types of fraud and its impact on CARs, the reference group is multiple fraud (25.5%), which refers to a firm commits more than one type of accounting fraud.

*5.4.4 Endogeneity concern*

This section discusses endogeneity concerns. Endogeneity may arise between fines and stock market reaction, as fines affect stock market reactions and the latter might influence the former. Chen et al. (2011) propose that when making decisions about punishments, the CSRC considers several factors including investors losses, where the greater the investor losses, the greater possibility of firms being subject to heavy penalties. If this is the case, the regression model may produce biased and inconsistent estimates. This issue is addressed by instrumenting the fines measure as well as re-estimating the fixed-effects regression model for CARs using two stage least squares (2-SLS) method. Two instrumental variables used for fines are the national regulator (REGULATOR) and the laws (LAW). This is because fines are mainly imposed by national regulator (i.e. CSRC and Ministry of Finance) based on the laws rather than departmental provisions or self-regulation. The instrumental variables (REGULATOR and LAW) must be correlated with the endogenous variable (Fines) but not correlated with the error term (Su, 2015).

**Table 5.7**

Two stage least squares method regression results.

| Variables | First Stage Fines | Second Stage CARs |
|---|---|---|
| REGULATOR | 0.299*** | |
| | (0.098) | |
| LAW | 0.215** | |
| | (0.085) | |
| FINES1 | | -0.073* |
| | | (0.041) |
| Criticism | 0.086 | 0.083*** |
| | (0.130) | (0.025) |
| Condemnation | 0.116 | 0.032 |
| | (0.130) | (0.024) |
| Warning | 0.672*** | 0.133*** |
| | (0.092) | (0.040) |
| Rectification notice | 0.085 | 0.036** |
| | (0.088) | (0.015) |
| Regulatory concern | 0.126 | 0.054* |
| | (0.155) | (0.030) |
| Letter of warning | 0.024 | 0.025 |
| | (0.102) | (0.020) |
| Duration | -0.007 | -0.012*** |
| | (0.019) | (0.004) |
| Firm size | -0.013 | -0.015** |
| | (0.039) | (0.008) |
| Largest ownership | 2.520*** | 0.635*** |
| | (0.559) | (0.143) |
| Ownership form | 0.080 | 0.077*** |
| | (0.077) | (0.016) |
| Institutional ownership | -0.827 | 0.337* |
| | (0.871) | (0.176) |
| Chairman change | -0.166 | -0.079*** |
| | (0.112) | (0.023) |
| CEO change | 0.055 | -0.033*** |
| | (0.063) | (0.013) |
| Big ten audit | 0.193** | 0.068*** |
| | (0.080) | (0.016) |
| Constant | -0.689 | 0.063 |
| | (0.776) | (0.140) |
| Observations | 358 | 358 |
| Firm fixed effects | Yes | Yes |
| Wald Chi$^2$ | | 131.23*** |
| F statistic, instrument relevance | | 11.44*** |
| Sargan-Hansen statistic (P-value) | 1.229 | (0.268) |
| Davidson-MacKinnon test of exogeneity (P-value) | 0.008 | (0.929) |
| Hausman test Chi$^2$ (P-value) | 0.01 | (1.000) |

The instrumental variable (REGULATOR) is a dummy variable which is coded 1 if fines are imposed by national regulators and zero otherwise. The instrumental variable (LAW) is a dummy variable if fines are imposed based on laws and zero otherwise. FINES1 is the predicted value of endogenous variable. The remaining variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. Firm fixed effects are controlled.

The 2-SLS method initially uses the endogenous variable (Fines) to regress the instrumental variables (REGULATOR and LAW) and other exogenous covariates; the predicted value of endogenous variable (FINES1) can then be calculated. In the second stage, the predicted value of FINES1 replaces the observed value of Fines in the main regression equation to obtain the estimated coefficients. As FINES1 is a linear function of exogenous covariates and instrumental variables only, by construction there is zero covariance between FINES1 and the disturbance term $\varepsilon_{it}$ (Jaafar and El-Shawa, 2009).

Table 5.7 reports the 2-SLS estimation results. In the first stage, the REGULATOR and LAW are significantly related to Fines at 1% and 5% levels respectively. The F-statistic for testing instrument relevance exceeds ten, supporting the strength of the instrumental variables.[98] The Sargan-Hansen statistic for testing instrument exogeneity signifies that instrumental variables are jointly exogenous (Elyasiani and Zhang, 2015).[99] The second stage coefficient estimates identify the effectiveness of punishments by studying stock market reaction. This section reports that FINES1 has a negative influence on CARs and the estimated coefficient is significantly different from zero. In contrast, the non-monetary punishments are positively related to CARs; implying fines trigger the most severe investor loss. In addition, the control variable results remain unchanged between 2-SLS model and fixed effects model.

The Davidson-MacKinnon test result of exogeneity cannot reject the null hypothesis of exogeneity for the variable Fines, indicating endogeneity is not problematic and instrumental variables techniques are not required (Aboal et al., 2011). Likewise, a Hausman test is conducted to examine the differences of coefficient estimates between original fixed effects model and 2-SLS fixed effects model and confirms differences between two estimators are statistically insignificant.

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[98] Staiger and Stock (1997) suggest that the F-statistic should exceed ten to demonstrate instrument relevance. It is reported that F-statistic equals to 11.44 in this research, implying instrumental variable is useful in explaining the variation in the endogenous covariate.

[99] The specific Sargan-Hansen statistic can be undertaken in the overidentifying cases when the number of instruments exceeds the number of endogenous variables. The null hypothesis for the Sargan-Hansen statistic is that all instruments are exogenous. The result cannot reject the null hypothesis and it is concluded that all the instruments are uncorrelated with the error term.

**Table 5.8**

Robustness tests.

| Panel A: Fines and warnings imposed simultaneously | | |
|---|---|---|
| Variables | [0, 1] CARs | [-15, -6] CARs |
| Fines & Warnings | -0.077*** | -0.117* |
| Criticism | 0.085*** | 0.092* |
| Warning | 0.187*** | 0.304*** |
| Condemnation | 0.036* | -0.028 |
| Fines | -0.051*** | -0.178*** |
| Rectification notice | 0.039** | 0.006 |
| Regulatory concern | 0.055* | 0.079 |
| Letter of warning | 0.026 | -0.037 |
| Control variables | Yes | Yes |
| Firm fixed effects | Yes | Yes |
| Observations | 358 | 358 |
| R-squared | 0.819 | 0.531 |

| Panel B: Market reaction to administrative investigation announcements | | | |
|---|---|---|---|
| Event windows | No. | Investigation date | Announcement date |
| [-5, +5] | 43 | -0.058*** | -0.013 |
| [-3, +3] | 43 | -0.039*** | -0.005 |
| [-2, 2] | 43 | -0.039*** | -0.015 |
| [-1, 1] | 43 | -0.046*** | -0.012 |
| [0, 1] | 43 | -0.041*** | -0.007 |

| Panel C: Fraud cases with recidivism | | |
|---|---|---|
| Variables | [0, 1] CARs | [-15, -6] CARs |
| Fines | -0.068** | -0.215*** |
| Control variables | Yes | Yes |
| Firm fixed effects | Yes | Yes |
| Observations | 379 | 379 |
| R-squared | 0.598 | 0.415 |

| Panel D: Modified dependent variables | | |
|---|---|---|
| Variables | [-2,2] CARs | [-5,5] CARs |
| Fines | -0.184* | -0.269** |
| Control variables | Yes | Yes |
| Firm fixed effects | Yes | Yes |
| Observations | 358 | 358 |
| R-squared | 0.771 | 0.768 |

Fines & Warnings is a dummy variable which is coded one if a firm subjects to both fines and warning sanctions simultaneously and zero otherwise. The remaining variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. Cases with recidivism refer to a firm was punished multiple times in a firm-year. Firm fixed effects are controlled in the Panel A, C and D. CARs are calculated based on the market model. See Appendices 2.4-2.6 for detailed results.

**Table 5.8**

Robustness tests (continued).

| Panel E: The size of fines and stock market reaction | | |
|---|---|---|
| Variables | [0, 1] CARs | [-15, -6] CARs |
| Regulatory fines | -0.006*** | -0.018*** |
| Criticism | 0.081*** | 0.084 |
| Warning | 0.030 | -0.038 |
| Condemnation | 0.140*** | 0.237*** |
| Rectification notice | 0.035** | 0.001 |
| Regulatory concern | 0.054* | 0.077 |
| Letter of warning | 0.025 | -0.039 |
| Control variables | Yes | Yes |
| Firm fixed effects | Yes | Yes |
| Observations | 358 | 358 |
| R-squared | 0.811 | 0.523 |
| Panel F: Winsorizing dependent variable at 99% | | |
| Variables | [0, 1] CARs | [-15, -6] CARs |
| Criticism | 0.052** | 0.037 |
| Warning | 0.072*** | 0.119** |
| Condemnation | 0.009 | -0.073 |
| Fines | -0.036*** | -0.149*** |
| Rectification notice | 0.018 | -0.039 |
| Regulatory concern | 0.033 | 0.030 |
| Letter of warning | 0.021 | -0.047 |
| Control variables & Firm fixed effects | Yes | Yes |
| Observations | 358 | 358 |
| R-squared | 0.730 | 0.448 |
| Panel G: Trimming dependent variable at 99% | | |
| Variables | [0, 1] CARs | [-15, -6] CARs |
| Criticism | 0.060** | 0.037 |
| Warning | 0.087*** | 0.119** |
| Condemnation | 0.015 | -0.073 |
| Fines | -0.045*** | -0.149*** |
| Rectification notice | 0.018 | -0.039 |
| Regulatory concern | 0.033 | 0.030 |
| Letter of warning | 0.021 | -0.047 |
| Control variables & Firm fixed effects | Yes | Yes |
| Observations | 358 | 358 |
| R-squared | 0.714 | 0.363 |

Regulatory fines are defined as the natural logarithm of one plus the amounts of fines. The remaining variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. CARs are calculated based on the market model. See Appendices 2.7-2.9 for detailed results.

*5.4.5 Robustness tests*

The results of additional robustness tests are reported as follows. First, as fines and warnings can be imposed simultaneously, this chapter re-estimates the stock market reaction to different punishments by taking the joint-punishment into consideration. An indicator variable (Fines & Warnings) is constructed and coded one if a firm subjects to both fines and warnings sanctions simultaneously and zero otherwise. Panel A of Table 5.8 reports the estimation results over [0, 1] and [-15, -6] event windows. It is reported that the coefficients for Fines & Warnings and Fines are both significantly negative and the coefficients in the [-15, -6] pre-event period are more negative than the [0, 1] event period. This further confirms that investors perceive punishments involving fines far more severely than the 'name and shame' non-monetary penalties in addressing accounting fraud.

Second, stock market reactions to investigation announcements is examined. For a case considered to be an administrative offence, an investigation notification is publicly announced before the formal sanction notification. Panel B compares the stock market reaction between investigation announcements and sanction announcements. It is observed that the significant CARs range from -3.9% to -5.8% around investigation announcements. Interestingly, the corresponding CARs around formal sanction announcements are not significant. In other words, fraud leads to greater investor loss at the investigation phase; however, at the formal sanction phase, investor loss is insignificant as the incoming punishments have already been perceived by investors.

Third, this chapter identifies the cases with recidivism and modifies the event window of the dependent variable CARs to a 5-day event window [-2, 2] and an 11-day event window [-5, 5]. The regression model is then re-estimated; the findings (in Panel C and D) confirm fines result in a more negative stock market reaction than the non-monetary punishments. The major findings are qualitatively identical as those reported in the Table 5.5.

Fourth, a few studies have assessed the relationship between the size of fines and the

magnitude of investor losses. For instance, Karpoff et al. (2007) find that both private and regulatory monetary penalties are positively and significantly related to the measures of investors' potential losses resulting from corporate misconduct in U.S.A. However, the non-monetary punishments are unrelated to the magnitude of the investor harm.[100] This section estimates the association between the magnitude of fines and associated drops in stock market reaction by replacing the dummy variable 'fines' into the continuous variable regulatory fines (i.e. natural logarithm of one plus the amounts of fines).

It is reported that there is a significant and negative relationship between the magnitude of fines and the cumulative abnormal returns in both [0, 1] and [-15, -6] event windows (see Panel E of Table 5.8). In other words, the larger the fine, the greater the fall in firm value. However, this finding needs to be interpreted with caution. In particular, the maximum fines imposed by the CSRC against corporate misrepresentation are 600,000 Yuan (about $90,000) based on the Securities Law. Subsequently, no general conclusion i.e. regulators should impose higher fines on perpetrators to produce stronger retributive effect' should be drawn, as the variable 'regulatory fines' is censored in the regression model.

Fifth, this section tests the potential effects caused by the outliers of CARs. Brown and Warner (1985) point out that daily stock returns are characterized by non-normality, indicating a significant presence of outliers and high leverage data points. This raises the question that to what extent do outliers and high leverage data points in this event study research affect the conclusions. There are three common methods for addressing outliers: ignoring them, trimming the variable to remove inconvenient data by the arbitrary setting the cut-off thresholds for too large or small observations, or

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[100] Investor harm in Karpoff et al. (2007)'s paper is measured through a series of variables, including provable loss (a firm's highest market value minus its value at the close of trading of the day after the enforcement event), public float (the percentage of a firm's shares not owned by officers, directors or majority owners), violation period stock price run-up (CARs calculated over the violation period using value-weighted index of all stocks), insider trading dummy and fraud dummy (dichotomous variables that take a value of 1 if insider trading/fraud charges are included in regulatory proceedings and 0 otherwise).

winsorizing the largest or smallest observations and replacing them with the values of arbitrary selected cut-off thresholds.

Sorokina et al. (2013) argue that none of these methods can guarantee successful removal of outliers from the dataset, as the outliers are identified by the size of the residual from a regression model rather than the absolute size of the particular observation of an individual variable. In particular, when observations are trimmed, valuable information is lost, including the effect of interest, event effect in this thesis. When observations are winsorized, unambiguously incorrect observations are added to the dataset. In addition, the announcement of regulatory sanctions would unavoidably cause extreme stock market reaction and the extreme stock market reaction reflects investors' loss of confidence about firms' future performance. Such information is valuable and indispensable as the CARs are used to compare the effectiveness of different regulatory punishments. Subsequently, all observations of CARs are kept and neither trimming nor winsorization techniques are applied in this thesis.

The potential effects caused by outliers of CARs are examined. Following Armour et al. (2017), this section first winsorizes the variable CARs at 99% and then drops the outliers instead of winsorizing at 99%.[101] It is reported that the main findings remain unchanged (see panel F and G of Table 5.8): investors perceive fines more severely than non-monetary punishments. However, it is important to notice that the magnitude of stock market reaction to fines becomes smaller in both [0, 1] and [-15, -6] event windows when CARs are winsorized or trimmed.

## 5.5 Conclusions

In this chapter the effectiveness of different monetary and non-monetary 'name and shame' punishments for accounting fraud are assessed. This is undertaken through

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[101] The findings are qualitatively similar when CARs are winsorized or trimmed at 98% and 95%.

examining the stock market reaction to the regulatory reporting of such crimes in China from 2007 to 2014. Overall punishment has a significant impact on the market value of fraudulent firms. The magnitude of the investor losses range from -0.5% to -1.1%, indicting a statistically but not economically significant impact on fraudulent firms. This value is lower than previous Chinese studies which have not incorporated regional office announcements.

Using a regression model, this chapter estimates investors perceive punishments involving monetary penalties more severely than those without monetary penalties. This result may occur as monetary penalties not only result in direct cash outflows yet lose reputation for fraudulent firms. Monetary penalties indeed speak very loudly in China and enforcement in severe fraud cases may need to use fines liberally and be aware of the limitations of non-monetary, 'name and shame' punishments. Stock markets can also discriminate among different fraudulent behaviours and react less significantly to the disclosure than the income fraud. This may arise from different perceptions of recognized and disclosed items, leading investors to value false recognition of income items more than false disclosure of items. This chapter also finds information leakage prior to the announcement of punishments. Informed investors with such private information perceive monetary penalties more severely than the non-monetary penalties; results which remain robust after conducting additional analysis.

One explanation for these findings is that while non-monetary penalties trigger reputational losses, these costs are relatively limited. If managers are able to manage punishment information disclosure to financial markets, the reputational costs associated with 'name and shame' penalties can be moderated. In contrast, monetary punishments 'speak very loudly' (Steinway, 2014), carry far greater reputational costs which are less influenced by information leakage. Fraud type is also seen to be a significant influence on stock market reaction, valuing dishonest recognition of income items more heavily than false disclosure of items.

These findings need to be interpreted cautiously because of three limitations. First, the samples are subject to a selection bias. In other words, only fraud cases that are detected

and revealed to the public are included. Second, this chapter focuses on the impact of punishment announcement on the short-term stock returns. The longer-term economic consequences caused by financial statement fraud are still unknown to investors. Hitz et al. (2012) argue that the stock market needs several days to fully react to punishment news, as the lack of experience interpreting enforcement measures precludes investors from comprehending the punishment announcements' implications in the short-term. As this process can last up to forty days, the long-term implications of punishment announcements for shareholder wealth remains an open question. Third, in the pre-announcement period or during the announcement period, unobserved events may exist leading to a negative market reaction, yet difficult to accommodate.

Despite these constraints the findings do provide insights for regulators and policy makers. First, meaningful monetary penalties play an important role in forming a strong enforcement program for China. Second, as investors view punishments for different types of fraud distinctly, more strict disclosure regulations associated with financial reporting are needed. Further, when a disclosure fraud is deemed to be serious, especially in relation to false disclosure of material related party transactions, investment status, accounting policies and guaranteed items (Zhu and Gao, 2011), harsher punishments need to be imposed and fully enforced even if investors react less negatively. By doing so, regulators can increase the costs of disclosure fraud and help investors understand the value to comprehending a firm's disclosed items.

Third, information leakage prior to formal punishment announcements is observed. Regulators should enforce and enhance regulations against informed trading and information leakage. To keep corporate insiders and other informed investors from trading on non-public information and prevent information leakage, the Chinese regulators have to date implemented several regulations. One of the key provisions is the Article 202 of the *Chinese Securities Law*, which stipulates that those who leak inside information are subject to a range of punishments. This regulation is problematic and ambiguous through only addressing traders using leaked information to make profits; yet not traders using leaked information to avoid losses (Weng and Jia, 2015).

In addition, selective enforcement of regulations in China may amplify the level of information asymmetry between informed insiders and outside investors (Chen et al., 2011). Therefore, regulators need to fully enforce regulations and revise *the Securities Law* to avoid such loopholes for informed investors to profit from non-public material information.

Lastly, in considering the efficiency of punishments, public enforcement undoubtedly plays an important role in China's regulatory regime of corporate disclosure. The 2002 *Notice Regarding Accepting Tort Cases Arising from Stock Market False Disclosure issued by Supreme Court* in China for the first time allowed courts to accept cases against fraud in information disclosure and required an administrative prerequisite for private enforcement actions (Xu and Xu, 2017). This chapter finds a positive relationship between disclosure fraud and stock market reaction, which can be alternatively explained as investors' anticipation to be compensated through civil litigation. If this is the case, private enforcement may provide a marginal deterrence; therefore, this private enforcement mechanism should be strengthened and complement public enforcement in China.

# 6. Does mutual fund investment deter accounting fraud?

## 6.1 Introduction

Does mutual fund investment deter accounting fraud in China? Mutual funds emerged in China two decades ago and with government support have experienced high growth, becoming the largest type of institutional investor in Chinese capital markets (Chi et al., 2014). Compared to individual investors, mutual funds can diversify investment risks and have expertise in monitoring firms' decision making process, serving as an external corporate governance mechanism (Chan et al., 2014). Mutual funds have been previously examined with respect to improving firm performance (Ng et al., 2009; Lin and Fu, 2017), corporate transparency (Chan et al., 2014) and stock price informativeness (Ding et al., 2013). However, little is known about the role of mutual fund investment in detecting accounting fraud, especially in the context of China, where legal enforcement is relatively low and protection of investors' rights is weak.

Using a bivariate probit model, this chapter examines fraud commission and detection separately for Chinese listed firms from 2007 to 2014. It is reported mutual fund investment reduces listed firms' propensity to commit fraud and increases the likelihood of fraud detection. This supports Chinese regulators' efforts to develop mutual funds to reduce fraud. Open-end fund investment has a stronger influence on disciplining listed firms than closed-end fund investment and redeemable shares exert considerable discipline on managers. However, state ownership moderates the benefits of the external governance mechanism provided by mutual funds. The ability of mutual funds monitoring is reduced as the SOEs answer more to the state than to the stock market.

This chapter makes the following contributions to the literature. First, ambiguity as to the monitoring role of mutual funds in Chinese capital market is alleviated. Although mutual funds are often considered to be a monitor reducing information asymmetries, agency problems and maximizing shareholder value, the existing empirical evidence is mixed. For instance, Kim and Jiang (2015) express concerns as to the small size of mutual fund shareholdings, which may result in them not having the power or desire to

engage in shareholder activism. Lin et al. (2017) find a high level of information asymmetry in China's capital markets results in greater costs of monitoring and mutual funds may act passively. Distinctly this chapter reports mutual fund investment is capable of disciplining firms detecting potential fraudulent behaviours.

Second, this chapter highlights the constraining roles played by mutual fund investment and state ownership in monitoring managers and shaping the corporate information environment. Most Chinese listed firms have a highly concentrated ownership structure, with a single owner having the effective control of the listed firms. Many of these controlling shareholders are state and quasi-state institutions. State ownership has been previously portrayed as beneficial to listed firms by offering financial support (Wang and Yung, 2011), improving firm performance (Peng and Luo, 2000), attracting greater investments (Shen and Lin, 2016) and facilitating business in uncertain environments (Hou et al., 2013). This research illuminates a negative side of state ownership: its role in constricting monitoring by mutual funds. In China, the state either directly or indirectly owns virtually all mutual funds' management firms and more importantly, mutual funds engage in voting on behalf of minority shareholders. As a consequence, the state can apply pressure to mutual funds and the ability of mutual funds to discipline dishonest managers is significantly reduced (Firth et al., 2010; Ding et al., 2013).

Third, a bivariate probit model is used to accommodate partial observability. Fraud studies (See Jia et al., 2009; Hou and Moore, 2010, Hou et al., 2013) typically rely on the detection of fraud for evidence of its existence. However, fraud can only be observed when fraudsters are punished. Past studies only consider detected fraud rather than the underlying population of all fraudulent activities (Stuart and Wang, 2016). In this chapter, the probability of detected fraud is considered to be the product of two latent probabilities: the probability of fraud commission and fraud detection. A bivariate probit model is thus adopted to quantify not only the determinants of fraud commission and detection but also the interaction between these two latent processes (Wang, 2013).

The remainder of the chapter is organized as follows. The next section outlines the context of the study and reviews the relevant literature. The third section develops

hypotheses, discusses the variables employed and the research model. The fourth section reports the empirical results and the final section concludes the chapter.

## 6.2 Literature review

### 6.2.1 Characteristics of mutual funds

Mutual funds are created through a contractual relationship between a fund management institution, a fund custodian and investors. Commercial banks are licensed by the CSRC to act as fund custodians and assume the responsibilities of monitoring fund managers' investment activities (CSRC, 2013; Neftci et al., 2007). Fund management institutions mainly perform duties of raising capital and handling the sale and registration of fund shares (Yang et al., 2014).

China's mutual funds industry differs from that of the U.S.A in several ways. First, the size of mutual funds is different: by the end of 2016, mutual funds in the U.S. were about 13 times larger than mutual funds in China. There were 850 registered U.S. fund companies with total fund holding of $16.3 trillion, accounting for about 60% of stock market capitalization (ICI, 2017). In contrast, there were 108 fund management companies in China and mutual funds' assets accounting for only 18% of domestic market capitalization (AMAC, 2017). This gap reflects the dominance of individual investors in Chinese domestic stock markets (Hu and Chen, 2016).

Second, mutual funds in the U.S.A are corporate entities with a specific board of directors (or trustees) overseeing each fund. In contrast, mutual funds in China are not corporate entities but contract funds, implying fewer voting rights are provided to investors.

Third, management fees in U.S. mutual funds are negotiated by the board of directors and fluctuate according to market competition and fund performance. Distinctly management fees in China's mutual funds are fixed at 1.5% of total assets under

management since 2002. Subsequently, management fees do not reveal much about the mutual funds' performance in China.

Fourth, mutual funds in China are mostly distributed through fund management companies, commercial banks or securities companies. Insurance firms play a very little role in the distribution of funds (Jun et al., 2014). However, in the U.S.A, mutual funds can be allocated through a variety of channels such as the direct channel, the advice channel, the retirement plan channel, the supermarket channel and the institutional channel (Jiang et al., 2008).[102]

Fifth, the turnover among Chinese fund managers is nearly three times that of their U.S. counterparts. For instance, the average duration of fund managers in China is 1.68 years while the duration of fund managers in U.S.A is about 4.8 to 4.9 years. The high turnover among Chinese fund managers is largely due to high labour competition, poor prior fund performance and job-hopping when new funds are issued (Wang and Ko, 2017).

Sixth, compared to the U.S. SEC, the CSRC has more power to regulate the mutual funds industry, including approving the establishment of fund management companies and electing senior managers of fund management companies (Rao et al., 2016).[103]

Lastly, mutual funds in China have low incentives to fulfill their monitoring roles in firms with strong government connections. Compared to U.S. firms, a typical Chinese listed firm is often controlled by a large shareholder such as the state (Wong, 2016). Firms with state-owned background have more government connections than private firms. In particular, *Guanxi* is often used as an informal governance mechanism. These

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[102] In the direct channel, investors carry out transactions directly with mutual funds. In the advice, retirement plan and supermarket channels, individual investors use third parties that conduct transactions with mutual funds on their behalf. Businesses, financial institutions, foundations and other institutional investors use the institutional channel to conduct transactions either directly with mutual funds or through third parties (Reid and Rea, 2003).

[103] Considerable differences exist between the CSRC and the SEC with regard to approving the establishment of fund management firms (See Article 13 and 14 of the *Securities Investment Fund Law*) and electing senior managers of fund management firms (See Article 17). Available at: http://english.gov.cn/services/investment/2014/08/23/content_281474982978075.htm (last visited on 5 December 2017).

social ties, while applauded by locals as an important channel through which one can build trust between parties, has been criticized by outsiders as fostering favoritism and collusion (Gao et al., 2015). Firms with government connections in China can be treated more favourably and even escape from regulatory punishments (Hou and Moore, 2010). Subsequently, mutual funds are reluctant to perform their monitoring roles. Nevertheless, as government connections do not feature in U.S. firms, mutual funds face lower costs of monitoring and perform their disciplinary function more effectively.

*6.2.2 Can mutual funds play a monitoring role? A theoretical review*

Multiple theories have advocated mutual fund investment is an important corporate governance mechanism to deter fraud. Compared with individual investors, mutual funds present greater incentives to monitor managers. This prompts firm managers to be more concerned about performance and shareholders, discouraging them from opportunism (Ding et al., 2013). In addition, as large institutional shareholders, they have greater voting power and more influence on share price movements than other institutional investors in China (Chan et al., 2014). They actively participate in corporate governance through proposing shareholder bills and soliciting proxy voting rights (Dai et al., 2013). Subsequently, incentives exist to collect information and monitor management, minimizing information asymmetry and reducing the likelihood of fraud (Shleifer and Vishny, 1997; Lin and Fu, 2017).

From a 'gatekeeper' perspective, in a universal sense, mutual funds can deter clients' wrongdoing and promote compliance (Coffee, 2006). Kraakman (1986) defines gatekeepers as third parties who are able to disrupt misconduct by withholding their cooperation from wrongdoers. As gatekeepers, mutual funds have significant reputational capital to preserve and a lot to lose if they collude with fraudsters. They only make a sell decision after a careful and impartial review of a firm's prospects, as a threat of exit by mutual funds is expected to cause negative stock returns (Firth et al., 2016). Subsequently, mutual funds use their knowledge, monitoring abilities and

competence to prevent corporate wrongdoings, to whistle-blow, to resign from, discharge or punish wrongdoers and to rescue individuals or organizations in dangerous situations (Alzola, 2017).

Distinctly 'cognitive evaluation' research argues mutual funds do not play an active monitoring function universally (Shi et al., 2016). Here external pressures affect internal motivations to do what is right, leading mutual funds to only focus on short-term investments. When a listed firm has a poor financial performance, mutual funds are therefore more likely to 'vote with their feet' through selling firm shares. To prevent the exit of mutual funds, firm managers are under continuous pressure to meet the short-term earnings expectation, and engage in accounting fraud even though they know it is wrong (Kazemian and Sanusi, 2015). Fund managers may also pressure firm managers to forego long-term investments in favor of increasing short-term financial profitability to enhance job security and the likelihood of promotion (Graves, 1988). Mutual funds can therefore prompt managers to shift from an internal to an external locus of causality, shifting focus from honest corporate financial reporting to providing an outward perception of compliance (Shi et al., 2016).

In China, the monitoring efficiency of mutual funds may also be shaped by '*Guanxi*' and political connections. Building *Guanxi* (relationship) is an important element of China's business culture and key to effectively executing a business plan (Lin and Fu, 2017). As *Guanxi* dominates social life, it leads to self-interested behaviours such as behind-the-scenes and one-to-one meetings with firm management. In Chinese listed firms, fund managers are more likely to engage in more 'informal communications' with firm managers, where firm managers may secretly disclose price-sensitive information and fund managers reciprocate by endorsing the firms' stocks (Ding et al., 2016). Managers with strong political connections may also restrict mutual funds from monitoring listed firms in China. Thus, the incentives of firms to provide high-quality financial reporting reduce and the likelihood of fraud increases with the extent of political connections (Wang et al., 2017).

## 6.3 Development of hypotheses, variables and methods

*6.3.1 Hypotheses development*

Mutual funds are effective institutional investors for several reasons. First, fund managers are pressured to provide investors with superior stock returns as their income is related to fund performance and size (Aggarwal et al., 2015). Fraudulent firms generally experience a negative stock market reaction when punishments are publicly disclosed, which in turn has an adverse impact on the performance of mutual funds and reputation of fund managers. Subsequently, mutual funds have incentives to discourage corporate opportunistic behaviours. Second, Chinese mutual funds are subject to regulatory scrutiny, required to make quarterly disclosures regarding portfolio compositions and adhere to pre-determined investment styles and objectives (Yuan et al., 2008; El Kalak et al., 2016). Third, fund managers are sophisticated investors with managerial skills and professional knowledge facilitating the detection of fraudulent activities. Using their resources to monitor and remove managers believed to be using fraudulent techniques to manipulate earnings, mutual funds can constrain self-serving managerial manipulation (Wang, 2014). In an interview conducted by Yuan et al. (2009), directors and senior management confirm that mutual funds are active shareholders and exercise influence, whereas other institutional investors tend to be passive. Therefore, this chapter posits:

> $H_1$: *Mutual fund ownership is negatively related to a firm's propensity to commit fraud and positively associated with the detection of fraud.*

Mutual funds are then divided into open-end funds and closed-end funds to examine their monitoring efficiency separately. Close-end funds have a fixed number of shares traded on stock markets and fund shares cannot be redeemed by investors upon request during the term of the fund contract. In contrast, the number of shares outstanding in open-end funds is continuously changing and investors are allowed to redeem shares at

the time agreed in the fund contract (Wei, 2016).[104]

For open-end funds, the ability of investors to redeem shares can unilaterally remove assets from managerial control. In this way, liquid open-end funds provide excellent discipline to mutual fund managers: if the fund managers behave opportunistically and tactically collude with fraudulent firms, they will find themselves managing funds with less or no assets, as investors can redeem fund shares to withdraw the capital during the open-end fund contract and thus fund size declines (Aguilera and Crespi-Cladera, 2016). Subsequently, fund management fees, a major source of income for fund managers, decrease as the size of fees is linked to the size of assets they manage in China.[105] In contrast, for closed-end funds, as shares cannot be redeemed during the fund contract, the size of fund assets and fund management fees remain unchanged. Subsequently, closed-end funds cannot effectively discipline listed firms and have a lesser impact on fraud commission or detection (Lu et al., 2008). In addition, fund management firms often direct their best managerial talent to open-end funds rather than closed-end funds, with open-end funds outperforming closed-end funds both statistically and economically (MacKay and Wu, 2012). Therefore, this chapter posits:

*H2: Open-end fund ownership is negatively related to a firm's propensity to commit fraud and positively associated with the detection of fraud; whereas closed-end fund ownership has no impact on fraud commission and detection.*

The monitoring effect of mutual funds may be less pronounced in SOEs for several reasons. First, SOEs are charged not only to maximize shareholder interests but to shoulder policy burdens, such as increasing employment rate and wages, promoting regional development, ensuring national security and providing low-prices goods and

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[104] Unlike closed-end funds, open-end funds do not trade on stock exchanges. Investors buy fund shares from investment companies and sell their shares back to the companies.

[105] This is different from western countries as management fees fluctuate based on market competition and fund performance in the west. In addition, although the 'rate' of management fees is not negotiated in China, the monetary amounts of fees will depend on the amount of money being managed.

services (Wu et al., 2016). Mutual funds investing in SOEs are therefore less able to challenge managers' decisions that incorporate such political considerations.

Second, the ability of mutual funds to deter accounting fraud is expected to be more pronounced in firms concerned with external shareholders' opinions. A drop in stock returns due to reputational losses and rising discount rates following the public disclosure of fraud, has more influence on the listed firms which are more reliant on external equity financing (Hou et al., 2013). Compared to non-SOEs, SOEs are more likely to receive financial support from government authorities and less likely to rely on the stock markets to provide funding. In particular, SOEs have preferential access to bank loans and face less pressure from debt covenant constraints (Shen and Lin, 2016). As a result, non-SOEs are more reliant on acquiring external funding for investment projects and growth opportunities.

Third, managers in SOEs may restrict the monitoring role of mutual funds for their future promotion. Successful executives in Chinese SOEs are generally rewarded with promotion to government positions. When accounting fraud is revealed, managers in SOEs face a higher probability of being dismissed than managers in private firms since the announcement of fraud damages the image of the state. These higher costs result in managers reducing the role of mutual funds in detecting accounting fraud (Wu et al., 2016; Shi and Wang, 2016).

Fourth, SOEs have more political and regulatory resources than non-SOEs, blunting mutual funds' demands for high quality accounting information. In particular, SOEs are treated more favorably because of the political affiliation and links between them and the regulators (Chen et al., 2011). This can result in favorable enforcement outcomes or even help SOEs escaping from regulatory punishments (Hou and Moore, 2010). Mutual funds thus have lower incentives to fulfill their monitoring role. Therefore, this chapter posits:

*H3: The monitoring role of mutual funds is moderated in SOEs.*

*6.3.2 Data and variables*

The study data includes all the firms listed on the China's two stock exchanges from 2007 to 2014. This hand-collected dataset of accounting fraud is based on the sanction reports issued by regulators, and downloaded from the CSRC, 'CNINFO' website, and the Shanghai and Shenzhen Stock Exchange websites. Corporate governance and firm characteristics data is obtained from the CSMAR database, and ownership data is downloaded from the Resset database.[106] An 8-year period from 2007 to 2014 is used to accommodate the new accounting standards adopted in 2007. This chapter excludes observations from the financial industry due to different data structures and where data is unavailable.[107] The final sample consists of 13,054 observations.

The dependent variable is fraud commission. Fraud commission receives the value of 1 if a firm commits accounting fraud and zero otherwise. As fraud commission is not directly observable, a bivariate probit model is introduced to solve this partial observability problem. To implement the bivariate probit model, another dependent variable is introduced: fraud detection. Fraud detection equals to one if a firm is subject to a sanction decision imposed by regulators and zero otherwise in a firm year.

Mutual fund ownership is captured using several variables. To examine hypothesis 1, test variables include the ownership of mutual funds and other institutions. Other institutions refer to the proportion of total outstanding shares held by Qualified Foreign Institutional Investors, securities firms, insurance firms, pension, trust firms, financial firms and other institutional investors.[108] To examine hypothesis 2, mutual funds are

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[106] There are differences regarding the proportion of institutional ownership of listed firms between the CSMAR and the Resset database. This is mainly caused by the distinct classification of institutional ownership and different definitions of 'other institutional investors'. In the Appendix 3.1, data relating to institutional ownership is collected from the CSMAR database to re-estimate the monitoring efficiency of mutual funds. The main results are not changed.

[107] The original sample includes 14,499 observations in total. This chapter first excludes 361 observations from the financial industry and then excludes 1,084 observations with unavailable data.

[108] Other institutional investors include: state-owned asset management organizations, universities, government agencies, labour unions, research institutions, futures firms, banks and

divided into open-end funds and closed-end funds based on the redeemability of the fund shares. An interaction variable Mutual funds*SOEs is introduced to examine the hypothesis 3. This variable captures the impact of the mutual funds on the incidence of accounting fraud among firms with state-owned background. The identification of SOEs is based on the nature of a firm's actual controller. These variables are included in both fraud commission and fraud detection models.

Following Shi and Wang (2016) and Wang (2013), control variables associated with the likelihood of fraud commission are included. First, this chapter controls for firm size using the natural logarithm of firm total assets. Relative to large listed firms, small listed firms are subject to less regulatory scrutiny and are more likely to commit fraud in order to satisfy analysts and investors' expectations (Shi and Wang, 2016). CEO duality is controlled as CEOs who are also chairmen may have more discretion to falsify financial statements (Aggarwal et al., 2015). Board meeting frequency is included to predict fraud commission, as this can reflect some of the external pressures imposed on managers (Shi et al., 2016). Large auditors are also included as these can be more effective in disciplining managers and would suffer a loss of market share if they failed to so (Lisic et al., 2015). Supervisory board size is controlled as a larger supervisory board may have greater expertise in financial accounting and would be likely to stand up to a CEO who adopts aggressive or fraudulent accounting (Firth et al., 2007).

The variables relating to fraud detection are included following Wang (2013). This chapter controls for firm leverage, calculated as the ratio of total liabilities to total assets, as firms with higher financial leverage tend to be more closely monitored by regulators (Khanna et al., 2015). A firm's sales growth rate is controlled as higher-growth firms can attract more attention from regulators and investors. Return on assets (ROA) as a firm performance predictor is included because firms with desirable financial performance may not attract much attention from the CSRC (Shi and Wang, 2016). Stock returns are also controlled to predict the likelihood of fraud detection. If a

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other asset management firms. However, as the Resset database groups them all together, the details of individual ownership cannot be obtained.

manager manipulates financial statements to mislead investors, regulators may trigger investigations. A firm's abnormal return volatility is controlled using a firm's demeaned standard deviation of monthly stock returns. Firms with higher stock return volatility have greater probability of being complained by investors because the likelihood of a big investment loss is higher. Similarly, abnormal stock turnover measured as the demeaned monthly stock turnover in a year is considered. Abnormal stock turnover measures the extent that investors are affected by firms' stock prices (Wang, 2013).

Two control variables are included in both fraud commission and detection equations. Following Wang (2013) and Shi and Wang (2016), the ratio of research and development expenditures (R&D) to total assets is considered. Wang (2013) finds that firms with high R&D are less likely to get caught for fraud and are more likely to commit fraud. Political connections are also controlled in two equations. Due to lower level of investor protection and regulatory enforcement in China, politically connected firms are more likely to use illegal measures to manipulate financial statements and are expected to be less frequently targeted by the CSRC (Shi and Wang, 2016; Wang et al., 2017).

This chapter includes corporate governance variables only in the commission model as a firm's internal governance mechanisms are more likely to affect managers' propensity to commit fraud rather than to trigger regulatory investigation. This is especially the case in China, where the board of directors, supervisors and auditors may persuade firm managers from committing fraud through private meetings due to the existence of *Guanx*i rather than blowing whistles on corporate misconduct to the outside parties i.e. regulators (Chen et al., 2006).

Financial variables are included in the detection equation as firms with bad or abnormal corporate financial performance are more likely to become the target of regulatory investigation rather than because they affect firms' incentives to commit fraud. Firms sometimes commit fraud due to financial pressure based on the fraud triangle theory. While this chapter incorporates leverage, ROA and sales growth into both commission and detection equations (see robustness tests), the main findings on mutual funds

remain unchanged. Table 6.1 summarizes the definition of the variables.

*6.3.3 Research model*

Empirical studies on accounting fraud typically adopt a single probit or logit model with matched pairs, which captures the joint probability of fraud being committed and detected. Yet, there are two latent processes relating to accounting fraud: listed firms that commit fraud and those are caught by regulators. By treating detected fraud as all fraud, traditional methods are restricted to examining observations that have been caught by regulators, overlooking firms that have engaged in fraud but have not yet been caught (Shi et al., 2016). Moreover, there is strategic interdependence between a firm's motivations to commit fraud and the extent of detection by regulators. Specifically, a firm's management would estimate the likelihood of being caught prior to committing accounting fraud. Conversely, a regulator's decision to investigate potential managerial misconduct relies on its estimation of the firms' propensity to commit fraud. In other words, factors that increase the propensity of detection may affect the propensity of fraud commitment. A single probit equation cannot model this strategic interdependence; therefore, a bivariate probit model is used to address the partial observability of fraud (Yu, 2013b).[109]

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[109] Poirier (1980) proposes a bivariate probit model to address partial observability. See Yu (2013b) 'S*ecurities fraud and corporate finance: recent developments*' for details regarding the partial observability concern.

**Table 6.1**

Variable definitions.

| Variable Type | Variable name | Description |
| --- | --- | --- |
| Dependent variable | Accounting Fraud | A dummy variable which is coded 1 if a firm commits accounting fraud and zero otherwise |
| Test variables | Mutual funds | The proportion of total outstanding shares held by mutual funds |
| | Other institutional investors | The proportion of total outstanding shares held by qualified foreign institutional investors, securities firms, insurance firms, pension funds, trust firms, financial firms and other institutional investors |
| | Open-end funds | The proportion of total outstanding shares held by open-end funds |
| | Closed-end funds | The proportion of total outstanding shares held by closed-end funds |
| | Mutual funds*SOEs | Mutual fund ownership in the SOEs. SOEs is a dummy variable that equal to one if a firm is controlled by the state, and zero otherwise |
| Control variables | Firm size | Natural logarithm of a firm's total assets |
| | Duality | Equals to one if CEOs also serve as chairmen and zero otherwise |
| | Board meetings | The number of board meetings held in a year |
| | BIG4 | A dummy variable coded one if the firm auditor is one of the four biggest auditors and zero otherwise |
| | SBSIZE | The number of members on the supervisory board |
| | R&D | Ratio of research and development expenditures to total assets |
| | Political ties | A dummy variable equals to one if the CEO is a current or former officer of the government, military, a member of the people's congress or the Chinese People's Political consultative conference |
| | Leverage | Total liabilities divided by the firm's total assets |
| | Growth | Growth rate of total sales |
| | ROA | Net profits divided by total assets |
| | Stock returns | Annual firm stock returns (with cash dividend reinvested) |
| | Abnormal volatility | The demeaned standard deviation monthly stock returns in a year |
| | Abnormal turnover | The demeaned monthly stock turnover in a year |

Some pre-tests are undertaken to examine the appropriateness of a bivariate probit model. First, the variance inflation factor diagnostic statistics indicate that there is no excessive multicollinearity with mean VIF less than 2 for the different models. Akaike information criterion (AIC) values between a simple probit model and a bivariate probit

model are compared. Lower values of AIC imply a better model fit[110] (Bromiley and Harris, 2014). The AIC statistics provide strong support for the use of bivariate probit models. A likelihood ratio (LR) test and a Wald test are used to evaluate the differences between models. The results of LR and Wald tests confirm that the mutual funds variables create a statistically significant improvement in the fit of the models. All test and control variables are lagged by one year to address potential reverse causality. Following Ariste et al. (2013) and Shi and Wang (2016), standard errors are clustered by firms in order to account for repeated observations on the same firm over time.

Following Wang (2013), the detected accounting fraud is modeled as a function of the joint realizations of the two latent variables: fraud commission and fraud detection. $F_i^*$ represents the firm $i$'s potential to commit financial statement fraud, $D_i^*$ denotes the firm $i$'s potential for being detected conditional on the firm $i$ committing financial statement fraud. The reduced form model is then:

$$F_i^* = x_{F,i}\beta_F + u_i \tag{6.1}$$

$$D_i^* = x_{D,i}\beta_D + v_i \tag{6.2}$$

$x_{F,i}$ is the row vector that explains firm $i$'s propensity to commit fraud, and $x_{D,i}$ contains variables that explain firm $i$'s potential for getting detected. $u_i, v_i$ are zero-mean disturbances with a bivariate normal distribution. The variances are normalized to unity as these cannot be estimated and the correlation between $u_i$ and $v_i$ is assessed to be $\rho$ (Wang, 2013).

In order to model fraud commission, $F_i^*$ is transferred into a binary variable $F_i$, where $F_i = 1$ if $F_i^* > 0$, and $F_i = 0$ otherwise. For the fraud detection model (conditional on fraud commission), $D_i^*$ is transformed into a binary variable $D_i$, where $D_i = 1$ if $D_i^* > 0$, and $D_i = 0$ otherwise. As $D_i$ and $F_i$ cannot be directly observed, $Z_i$ an

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[110] The AIC statistic is often used for comparing maximum likelihood models and the formula is listed as follows. AIC=-2*ln (likelihood) + 2*k, where k is the number of parameters estimated. Subsequently, AIC can be viewed as measures that combine fit and complexity (Raftery, 1995). In the thesis, AIC values between bivariate probit models and single probit models for testing three different hypotheses are compared.

interaction term between $D_i$ and $F_i$ is considered, where

$$Z_i = F_i * D_i \tag{6.3}$$

$Z_i = 1$ if the firm $i$ has committed fraud and also been detected. $Z_i = 0$ if the firm $i$ has not committed fraud or firm $i$ has committed fraud but has not been detected by regulators. The empirical specification for $Z_i$ is:

$$P(Z_i = 1) = P(F_i D_i = 1) = P(F_i = 1, D_i = 1) = \Phi(x_{F,i}\beta_F, x_{D,i}\beta_D, \rho) \tag{6.4}$$

$$P(Z_i = 0) = P(F_i D_i = 0) = P(F_i = 0, D_i = 0) + P(F_i = 1, \tag{6.5}$$
$$D_i = 0) = 1 - \Phi(x_{F,i}\beta_F, x_{D,i}\beta_D, \rho)$$

where $\Phi$ is the bivariate standard normal cumulative distribution function. Full identification of the model parameters requires that $x_{F,i}$ and $x_{D,i}$ in the equations cannot include exactly the same variables. The model can be then estimated by using the maximum-likelihood method with the following log-likelihood function:

$$L(\beta_F, \beta_D, \rho) = \sum_{z_i=1} \log(P(Z_i = 1)) + \sum_{z_i=0} \log(P(Z_i = 0)) \tag{6.6}$$
$$= \sum_{i=1}^{N} \{z_i \log[\Phi(x_{F,i}\beta_F, x_{D,i}\beta_D, \rho)] + (1 - z_i) \log[1 - \Phi(x_{F,i}\beta_F, x_{D,i}\beta_D, \rho)]\}$$

## 6.4 Results

### 6.4.1 Descriptive statistics

Table 6.2 displays the descriptive statistics. On average, mutual funds are the largest institutional investors owning 4.6% of stocks. The supervisory board on average has 3.89 directors and 8% of the listed firms in the sample hire big four auditors. 17.3% CEOs have dual positions and 13.8% CEOs have political connections.

**Table 6.2**

Descriptive statistics.

| Variables | Frequency | Full sample | Fraud firms | Non-fraud firms | Mean difference |
|---|---|---|---|---|---|
| Mutual funds | 13,054 | 0.046 | 0.026 | 0.047 | 0.021*** |
| Other institutions | 13,054 | 0.118 | 0.110 | 0.118 | 0.008 |
| QFII | 13,054 | 0.001 | 0.001 | 0.001 | 0.001** |
| Securities firms | 13,054 | 0.004 | 0.003 | 0.004 | 0.001 |
| Insurance firms | 13,054 | 0.003 | 0.002 | 0.003 | 0.001*** |
| Pension funds | 13,054 | 0.003 | 0.002 | 0.003 | 0.001** |
| Trust firms | 13,054 | 0.003 | 0.005 | 0.003 | -0.002*** |
| Financial firms | 13,054 | 0.001 | 0.000 | 0.001 | 0.001 |
| Other institutional investors | 13,054 | 0.104 | 0.097 | 0.104 | 0.007 |
| Open-end funds | 13,054 | 0.040 | 0.039 | 0.040 | 0.001 |
| Closed-end funds | 13,054 | 0.002 | 0.002 | 0.001 | -0.001 |
| Mutual funds*SOEs | 13,054 | 0.027 | 0.010 | 0.027 | 0.018*** |
| Firm size | 13,054 | 21.763 | 21.375 | 21.778 | 0.403*** |
| Duality | 2,261 | 0.173 | 0.223 | 0.171 | -0.051*** |
| Board meetings | 13,054 | 9.191 | 9.328 | 9.186 | -0.142 |
| BIG4 | 1,047 | 0.080 | 0.048 | 0.082 | 0.034*** |
| SBSIZE | 13,054 | 3.894 | 3.682 | 3.902 | 0.220*** |
| R&D | 13,054 | 0.008 | 0.007 | 0.008 | 0.001 |
| Political ties | 1,805 | 0.138 | 0.145 | 0.138 | -0.007 |
| Leverage | 13,054 | 0.656 | 0.721 | 0.653 | -0.068 |
| Growth | 13,054 | 12.678 | 1.809 | 13.113 | 11.304 |
| ROA | 13,054 | 0.040 | 0.009 | 0.041 | 0.032 |
| Stock returns | 13,054 | 0.427 | 0.253 | 0.434 | 0.181*** |
| Abnormal volatility | 13,054 | -0.002 | 0.012 | -0.002 | -0.014** |
| Abnormal turnover | 13,054 | 0.002 | 0.053 | 0.000 | -0.053*** |

Mutual funds (4.6%) include open-end funds (4.0%) and closed-end funds (0.2%).[111] In the chapter, the reason that the proportion of total outstanding shares held by open-end and closed-end funds is less than the proportion held by mutual funds is the existence of exchange-traded funds. The exchange-traded funds (ETFs) are a special form of open-end funds that can be traded on stock exchange. ETFs are an indexation

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[111] Closed-end funds, when set up, issue a fixed number of shares that are traded on secondary markets. Open-end funds, on the other hand, are not traded on the stock exchanges and the fund shares can be redeemed.

of investment instrument and invest in the constituent stocks of an index (Peng, 2015).[112] However, as the proportion of shares held by ETFs is relatively small and such data is unavailable in the databases, the chapter focuses on open-end and close-end funds only.

Although the CSRC encourages the development of institutional investors, they do not own sufficient shares to exert influence or control over listed firms, as evidenced by the proportion of total outstanding shares: 16.5%. China's capital market is still dominated by the state controlling shareholders and individual investors. According to Jiang et al. (2017) in the last decade, state and legal person investors own more than 45% of listed firms' shares on average, and retail individual investors who are often characterized as short term-oriented and uninformed investors hold about 38% of listed firms' shares.

The characteristics of fraudulent versus non-fraudulent firms are also compared. The sample consists of 12,551 firm-year observations not involved in accounting fraud and 503 firm-year observations punished because of accounting fraud. The average mutual fund ownership for the fraud sub-sample is 2.6% and 4.7% for the non-fraud subsample. The difference is statistically significant, implying firms are less likely to commit fraud when they have high mutual fund ownership. Similarly, fraudulent SOEs (1.0%) have significantly lower mutual fund ownership than non-fraudulent SOEs (2.7%). Firm size is larger for the non-fraud sub-sample than for the fraud sub-sample. Fraudulent firms also have significantly higher CEO duality, but significantly lower supervisory board size than non-fraudulent firms. For ex-post financial performance, fraudulent firms have worse stock return performance, abnormally higher stock return volatility and higher stock turnover than the non-fraudulent firms. Pearson correlation coefficients are also examined. The result shows the absolute values of all coefficients are lower than 0.35, indicating multicollinearity is not a problem.[113]

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[112] The first exchange-traded fund was introduced in 2004 and listed on the Shanghai Stock Exchange. The ETFs have become an increasingly important way for many international institutional investors and retail investors to access the China's A-share market (Li, 2010).

[113] See Appendix 3.2 for the supplemental descriptive statistics and Appendix 3.3 for the

*6.4.2 Regression results*

Table 6.3 presents results for hypothesis 1. The coefficients of mutual fund ownership are significantly negative in the fraud commission equation and significantly positive in the fraud detection equation. This indicates when a significant proportion of a firm's shares are owned by mutual funds, the probability of revealing fraudulent activities is significantly higher and the likelihood of listed firms committing fraud is significantly lower. This result supports Chinese policy to develop mutual funds. In contrast, foreign investors, securities firms, trust firms and financial firms are passive investors. This is perhaps due to their small shareholdings, recent entry into the market and less independence of business relationships with investee firms.

Table 6.4 reports the results for hypothesis 2. Open-end funds are negatively related to a firm's propensity to commit fraud and positively associated with the likelihood of fraud detection. In contrast, closed-end funds have no impact on fraud commission and detection. These results confirm redeemability is a powerful form of governance, which can hold managers accountable. The average percentage of ownership held by open-end funds (4.03%) is higher than that held by closed-end funds (0.15%), which may be the reason why open-end funds are more active in disciplining listed firms.

Table 6.5 presents the results for hypothesis 3. Mutual funds are interacted with SOEs to capture whether the monitoring function of mutual funds is shaped by state ownership. The coefficients pertaining to Mutual funds*SOEs are not significant, indicating that mutual funds in SOEs have no impact on monitoring and detecting managers' opportunistic behaviours. Some mutual funds may even tacitly collude with controlling shareholders or managers to expropriate minority shareholders' interests. Government intervention therefore reduces the role of mutual funds in deterring accounting fraud, consistent with hypothesis 3.

Turning to the control variables in the fraud commission equations, the results are consistent with the prior literature (Jia et al., 2009, Shi and Wang, 2016). Larger firms

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correlation tables.

are less likely to commit fraud, as these firms tend to be mature, diversified, operate with less profit volatility and receive tighter regulatory scrutiny. The coefficients of CEO duality are positive and statistically significant in all models, indicating that CEOs with more internal power are more likely to commit fraud. Supervisory board size is negatively associated with fraud commission, implying large supervisory boards have incentives to monitor managers against accounting fraud. In addition, firms with higher R&D intensity are less likely to be caught by regulators. Subsequently, lower costs of fraud detection provide higher incentives for firms to commit fraud.[114]

The fraud detection equation uses financial performance measures as control variables. It is reported that firm leverage is significantly and positively related to fraud detection. Sales growth is significantly and positively associated with fraud detection, indicating firms with high growth rates are more likely to trigger regulatory investigations. The coefficients of ROA are negative and statistically significant. The likelihood of fraud detection is therefore significantly lower for highly profitable firms. Firms with higher annual stock returns are less likely to be caught for fraud, and firms that experience abnormal high return volatility and high stock turnover are more likely to be targeted for fraud detection. Specifically, firms experiencing higher return volatility are more likely to be complained by investors, thus triggering regulatory investigation. Firms with higher stock turnover imply more investors are affected by the firms' stock prices and it is easier to identify a class of plentiful investors. As a result, investigations will be launched as regulators regard this behaviour as an indicator of fraud (Wang, 2013).

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[114] The reason R&D loses so much significance in Tables 6.4 and 6.5 is that the variable R&D is sensitive to the total number of variables included in the commission and detection equations. For instance, if the proportion of other institutional ownership is not controlled, three models yield consistent and significant R&D coefficients in fraud commission and detection equations (see Appendix 3.4). Therefore, the statistical significance of R&D coefficients needs to be interpreted with caution as they are sensitive to the model specification.

**Table 6.3**

Regression results: mutual funds and accounting fraud.

| Variables | P(F) | P(D|F) |
|---|---|---|
| Mutual funds | -3.082*** | 4.383*** |
|  | (0.535) | (0.704) |
| Other institutions | -0.308 | 0.417 |
|  | (0.465) | (0.689) |
| Firm size | -0.054*** |  |
|  | (0.013) |  |
| Duality | 0.062** |  |
|  | (0.031) |  |
| Board meeting | 0.030 |  |
|  | (0.034) |  |
| Big4 | -0.021 |  |
|  | (0.052) |  |
| SBSIZE | -0.022* |  |
|  | (0.013) |  |
| R&D | 10.307** | -13.433*** |
|  | (4.022) | (4.675) |
| Political tie | -0.104 | 0.202 |
|  | (0.206) | (0.303) |
| Leverage |  | 0.573*** |
|  |  | (0.140) |
| Growth |  | 0.026** |
|  |  | (0.013) |
| ROA |  | -0.742*** |
|  |  | (0.183) |
| Stock returns |  | -0.101*** |
|  |  | (0.026) |
| Abnormal volatility |  | 0.759*** |
|  |  | (0.272) |
| Abnormal turnover |  | 0.292** |
|  |  | (0.125) |
| Constant | 0.081 | 0.997*** |
|  | (0.281) | (0.190) |
| Log likelihood |  | -2015.365 |
| Chi-squared (d.f.) |  | 103.30(19) |
| Prob > chi2 |  | 0.000 |
| Observations | 13,054 | 13,054 |

All of the variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

**Table 6.4**

Regression results: Open-end and closed-end funds and accounting fraud.

| Variables | P(F) | P(D\|F) |
|---|---|---|
| Open-end funds | -2.198*** | 4.104*** |
| | (0.569) | (1.330) |
| Closed-end funds | 11.994 | -14.020 |
| | (8.160) | (9.405) |
| Other institutions | -0.337 | 0.500 |
| | (0.594) | (0.982) |
| Firm size | -0.070*** | |
| | (0.016) | |
| Duality | 0.081* | |
| | (0.043) | |
| Board meeting | 0.044 | |
| | (0.044) | |
| Big4 | -0.013 | |
| | (0.072) | |
| SBSIZE | -0.032** | |
| | (0.016) | |
| R&D | 5.516 | -7.510 |
| | (5.674) | (7.015) |
| Political tie | 0.221 | -0.279 |
| | (0.270) | (0.389) |
| Leverage | | 0.852*** |
| | | (0.209) |
| Growth | | -0.001 |
| | | (0.001) |
| ROA | | -1.109*** |
| | | (0.312) |
| Stock returns | | -0.148*** |
| | | (0.044) |
| Abnormal volatility | | 1.257*** |
| | | (0.367) |
| Abnormal turnover | | 0.370** |
| | | (0.176) |
| Constant | 0.451 | 0.623** |
| | (0.345) | (0.307) |
| Log likelihood | | -2019.724 |
| Chi-squared (d.f.) | | 66.56(21) |
| Prob > chi2 | | 0.000 |
| Observations | 13,054 | 13,054 |

All of the variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

**Table 6.5**

Regression results: mutual funds, SOEs and accounting fraud.

| Variables | P(F) | P(D|F) |
|---|---|---|
| Mutual funds | -2.395*** | 4.329*** |
| | (0.754) | (1.268) |
| Mutual funds*SOEs | 1.366 | -4.245 |
| | (7.665) | (11.642) |
| Other institutions | -0.837 | 1.318 |
| | (0.938) | (1.838) |
| Firm size | -0.048*** | |
| | (0.018) | |
| Duality | 0.066* | |
| | (0.036) | |
| Board meeting | 0.022 | |
| | (0.037) | |
| Big4 | -0.047 | |
| | (0.062) | |
| SBSIZE | -0.021 | |
| | (0.016) | |
| R&D | 4.570 | -6.659 |
| | (11.722) | (14.939) |
| Political tie | -0.080 | 0.161 |
| | (0.266) | (0.384) |
| Leverage | | 0.660** |
| | | (0.315) |
| Growth | | -0.001 |
| | | (0.001) |
| ROA | | -0.724 |
| | | (0.455) |
| Stock returns | | -0.107** |
| | | (0.047) |
| Abnormal volatility | | 1.026** |
| | | (0.435) |
| Abnormal turnover | | 0.248* |
| | | (0.135) |
| Constant | 0.047 | 0.842* |
| | (0.458) | (0.464) |
| Log likelihood | | -2012.452 |
| Chi-squared (d.f.) | | 66.87(21) |
| Prob > chi2 | | 0.000 |
| Observations | 13,054 | 13,054 |

All of the variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

*6.4.3 Addressing endogeneity: a propensity score matching model*

So far the interpretation of the results has assumed mutual fund ownership is exogenous. However, mutual funds might be endogenous as there are observable differences between firms with high versus low mutual fund shareholdings. For example, Wang (2014) concludes mutual funds block-holders virtually become corporate insiders and collude with managers to expropriate minority shareholders' interests. Firth (2016) suggests mutual funds with high shareholdings have more incentives to affect corporate decisions, contradicting to Wang (2014)'s argument. In addition, prior studies using Chinese data have also reported mutual funds may be attracted to well-performing firms (Aggarwal et al., 2015). Therefore, the selection effects are mitigated using a propensity score matching approach (Lian et al., 2011).

This chapter constructs a set of control firms that can be matched optimally to the set of treated firms with high mutual fund shareholdings. To capture high mutual fund shareholdings, an indicator variable (HI_Mutual) coded one if mutual funds hold at least 5% of a firm's equity and zero otherwise is created (Lin and Fu, 2017). A probit model is performed using HI_Mutual as the dependent variable and all other financial control variables as regressors.[115] Subsequently, a firm's propensity score is obtained and control samples are matched to treated samples based on the computed propensity scores. The nearest neighbor matching method (i.e. one to four matching) is applied to estimate average effect of mutual funds blockholding on fraud occurrence.

The difference between the treated and control groups is -0.02 and is statistically significant (t=-5.13) in the unmatched samples. After matching, the difference narrows to -0.01 yet remains statistically significant (t=-2.35). The results indicate large mutual funds can monitor and discipline managers. T-tests are conducted to check whether differences between two groups remain large after conditioning of the propensity score. Good balancing is evidenced by each of an insignificant financial control variable after

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[115] This is because mutual funds prefer firms that are well-performing, such as having positive earnings, high return on assets and low risks (Yang et al., 2014). See Appendix 3.5 for details.

matching, denoting treated and untreated groups have similar financial characteristics.

**Table 6.6**

Endogeneity tests: propensity score matching results.

| Variables | P(F) | P(D\|F) |
|---|---|---|
| HI_Mutual | -0.426** | 0.626** |
| | (0.194) | (0.290) |
| Other institutions | -0.035 | 0.021 |
| | (0.499) | (0.728) |
| Firm size | -0.065*** | |
| | (0.022) | |
| Duality | 0.053 | |
| | (0.042) | |
| Board meetings | 0.062 | |
| | (0.048) | |
| Big4 | -0.019 | |
| | (0.064) | |
| SBSIZE | -0.028 | |
| | (0.017) | |
| R&D | 10.583** | -14.499** |
| | (5.128) | (6.036) |
| Political ties | -0.089 | 0.175 |
| | (0.223) | (0.346) |
| Leverage | | 0.654** |
| | | (0.316) |
| Growth | | 0.038 |
| | | (0.028) |
| ROA | | -0.846** |
| | | (0.409) |
| Stock returns | | -0.126** |
| | | (0.064) |
| Abnormal volatility | | 0.672 |
| | | (0.551) |
| Abnormal turnover | | 0.328 |
| | | (0.240) |
| Constant | 0.222 | 0.997*** |
| | (0.428) | (0.302) |
| Log likelihood | | -1395.509 |
| Chi-squared (d.f.) | | 41.55(19) |
| Prob > chi$^2$ | | 0.002 |
| Observations | 9,884 | 9,884 |

HI_Mutual is a dummy variable which is coded one if mutual funds hold at least 5% of a firm's equity and zero otherwise. The remaining control variables are defined in the Table 1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

The bivariate probit model of fraud commission and fraud detection is re-estimated using propensity score-matched observations. Results in Table 6.6 are consistent with prior findings: firms with high mutual fund shareholdings are active monitors: they can effectively detect potential fraudulent behaviours and reduce listed firms' propensity to commit fraud.

*6.4.4 Additional analysis*

The following robustness tests are also conducted. First, the dependent variable accounting fraud is replaced with corporate fraud to re-estimate the impact of mutual funds on fraud commission and detection. Corporate fraud includes both accounting fraud and market manipulation (e.g. insider trading, illegal purchase and sale of shares and price manipulations). Results are presented in the Panel A of Table 6.7 and are consistent with prior findings and hypotheses. Mutual funds are active monitors against fraudulent activities and lead investee firms to better compliance with accounting and securities regulations.

Second, the relationship between power balance and accounting fraud is examined. The balance of power between mutual funds and controlling shareholders is a shareholding arrangement over the controlling power of a firm (Xie and Zeng, 2010). To capture the impact of power balance on fraud, an indicator (Mutual fund/Top1) is created and calculated as the ratio of mutual fund ownership to largest shareholder ownership of a listed firm. The results are reported in the Panel B. When the degree of power balance between mutual funds and largest shareholder is higher, listed firms are more likely to become the targets of fraud detection. Subsequently, they commit less fraud.

**Table 6.7**

Additional analysis.

| Panel A: Mutual funds and corporate fraud | | |
|---|---|---|
| Variables | P(F) | P(D\|F) |
| Mutual funds | -2.600*** | 3.853*** |
| | (0.560) | (1.174) |
| Control variables | Yes | Yes |
| Log likelihood | | -4442.623 |
| Chi-squared (d.f.) | | 156.56(19)*** |
| Observations | 13,054 | 13,054 |

| Panel B: Power balance | | |
|---|---|---|
| Variables | P(F) | P(D\|F) |
| Mutual funds/ Top 1 ownership | -0.547*** | 0.826*** |
| | (0.139) | (0.242) |
| Control variables | Yes | Yes |
| Log likelihood | | -2017.174 |
| Chi-squared (d.f.) | | 75.59(19)*** |
| Observations | 13,054 | 13,054 |

| Panel C: Impact of changes in mutual fund ownership on accounting fraud | | |
|---|---|---|
| Variables | P(F) | P(D\|F) |
| Mutual_diff | -4.170*** | 5.401*** |
| | (1.345) | (1.938) |
| Control variables | Yes | Yes |
| Log likelihood | | -2018.096 |
| Chi-squared (d.f.) | | 87.72(19)*** |
| Observations | 13,054 | 13,054 |

| Panel D: Governance variables in both fraud commission and detection models | | |
|---|---|---|
| Variables | P(F) | P(D\|F) |
| Mutual funds | -4.592*** | 9.025*** |
| | (0.969) | (1.544) |
| Mutual funds*SOEs | 2.256 | -8.350 |
| | (4.089) | (5.492) |
| Control variables | Yes | Yes |
| Log likelihood | | -1993.223 |
| Chi-squared (d.f.) | | 216.74(29)*** |
| Observations | 13,054 | 13,054 |

| Panel E: Changes in mutual fund ownership following accounting fraud | |
|---|---|
| Variables | Value |
| Accounting fraud | -0.005**(0.002) |
| Control variables | Yes |
| R-squared | 0.073 |
| Observations | 13,054 |

Mutual funds/Top 1 ownership is calculated as the ratio of mutual fund ownership to largest shareholder's ownership of a listed firm. Mutual_diff measures the changes of mutual fund ownership between year t and year t-1. The remaining variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. Panel A to Panel D show the results of bivariate probit model: P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection. Panel E displays the result of an OLS regression model. See Appendices 3.6-3.10 for detailed results.

Third, the impact regarding the changes of mutual fund ownership on accounting fraud is examined. An indicator variable (Mutual_diff) is created to measure the changes of mutual fund ownership between year *t* and year *t-1*. The results are reported in the Panel C and are consistent with Aggarwal et al. (2015)'s findings. The coefficient of Mutual_diff is significantly negative in the fraud commission equation and significantly positive in the fraud detection equation. Therefore, an increase of a firm's mutual fund shareholdings can better detect fraud and reduce the likelihood of fraud commission.

Fourth, following Khanna et al. (2015), corporate governance variables are included in both fraud commission and fraud detection equations to re-estimate hypotheses. The results are reported in the Panel D and they are in line with main findings. Mutual funds have expertise to monitor managers' activities. In addition, they are less likely to discipline and put pressure on firms with state-owned background.

Fifth, changes in mutual fund ownership following fraud are examined. If mutual funds punish listed firms for their fraudulent behaviours, a decrease in ownership held by mutual funds after accounting fraud is expected. The changes of mutual fund ownership between year *t+1* and year *t* are used as the dependent variable and regressed on *accounting fraud* and control variables. Panel E reports the regression results, which are consistent with expectations. Therefore, evidence that mutual funds significantly reduce their shareholdings of listed firms after the firms have committed accounting fraud is revealed.

Sixth, this section re-estimates the prior model by including corporate governance variables in the detection equation and financial characteristics variables in the commission equation. The results are in line with the main findings that mutual fund investment has significantly higher levels of fraud detection, reducing firms' propensity to engage in fraud. However, mutual funds cannot effectively detect fraud in firms with a state-owned background (see Appendix 3.11).

## 6.5 Conclusions

Mutual funds are an increasingly important presence in Chinese capital markets. They have considerably increased their ownership levels since the last decade and become more vocal and more likely to vote on corporate events with their voice rather than with their feet and exit (Aggarwal et al., 2015). Using a bivariate probit model, the role of mutual fund ownership in deterring accounting fraud is examined between 2007 and 2014. This chapter finds evidence that mutual fund ownership is associated with higher ability of fraud detection, reducing firms' propensity to engage in fraud. The efforts of the CSRC in promoting mutual funds to invest in capital markets have additional benefits of restricting managerial opportunistic behaviours. In addition, compared to closed-end funds, open-end funds help reduce fraud and promote financial reporting quality. This confirms that redeemable shares can exert strong discipline on managers and they are a powerful form of governance. However, state ownership moderates the positive impact of mutual funds on fraud commission and fraud detection. Amongst firms with greater state ownership and control, the ability of mutual funds to discipline and influence managerial opportunistic behaviours is significantly reduced as managers in SOEs answer more to the state than to the stock market. Relative to mutual funds, other institutional investors such as QFII, securities firms, trust firms and financial firms are passive investors. This probably due to their small shareholdings, higher monitoring costs and conflicts of business interests with investee firms.

These findings are robust to alternative measures of fraud and mutual funds. Endogeneity concerns are addressed using a propensity score matching approach. Firms with high mutual fund shareholdings have active monitoring roles. Moreover, when mutual fund ownership is changed into alternative measures, such as power balance between mutual funds and controlling shareholders and the changes of mutual fund ownership, results remain unchanged. Mutual funds are likely to punish listed firms for the fraudulent behaviours they committed, which is evidenced by the reduced shareholdings of listed firms following fraud.

These results have implications for future research. First, while mutual funds can

restrict accounting fraud, the channels through which mutual funds carry out monitoring activities are not examined. For instance, mutual funds' meetings with internal audit committee members and independent directors who have financial expertise could be the plausible channels through which mutual funds affect managers' activities of investee firms (Wang, 2014). It would also be interesting to identify the channels of mutual funds monitoring. As some of these meetings are behind closed-doors and are not quantified, future studies would benefit from hand-collected data of mutual funds' meetings. Second, this chapter classifies mutual funds into open-end funds and closed-end funds based on the redeemability of the shares. There are other classification methods based on portfolio turnover (Dai et al., 2013) and past investment behaviours (Chi et al., 2014). Dai et al. (2013) find that relative to short-term mutual funds, long-term mutual funds play a stronger supervisory role and reduce negative management behaviours. Chi et al. (2014) report that transient mutual funds' ownership is positively related to firms' earning management activities. A future study using these different classifications of mutual funds could highlight the possible impacts on deterring accounting fraud.

The findings provide insights for regulators and policy makers. First, mutual fund ownership plays a beneficial role in detecting fraud and limiting expropriation by firm managers. This endorses the CSRC's efforts in promoting mutual funds as a major institutional investor to enhance corporate governance in China. However, compared to capital markets in the U.S.A, mutual funds in China remain small, implying a development gap. In addition, China's capital markets are dominated by individual investors who cause 'herding behaviours' and strong stock price fluctuations (Hu and Chen, 2016). Therefore, regulators should encourage individual investors' collective investments in mutual funds to reduce fraud and improve financial reporting quality.

Second, as closed-end funds cannot be redeemed, opportunities exist for firm managers engaging in accounting fraud. Therefore, regulators should monitor closed-end funds closely as they have the potential to overlook fraud. Open-end funds should be given priority to develop in China to reduce the dominance of individual investors. In an

institutional environment with weaker legal enforcement and imperfect shareholder protection, the external governance function played by open-end funds is especially important.

Third, state ownership appears to impede the monitoring efficiency of mutual funds and transfer agency costs to minority shareholders. For regulators, a reduction of state influence over listed firms could strengthen mutual funds' disciplining function (Chan et al., 2014). Chinese standard setters are currently undertaking a 'mixed-ownership' reform on central SOEs. The reform includes diversifying the shareholding structure of SOEs through bringing in professional and general institutions to create a flexible and efficient market-oriented mechanism and improving management of SOEs (Xinhua, 2017). Such a reform can provide mutual funds greater say in corporate decision making and enhance firm financial reporting quality.

To conclude, accounting fraud erodes market confidence, undermines trust and damages the image of accounting profession. Over the last decade, international experience has confirmed the importance of improving corporate governance in deterring fraud. This chapter identifies mutual funds can detect managers' opportunistic behaviours, thus reducing listed firms' propensity of engaging in fraud. It is hoped that findings enable regulators to develop remedies that are suitable for the healthy development of the Chinese capital market.

# 7. Conclusions

## 7.1 Introduction

This thesis examines the causes and consequences of accounting fraud in China between 2007 and 2014. Three research questions are addressed in the thesis, including how recidivist fraudulent financial reporting, punishments and institutional factors are associated, how effective are punishments for fraud and can mutual fund investment deter accounting fraud. Evidence is provided that accounting fraud is prevalent in China with different techniques of manipulation and a high occurrence of recidivism. Although punishments are imposed on perpetrators to combat fraud, only monetary penalties are perceived as retributive and effective. Subsequently, more effective corporate governance mechanisms should be implemented, for instance, mutual fund investment can discipline managers and improve financial reporting quality.

The thesis initially discusses the institutional background, theoretical framework and prior empirical findings associated with the causes and consequences of fraud. There are four major regulators of corporate disclosure i.e. CSRC, CSRC regional offices, stock exchanges and Ministry of Finance and they can impose different punishments on fraudulent firms. The causes of fraud and recidivism are identified based on agency and fraud triangle theories. It is observed that investors in Chinese listed firms face a twin-agency problem from both managers and state controlling shareholders. In addition, the interaction between corporate financial pressure, imperfect legal environment, the ineffectiveness of the CSRC and corrupt organizational culture (i.e. high power distance and *Guanxi*) cause fraud and recidivism. Generally, investors negatively view punishment information announced to the public. In order to deter future fraud and make offenders pay a price, punishments should produce sufficient disutility to outweigh benefits from fraud. In addition, effective corporate governance mechanisms should be developed such as greater board independence, less CEO duality, larger auditors and higher institutional shareholdings in terms of timely detection and prevention of accounting fraud.

The thesis then outlines research methodologies to answer the research questions. To examine the relationship between accounting fraud, punishments and recidivism, a content analysis, descriptive assessments and logistic regression models are used. A content analysis approach is applied to study fraud and punishments as it can examine all of the disclosure in different sanction reports instead of merely looking for the presence of particular words or cases. To examine the consequences of fraud and how effective are punishments for accounting fraud, an event study and a fixed-effects model is adopted. An event study is used to examine abnormal impacts of punishments on the stock prices can capture both information leakage and investors' delayed response. To examine the monitoring role of mutual funds, a bivariate probit model is employed. The observed likelihood of detected fraud is modelled as the outcome of two latent processes: fraud commission and fraud detection. Subsequently, the model generates insights not only about each latent process but also how two probabilities interact with each other.

Three distinct, but related areas, are subject to investigation in this thesis. They all contribute to addressing significant gaps in the empirical corporate finance literature, that is, the paucity of research on recidivism, punishments and fraud partial observability. In particular, high levels of recidivism in accounting fraud is reported with firms employing a wide range of techniques simultaneously and repeatedly. Punishments increase with repeated offending but significant differences exist between different punishments and reoffending. The thesis finds the use of self-regulatory measures offers the least deterrent effect to future recidivism. The retributive effect of punishments is also examined based on the shareholder valuation of fraudulent firms. It is observed that monetary penalties speak loudly in the Chinese stock markets whereas firms' reputational losses trigged by non-monetary 'name and shame' punishments are limited and moderated by information leakage. Moreover, as most fraud studies are conducted on samples of firms that are caught, the concern of partial observability is addressed. Using a bivariate probit model, the thesis examines the monitoring role of mutual funds and finds mutual fund investment has higher levels of

fraud detection, reducing firms' propensity to commit fraud.

Accounting fraud has raised serious concerns about the integrity and ethical conduct of management, reliability of financial reporting, and the effectiveness of corporate governance in some listed firms. Fraud prevention apparently requires a joint effort from various stakeholders. For instance, the CSRC should strengthen its enforcement powers and maintain an independent and impartial role in fraud detection process. Auditors should maintain a line of defense against fraud by monitoring the financial reporting function and internal controls of listed firms (Zhu and Gao, 2011). Institutional investors should actively perform their fiduciary responsibility of protecting investments in the portfolio firms and impose controls on firm managers (Jalil and Rahman, 2010). Board of supervisors should oversee the appropriateness and accuracy of the company's financial statements more closely and diligently and be granted power to vote on managerial and financial decisions (Yang et al., 2011). Findings from the thesis underscore the importance of a cooperative working relationship among these participants to reduce the probability of accounting fraud.

This chapter is organized as follows. The next section presents a summary of findings from three empirical studies. The third section proposes policy recommendations for regulators. The final section offers avenues for future research.

## 7.2 A summary of empirical results

This thesis empirically investigates the causes and consequences of accounting fraud in China between 2007 and 2014. The key findings are summarized as follows. Chapter four examines how recidivist fraudulent financial reporting, punishments and institutional factors are associated. Using a content analysis approach, the thesis finds there are six major types of accounting fraud committed by the Chinese listed firms, including false income statements, false balance sheets, false cash flow statements, improper financial statement consolidation, delayed disclosure of annual and interim

reports and insufficient and false disclosure of information. 'Insufficient or false disclosure of information' has the highest incidence among the six types of fraudulent financial reporting, which is mainly committed through 'insufficient and false disclosure of the related party relationship and transactions', 'insufficient and false disclosure of the investment status' and 'insufficient and false disclosure of accounting policies and accounting estimates'. Accounting fraud is then divided into non-reoffending and recidivism groups and differences among preferred specific fraud techniques are compared. It is reported that first-time offenders prefer to omit or untruthfully disclose material information, while repeated-offenders use the techniques of manipulating recognized information as their top choices.

Common forms of punishments imposed on fraudulent firms include rectification notices, fines and warnings. In contrast, self-disciplinary measures such as public criticism and public condemnation are less frequently used to deter accounting fraud. Using the coded punishment data, the association between recidivism and punishments is descriptively examined. It is observed that the use of warnings and self-disciplinary measures appear to offer the least deterrent to future offending. This thesis also presents the features of reoffending: it is reported that 22% of offending firms are charged with accounting fraud on more than one occasion and majority of observations have the interval within two years between each punishment. Moreover, although no law or regulation in China has stressed more severe punishment is required for repeatedly fraudulent behaviours (Ding et al., 2012), the regulators impose more severe punishments on repeat offenders which suggests that previous corporate offences justify incremental additions to later punishments in China. The relationship between recidivism and a range of regulatory and institutional determinants is lastly examined using a logit model. This thesis finds self-regulatory measures (i.e. public condemnation) cannot prevent firms from engaging in recidivism, whereas firms with large proportion of institutional and state ownership are less involved in recidivism.

The chapter five examines the economic consequences of accounting fraud and the impact of different punishments for fraud on shareholder valuation of listed firms

between 2007 and 2014. Overall punishment has a significant and negative impact on the market value of fraudulent firms. The magnitude of the shareholder losses range from -0.5% to -1.1%, indicating a statistically but not economically significant impact on fraudulent firms. This is lower than previous Chinese studies (Chen et al., 2005; Firth et al., 2009), where fraud triggers -1% to -2% drop of CARs, as data in the literature does not incorporate sanction decisions made by CSRC regional offices.

Using a fixed-effects model, this chapter finds investors perceive punishments involving monetary penalties more severely than those without monetary penalties. This result occurs as monetary penalties not only lead to direct cash outflows yet lose reputation for fraudulent firms. In contrast, although non-monetary penalties trigger reputational losses, these costs are relatively limited. If managers are able to manage punishment information disclosure to financial markets, the reputational costs associated with 'name and shame' penalties can be moderated. Stock markets can also discriminate among different frauds and react less significantly to disclosure rather than income fraud. This is due to different perceptions of recognized and disclosed items, leading shareholders to value false recognition of income items more than false disclosure of items. Information leakage prior to the announcement of punishments is identified in this chapter. It is observed that informed investors with private information perceive monetary penalties more severely than the 'name and shame' penalties.

To reduce the likelihood of accounting fraud, effective corporate governance mechanisms need to be established. Chapter six sheds light on the roles of mutual fund ownership in deterring accounting fraud in Chinese listed firms. Using a bivariate probit model, this chapter finds evidence that mutual fund ownership is associated with a higher ability of fraud detection, reducing firms' propensity to commit fraud. This supports Chinese regulators' efforts to develop mutual funds to address accounting fraud. Mutual funds are then divided into open-end funds and closed-end funds based on the redeemability of fund shares. The chapter shows that compared to closed-end funds, open-end funds help reduce fraud, indicating redeemable shares can exert strong discipline on managers. However, state ownership moderates the positive impact of

mutual funds on fraud commission and fraud detection. Amongst firms with state-owned background, the ability of mutual funds to discipline managerial opportunistic behaviours is significantly reduced.

## 7.3 Policy recommendations

Based on these empirical findings, this section proposes policy recommendations for regulators and other interested parties. As the detection of fraud occurs after the commission of fraud, the suggestions can be categorized into two parts, including the approaches to reduce listed firms' ex ante incentives to commit fraud and the approaches to address listed firms' ex post fraudulent behaviours.

To reduce listed firms' ex ante incentives to commit fraud, effective corporate governance mechanisms should be established. In particular, the thesis suggests that regulators should encourage investment in mutual funds to deter fraud. China's capital market is dominated by individual investors. As individual investors are affected by irrationality, stock markets display strong price fluctuations. Their herd-like behaviours can also exacerbate the extent of corporate earnings manipulation and reduce financial reporting quality (Dai et al., 2013). Empirical findings in this thesis underscore the beneficial role mutual fund ownership plays in detecting fraud and limiting expropriation by firm managers. Therefore, the CSRC should continue to promote investors' collective investments in mutual funds to discipline firms. In addition, compared to closed-end funds, open-end funds should be given priority in China; as closed-end funds cannot be redeemed, opportunities exist for managers to commit fraud.

The empirical findings in the thesis recommend the establishment of large supervisory boards and the separation of two roles between CEOs and chairmen for listed firms to decrease management ex ante incentives of engaging in fraud. CEO duality gives CEOs excessive power over the decision-making process, subsequently, they are more likely to pursue personal interests at the expense of minority shareholders (Jensen, 1993).

Although some prior evidence indicates board of supervisors in China are not helpful in deterring fraud or recurrence of fraud (Jia et al., 2009), the thesis finds large supervisory boards have incentives to monitor managers to establish a sound accounting and information disclosure system against accounting fraud. However, it is acknowledged that there might be a substitution effect between supervisory boards and other internal governance mechanisms. In other words, the existence of a large supervisory boards may make it less necessary for a firm to be subject to monitoring by independent directors or audit committee members (Chen and Al-Najjar, 2012). This suggestion should be adopted with caution and perhaps future research can further qualify this substitution effect.

Accounting professionals should realize the impact of state ownership on Chinese listed firms is a double-edged sword. On one hand, state ownership is beneficial to listed firms by offering financial support. In particular, firms with state-owned background have preferential access to bank loans and face less pressure from debt covenant constraints (Shen and Lin, 2016). Subsequently, there is no significant negative stock market reaction when fraud is announced, as investors tend to perceive the post-fraud performance of the state-owned firms to be more likely to recover and less likely to deteriorate. On the other hand, state ownership appears to impede the monitoring efficiency of mutual funds and transfer agency costs to minority shareholders. In addition, as SOEs have more regulatory resources, they are treated more favourably because of the political affiliation between them and regulators (Chen et al., 2011). As a result, SOEs' recidivism is less likely to be publicly revealed and they can escape from regulatory punishments.

China's government needs to take necessary measures to strengthen the CSRC's enforcement powers and encourage the CSRC to maintain its independent and impartial role in fraud detection process. In particular, more funding should be invested to attract more highly qualified personnel for handling the growing number of cases. More importantly, the entanglement between enforcement staff of the CSRC and managers of corporations needs to be eliminated. Therefore, strict regulations should be enforced

to improve the integrity and independence of the CSRC staff (Duan, 2009). As state ownership reduces the monitoring efficiency of mutual funds, a reduction of state influence over listed firms could strengthen mutual funds' disciplining function. The government can also directly invest into mutual funds rather than listed firms to prevent the mixture of politics and enterprises and attract private participation in corporate investment (Anbound, 2017).

From an ex post view considering the detection and punishment of accounting fraud, the following recommendations are provided to regulators, accounting professionals and other corporate governance participants to improve their coordination in deterring accounting fraud. First, accounting fraud can be committed in a variety of ways, ranging from the most frequently occurring insufficient or false disclosure of related party transactions to least commonly observed false equity valuation. For accounting professionals, it is recommended to maintain professional skepticism during the whole auditing process and strengthen audit procedures of sufficiency and authenticity of listed firms' information disclosure, especially in areas relating to the disclosure of related party relationships and transactions, investment status and accounting policies and accounting estimates. External auditors should try to improve audit procedures on the authenticity of a firm's revenue, cost and asset impairment items in the income statements and asset items in balance sheets. They also need to be aware of the differences regarding the popular fraud techniques used between first-time fraud and repeat fraud. For first-time offenders, they are more likely to choose fictitiously and conceal material information disclosure, while recidivists prefer more complex and hidden accounting techniques such as the manipulation of revenue, costs and asset items. As most of the firms simultaneously commit several frauds, auditors should not consider a detected method of fraud as an isolated event. It should be treated as a signal that there might be other types of fraud techniques used by the firms.

Deterrence and retribution are the two primary goals of punishments. The thesis finds among different punishments, self-regulatory punishments are not only ineffective in punishing fraudsters but also failed to deter future fraudulent behaviours. In particular,

self-regulatory measures are positively associated with corporate recidivism and have no significant negative impact on stock market reaction around regulatory punishment announcements. Subsequently, regulators should realize that self-regulatory measures do not have either deterrence or retribution function when addressing Chinese accounting fraud. This contrasts with previous studies (e.g. Coffee and Sales, 2015) that portray self-regulators to be better able than government regulators to target professional misconduct or fraud. Clearly, evidence offered in the thesis suggests investor protection provided by the non-government forces have functional limitations. Therefore, compared to formal regulation, self-regulation should be less adopted when addressing corporate wrongdoings.

Compared to the self-regulatory punishments used by FINRA in U.S.A, the self-regulatory punishments imposed by China's two stock exchanges are negligible. Specifically, FINRA may punish its members by expulsion, suspension, limitation of activities or functions or operations, fines, censure and being suspended or barred from being associated with a member (Tuch, 2014). For negligent misrepresentation or omission of disclosure, a monetary penalty ranging from $2,500 to $73,000 is imposed; for intentional or reckless misrepresentation or fraudulent acts, fines ranging from $10,000 to $146,000 are imposed (FINRA, 2017). In contrast, only 'name and shame' non-monetary punishments can be imposed by Chinese self-regulators in addressing accounting fraud, such as public criticism and public condemnation. Given the prevalence and severe consequence of fraud, findings in the thesis underscore the importance of allowing Chinese self-regulators to impose monetary punishments on firms. In this way, self-regulators can contribute to compensating harmed investors for losses caused by fraud and improve the retributive effect of their punishment tools.

In terms of different supervisory measures, rectification notices are the most popular punishment imposed on first-time offenders and repeat offenders. However, the rectification notices offer little deterrence against fraud and do not prevent firms from engaging in recidivism. Moreover, the announcements of rectification notices have no significant negative impact on the shareholder valuation of fraudulent firms, indicating

no retributive function perceived by investors. Thus, regulators need to be aware of the ineffectiveness of rectification notices. In addition, as rectification notices aim to correct aberrant behaviours and are temporary rather than conclusive punishments, whether they are appropriate to impose on recidivists needs reconsideration.

The regulatory gaps regarding the principal considerations of imposing different supervisory measures need to be filled by the CSRC. Besides rectification notices, there are 17 different supervisory measures which can be imposed by regional offices, including statements of regulatory concern, letters of warning, public statements etc. Nevertheless, the severity of each supervisory measure and corresponding conditions of imposing them are poorly defined in the CSRC's regulatory documents. Therefore, more detailed regulatory guidelines, especially relating to determining these punishments is needed to differentiate each measure. This thesis offers an initial attempt of identifying the severity level of supervisory measures. For instance, statements of regulatory concern have the least retributive effect whereas letters of warning have negative impact on investor reaction in a pre-event period, although reputational costs associated with both measures are moderated due to information leakage.

The thesis provides strong evidence that monetary penalties remain an effective method of punishment with significant impacts on firm value. This result may arise from the imperfect legal environment and unique ownership structure in China, which encourages investors to perceive fines have retributive effects and produce sufficient disutility to outweigh gains from fraud. Certainly, meaningful monetary penalties play an important role in forming a strong enforcement program for China. The thesis acknowledges that there are limitations of financial penalties, such as the use of fines primarily hits shareholders who have no direct responsibilities for fraud. As shareholders can apply little effective pressure on management, current management can generally claim that fraud behaviours occurred under past management (Goodhart, 2017). The U.S. SEC has not been shy about promoting its use of monetary penalties in last decade, but the SEC is facing increased criticism for heavy reliance on fines as they are not always sufficient and can send the wrong signal to market participants

(Steinway, 2014). Therefore, although monetary penalties shout very loudly in Chinese capital markets, they need to be used with caution. The CSRC should not always impose monetary sanctions against corporations, and when it does, it should tie the amount to the gains generated by fraudulent behaviours.

The scale of fines imposed by the CSRC for misrepresentation needs to be adjusted upwards. In particular, the fines imposed on firms range from $45,000 to $90,000, which are far lower than its U.S. and UK counterparts especially as the CSRC only investigates major fraud cases. Also, the CSRC's processes in determining the level of fines need to be more explicit and transparent. Moreover, fines should not only have retributive function but also compensatory function. In the U.S.A, the establishment of Fair Fund allows the SEC to distribute money to injured investors (Winship, 2008). It is therefore suggested a similar compensatory scheme should be set up by the CSRC to increase the amount of compensation investors receive and fill the gap of China's ineffective civil litigation mechanisms (Xu and Zhu, 2017).

The thesis finds different types of fraud are not equivalently valued by equity investors, with income fraud being weighted more heavily than disclosure fraud. Subsequently, more strict disclosure regulations associated with financial reporting need to be enacted and enforced. Moreover, when a disclosure fraud is deemed to be prevalent and serious, especially relating to insufficient and false disclosure of related party transactions, investment status and accounting policies and accounting estimates, harsher punishments need to be imposed to make offenders pay a price and prevent recidivism. By doing so, regulators can increase the cost of disclosure fraud and help investors to be aware of the value associated with comprehending disclosed items in financial reporting.

Regulatory gaps in tackling information leakage in China's Securities Laws need to be addressed. In particular, China's Securities Law only addresses the cases regarding traders using leaked information to make profits, yet not traders using leaked information to avoid losses (Weng and Jia, 2015). Subsequently, much regulatory attention has been focused on informed trading prior to corporate events that typically

involve high returns to the target shareholders. When information leakage occurs prior to regulatory punishments, this has been ignored by regulators and the lower detection risks can encourage insider trading behaviours. The thesis also finds that reputational costs associated with non-monetary 'name and shame' punishments are moderated due to information leakage. This is caused by managers who want to soften the punishment impact and government officials who want to make private profits, as both of them have privilege access to such price sensitive information by virtue of their positions (Huang, 2007). Therefore, the CSRC should revise the loopholes of the existing Securities Laws and pay more attention to prevent their enforcement staff from colluding with managers and leaking punishment information.

A long-term solution to improve enforcement systems and reduce corporate fraud and recidivism is the introduction of private enforcement mechanisms in China. Distinctly from the SEC and the FCA, the CSRC can only impose administrative penalties rather than administrative and civil penalties. According to the *2002 Notice Regarding Accepting Tort Cases Arising from Stock Market False Disclosure* issued by the China's Supreme People's Court (SPC), the lower courts can accept private litigations against misrepresentation in the stock markets if these are based on the CSRC and the MOF administrative sanction decisions or prior criminal judgments (Xu et al., 2017). The administrative prerequisite has been heavily criticized as it shuts the door to the majority of injured investors who want to seek redress in the courts. In addition, the number of administrative sanctions that the CSRC has imposed is relatively small and the CSRC's fraud detection ability is limited due to its dual roles: guarding state property and protecting minority shareholder interests. Therefore, the SPC should gradually lift the requirements of administrative prerequisites against private litigations and allow courts to accept more misrepresentation or securities fraud cases (Duan, 2009).

One of the prevailing concerns regarding removing administrative prerequisite and allowing private securities litigations is that courts may become overburdened with the investor claims. Such a concern can be addressed by introducing the U.S. style class

action mechanisms. This is because class actions can allow injured investors to pool their claims together into a single action, improving the efficiency of private enforcement mechanisms. Unfortunately, only individual and joint actions are allowed in China rather than class actions. Thus, the introduction of a class action mechanism is recommended. The combined private monetary penalties of numerous investors can have a significant deterrent and retributive effect on fraudulent firms. In addition, a particular person's personal connection with fraudster becomes a non-issue in the private litigations as the number of potential plaintiffs is large in class actions (Duan, 2009).

## 7.4 Limitations and future research

The limitations of this thesis offer several avenues for future research. First, due to the nature of the data, it is not possible to undertake any proportionality test of the fines imposed on the fraudulent firms for their specific wrongdoing. The manner in which the data is reported by the regulators does not indicate the fines that are imposed for a particular type of fraud. Rather, the fines are imposed as aggregates for a series of fraudulent behaviours committed by the firms. Karpoff et al. (2007) find legal penalties are associated with the harm from the misconduct in U.S.A. However, their size of harm is measured by provable loss, public float and violation period stock price run-up rather than specific fraudulent behaviours. It would be very interesting if the future research can find a way to run a proportionality test to tease out how monetary penalty works in China or other economies.

**Table 7.1**

A summary of policy recommendations

| | |
|---|---|
| Reducing firms' ex ante incentives to commit fraud | Regulators should encourage the investment of mutual fund to deter fraud |
| | Large supervisory boards and the separation of two roles between CEOs and chairmen should be developed in firms' corporate governance mechanisms |
| | Accounting professionals should realize the impact of state ownership on Chinese listed firms is a double-edged sword |
| | Government needs to strengthen the CSRC's enforcement powers and encourage the CSRC to maintain its independent and impartial role in fraud detection process |
| Methods to address listed firms' ex post fraudulent behaviours | Auditors should strengthen audit procedures of sufficiency and authenticity of listed firms' information disclosure, and authenticity of firms' revenue, cost and asset impairment items in the income statements and asset items in balance sheets |
| | Self-regulatory measures should be adopted less in addressing accounting fraud. In addition, self-regulators should be allowed to impose monetary punishments on firms, in order to improve the retributive effect of their punishment tools |
| | As rectification notices offer little deterrence against fraud, whether they are appropriate to be largely imposed on recidivists need reconsideration |
| | The regulatory gaps with regards to the differences between each supervisory measure and the principal considerations of imposing different supervisory measures need to be filled by the CSRC |
| | Monetary penalties remain an effective method of punishment with significant impacts on firm value and play an important role in forming a strong enforcement program for China. However, fines should be used with caution due to their limitations |
| | The scale of fines can be imposed by the CSRC against misrepresentation needs to be adjusted upwards. Also, the CSRC's considerations in determining the level of fines need to be more explicit and transparent. Moreover, the CSRC should establish a compensatory scheme to increase the amount of compensation investors receive |
| | Stricter disclosure regulations associated with financial reporting need to be enacted and enforced |
| | Regulatory gaps on information leakage in China's Securities Law need to be addressed. In addition, more attention should be paid by the CSRC to prevent enforcement staff colluding with managers and leaking punishment information |
| | Private enforcement mechanisms should complement public enforcement mechanisms in China to reduce corporate fraud and recidivism. In addition, the U.S. style class action mechanism should be introduced |

Future research could also explore the characteristics of corporate disclosure regulations and their implications for fraud. The China's legal framework on corporate disclosure consists of four levels: laws, administrative regulations, departmental regulatory provisions and self-regulations (OECD, 2011). In addition, the current corporate disclosure regime is mainly under the regulation of the *Securities Law*, *Chinese Accounting Standards*, *Administrative Measures on Information Disclosure by Listed Companies*, and *Stock Exchange Rules*. These regulations have experienced several revisions and reenactments and have improved with the development of Chinese capital markets. Subsequently, it would be apposite to examine whether certain regulations improve financial reporting quality or lead to more fraud. For regulations causing more fraud, they should be further revised and used with caution. Karpoff et al. (2007) find penalties have responded to legal mandates as the U.S. Sentencing Commission Guidelines and the Sarbanes-Oxley Act of 2002. Therefore, the relationship between legal penalties and regulations can also be investigated in a China's context in future research.

The thesis focuses on the impact of punishment announcements on the short-term stock returns. The longer-term economic consequences caused by financial statement fraud are still unknown to investors. Hitz et al. (2012) argue that the stock market needs up to forty days to fully react to punishment news, as the lack of experience interpreting enforcement measures precludes investors from comprehending the punishment announcements' implications in the short-term. Tibbs et al. (2011) find the negative abnormal returns reach a trough around the third year after the disclosure of corporate misconduct. Therefore, future research is expected to direct its attention to the long-term implications of punishment announcements for shareholder wealth.

Future studies can also go beyond examining investors' stock market reaction and focus on how the disclosure of fraud affects firms' different stakeholders' activities when studying the economic consequences of fraud. For instance, suppliers are expected to change the terms of trade with which they do business with the firms (Karpoff et al., 2008). Banks tend to grant loans with significantly higher spreads, shorter maturities,

more covenant restrictions and a higher likelihood of being secured to fraud firms (Graham et al., 2008). Customers may be apprehensive in dealing with firms that have a dishonest management, reducing the demand for the fraud firm's products (Johnson et al., 2014). As different stakeholders are heterogeneous and affected by firms' activities to a different extent, more attention should be paid to their reaction to Chinese accounting fraud in future research.

The thesis focuses on the role of China's public enforcement mechanisms, the private enforcement mechanisms should also be examined in future research. Specifically, China's securities litigation features a dependence on public enforcement. Sanction decisions from public authorities do not ensure compensation for minority shareholders, subsequently, private litigation acts as an important supplement to public enforcement. However, the Chinese lower courts can only accept private litigations against misrepresentation if cases have been punished by administrative regulators (Xu et al., 2017). Huang (2013) shows only 25% administrative sanctions are brought to court, as a result, examining the reasons of low private litigation rate can be a direction for future research. In addition, among the cases brought to court, more than 30% of cases are dismissed or have plaintiffs withdrawing the cases without compensation (Huang, 2017), future research is thus expected to create a set of control samples to identify the determinants of the successful private litigations against corporate misrepresentation, and assess the deterrent and retributive effect of the private legal penalties.

The thesis addresses the problem of partial observability through a bivariate probit model, but the CSRC's detection rate of fraud remains unknown. Some recent studies attempt to make progress on this challenging issue. For instance, Ormosi et al. (2014) show less than one fifth of firms in EU cartels are detected based on a capture-recapture approach. Zakolyukina (2017) constructs a structural model of CEOs' decisions to manipulate earnings and estimates that 60% CEOs manipulate earning more than once, with a detection probability of 14% over a 5-year horizon. Similarly, Dyck et al. (2017) use the demise of Arthur Anderson to identify a calibration exercise and find the probability of a firm engaging in financial misconduct is 15% in any year. Estimating

regulators' detection likelihood of fraud is important as it reveals the real incidence of corporate fraud and the efficiency of regulatory enforcement procedures. Future analysis should address this issue in a China's context by introducing the aforementioned research approaches.

Finally, the thesis examines the roles of regulators and mutual funds in detecting accounting fraud, the monitoring efficiency of other gatekeepers, such as auditors, media, lawyers and financial analysts should be addressed in future research. The big accounting firms generally have motives to provide stricter external monitoring to avoid ruining reputations and they can resist client pressure to waive their correction (Lennox et al., 2010). The media also serves as a watchdog role through reporting information from other information intermediaries e.g. analysts and auditors and undertaking original investigation and analysis (Miller, 2006). Moreover, financial analysts may reduce corporate fraud through their active participation in the information distribution process (Yu, 2008). However, most of the empirical findings are from U.S.A, where the legal system is strong in protecting investors and corporate governance mechanisms are effective in addressing earnings management, future research should address these gatekeepers' role in deterring fraud in a China's context.

Accounting fraud is a serious threats to investors' confidence in financial reporting and adversely affects the integrity and reputation of accounting professionals. The thesis has reviewed the main theories of fraud and punishment and presented the empirical evidence on the causes and consequences of Chinese accounting fraud. The implication drawn from this thesis could be useful for understanding corporate and regulatory behaviours relating to fraud and punishment from other developing and transitional economies. Findings from the thesis should increase corporate governance participants' attention toward accounting fraud and their strategies for prevention and detection of fraud. With more in-depth understanding of accounting fraud, this thesis helps to provide more concrete guidelines to design efficient regulatory policies and corporate governance mechanisms.

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# Appendices

## Appendix 1 Supplemental tables for Chapter 4

### Appendix 1.1

A sample of the CSRC sanction report

CSRC Administrative Sanction Decision (on Sichuan Donghefeng) [2012] No.5

26-03-2012

Concerned party: Sichuan Donghefeng Investment Co., Ltd.（hereinafter referred to as Sichuan Donghefeng）, whose legal representative is Zhu Yanfen，and registered address is Suites A, B, and H, F 7, Guodong Central Business Building, No. 52, Jindun Road, Qingyang District, Chengdu City, Sichuan Province.

Zhu Yanfen, female, was born in March 1972. Her address is No. 3, Chaidamu Central Road, Golmud City, Qinghai Province. She served as the legal representative of Sichuan Donghefeng at the time of the violation.

Gong Tianming，male, was born in July 1972. His address is Building 6, Golden Home, Futian District, Shenzhen City, Guangdong Province. He served as the Director of Capital Operation of Sichuan Donghefeng at the time of the violation.

Sichuan Donghefeng engaged in the stock trading by using others' accounts. According to the relevant provisions in the Securities Law of the People's Republic of China (hereinafter referred to as the Securities Law)，CSRC placed the case on file for investigation and prosecution，and informed, pursuant to relevant laws and regulations, the concerned party of the fact, reasons and legal basis of deciding on an administrative punishment, as well as the rights of concerned party under the law. The concerned party did not make legal statement or defense, nor requested a hearing. The investigation and trial of the case has finished.

The investigation results show that the concerned parties including Sichuan Donghefeng had the following violations：

The account of Zhang XXX and the account of Zhu Yanfen were opened on January 5, 2010 in a branch of Essence Securities Co. Ltd., located at Lingshiguan Road in Chengdu City. The

mode of transactions of the two accounts is online entrustment. Gong Tianming was responsible for the management and operation of the accounts.

The situation about the transfer of large-sum funds through the third-party custody account of Zhang XXX is as follows. 1. Transfer from other accounts: Transfer of funds of RMB 37.8 million and RMB 20 million both from the bank account of Chaidamu Qinghai Salt Lake Chemical Co., Ltd. (Hereinafter referred to as Salt Lake Chemical) separately on January 6 and April 1, 2010; transfer of funds of RMB 3 million from the bank account of Sichuan Donghefeng on October 26, 2010. 2. Transfer to other accounts: Transfer of funds of RMB 15,999,990 to the bank account of He Mouxia on March 9, 2010; transfer of funds of RMB 20 million to the bank account of Salt Lake Chemical on March 23, 2010. On July 14, 2011, this account suffered a loss of 7,659,189.63. On August 3, 2011, this account suffered a loss of RMB 10,719,899.35. On August 30, 2011, this account suffered a loss of RMB 15,706,393.58. As of December 12, 2011, this account still suffered a loss.

The situation about the transfer of large-sum funds through the third-party custody account of Zhu Yanfen is as follows. 1. Transfer from other accounts: Transfer of total funds of RMB 70 million through the bank account of Salt Lake Chemical separately on January 5, January 11 and April 1, 2010; transfer of funds of RMB 3 million through the bank account of Sichuan Donghefeng on January 14, 2010; transfer of funds of RMB 3 million through the bank account of Zhu Yanfen on October 20, 2010. 2. Transfer to other accounts: transfer of funds of RMB 30 million to the bank account of Salt Lake Chemical on March 23, 2010. On July 14, 2011, this account suffered a loss of RMB 3,855,731.93. On August 3, 2011, this account suffered a loss of RMB 5,322,853.99. On August 30, 2011, this account suffered a loss of RMB 8,596,616.50. As of December 12, 2011, this account still suffered a loss.

The financial accounts and bank vouchers of Salt Lake Chemical show the funds were directly transferred to the accounts of Zhang XXX and Zhu Yanfen. But the loan receipts were issued by Sichuan Donghefeng, and the accounting treatment name was 'other receivables-Sichuan Donghefeng'. The accounts and bank vouchers of Sichuan Donghefeng show funds were directly transferred to the personal accounts, namely those of Zhang XXX and Zhu Yanfen. The accounting treatment names were 'other receivables – Zhang XXX' and 'other receivables -

Zhu Yanfen'.

The above-mentioned illegal facts can be fully confirmed by many evidences including the account opening information, detailed transactions records, detail records of financial transactions, inquiry records of concerned parties, and financial books.

Sichuan Donghefeng's behaviour of stock trading through the accounts of Zhang XXX and Zhu Yanfen violates Article 80 of Securities Law, and constitutes the unlawful act prescribed in Article 208 of Securities Law. Zhu Yanfen is the executive officer directly responsible for the unlawful act of Sichuan Donghefeng, and Gong Tianming is the person responsible for it.

According to the fact, nature, case and social harm degree of concerned party's unlawful act, CSRC made the following decision in accordance with the provisions of Article 208 of the Securities Law:

1. Order Sichuan Donghefeng to correct its behaviour and impose a fine of RMB 30,000;

2. Give warnings to Zhu Yanfen and Gong Tianming, and impose a fine of RMB 30,000 to each of them.

Within 15 days after receiving the punishment decision, the above concerned party should submit the fine to China Securities Regulatory Commission. (Bank of deposit: Head Office of China Citic Bank; account No.: 7111010189800000162. China Citic Bank will directly turn over the fine to the State Treasury). Copies of payment voucher marked with the name of concerned party shall be sent to the Enforcement Bureau of China Securities Regulatory Commission for filing. In case of refusing to accept the punishment decision, the concerned party may submit the application for administrative review to China Securities Regulatory Commission within 60 days after receiving the punishment decision, or institute an administrative litigation to the people's court with the jurisdiction within three months after receiving the punishment decision. During the period of review and litigation, enforcement of the above decision shall not suspend.

China Securities Regulatory Commission

February 25, 2012

# Appendix 1.2

Coding scheme

| Types of accounting fraud | Code |
|---|---|
| **Panel A: False Income Statement** | |
| Fictitious revenue recognition | A1 |
| Fictitious operating costs and expenses recognition | A2 |
| Fictitious asset impairment losses recognition | A3 |
| Fictitious investment profits and losses recognition | A4 |
| Improper accounting for sales returns, trade discounts and rebates | A5 |
| Fictitious non-operating income and expenses recognition | A6 |
| Others | A7 |
| **Panel B: False Balance Sheet** | |
| Timing difference recognition of assets | B1 |
| False asset valuation | B2 |
| Mis-classification and improper accounting for assets | B3 |
| Timing difference recognition of liabilities | B4 |
| False liabilities valuation | B5 |
| Misclassification and improper accounting for liabilities | B6 |
| False equities valuation | B7 |
| **Panel C: False Cash Flow Statement** | |
| False cash flow relating to operating activities | C1 |
| False cash flow relating to investing activities | C2 |
| False cash flow relating to financing activities | C3 |
| False cash, cash equivalents and cash flow supplement materials | C4 |
| **Panel D: Improper financial statement consolidation** | |
| Not bringing a subsidiary in the scope of consolidation | D1 |
| Internal transactions not fully eliminated | D2 |
| Bringing a subsidiary which the parent firm has loss of control | D3 |
| Others | D4 |
| **Panel E: Delayed disclosure of annual and interim reports** | E |
| **Panel F: Insufficient and false disclosure of information** | |
| Related party transactions | F1 |
| Investment status | F2 |
| Financial status and operating results in the director report | F3 |
| Mortgage, seal and freeze of assets or equities and restricted assets | F4 |
| Assets which haven't obtained the ownership certificates or use rights | F5 |
| Receivables or payables by types, amounts and risk characteristics | F6 |
| Contracts and the fulfilment of contracts | F7 |
| Guarantee events | F8 |
| Lawsuits events | F9 |
| Commitment events | F10 |
| Directors, supervisors and senior management information | F11 |
| Accounting policies and accounting estimates | F12 |
| Customers and suppliers | F13 |
| Shareholders, shareholding and actual controllers | F14 |
| Internal control and corporate governance | F15 |
| External loans events | F16 |
| Others | F17 |

**Appendix 1.3**

Coding results

| Sanction Year | Stock Code | Firm Name | Coder 1 | Coder 2 | Difference |
|---|---|---|---|---|---|
| 2007 | 000592 | ZHONGFU STRAITS (PINGTAN) DEVELOPMENT COMPANY LIMITED | E | E | |
| 2007 | 000780 | INNER MONGOLIA PINGZHUANG ENERGY CO.,LTD | B2 | B2 | |
| 2007 | 000780 | INNER MONGOLIA PINGZHUANG ENERGY CO.,LTD | A1 | A1 | |
| 2007 | 000780 | INNER MONGOLIA PINGZHUANG ENERGY CO.,LTD | A2 | A2 | |
| 2007 | 002027 | HEDY HOLDING CO., LTD. | B3 | B3 | |
| 2007 | 002027 | HEDY HOLDING CO., LTD. | F10 | F14 | **Different** |
| 2007 | 600101 | SICHUAN MINGXING ELECTRIC POWER LTD | F8 | F8 | |
| 2007 | 600656 | ZHUHAI BOYUAN INVESTMENT CO., LTD. | F11 | F11 | |
| 2007 | 600656 | ZHUHAI BOYUAN INVESTMENT CO., LTD. | E | E | |
| 2008 | 000620 | MACROLINK REAL ESTATE CO., LTD. | E | E | |
| 2008 | 000762 | TIBET MINERAL DEVELOPMENT CO., LTD | F8 | F8 | |
| 2008 | 002137 | SHENZHEN SEA STAR TECHNOLOGY CO., LTD. | F17 | F12 | **Different** |
| 2008 | 600648 | SHANGHAI WAIGAOQIAO FREE TRADE ZONE GROUP CO., LTD. | B2 | B2 | |
| 2008 | 600648 | SHANGHAI WAIGAOQIAO FREE TRADE ZONE GROUP CO., LTD. | F2 | F2 | |
| 2009 | 000010 | BEIJING SHENHUAXIN CO., LTD. | F1 | F1 | |
| 2009 | 000010 | BEIJING SHENHUAXIN CO., LTD. | F11 | F11 | |
| 2009 | 000010 | BEIJING SHENHUAXIN CO., LTD. | A3 | A3 | |
| 2009 | 000010 | BEIJING SHENHUAXIN CO., LTD. | A2 | A2 | |
| 2009 | 000010 | BEIJING SHENHUAXIN CO., LTD. | B1 | B1 | |
| 2009 | 000010 | BEIJING SHENHUAXIN CO., LTD. | B3 | B3 | |
| 2009 | 000605 | Bohai Water Industry Co., Ltd. | F8 | F8 | |
| 2009 | 000605 | Bohai Water Industry Co., Ltd. | F9 | F9 | |
| 2009 | 000605 | Bohai Water Industry Co., Ltd. | F1 | F1 | |
| 2009 | 000605 | Bohai Water Industry Co., Ltd. | A6 | A6 | |
| 2009 | 002072 | KAIRUIDE HOLDING CO. , LTD. | F1 | F1 | |
| 2009 | 600209 | LAWTON DEVELOPMENT CO., LTD | B2 | B2 | |
| 2009 | 600209 | LAWTON DEVELOPMENT CO., LTD | F1 | F1 | |
| 2009 | 600490 | Pengxin International   Mining Co.,Ltd | F1 | F1 | |
| 2009 | 600490 | Pengxin International   Mining Co.,Ltd | C1 | C1 | |
| 2010 | 000409 | Shandong Geo-mineral Co., L | F1 | F1 | |
| 2010 | 000409 | Shandong Geo-mineral Co., L | B1 | B1 | |

| | | | | | |
|------|--------|-------------------------------------------------|------|------|-----------|
| 2010 | 000409 | Shandong Geo-mineral Co., L | A2 | A2 | |
| 2010 | 000409 | Shandong Geo-mineral Co., L | A5 | A5 | |
| 2010 | 000681 | VISUAL CHINA GROUP CO.,LTD. | F1 | F1 | |
| 2010 | 000681 | VISUAL CHINA GROUP CO.,LTD. | B2 | B2 | |
| 2010 | 000681 | VISUAL CHINA GROUP CO.,LTD. | A1 | A1 | |
| 2010 | 000958 | SHIJIAZHUANG DONGFANG THERMOELECTRIC CO., LTD | B2 | B2 | |
| 2010 | 000958 | SHIJIAZHUANG DONGFANG THERMOELECTRIC CO., LTD | F8 | F8 | |
| 2010 | 000958 | SHIJIAZHUANG DONGFANG THERMOELECTRIC CO., LTD | F4 | F5 | **Different** |
| 2010 | 000958 | SHIJIAZHUANG DONGFANG THERMOELECTRIC CO., LTD | F12 | F12 | |
| 2010 | 000958 | SHIJIAZHUANG DONGFANG THERMOELECTRIC CO., LTD | F1 | F1 | |
| 2010 | 002113 | HUNAN TIANRUN CHEMICAL INDUSTRY DEVELOPING CO., LTD. | F14 | F14 | |
| 2010 | 002113 | HUNAN TIANRUN CHEMICAL INDUSTRY DEVELOPING CO., LTD. | F11 | F11 | |
| 2010 | 002113 | HUNAN TIANRUN CHEMICAL INDUSTRY DEVELOPING CO., LTD. | F15 | F15 | |
| 2010 | 002113 | HUNAN TIANRUN CHEMICAL INDUSTRY DEVELOPING CO., LTD. | F2 | F2 | |
| 2010 | 600365 | TONGHUA GRAPE WINE CO., LTD | F17 | B3 | **Different** |
| 2010 | 600599 | Panda Financial Holding Corp., Ltd. | F15 | F15 | |
| 2010 | 600599 | Panda Financial Holding Corp., Ltd. | A2 | A2 | |
| 2010 | 600599 | Panda Financial Holding Corp., Ltd. | A3 | A3 | |
| 2010 | 600699 | NINGBO JOYSON ELECTRONIC CORP. | F14 | F14 | |
| 2011 | 000031 | COFCO PROPERTY (GROUP) CO.,LTD. | A3 | A3 | |
| 2011 | 000031 | COFCO PROPERTY (GROUP) CO.,LTD. | B3 | B3 | |
| 2011 | 000031 | COFCO PROPERTY (GROUP) CO.,LTD. | B5 | A4 | **Different** |
| 2011 | 000656 | JINKE PROPERTY GROUP CO., LTD. | A2 | A2 | |
| 2011 | 000656 | JINKE PROPERTY GROUP CO., LTD. | A7 | A7 | |
| 2011 | 002124 | NINGBO TECH-BANK CO.,LTD. | B6 | B6 | |
| 2011 | 002124 | NINGBO TECH-BANK CO.,LTD. | A2 | A2 | |
| 2011 | 002124 | NINGBO TECH-BANK CO.,LTD. | B3 | B3 | |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | F3 | F3 | |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | F13 | F13 | |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | A7 | A7 | |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING | F17 | A2 | **Different** |

| | | | | |
|---|---|---|---|---|
| | | CO.LTD | | |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | A2 | A2 |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | D1 | D1 |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | F1 | F1 |
| 2011 | 002505 | HUNAN DAKANG PASTURE FARMING CO.LTD | F10 | F10 |
| 2011 | 600217 | SHAANXI QINLING CEMENT (GROUP) CO., LTD | A3 | A3 |
| 2011 | 600666 | Aurora Optoelectronics Co., Ltd. | A2 | A2 |
| 2011 | 600666 | Aurora Optoelectronics Co., Ltd. | A7 | A7 |
| 2011 | 600666 | Aurora Optoelectronics Co., Ltd. | A1 | A1 |
| 2012 | 000420 | JILIN CHEMICAL FIBRE STOCK CO., LTD. | F2 | F2 |
| 2012 | 000420 | JILIN CHEMICAL FIBRE STOCK CO., LTD. | F12 | F12 |
| 2012 | 000546 | Jinyuan Cement Co.,Ltd | F1 | F1 |
| 2012 | 000819 | YUEYANG XINGCHANG PETRO-CHEMICAL CO., LTD. | F14 | F14 |
| 2012 | 002018 | Cefc Anhui International Holding Co., Ltd. | F1 | F1 |
| 2012 | 002286 | BAOLINGBAO BIOLOGY CO., LTD. | F12 | F12 |
| 2012 | 002286 | BAOLINGBAO BIOLOGY CO., LTD. | B2 | B2 |
| 2012 | 002286 | BAOLINGBAO BIOLOGY CO., LTD. | F17 | F17 |
| 2012 | 002466 | SICHUAN TIANQI LITHIUM INDUSTRIES, INC. | F4 | F4 |
| 2012 | 002466 | SICHUAN TIANQI LITHIUM INDUSTRIES, INC. | F1 | F1 |
| 2012 | 002639 | FUJIAN SNOWMAN CO., LTD | F12 | F12 |
| 2012 | 002639 | FUJIAN SNOWMAN CO., LTD | B6 | B6 |
| 2012 | 002639 | FUJIAN SNOWMAN CO., LTD | B3 | B3 |
| 2012 | 600250 | NANJING TEXTILES IMPORT & EXPORT LTD | A1 | A1 |
| 2012 | 600250 | NANJING TEXTILES IMPORT & EXPORT LTD | A2 | A2 |
| 2012 | 600250 | NANJING TEXTILES IMPORT & EXPORT LTD | A3 | A3 |
| 2012 | 600250 | NANJING TEXTILES IMPORT & EXPORT LTD | A4 | A4 |
| 2012 | 600250 | NANJING TEXTILES IMPORT & EXPORT LTD | B2 | B2 |
| 2012 | 600365 | TONGHUA GRAPE WINE CO., LTD | F6 | F6 |
| 2012 | 600365 | TONGHUA GRAPE WINE CO., LTD | B2 | B2 |
| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | F13 | F13 |
| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | F14 | F14 |
| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | F12 | F12 |
| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | A2 | A2 |
| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | A6 | A6 |
| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | B3 | B3 |

| 2012 | 600693 | FUJIAN DONGBAI (GROUP) CO., LTD | F17 | B2 | **Different** |
|---|---|---|---|---|---|
| 2012 | 601179 | CHINA XD ELECTRIC CO., LTD | B3 | B3 | |
| 2012 | 601179 | CHINA XD ELECTRIC CO., LTD | A1 | A1 | |
| 2012 | 601179 | CHINA XD ELECTRIC CO., LTD | A2 | A2 | |
| 2012 | 601179 | CHINA XD ELECTRIC CO., LTD | A3 | A3 | |
| 2012 | 601179 | CHINA XD ELECTRIC CO., LTD | D2 | D2 | |
| 2012 | 601179 | CHINA XD ELECTRIC CO., LTD | F12 | F12 | |
| 2013 | 000517 | RONGAN PROPERTY CO., LTD. | A1 | A1 | |
| 2013 | 000517 | RONGAN PROPERTY CO., LTD. | A4 | A4 | |
| 2013 | 000517 | RONGAN PROPERTY CO., LTD. | A7 | A7 | |
| 2013 | 000517 | RONGAN PROPERTY CO., LTD. | A2 | A2 | |
| 2013 | 000517 | RONGAN PROPERTY CO., LTD. | B2 | B2 | |
| 2013 | 000517 | RONGAN PROPERTY CO., LTD. | F16 | F16 | |
| 2013 | 000590 | UNISPLENDOUR GUHAN GROUP CORPORATION LIMITED | A1 | A1 | |
| 2013 | 000590 | UNISPLENDOUR GUHAN GROUP CORPORATION LIMITED | A2 | A2 | |
| 2013 | 000590 | UNISPLENDOUR GUHAN GROUP CORPORATION LIMITED | F17 | F17 | |
| 2013 | 000590 | UNISPLENDOUR GUHAN GROUP CORPORATION LIMITED | F16 | F16 | |
| 2013 | 000590 | UNISPLENDOUR GUHAN GROUP CORPORATION LIMITED | F7 | F7 | |
| 2013 | 000755 | SHANXI SANWEI (GROUP) CO., LTD | B3 | B3 | |
| 2013 | 000755 | SHANXI SANWEI (GROUP) CO., LTD | B5 | B5 | |
| 2013 | 002213 | SHENZHEN TERCA TECHNOLOGY CO., LTD | F14 | F14 | |
| 2013 | 002213 | SHENZHEN TERCA TECHNOLOGY CO., LTD | A2 | A2 | |
| 2013 | 002213 | SHENZHEN TERCA TECHNOLOGY CO., LTD | F12 | F12 | |
| 2013 | 002456 | SHENZHEN O-FILM TECH CO.,LTD. | F14 | F14 | |
| 2013 | 002456 | SHENZHEN O-FILM TECH CO.,LTD. | F4 | F4 | |
| 2013 | 002456 | SHENZHEN O-FILM TECH CO.,LTD. | B3 | B3 | |
| 2013 | 002456 | SHENZHEN O-FILM TECH CO.,LTD. | A3 | A3 | |
| 2013 | 002456 | SHENZHEN O-FILM TECH CO.,LTD. | A2 | A2 | |
| 2013 | 002456 | SHENZHEN O-FILM TECH CO.,LTD. | B5 | B5 | |
| 2013 | 002501 | Jilin Liyuan Precision Manufacturing Co., Ltd. | F3 | F3 | |
| 2013 | 002501 | Jilin Liyuan Precision Manufacturing Co., Ltd. | F7 | F7 | |
| 2013 | 002501 | Jilin Liyuan Precision Manufacturing Co., Ltd. | A2 | A2 | |
| 2013 | 002539 | SHINDOO CHEMICAL INDUSTRY CO.,LTD | F11 | F11 | |
| 2013 | 002539 | SHINDOO CHEMICAL INDUSTRY CO.,LTD | F17 | D4 | **Different** |
| 2013 | 002539 | SHINDOO CHEMICAL INDUSTRY CO.,LTD | F12 | F12 | |
| 2013 | 600253 | HENAN TOPFOND PHARMACEUTICAL LTD | F1 | F1 | |
| 2013 | 600319 | WEIFANG YAXING CHEMICAL CO., LTD | F1 | F1 | |

| 2013 | 600319 | WEIFANG YAXING CHEMICAL CO., LTD | A2 | A2 |
|------|--------|----------------------------------|-----|-----|
| 2013 | 600588 | Yonyou Network Technology Co., Ltd. | F12 | F12 |
| 2013 | 600766 | YanTai Yuancheng Gold Co., Ltd. | F2 | F2 |
| 2013 | 600766 | YanTai Yuancheng Gold Co., Ltd. | F4 | F4 |
| 2014 | 000408 | JINGUYUAN HOLDING CO.,LTD | F9 | F9 |
| 2014 | 000688 | Jianxin Mining Co., Ltd. | F1 | F1 |
| 2014 | 000688 | Jianxin Mining Co., Ltd. | A2 | A2 |
| 2014 | 000972 | XINJIANG CHALKIS CO., LTD | A1 | A1 |
| 2014 | 000972 | XINJIANG CHALKIS CO., LTD | A2 | A2 |
| 2014 | 000972 | XINJIANG CHALKIS CO., LTD | F1 | F1 |
| 2014 | 002420 | GUANGZHOU ECHOM SCIENCE & TECHNOLOGY CO.,LTD. | F2 | F2 |
| 2014 | 002420 | GUANGZHOU ECHOM SCIENCE & TECHNOLOGY CO.,LTD. | F13 | F13 |
| 2014 | 002420 | GUANGZHOU ECHOM SCIENCE & TECHNOLOGY CO.,LTD. | F1 | F1 |
| 2014 | 002420 | GUANGZHOU ECHOM SCIENCE & TECHNOLOGY CO.,LTD. | F12 | F12 |
| 2014 | 002420 | GUANGZHOU ECHOM SCIENCE & TECHNOLOGY CO.,LTD. | A3 | A3 |
| 2014 | 002420 | GUANGZHOU ECHOM SCIENCE & TECHNOLOGY CO.,LTD. | B2 | B2 |
| 2014 | 600186 | HENAN LIANHUA GOURMET POWDER LTD. | F9 | F9 |
| 2014 | 600186 | HENAN LIANHUA GOURMET POWDER LTD. | A6 | A6 |
| 2014 | 600186 | HENAN LIANHUA GOURMET POWDER LTD. | F13 | F13 |
| 2014 | 600186 | HENAN LIANHUA GOURMET POWDER LTD. | A2 | A2 |
| 2014 | 600186 | HENAN LIANHUA GOURMET POWDER LTD. | B3 | B3 |
| 2014 | 600293 | HUBEI SANXIA NEW BUILDING MATERIALS CO., LTD | A2 | A2 |
| 2014 | 600293 | HUBEI SANXIA NEW BUILDING MATERIALS CO., LTD | B2 | B2 |
| 2014 | 600446 | SHEN ZHEN KINGDOM TECHNOLOGY LTD. | F1 | F1 |
| 2014 | 600800 | TIAN JIN GLOBAL MAGNETIC CARD LTD. | D1 | D1 |
| 2014 | 600800 | TIAN JIN GLOBAL MAGNETIC CARD LTD. | F1 | F1 |

Note: These are the 10% fraudulent cases randomly selected by the independent coder.

**Appendix 1.4**

Coding reliability

*Cohen's Kappa*

The formula for calculating the Cohen's kappa (k) lists as follows (Cohen, 1960).

$$k = \frac{P_a - P_c}{1 - P_c} \tag{1}$$

The $P_a$ refers to the percentage of cases that both coders agree and the $P_c$ refers to the percentage of cases that the agreement is expected by chance alone. Expected agreement by chance is calculated on the basis of the multiplicative marginal (Lombard et al., 2002).

$$P_c = \left(\frac{1}{n^2}\right)\left(\sum_{i=1}^{c} n_{i\cdot}n_{\cdot i}\right) \tag{2}$$

Where n denotes the number of the observations, C denotes the number of response categories. The $n_{i\cdot}$ and $n_{\cdot i}$ refer to row marginal and column marginal for response $i$ for the two coders respectively (Cooper et al, 2009).

| Case Processing Summary | | Case valid | | Case missing | | Total cases | |
|---|---|---|---|---|---|---|---|
| | N | Percent | N | Percent | N | Percent |
| Coder2 * Coder1 | 159 | 100% | 0 | 0% | 159 | 100% |

| Symmetric Measures | | Value | Std Error | Approx. T | Approx. Sig. |
|---|---|---|---|---|---|
| Measure of Agreement | Kappa | 0.946 | 0.018 | 48.657 | 0.000 |

### Krippendorff's Alpha Reliability Estimate

The formula of Krippendorff's Alpha is listed as follows:

$$\alpha = 1 - \left(\frac{D_o}{D_e}\right) \tag{3}$$

Where $D_o$ is the observed disagreement among values assigned to units of analysis:

$$D_o = \frac{1}{n}\sum_c\sum_k o_{ck \ metric}\delta_{ck}^2 \tag{4}$$

and $D_e$ is the disagreement one would expect when the coding of units is attributable to chance rather than to the properties of these units:

$$D_e = \frac{1}{n(n-1)}\sum_c\sum_k n_c \cdot n_{k \ metric}\delta_{ck}^2 \tag{5}$$

Where $o_{ck}$, $n_c$, $n_k$, $n$ refer to the frequencies of values in coincidence matrices. In addition, coincidence matrices account for all values contained in a reliability data matrix (Krippendorff, 2007).

| Krippendorff's Alpha | Alpha | LL95%CI | UL95%CI | Units | Observers | Pairs |
|---|---|---|---|---|---|---|
| Value | 0.932 | 0.853 | 0.989 | 159 | 2 | 159 |

*Probability (q) of failure to achieve an alpha of at least alphamin:*

| alphamin | q |
|---|---|
| 0.900 | 0.1772 |
| 0.800 | 0.0018 |
| 0.700 | 0.000 |
| 0.600 | 0.000 |
| 0.500 | 0.000 |
| Number of bootstrap samples | 5000 |

**Appendix 1.5**

Types of fraudulent financial reporting (in proportion)

| Types of Accounting Fraud | Non-reoffend | Recidivism |
|---|---|---|
| **Panel A: False Income Statement** | | |
| Fictitious revenue recognition | 4.828% | 6.803% |
| Fictitious operating costs and expenses recognition | 8.966% | 10.884% |
| Fictitious asset impairment losses recognition | 4.039% | 2.041% |
| Fictitious investment profits and losses recognition | 1.379% | 1.701% |
| Improper accounting for sales returns, trade discounts and rebates | 0.887% | 1.020% |
| Fictitious non-operating income and expenses recognition | 1.773% | 0.680% |
| Others | 1.379% | 1.020% |
| **Panel B: False Balance Sheet** | | |
| Timing difference recognition of assets | 0.493% | 0.340% |
| False asset valuation | 4.532% | 4.762% |
| Mis-classification and improper accounting for assets | 3.941% | 4.422% |
| Timing difference recognition of liabilities | 0.296% | 0.000% |
| False liabilities valuation | 2.660% | 2.721% |
| Mis-classification and improper accounting for liabilities | 0.887% | 1.020% |
| False equities valuation | 0.099% | 0.000% |
| **Panel C: False Cash Flow Statement** | | |
| False cash flow relating to operating activities | 0.591% | 0.340% |
| False cash flow relating to investing activities | 0.394% | 0.000% |
| False cash flow relating to financing activities | 0.296% | 0.000% |
| False cash, cash equivalents and cash flow supplement materials | 0.591% | 1.020% |
| **Panel D: Improper financial statement consolidation** | | |
| Not bringing a subsidiary in the scope of consolidation | 0.690% | 2.041% |
| Internal transactions not fully eliminated | 0.788% | 0.340% |
| Bringing a subsidiary which the parent firm has loss of control | 0.296% | 0.340% |
| Others | 0.296% | 0.340% |
| **Panel E: Delayed disclosure of annual and interim reports** | 0.985% | 2.721% |
| **Panel F: Insufficient and false disclosure of information** | | |
| Related party transactions | 14.975% | 14.626% |
| Investment status | 5.813% | 3.741% |
| Financial status and operating results in the director report | 1.182% | 2.041% |
| Mortgage, seal and freeze of assets or equities and restricted assets | 1.478% | 2.721% |
| Assets that haven't obtained the ownership certificates or use rights | 0.887% | 1.701% |
| Receivables or payables by types, amounts and risks | 2.167% | 2.041% |
| Contracts and the fulfilment of contracts | 2.069% | 1.701% |
| Guarantee events | 4.828% | 3.401% |
| Lawsuits events | 1.379% | 2.041% |
| Commitment events | 0.887% | 1.020% |
| Directors, supervisors and senior management information | 2.562% | 2.381% |
| Accounting policies and accounting estimates | 5.123% | 3.401% |
| Customers and suppliers | 1.281% | 2.041% |
| Shareholders, shareholding and actual controllers | 3.448% | 4.082% |
| Internal control and corporate governance | 0.690% | 2.041% |
| External loans events | 2.069% | 1.361% |
| Others | 8.079% | 5.102% |
| **Total** | 100% | 100% |

Non-reoffend refers to the fraud techniques used by first-time offenders. Recidivism refers to the fraud techniques used by the repeat offenders.

**Appendix 1.6**

Logistic regression model: Average marginal effects

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6-PSM |
|---|---|---|---|---|---|---|
| Self-measures | 0.080** | | | 0.084** | | 0.219*** |
| | (0.040) | | | (0.041) | | (0.042) |
| Criticism | | 0.022 | | | 0.039 | |
| | | (0.068) | | | (0.070) | |
| Condemnation | | | 0.123** | | 0.122** | |
| | | | (0.062) | | (0.062) | |
| Fraud cases | | | | 0.013 | 0.011 | 0.001 |
| | | | | (0.010) | (0.010) | (0.015) |
| Lasting years | | | | 0.007 | 0.007 | 0.008 |
| | | | | (0.008) | (0.008) | (0.009) |
| Firm size | 0.014 | 0.011 | 0.014 | 0.014 | 0.015 | 0.006 |
| | (0.015) | (0.014) | (0.015) | (0.014) | (0.014) | (0.018) |
| Leverage | 0.013 | 0.012 | 0.013 | 0.013 | 0.012 | -0.008 |
| | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.018) |
| Institution | -0.612** | -0.590** | -0.591** | -0.665** | -0.649** | -0.468 |
| | (0.294) | (0.290) | (0.288) | (0.304) | (0.299) | (0.308) |
| State | -0.349*** | -0.366*** | -0.369*** | -0.352*** | -0.371*** | -0.428*** |
| | (0.121) | (0.122) | (0.120) | (0.120) | (0.119) | (0.144) |
| Big4 | -0.117 | -0.117 | -0.125 | -0.115 | -0.121 | -0.041 |
| | (0.107) | (0.105) | (0.108) | (0.108) | (0.108) | (0.089) |
| Observations | 546 | 546 | 546 | 546 | 546 | 516 |

Self-regulatory measures include public criticism, public condemnation, verbal warning and suspend business. Although verbal warning and suspend business are also self-regulatory measures, they are seldom used by self-regulators and only include 2 and 1 case respectively in this chapter. Therefore, verbal warning and suspend business are not examined in models for the concerns that few observations may bias the overall regression model. Model 1-5 include 546 observations and Model 6 includes propensity score matched 516 observations. All of the variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The standard errors are adjusted for firm-level clustering.

**Appendix 1.7**

Logistic regression model: Marginal effects at the mean

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6-PSM |
|---|---|---|---|---|---|---|
| Self-measures | 0.079** | | | 0.082** | | 0.229*** |
| | (0.040) | | | (0.040) | | (0.048) |
| Criticism | | 0.022 | | | 0.038 | |
| | | (0.067) | | | (0.069) | |
| Condemnation | | | 0.121** | | 0.120* | |
| | | | (0.061) | | (0.061) | |
| Fraud cases | | | | 0.012 | 0.011 | 0.001 |
| | | | | (0.010) | (0.010) | (0.016) |
| Lasting years | | | | 0.007 | 0.007 | 0.009 |
| | | | | (0.007) | (0.008) | (0.010) |
| Firm size | 0.013 | 0.011 | 0.014 | 0.014 | 0.014 | 0.006 |
| | (0.014) | (0.014) | (0.014) | (0.014) | (0.014) | (0.019) |
| Leverage | 0.013 | 0.011 | 0.012 | 0.013 | 0.012 | -0.009 |
| | (0.011) | (0.011) | (0.011) | (0.011) | (0.011) | (0.019) |
| Institution | -0.602** | -0.580** | -0.583** | -0.654** | -0.638** | -0.491 |
| | (0.286) | (0.281) | (0.280) | (0.294) | (0.290) | (0.323) |
| State | -0.344*** | -0.360*** | -0.364*** | -0.346*** | -0.365*** | -0.449*** |
| | (0.116) | (0.117) | (0.116) | (0.115) | (0.115) | (0.151) |
| Big4 | -0.116 | -0.115 | -0.124 | -0.113 | -0.119 | -0.043 |
| | (0.105) | (0.103) | (0.106) | (0.106) | (0.106) | (0.094) |
| Observations | 546 | 546 | 546 | 546 | 546 | 516 |

Self-regulatory measures include public criticism, public condemnation, verbal warning and suspend business. Although verbal warning and suspend business are also self-regulatory measures, they are seldom used by self-regulators and only include 2 and 1 case respectively in this chapter. Therefore, verbal warning and suspend business are not examined in models for the concerns that few observations may bias the overall regression model. Model 1-5 include 546 observations and Model 6 includes propensity score matched 516 observations. All of the variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The standard errors are adjusted for firm-level clustering.

## Appendix 1.8

Logistic regression model considering the same year recidivism

| Variables | Model 1 | Model 2 |
|---|---|---|
| Self-measures | 1.169*** | |
| | (0.230) | |
| Criticism | | 0.431 |
| | | (0.377) |
| Condemnation | | 1.018*** |
| | | (0.357) |
| Fraud cases | -0.003 | -0.042 |
| | (0.062) | (0.062) |
| Lasting years | 0.015 | 0.015 |
| | (0.046) | (0.045) |
| Firm size | 0.067 | 0.061 |
| | (0.078) | (0.077) |
| Leverage | 0.048 | 0.035 |
| | (0.071) | (0.066) |
| Institution | -1.763 | -1.373 |
| | (1.302) | (1.434) |
| State | -1.827*** | -2.022*** |
| | (0.640) | (0.632) |
| Big4 | -0.307 | -0.381 |
| | (0.449) | (0.444) |
| Constant | -2.407 | -2.039 |
| | (1.682) | (1.666) |
| Wald chi$^2$ | 36.83*** | 20.25** |
| Pseudo R$^2$ | 0.055 | 0.031 |
| Pearson Goodness-of-Fit (P-value) | 0.406 | 0.456 |
| Observations | 603 | 603 |

Self-regulatory measures include public criticism, public condemnation, verbal warning and suspend business. Although verbal warning and suspend business are also self-regulatory measures, they are seldom used by self-regulators and only include 2 and 1 case respectively in this chapter. Therefore, verbal warning and suspend business are not examined in models for the concerns that few observations may biases the overall regression model. The Model 1-2 consider the corporate recidivism that occurs in the same firm-year. All of the variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. The standard errors are adjusted for firm-level clustering.

**Appendix 1.9**

Different punishments and recidivism

| Variables | Model 3 |
|---|---|
| Administrative sanctions | 0.811 |
| | (0.463) |
| Supervisory measures | 0.483 |
| | (0.492) |
| Self-regulatory measures | 0.959** |
| | (0.467) |
| Fraud cases | 0.075 |
| | (0.064) |
| Lasting years | 0.044 |
| | (0.052) |
| Firm size | 0.102 |
| | (0.092) |
| Leverage | 0.090 |
| | (0.068) |
| Institution | -4.126* |
| | (2.217) |
| State | -2.320*** |
| | (0.827) |
| Big4 | -0.831 |
| | (0.655) |
| Constant | -4.156** |
| | (1.983) |
| Wald chi$^2$ | 26.63*** |
| Pseudo R$^2$ | 0.048 |
| Pearson Goodness-of-Fit (P-value) | 0.365 |
| Observations | 546 |

Administrative punishments include warnings, fines and repayment of tax. Supervisory measures include rectification notices, statements of regulatory concern, letters of warnings, public statements required to be made and regulatory interview. Self-regulatory measures include public criticism, public condemnation, verbal warning and suspend business. All of the variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. The standard errors are adjusted for firm-level clustering.

**Appendix 1.10**

Propensity Score Matching (Radius matching)

The propensity score is defined as the conditional probability of receiving a treatment given pre-treatment characteristics.

$$p(X) = \Pr[D = 1 \mid X] = \mathrm{E}[D \mid X] \qquad (6)$$

Where the $X$ refers to the multidimensional vector of characteristics of the control group, $D$ is the indicator variable, which equals to one if a firm subjects to self-regulatory measures for its fraudulent behaviours and zero otherwise. Theoretically, after computing $p(X_i)$, the average effect of treatment on the treated ($ATT$) can be calculated by taking the differences of the potential outcomes between treated group and control group (Lian et al., 2011).

$$ATT = E[Y_{1i} - Y_{0i} \mid D_i = 1] = E\{E[Y_{1i} - Y_{0i} \mid D_i = 1, p(X_i)]\} \qquad (7)$$

$$= E\{E[Y_{1i} \mid D_i = 1, p(X_i)] - E[Y_{0i} \mid D_i = 0, p(X_i)] \mid D_i = 1\}$$

Where $Y_{1i}$ and $Y_{0i}$ refer to the potential outcomes of the treated group and the control group respectively. To estimate propensity score, a logit model is used with self-regulatory measures as the dependent variable and other variables as regressors.

| Variables | Self-regulatory measures |
|---|---|
| Fraud cases | -0.487*** |
| | (0.109) |
| Lasting years | 0.046 |
| | (0.055) |
| Firm size | -0.230** |
| | (0.096) |
| Leverage | -0.102 |
| | (0.101) |
| Institution | 2.318* |
| | (1.257) |
| State | -1.141 |
| | (0.782) |
| Big4 | -0.265 |
| | (0.579) |
| Constant | 4.213 |
| | (2.046) |
| Log likelihood | -257.652 |
| Chi-squared (d.f.) | 42.32(7)*** |
| Observations | 603 |

The chapter estimates *ATT* through the radius matching. In particular, the outcome of the control observations matches with the outcome of the treated observations only when the propensity scores fall in the predefined radius of the treated units. Following Lin and Ye (2007) and Lian et al. (2011), a medium radius (r = 0.005) is selected. The chapter notes that changing the length of radius (to a wide radius r = 0.01 or a tight radius r = 0.002) has little impact on the results. A simplified formula to compute *ATT* using the radium matching can be written as:

$$ATT = \frac{1}{N^T}(\sum_{i \in T} Y_i^T - \frac{1}{N_i^C}\sum_{j \in T} Y_j^C) \tag{8}$$

Where $N^T$ is the number of cases in the treated group and $N_i^C$ is a weighting scheme that equals to the number of cases in the control group using a specific algorithm. The ATT results are listed as follows (Note: 5 observations are off support after matching).

| Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
|---|---|---|---|---|---|---|
| Recidivism | Unmatched | 0.505 | 0.241 | 0.264 | 0.047 | 5.56 |
| | ATT | 0.510 | 0.286 | 0.224 | 0.060 | 3.75 |

Evaluating balance in the matched samples

| Variable | Unmatched Matched | Mean | | %reduct | | t-test | |
|---|---|---|---|---|---|---|---|
| | | Treated | Control | %bias | bias | t | p>t |
| Fraud cases | U | 1.571 | 2.382 | -52.7 | | -4.78 | 0.000 |
| | M | 1.600 | 1.687 | -4.7 | 91.1 | -0.43 | 0.669 |
| Lasting years | U | 2.010 | 1.936 | 3.7 | | 0.35 | 0.724 |
| | M | 1.990 | 1.945 | 2.3 | 38.4 | 0.16 | 0.875 |
| Firm size | U | 20.986 | 21.359 | -29 | | -2.63 | 0.009 |
| | M | 21.046 | 20.903 | 11.1 | 61.7 | 0.88 | 0.378 |
| Leverage | U | 0.668 | 0.742 | -5.9 | | -0.52 | 0.602 |
| | M | 0.672 | 0.614 | 4.6 | 21.8 | 0.42 | 0.675 |
| Institution | U | 0.053 | 0.041 | 13.2 | | 1.35 | 0.177 |
| | M | 0.038 | 0.043 | -4.8 | 63.4 | -0.43 | 0.668 |
| State | U | 0.059 | 0.096 | -23.1 | | -1.98 | 0.048 |
| | M | 0.060 | 0.064 | -2.3 | 89.9 | -0.19 | 0.851 |
| Big4 | U | 0.038 | 0.050 | -5.9 | | -0.53 | 0.599 |
| | M | 0.040 | 0.039 | 0.4 | 93.5 | 0.03 | 0.978 |

For overall samples

| Sample | Mean Bias | Median Bias |
|---|---|---|
| Unmatched | 19.1 | 13.2 |
| Matched | 4.3 | 4.6 |

The balancing is good for all covariates: t-tests are not significant in the matched samples. In addition, the overall matching performance is good: after matching the average (median) bias is reduced to 4.3 (4.6).

**Appendix 1.11**

The impact of the split share structure reform on empirical results

The main purpose of the SSSR is to make state-owned shares more responsive to the stock market. Subsequently, the market value of state-owned shares, instead of the book value of SOE assets is used to evaluate the performance of governments. To examine the impact of SSSR on the empirical results, this thesis creates a dummy variable SSSR that equals to one if a firm-year observation has completed the split share structure reform and zero otherwise.

It is reported that firms completing the SSSR are related to greater occurrence of corporate recidivism and negative stock market reaction when the fraud is publicly revealed (also see Appendices 2.10 and 3.12 for results). As state shareholders have the option to trade their shares following SSSR, their wealth becomes sensitive to the market value of the firms (Chen et al., 2016). Subsequently, state shareholders tend to tactically collude with firm managers to engage in recidivism and obtain private benefits. Investors react negatively to the punishments imposed on firms that complete SSSR as such firms are more likely to reoffend, leading to deteriorating effect on firm value and future cash flows.

**Appendix 1.11 (continued)**

Logistic regression model considering SSSR

| Variables | Model 1 | Model 2 |
|---|---|---|
| Self-measures | 0.647** | |
| | (0.267) | |
| Criticism | | 0.282 |
| | | (0.439) |
| Condemnation | | 0.761* |
| | | (0.420) |
| Fraud cases | 0.102 | 0.090 |
| | (0.063) | (0.065) |
| Lasting years | 0.019 | 0.019 |
| | (0.050) | (0.050) |
| Firm size | 0.098 | 0.100 |
| | (0.091) | (0.091) |
| Leverage | 0.095 | 0.089 |
| | (0.074) | (0.071) |
| Institution | -4.310** | -4.175** |
| | (1.875) | (1.829) |
| State | -2.378*** | -2.484*** |
| | (0.767) | (0.761) |
| Big4 | -0.664 | -0.707 |
| | (0.665) | (0.666) |
| SSSR | 0.767*** | 0.703*** |
| | (0.227) | (0.224) |
| Constant | -3.991** | -3.891** |
| | (1.950) | (1.945) |
| Wald chi$^2$ | 33.46*** | 32.56*** |
| Pseudo R$^2$ | 0.062 | 0.058 |
| Pearson Goodness-of-Fit (P-value) | 0.576 | 0.605 |
| Observations | 546 | 546 |

Self-regulatory measures include public criticism, public condemnation, verbal warning and suspend business. Although verbal warning and suspend business are also self-regulatory measures, they are seldom used by self-regulators and only include 2 and 1 case respectively in this chapter. Therefore, verbal warning and suspend business are not examined in models for the concerns that few observations may biases the overall regression model. The Models 1-2 consider the impact of SSSR on corporate recidivism. SSSR equals to one if a firm-year observation has completed the split share structure reform and zero otherwise. The remaining variables are defined in the Table 4.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. The standard errors are adjusted for firm-level clustering.

**Appendix 2 Supplemental tables for Chapter 5**

**Appendix 2.1 CARs around the announcement of advance notice of sanction decisions**

For cases considered to be administrative offences, before deciding to impose any administrative penalties, regulators have responsibilities to notify the facts, grounds and basis according to what the administrative sanction decisions are based on through issuing the advance notice of administrative decisions to violators. The regulators are required to specify the violators' rights of requesting a hearing in the advance notice of administrative penalties. On a jurisprudential basis, there is still a possibility that the violators can exempt administrative penalties after them receiving the advance notices (National People's Congress, 2009). However, most firms receiving advance notice of punishments do not publicly disclose such information in time, leading to only 14 observations in the samples. The following table shows the CARs around the announcement of advance notice of sanction decisions. It is observed that a large portion of CARs are significantly negative, suggesting stock markets view such announcements negatively.

| Event windows | No. | Coefficient | Std. Err. | t-stat | P>\|t\| | %(CAR<0) | Wilcoxon z |
|---|---|---|---|---|---|---|---|
| [-5, +5] | 14 | -0.075*** | 0.023 | -3.29 | 0.006 | 78.571% | -8.667*** |
| [-3, +3] | 14 | -0.049** | 0.016 | -3.01 | 0.010 | 71.429% | -5.944*** |
| [0, +5] | 14 | -0.053*** | 0.018 | -3.02 | 0.010 | 85.714% | -6.172*** |
| [-2, 2] | 14 | -0.041** | 0.018 | -2.34 | 0.036 | 64.286% | -4.201*** |
| [-1, 1] | 14 | -0.024 | 0.016 | -1.56 | 0.143 | 71.429% | -2.646*** |
| [0, 1] | 14 | -0.018 | 0.014 | -1.30 | 0.215 | 57.143% | -1.663* |

Note: ***, ** and *, denote statistical significance at 1%, 5%, and 10% levels respectively. The market model is used to calculate normal returns. Daily individual stock returns are collected from the CSMAR database, which are calculated from the following formula.

$$r_{n,t} = \frac{P_{n,t}\left(1 + F_{n,t} + S_{n,t}\right) * C_{n,t} + D_{n,t}}{P_{n,t-1} + C_{n,t} * S_{n,t} * K_{n,t}} - 1 \qquad (9)$$

$P_{n,t}$ and $P_{n,t-1}$ represent the closing price of stock n on day t and day t-1. $D_{n,t}$, $F_{n,t}$, $S_{n,t}$, $K_{n,t}$ and $C_{n,t}$ represent the cash dividend per share, bonus shares per share, number of placing shares per share, placing price per share and number of splits per share of stock n on day t which is ex-right day.

**Appendix 2.2**

**Discussion on accounting profession and big 4 versus big 10 in China**

Auditors can have a profound effect on corporate fraud through deterrence (i.e. the fraud will be reported) and by correcting it (by forcing the revision or restatement of financial statements). Big 4(10) in the thesis is defined as a dummy variable coded one if the auditor is one of the four (ten) biggest accounting firms in China. The ranking of accounting firms is published by the Chinese Institute of Certified Public Accountants (CICPA) on the basis of revenue, comprehensive evaluation scores of penalty and discipline deductions, other indices and the number of employed CPAs.[116] In China, the foreign accounting firms cannot directly audit domestic companies. However, the large international accounting firms have joint ventures with Chinese CPAs to which they provide training and inculcate western audit philosophies (Chen et al., 2006). The big 4 auditors include Deloitte, PwC, Ernst & Young and KPMG.[117] The big 10 auditors are PwC China, Deloitte China, Ruihua CPAs, Ernst & Young China, BDO China Shu Lun Pan CPAs, KPMG China, PKF Daxin CPAs, Pan-China CPAs, ShineWing CPAs and Da Hua CPAs (CICPA, 2014).[118] These auditors not only have the top business income but also have high external evaluation of their business practices by the CICPA.

Generally, when a listed firm chooses a large accounting firm (e.g., Big 4 or Big 10), it

[116] Comprehensive evaluation score equals the business income index plus other indicators of comprehensive evaluation minus penalties and disciplinary index. Other indicators include basic conditions, internal governance, practice quality, human resource, global business, information technology and social responsibilities of accounting firms. The official rank of accounting firms by the CICPA has been widely used in literature to decide big accounting firms (see Du, 2013).

[117] The big four accounting firms were ranked as the top four auditors by the CICPA from 2006 to 2012. In 2013, local Chinese accounting firms have gradually narrowed their gap, especially Ruihua and BDO whose revenue has exceeded Ernst & Young and KPMG, and listed as the 3rd and 5th of the ranking (CICPA, 2014).

[118] A few large accounting firms have merged during the sample period. For instance, Ruihua China CPAs was formed by the merger of Crowe Horwath and RSM in 2013. In addition, China Audit Asia Pacific CPAs was one of the top ten accounting firms in 2006 and 2007, but dropped out the top ten auditors after 2007. Reanda CPAs only entered to the top ten accounting firms in 2008.

signals to investors about a firm's acceptance of the auditor's demands for higher disclosure quality. Subsequently, the firm is less likely to commit fraud. This expectation is consistent with agency theory that large auditors have stronger incentives to maintain independence and to impose more stringent and extensive disclosure standards because they have more to lose from reputational damage (Wang et al., 2008). In this thesis, the variable big 4 auditor is used in Chapter 4 and Chapter 6, and the variable big 10 auditor is employed in Chapter 5 as the sample size is relatively small.[119]

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[119] The mean of big 4 is 0.025 (9 observations) whereas the mean of big 10 is 0.352 (126 observations) in Chapter 5.

# Appendix 2.3

Correlation table

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] | [15] | [16] | [17] | [18] | [19] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [1]CARs | 1 | | | | | | | | | | | | | | | | | | |
| [2]Criticism | 0.065 | 1 | | | | | | | | | | | | | | | | | |
| [3]Warning | 0.043 | -0.099* | 1 | | | | | | | | | | | | | | | | |
| [4]Condemnation | 0.027 | -0.055 | -0.084 | 1 | | | | | | | | | | | | | | | |
| [5]Fines | 0.035 | -0.115** | 0.678*** | -0.097* | 1 | | | | | | | | | | | | | | |
| [6]Rectification notice | -0.021 | -0.323*** | -0.185*** | -0.273*** | -0.259*** | 1 | | | | | | | | | | | | | |
| [7]Regulatory concern | 0.013 | -0.07 | -0.107** | -0.059 | -0.123** | -0.346*** | 1 | | | | | | | | | | | | |
| [8]Letter of warning | -0.008 | -0.062 | -0.095* | -0.053 | -0.109** | -0.232*** | -0.019 | 1 | | | | | | | | | | | |
| [9]Income fraud | 0.048 | -0.014 | -0.008 | 0.056 | 0.095* | -0.038 | 0.003 | -0.004 | 1 | | | | | | | | | | |
| [10]Balance sheet fraud | 0.037 | 0.001 | -0.064 | -0.02 | 0.069 | -0.033 | -0.047 | 0.009 | 0.350*** | 1 | | | | | | | | | |
| [11]Disclosure fraud | -0.028 | 0.140*** | 0.091* | 0.054 | 0 | -0.115** | 0.033 | -0.097* | -0.431*** | -0.313*** | 1 | | | | | | | | |
| [12]Duration | -0.096* | 0.053 | 0.066 | 0.079 | 0.021 | -0.042 | -0.146*** | -0.03 | -0.071 | -0.03 | 0.007 | 1 | | | | | | | |
| [13]Firm size | -0.023 | -0.065 | -0.091* | -0.152*** | -0.062 | 0.086 | 0.138*** | 0.075 | 0.054 | 0.033 | -0.109** | 0.019 | 1 | | | | | | |
| [14]Largest ownership | 0.057 | -0.100* | -0.190*** | -0.039 | -0.129** | 0.041 | 0.132** | -0.004 | 0.004 | -0.015 | -0.02 | -0.140*** | 0.267*** | 1 | | | | | |
| [15]Ownership form | 0.048 | 0.001 | -0.111** | -0.02 | 0.008 | 0.072 | -0.07 | -0.073 | 0.08 | 0.018 | -0.047 | 0.076 | 0.211*** | 0.173*** | 1 | | | | |
| [16]Institutional | -0.003 | -0.012 | -0.07 | 0.072 | -0.032 | 0.013 | -0.022 | -0.024 | 0.005 | -0.037 | -0.029 | 0.038 | 0.125** | 0.098* | 0.145*** | 1 | | | |
| [17]Chairman change | 0.015 | -0.025 | 0.063 | 0.044 | 0.131** | -0.108** | -0.039 | 0.049 | 0.026 | 0.064 | 0.059 | 0.02 | -0.019 | -0.008 | 0.088* | -0.044 | 1 | | |
| [18]CEO change | -0.03 | -0.024 | 0.092* | 0.08 | 0.086 | 0.034 | -0.04 | -0.041 | 0.068 | 0.046 | 0.061 | 0.006 | -0.088* | -0.067 | -0.03 | 0.013 | 0.326*** | 1 | |
| [19]Big ten audit | -0.014 | -0.091* | -0.009 | -0.159*** | -0.017 | 0.055 | 0.119** | -0.052 | 0.021 | 0.015 | -0.012 | -0.067 | 0.241*** | -0.001 | 0.007 | 0.056 | -0.059 | -0.025 | 1 |

## Appendix 2.4

Fines and warnings imposed simultaneously

| Variables | Model 1 [0, 1] | Model 2 [-15, -6] |
|---|---|---|
| Fines & Warnings | -0.077*** | -0.117* |
| | (0.025) | (0.069) |
| Criticism | 0.085*** | 0.092* |
| | (0.026) | (0.051) |
| Warning | 0.187*** | 0.304*** |
| | (0.033) | (0.081) |
| Condemnation | 0.036* | -0.028 |
| | (0.020) | (0.057) |
| Fines | -0.051*** | -0.178*** |
| | (0.013) | (0.025) |
| Rectification notice | 0.039** | 0.006 |
| | (0.017) | (0.028) |
| Regulatory concern | 0.055* | 0.079 |
| | (0.031) | (0.049) |
| Letter of warning | 0.026 | -0.037 |
| | (0.016) | (0.046) |
| Duration | -0.012*** | -0.026*** |
| | (0.004) | (0.006) |
| Firm size | -0.013** | -0.009 |
| | (0.006) | (0.012) |
| Largest ownership | 0.652*** | 0.975*** |
| | (0.096) | (0.293) |
| Ownership form | 0.074*** | 0.006 |
| | (0.011) | (0.038) |
| Institutional ownership | 0.324** | 0.673 |
| | (0.146) | (0.497) |
| Chairman change | -0.077*** | -0.130** |
| | (0.016) | (0.066) |
| CEO change | -0.033*** | -0.032 |
| | (0.007) | (0.032) |
| Big ten audit | 0.077*** | 0.108*** |
| | (0.014) | (0.035) |
| Constant | -0.001 | -0.138 |
| | (0.117) | (0.257) |
| Observations | 358 | 358 |
| R-squared | 0.819 | 0.531 |
| F-statistics | 8.18*** | 2.05** |
| Firm fixed effects | Yes | Yes |

Fines & Warning is a dummy variable which is coded one if a firm subjects to both fines and warning sanctions simultaneously and zero otherwise. The remaining variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. CARs are calculated based on the market model. The dependent variable is CARs over a [0, 1] event window in the Model 1, and over a [-15, -6] pre-event window in the Model 2. Firm fixed effects are controlled.

## Appendix 2.5

Fraud recidivism

| Variables | Model 1 [0, 1] | Model 2 [-15, -6] |
|---|---|---|
| Criticism | 0.067*** | 0.091** |
| | (0.022) | (0.045) |
| Warning | 0.107*** | 0.259*** |
| | (0.032) | (0.045) |
| Condemnation | 0.047*** | 0.018 |
| | (0.017) | (0.045) |
| Fines | -0.068** | -0.215*** |
| | (0.027) | (0.044) |
| Rectification notice | 0.018 | 0.031 |
| | (0.016) | (0.023) |
| Regulatory concern | 0.024 | 0.102*** |
| | (0.026) | (0.039) |
| Letter of warning | 0.018 | -0.020 |
| | (0.014) | (0.038) |
| Duration | -0.012*** | -0.018*** |
| | (0.003) | (0.006) |
| Firm size | -0.009* | -0.011 |
| | (0.005) | (0.009) |
| Largest ownership | 0.528*** | 1.018*** |
| | (0.167) | (0.281) |
| Ownership form | 0.070*** | 0.007 |
| | (0.011) | (0.035) |
| Institutional ownership | 0.356** | 0.473 |
| | (0.169) | (0.512) |
| Chairman change | -0.059*** | -0.114** |
| | (0.018) | (0.048) |
| CEO change | -0.035*** | -0.038 |
| | (0.010) | (0.029) |
| Big ten audit | 0.080*** | 0.082** |
| | (0.018) | (0.038) |
| Constant | -0.017 | -0.114 |
| | (0.092) | (0.186) |
| Observations | 379 | 379 |
| R-squared | 0.598 | 0.415 |
| F-statistics | 8.07*** | 5.78*** |
| Firm fixed effects | Yes | Yes |

Cases with recidivism refer to a firm was punished multiple times in a firm-year. All of variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. CARs are calculated based on the market model. The dependent variable is CARs over a [0, 1] event window in the Model 1, and over a [-15, -6] pre-event window in the Model 2. Firm fixed effects are controlled.

## Appendix 2.6

Modified dependent variables

| Variables | Model 1 [-2, 2] | Model 2 [-5, 5] |
|---|---|---|
| Criticism | 0.202*** | 0.259*** |
| | (0.071) | (0.095) |
| Warning | 0.401*** | 0.493*** |
| | (0.117) | (0.159) |
| Condemnation | 0.159*** | 0.185** |
| | (0.059) | (0.086) |
| Fines | -0.184* | -0.269** |
| | (0.100) | (0.138) |
| Rectification notice | 0.147*** | 0.205*** |
| | (0.055) | (0.072) |
| Regulatory concern | 0.163** | 0.260** |
| | (0.079) | (0.108) |
| Letter of warning | 0.068* | 0.078 |
| | (0.040) | (0.054) |
| Duration | -0.027** | -0.038*** |
| | (0.011) | (0.014) |
| Firm size | -0.033** | -0.054** |
| | (0.016) | (0.023) |
| Largest ownership | 1.728*** | 2.517*** |
| | (0.508) | (0.664) |
| Ownership form | 0.072*** | 0.054 |
| | (0.027) | (0.039) |
| Institutional ownership | 1.737*** | 2.575*** |
| | (0.433) | (0.571) |
| Chairman change | -0.246*** | -0.328*** |
| | (0.047) | (0.059) |
| CEO change | -0.071*** | -0.094** |
| | (0.027) | (0.039) |
| Big ten audit | 0.160*** | 0.214*** |
| | (0.047) | (0.057) |
| Constant | -0.062 | 0.067 |
| | (0.300) | (0.423) |
| Observations | 358 | 358 |
| R-squared | 0.771 | 0.768 |
| F-statistics | 6.22*** | 4.84*** |
| Firm fixed effects | Yes | Yes |

All of variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. CARs are calculated based on the market model. The dependent variable is CARs over a [-2, 2] event window in the Model 1, and over a [-5, 5] event window in the Model 2. Firm fixed effects are controlled.

**Appendix 2.7**

Regression results: the size of fines and stock market reaction

| Variables | Model 1 | Model 2 |
|---|---|---|
| Regulatory fines | -0.006*** | -0.018*** |
| | (0.002) | (0.004) |
| Criticism | 0.081*** | 0.084 |
| | (0.027) | (0.052) |
| Warning | 0.030 | -0.038 |
| | (0.020) | (0.058) |
| Condemnation | 0.140*** | 0.237*** |
| | (0.027) | (0.053) |
| Rectification notice | 0.035** | 0.001 |
| | (0.017) | (0.028) |
| Regulatory concern | 0.054* | 0.077 |
| | (0.030) | (0.050) |
| Letter of warning | 0.025 | -0.039 |
| | (0.015) | (0.045) |
| Duration | -0.011*** | -0.026*** |
| | (0.004) | (0.006) |
| Firm size | -0.015*** | -0.013 |
| | (0.006) | (0.012) |
| Largest ownership | 0.651*** | 0.981*** |
| | (0.108) | (0.304) |
| Ownership form | 0.077*** | 0.010 |
| | (0.011) | (0.038) |
| Institutional ownership | 0.338** | 0.694 |
| | (0.150) | (0.492) |
| Chairman change | -0.081*** | -0.137** |
| | (0.016) | (0.067) |
| CEO change | -0.033*** | -0.031 |
| | (0.006) | (0.032) |
| Big ten audit | 0.070*** | 0.097*** |
| | (0.013) | (0.032) |
| Constant | 0.060 | -0.049 |
| | (0.106) | (0.233) |
| Observations | 358 | 358 |
| R-squared | 0.811 | 0.523 |
| F-statistics | 11.27*** | 4.95*** |
| Firm fixed effects | Yes | Yes |

Regulatory fines are define as the natural logarithm of one plus the amounts of fines imposed by regulators. The remaining variables are defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The dependent variable is CARs over a [0, 1] event window in the Model 1, and over a [-15, -6] pre-event window in the Model 2. Firm fixed effects are controlled.

**Appendix 2.8**

Regression results: winsorizing dependent variable at 99%.

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| Criticism | 0.052** | | 0.046*** | 0.060 | | 0.064 |
| | (0.022) | | (0.015) | (0.051) | | (0.050) |
| Warning | 0.072*** | | 0.067*** | 0.164*** | | 0.184*** |
| | (0.014) | | (0.010) | (0.035) | | (0.040) |
| Condemnation | 0.009 | | 0.010 | -0.055 | | -0.059 |
| | (0.016) | | (0.014) | (0.054) | | (0.056) |
| Fines | -0.036*** | | -0.026*** | -0.175*** | | -0.199*** |
| | (0.012) | | (0.009) | (0.031) | | (0.042) |
| Rectification notice | 0.012 | | 0.017* | -0.021 | | -0.016 |
| | (0.012) | | (0.009) | (0.024) | | (0.027) |
| Regulatory concern | 0.026 | | 0.018 | 0.052 | | 0.070 |
| | (0.026) | | (0.018) | (0.046) | | (0.056) |
| Letter of warning | 0.020 | | 0.020** | -0.043 | | -0.043 |
| | (0.013) | | (0.009) | (0.043) | | (0.042) |
| Income fraud | | -0.013* | -0.018** | | 0.016 | 0.033 |
| | | (0.007) | (0.008) | | (0.042) | (0.045) |
| Balance sheet fraud | | -0.008 | 0.007 | | -0.062 | 0.015 |
| | | (0.011) | (0.010) | | (0.098) | (0.056) |
| Disclosure fraud | | 0.036*** | 0.034*** | | 0.011 | -0.001 |
| | | (0.006) | (0.007) | | (0.030) | (0.030) |
| Duration | -0.008** | -0.005* | -0.006** | -0.023*** | -0.020*** | -0.023*** |
| | (0.003) | (0.003) | (0.003) | (0.006) | (0.007) | (0.006) |
| Firm size | -0.012** | 0.002 | -0.002 | -0.009 | 0.007 | -0.014 |
| | (0.005) | (0.004) | (0.004) | (0.011) | (0.016) | (0.014) |
| Largest ownership | 0.318*** | 0.168** | 0.306*** | 0.649*** | 0.190 | 0.678*** |
| | (0.070) | (0.076) | (0.046) | (0.235) | (0.248) | (0.231) |
| Ownership form | 0.078*** | 0.081*** | 0.087*** | 0.010 | -0.017 | 0.005 |
| | (0.012) | (0.010) | (0.008) | (0.038) | (0.034) | (0.034) |
| Institutional ownership | 0.111 | 0.050 | 0.029 | 0.486 | 0.401 | 0.488 |
| | (0.137) | (0.108) | (0.073) | (0.454) | (0.475) | (0.426) |
| Chairman change | -0.055*** | -0.048*** | -0.060*** | -0.110* | -0.078 | -0.107* |
| | (0.017) | (0.012) | (0.013) | (0.062) | (0.074) | (0.063) |
| CEO change | -0.026*** | -0.038*** | -0.035*** | -0.026 | -0.033 | -0.029 |
| | (0.008) | (0.009) | (0.007) | (0.031) | (0.031) | (0.034) |
| Big ten audit | 0.051*** | 0.064*** | 0.060*** | 0.079** | 0.060 | 0.084** |
| | (0.013) | (0.017) | (0.011) | (0.031) | (0.049) | (0.033) |
| Constant | 0.114 | -0.127 | -0.104 | 0.004 | -0.190 | 0.097 |
| | (0.083) | (0.085) | (0.083) | (0.206) | (0.335) | (0.273) |
| Observations | 358 | 358 | 358 | 358 | 358 | 358 |
| R-squared | 0.730 | 0.713 | 0.860 | 0.448 | 0.198 | 0.464 |
| F-statistics | 10.79*** | 17.03*** | 47.20*** | 9.56*** | 1.08 | 5.89*** |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |

All of the variables are defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The dependent variable is CARs over a [0, 1] event window in the Model 1-3, and over a [-15, -6] pre-event window in the Model 4-6. Firm fixed effects are controlled.

**Appendix 2.9**

Regression results: trimming dependent variable at 99%.

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| Criticism | 0.060** | | 0.050*** | 0.037 | | 0.039 |
| | (0.026) | | (0.019) | (0.056) | | (0.052) |
| Warning | 0.087*** | | 0.077*** | 0.119** | | 0.121** |
| | (0.023) | | (0.019) | (0.047) | | (0.061) |
| Condemnation | 0.015 | | 0.014 | -0.073 | | -0.081 |
| | (0.019) | | (0.015) | (0.054) | | (0.055) |
| Fines | -0.045*** | | -0.033** | -0.149*** | | -0.155*** |
| | (0.014) | | (0.013) | (0.035) | | (0.054) |
| Rectification notice | 0.018 | | 0.020* | -0.039 | | -0.032 |
| | (0.016) | | (0.012) | (0.029) | | (0.030) |
| Regulatory concern | 0.033 | | 0.020 | 0.030 | | 0.059 |
| | (0.030) | | (0.021) | (0.049) | | (0.058) |
| Letter of warning | 0.021 | | 0.020** | -0.047 | | -0.046 |
| | (0.014) | | (0.010) | (0.043) | | (0.041) |
| Income fraud | | -0.007 | -0.021*** | | 0.037 | 0.049 |
| | | (0.006) | (0.007) | | (0.040) | (0.045) |
| Balance sheet fraud | | -0.015 | 0.014 | | -0.086 | -0.027 |
| | | (0.009) | (0.010) | | (0.090) | (0.066) |
| Disclosure fraud | | 0.040*** | 0.033*** | | 0.028 | 0.010 |
| | | (0.007) | (0.007) | | (0.027) | (0.031) |
| Duration | -0.009** | -0.004 | -0.007** | -0.021*** | -0.014* | -0.020*** |
| | (0.004) | (0.003) | (0.003) | (0.006) | (0.007) | (0.006) |
| Firm size | -0.013** | 0.002 | -0.003 | -0.006 | 0.008 | -0.011 |
| | (0.005) | (0.004) | (0.005) | (0.011) | (0.014) | (0.015) |
| Largest ownership | 0.398*** | 0.086 | 0.351*** | 0.414 | -0.124 | 0.400 |
| | (0.109) | (0.063) | (0.082) | (0.274) | (0.181) | (0.294) |
| Ownership form | 0.078*** | 0.082*** | 0.087*** | 0.012 | -0.013 | 0.007 |
| | (0.012) | (0.010) | (0.008) | (0.038) | (0.035) | (0.036) |
| Institutional ownership | 0.171 | -0.052 | 0.069 | 0.308 | 0.010 | 0.244 |
| | (0.159) | (0.121) | (0.098) | (0.462) | (0.462) | (0.434) |
| Chairman change | -0.061*** | -0.039*** | -0.063*** | -0.093 | -0.044 | -0.086 |
| | (0.018) | (0.012) | (0.014) | (0.062) | (0.070) | (0.064) |
| CEO change | -0.028*** | -0.038*** | -0.036*** | -0.020 | -0.031 | -0.022 |
| | (0.008) | (0.009) | (0.007) | (0.030) | (0.029) | (0.033) |
| Big ten audit | 0.056*** | 0.061*** | 0.062*** | 0.066** | 0.047 | 0.069** |
| | (0.014) | (0.018) | (0.012) | (0.034) | (0.047) | (0.035) |
| Constant | 0.099 | -0.110 | -0.112 | 0.047 | -0.125 | 0.142 |
| | (0.079) | (0.083) | (0.080) | (0.192) | (0.297) | (0.258) |
| Observations | 352 | 352 | 352 | 352 | 352 | 352 |
| R-squared | 0.714 | 0.711 | 0.849 | 0.363 | 0.137 | 0.382 |
| F-statistics | 8.33*** | 18.63*** | 31.94*** | 7.51*** | 0.77 | 3.73*** |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |

All of the variables are defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The dependent variable is CARs over a [0, 1] event window in the Model 1-3, and over a [-15, -6] pre-event window in the Model 4-6. Firm fixed effects are controlled.

**Appendix 2.10**

Regression results: SSSR and CARs

| Variables | Model 1 [0, 1] | Model 2 [-15, -6] |
|---|---|---|
| Criticism | 0.085*** | 0.092* |
| | (0.026) | (0.051) |
| Warning | 0.110*** | 0.187*** |
| | (0.017) | (0.036) |
| Condemnation | 0.036* | -0.028 |
| | (0.020) | (0.057) |
| Fines | -0.051*** | -0.178*** |
| | (0.013) | (0.025) |
| Rectification notice | 0.039** | 0.006 |
| | (0.017) | (0.028) |
| Regulatory concern | 0.055* | 0.079 |
| | (0.031) | (0.049) |
| Letter of warning | 0.026* | -0.037 |
| | (0.016) | (0.046) |
| Duration | -0.012*** | -0.026*** |
| | (0.004) | (0.006) |
| Firm size | -0.013** | -0.009 |
| | (0.006) | (0.012) |
| Largest ownership | 0.652*** | 0.975*** |
| | (0.096) | (0.293) |
| Ownership form | 0.074*** | 0.006 |
| | (0.011) | (0.038) |
| Institutional ownership | 0.324** | 0.673 |
| | (0.146) | (0.497) |
| Chairman change | -0.077*** | -0.130** |
| | (0.016) | (0.066) |
| CEO change | -0.033*** | -0.032 |
| | (0.007) | (0.032) |
| Big ten audit | 0.077*** | 0.108*** |
| | (0.014) | (0.035) |
| SSSR | -0.077*** | -0.117* |
| | (0.025) | (0.069) |
| Constant | 0.038 | -0.078 |
| | (0.113) | (0.238) |
| Observations | 358 | 358 |
| R-squared | 0.819 | 0.531 |
| F-statistics | 8.18*** | 2.05** |
| Firm fixed effects | Yes | Yes |

SSSR equals to one if a firm-year observation has completed the split share structure reform and zero otherwise. The remaining variables are as defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. CARs are calculated based on the market model. The dependent variable is CARs over a [0, 1] event window in the Model 1, and over a [-15, -6] event window in the Model 2. Firm fixed effects are controlled.

## Appendix 2.11

Regression results: selection of a different reference group

| Variables | Model 1 | Model 2 |
|---|---|---|
| Fines | -0.036*** | -0.131*** |
| | (0.010) | (0.039) |
| Criticism | 0.012 | 0.073 |
| | (0.023) | (0.053) |
| Condemnation | -0.026** | -0.046 |
| | (0.011) | (0.043) |
| Rectification notice | -0.017** | -0.022 |
| | (0.008) | (0.019) |
| Regulatory concern | -0.008 | 0.055 |
| | (0.025) | (0.043) |
| Letter of warning | -0.001 | -0.001 |
| | (0.016) | (0.038) |
| Duration | -0.008* | -0.021*** |
| | (0.004) | (0.006) |
| Firm size | -0.009* | -0.011 |
| | (0.005) | (0.011) |
| Largest ownership | 0.199** | 0.246 |
| | (0.096) | (0.237) |
| Ownership form | 0.078*** | 0.012 |
| | (0.012) | (0.038) |
| Institutional ownership | 0.099 | 0.228 |
| | (0.184) | (0.451) |
| Chairman change | -0.053*** | -0.077 |
| | (0.019) | (0.061) |
| CEO change | -0.024** | -0.020 |
| | (0.011) | (0.028) |
| Big ten audit | 0.046*** | 0.042 |
| | (0.013) | (0.037) |
| Constant | 0.133 | 0.196 |
| | (0.087) | (0.201) |
| Observations | 344 | 344 |
| R-squared | 0.631 | 0.334 |
| F-statistics | 6.73*** | 3.57*** |
| Firm fixed effects | Yes | Yes |

The previous regression analysis uses no firm-level punishment (14 cases) as the reference group. This robustness test deletes these 14 cases and selects warnings as the reference group. It is observed that the main regression results remain unchanged. The variables are defined in the Table 5.2. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels. The dependent variable is CARs over a [0, 1] event window in the Model 1, and over a [-15, -6] pre-event window in the Model 2. Firm fixed effects are controlled.

# Appendix 3 Supplemental tables for Chapter 6
## Appendix 3.1

Mutual funds and accounting fraud: ownership data from the CSMAR database

| Variables | P(F) | P(D\|F) |
|---|---|---|
| Mutual funds | -5.221*** | 5.961*** |
| | (1.413) | (2.313) |
| Other institutions | -1.073 | 1.338 |
| | (0.740) | (1.134) |
| Firm size | -0.041*** | |
| | (0.012) | |
| Duality | 0.054* | |
| | (0.033) | |
| Board meeting | 0.061* | |
| | (0.033) | |
| Big4 | -0.028 | |
| | (0.053) | |
| SBSIZE | -0.020 | |
| | (0.012) | |
| R&D | 4.322 | -7.440 |
| | (3.979) | (4.990) |
| Political tie | -0.532* | 0.959 |
| | (0.284) | (0.609) |
| Leverage | | -0.001 |
| | | (0.002) |
| Growth | | 0.024 |
| | | (0.015) |
| ROA | | -0.402 |
| | | (0.286) |
| Stock returns | | -0.084*** |
| | | (0.029) |
| Abnormal volatility | | 0.875** |
| | | (0.345) |
| Abnormal turnover | | 0.294** |
| | | (0.148) |
| Constant | -0.100 | 1.085*** |
| | (0.291) | (0.242) |
| Log likelihood | | -2048.301 |
| Chi-squared (d.f.) | | 100.94(19) |
| Prob > chi2 | | 0.000 |
| Observations | 13,054 | 13,054 |

All of the variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

**Appendix 3.2**

Supplemental descriptive statistics

| Panel A: Summary of firms that commit accounting fraud | | | |
|---|---|---|---|
| Year | No. fraud observations | No. all observations | Proportion |
| 2007 | 34 | 1,315 | 2.586% |
| 2008 | 27 | 1,352 | 1.997% |
| 2009 | 51 | 1,450 | 3.517% |
| 2010 | 58 | 1,532 | 3.786% |
| 2011 | 59 | 1,584 | 3.725% |
| 2012 | 89 | 1,806 | 4.928% |
| 2013 | 113 | 1,961 | 5.762% |
| 2014 | 72 | 2,054 | 3.505% |
| Total | 503 | 13,054 | 3.853% |

| Panel B: Types of accounting fraud | | |
|---|---|---|
| Types | No. of cases | Description |
| Income statement fraud | 277 | A firm manipulates its income statement items (e.g. revenue, costs, expenses, impairment losses, investment profits or losses) |
| Balance sheet fraud | 156 | A firm manipulates its balance sheet items (i.e. assets, liabilities and equities) |
| Cash flow fraud | 22 | A firm manipulates operating, investing or financing cash flows or cash equivalents |
| Improper consolidation | 27 | A firm improperly consolidates its financial statements |
| Delayed annual reports | 15 | A firm delays its disclosure of annual reports |
| Insufficient or false disclosure information | 695 | A firm conceals or untruthfully discloses information in the financial statements |

| Panel C: Distribution of institutional investors | | | |
|---|---|---|---|
| Institutional investors | No. fraud firm-year observations have the following institutional investors | No. all firm-year observations have the following institutional investors | % of fraud firm-year observations have the following institutional investors |
| Mutual fund | 329 | 10,219 | 3.219% |
| QFII | 27 | 1,389 | 1.944% |
| Securities firms | 120 | 3,125 | 3.840% |
| Insurance firms | 65 | 2,607 | 2.493% |
| Pension funds | 52 | 2,086 | 2.493% |
| Trust firms | 80 | 1,661 | 4.816% |
| Financial firms | 10 | 343 | 2.915% |
| Other investors | 381 | 9,504 | 4.009% |

## Appendix 3.3

Correlation matrix

| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] |
|---|---|---|---|---|---|---|---|---|---|---|
| [1]Accounting fraud | 1 | | | | | | | | | |
| [2]Mutual funds | -0.051*** | 1 | | | | | | | | |
| [3]Other institutions | -0.01 | -0.039*** | 1 | | | | | | | |
| [4]Firm size | -0.058*** | 0.221*** | 0.057*** | 1 | | | | | | |
| [5]Duality | 0.026*** | 0 | 0.020** | -0.132*** | 1 | | | | | |
| [6]Meetings | 0.01 | 0.065*** | 0.008 | 0.166*** | -0.009 | 1 | | | | |
| [7]Big4 | -0.024*** | 0.034*** | 0.100*** | 0.348*** | -0.035*** | 0.047*** | 1 | | | |
| [8]SB size | -0.033*** | 0.032*** | 0.046*** | 0.225*** | -0.131*** | -0.030*** | 0.079*** | 1 | | |
| [9]R&D | -0.011 | 0.116*** | 0.021** | -0.044*** | 0.117*** | -0.039*** | 0.030*** | -0.089*** | 1 | |
| [10]Political ties | 0.004 | 0.050*** | 0.035*** | 0.031*** | 0.244*** | 0.021** | 0.018** | -0.057*** | 0.052*** | 1 |
| [11]Leverage | 0.002 | -0.012 | -0.001 | -0.103*** | 0.016* | 0.001 | -0.005 | -0.009 | -0.016* | -0.009 |
| [11]Growth | -0.002 | -0.004 | 0.029*** | -0.001 | -0.001 | 0.004 | -0.003 | -0.007 | -0.005 | 0 |
| [13]ROA | -0.008 | 0.027*** | 0.007 | 0.012 | 0.005 | 0.002 | 0.004 | -0.002 | 0.012 | 0.005 |
| [14]Stock returns | -0.034*** | 0.120*** | -0.043*** | -0.099*** | -0.021** | -0.011 | -0.039*** | 0.028*** | -0.085*** | -0.048*** |
| [15]Volatility | 0.022** | -0.046*** | -0.011 | -0.075*** | 0.018** | 0.024*** | -0.034*** | -0.020** | -0.009 | 0.004 |
| [16]Turnover | 0.054*** | -0.206*** | -0.125*** | -0.310*** | 0.023*** | -0.026*** | -0.182*** | -0.071*** | -0.037*** | -0.026*** |

**Appendix 3.3 (continued)**

Correlation matrix

|  | [11] | [12] | [13] | [14] | [15] | [16] |
|---|---|---|---|---|---|---|
| [11]Leverage | 1 | | | | | |
| [11]Growth | 0 | 1 | | | | |
| [13]ROA | -0.041*** | 0 | 1 | | | |
| [14]Stock returns | 0.004 | -0.002 | 0.011 | 1 | | |
| [15]Volatility | 0.007 | 0.004 | 0 | 0.288*** | 1 | |
| [16]Turnover | 0.01 | -0.008 | 0.008 | 0.092*** | 0.106*** | 1 |

All of the variables are defined in the Table 6.1. Open-end funds, Closed-end funds, Mutual funds*SOEs are not included in the correlation table as they are part of the mutual funds and are used to test different hypotheses. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively.

## Appendix 3.4

### Mutual funds, R&D and accounting fraud

| Variables | P(F) | P(D\|F) | P(F) | P(D\|F) | P(F) | P(D\|F) |
|---|---|---|---|---|---|---|
| Mutual funds | -3.148*** | 4.440*** | | | -2.385*** | 4.053*** |
| | (0.560) | (0.728) | | | (0.734) | (0.978) |
| Open-end funds | | | -2.114*** | 3.816*** | | |
| | | | (0.575) | (1.292) | | |
| Closed-end funds | | | 11.029 | -12.482 | | |
| | | | (7.697) | (8.838) | | |
| Mutual funds*SOEs | | | | | -0.946 | 0.494 |
| | | | | | (1.403) | (2.178) |
| Firm size | -0.052*** | | -0.068*** | | -0.047*** | |
| | (0.013) | | (0.015) | | (0.012) | |
| Duality | 0.061** | | 0.076* | | 0.060** | |
| | (0.031) | | (0.041) | | (0.030) | |
| Board meeting | 0.031 | | 0.041 | | 0.023 | |
| | (0.034) | | (0.042) | | (0.033) | |
| Big4 | -0.020 | | -0.010 | | -0.032 | |
| | (0.051) | | (0.069) | | (0.050) | |
| SBSIZE | -0.023* | | -0.031** | | -0.018 | |
| | (0.013) | | (0.015) | | (0.012) | |
| R&D | 10.727*** | -13.949*** | 7.103* | -9.417* | 9.023** | -12.067*** |
| | (3.832) | (4.443) | (4.297) | (4.991) | (3.990) | (4.612) |
| Political tie | -0.061 | 0.132 | 0.155 | -0.177 | -0.111 | 0.201 |
| | (0.220) | (0.315) | (0.220) | (0.316) | (0.218) | (0.316) |
| Leverage | | 0.565*** | | 0.792*** | | 0.558*** |
| | | (0.138) | | (0.175) | | (0.147) |
| Growth | | -0.001 | | 0.037** | | 0.025** |
| | | (0.001) | | (0.014) | | (0.013) |
| ROA | | -0.728*** | | -1.146*** | | -0.721*** |
| | | (0.177) | | (0.395) | | (0.191) |
| Stock returns | | -0.098*** | | -0.142*** | | -0.099*** |
| | | (0.026) | | (0.039) | | (0.026) |
| Abnormal volatility | | 0.966*** | | 1.026*** | | 0.793*** |
| | | (0.313) | | (0.306) | | (0.292) |
| Abnormal turnover | | 0.260** | | 0.406** | | 0.294** |
| | | (0.122) | | (0.167) | | (0.126) |
| Constant | 0.017 | 1.039*** | 0.373 | 0.733*** | -0.077 | 1.038*** |
| | (0.267) | (0.170) | (0.314) | (0.233) | (0.264) | (0.168) |
| Log likelihood | | -2019.235 | | -2017.078 | | -2009.796 |
| Chi-squared (d.f.) | | 98.90(17) | | 72.55(19) | | 86.93(19) |
| Prob > chi2 | | 0.000 | | 0.000 | | 0.000 |
| Observations | 13,054 | 13,054 | 13,054 | 13,054 | 13,054 | 13,054 |

All of the variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

## Appendix 3.5

Propensity Score Matching *(Nearest neighbor matching 1:4)*

The propensity score is defined as the conditional probability of receiving a treatment given pre-treatment characteristics.

$$p(X) = \Pr[D = 1 \,|\, X] = E[D \,|\, X] \tag{10}$$

Where the $X$ refers to the multidimensional vector of characteristics of the control group, $D$ is the indicator variable, which equals to one if mutual funds hold at least 5% of a firm's equity and zero otherwise. Theoretically, after computing $p(X_i)$, the average effect of treatment on the treated (*ATT*) can be calculated by taking the differences of the potential outcomes between treated group and control group (Lian et al., 2011).

$$ATT = E[Y_{1i} - Y_{0i} \,|\, D_i = 1] = E\{E[Y_{1i} - Y_{0i} \,|\, D_i = 1, p(X_i)]\} \tag{11}$$

$$= E\{E[Y_{1i} \,|\, D_i = 1, p(X_i)] - E[Y_{0i} \,|\, D_i = 0, p(X_i)] \,|\, D_i = 1\}$$

Where $Y_{1i}$ and $Y_{0i}$ refer to the potential outcomes of the treated group and the control group respectively. To estimate propensity score, a logit model is used with HI_Mutual as the dependent variable and financial control variables as regressors.

| Variables | HI_Mutual |
|---|---|
| Leverage | -0.246*** |
| | (0.029) |
| Growth | -0.001 |
| | (0.001) |
| ROA | 0.310*** |
| | (0.035) |
| Stock returns | 0.214*** |
| | (0.012) |
| Abnormal volatility | -0.923*** |
| | (0.175) |
| Abnormal turnover | -1.407*** |
| | (0.073) |
| R&D | 9.838*** |
| | (0.798) |
| Constant | -0.711*** |
| | (0.021) |
| Log likelihood | -7102.388 |
| Chi-squared (d.f.) | 979.84(7)*** |
| Observations | 13,054 |

The thesis estimates *ATT* through nearest-neighbor matching, which is used to search the closest control sample from the estimated propensity score values of the treated group. Following Lemmon and Roberts (2010), the thesis chooses one to four matching because if offers the benefits of yielding higher precision than one to one matching at the cost of small increase in bias (Rassen et al., 2012). However, the thesis notes that changing the number of matches to any number between 1 and 4 has little impact on the results.

| Variable | Sample | Treated | Controls | Difference | S.E. | T-stat |
|---|---|---|---|---|---|---|
| Accounting fraud | Unmatched | 0.024 | 0.044 | -0.020 | 0.004 | -5.13 |
| | ATT | 0.024 | 0.034 | -0.010 | 0.004 | -2.35 |

Evaluating balance in the matched samples

| Variable | Unmatched Matched | Mean Treated | Control | %reduct %bias | bias | t-test t | p>t | V(T)/V(C) |
|---|---|---|---|---|---|---|---|---|
| Leverage | U | 0.486 | 0.718 | -3.50 | | -1.46 | 0.144 | 0.00* |
| | M | 0.486 | 0.487 | 0.00 | 99.5 | -0.10 | 0.923 | 0.08* |
| Growth | U | 4.652 | 15.621 | -1.10 | | -0.47 | 0.640 | 0.03* |
| | M | 4.652 | 11.162 | -0.70 | 40.7 | -0.33 | 0.741 | 0.05* |
| ROA | U | 0.074 | 0.027 | 6.80 | | 2.83 | 0.005 | 0.00* |
| | M | 0.074 | 0.062 | 1.80 | 73.9 | 0.96 | 0.336 | 0.01* |
| Stock returns | U | 0.629 | 0.352 | 26.10 | | 13.63 | 0.000 | 1.32* |
| | M | 0.629 | 0.683 | -5.00 | 80.8 | -1.81 | 0.070 | 0.71* |
| Abnormal volatility | U | -0.008 | 0.001 | -8.50 | | -3.71 | 0.000 | 0.12* |
| | M | -0.008 | -0.005 | -3.40 | 59.8 | -1.87 | 0.062 | 0.23* |
| Abnormal turnover | U | -0.051 | 0.021 | -40.10 | | -19.56 | 0.000 | 0.72* |
| | M | -0.051 | -0.049 | -1.00 | 97.5 | -0.46 | 0.645 | 0.97 |
| R&D | U | 0.011 | 0.007 | 23.80 | | 13.47 | 0.000 | 2.48* |
| | M | 0.011 | 0.011 | 0.50 | 98.1 | 0.16 | 0.871 | 1.06 |

For overall samples

| Sample | Mean Bias | Median Bias |
|---|---|---|
| Unmatched | 15.7 | 8.5 |
| Matched | 1.8 | 1.0 |

The balancing is good for all covariates: abs(bias)≤5% and t-tests are not significant in the matched samples at 5% significance level. In addition, the overall matching performance is good: after matching the average (median) bias is reduced to 1.8 (1.0).

## Appendix 3.6

Mutual funds and corporate fraud

| Variables | P(F) | P(D\|F) |
|---|---|---|
| Mutual funds | -2.600*** | 3.853*** |
| | (0.560) | (1.174) |
| Other institutions | 0.721 | -0.900 |
| | (0.619) | (0.779) |
| Firm size | -0.072*** | |
| | (0.013) | |
| Duality | 0.095*** | |
| | (0.034) | |
| Board meetings | 0.135*** | |
| | (0.040) | |
| Big4 | -0.157*** | |
| | (0.057) | |
| SBSIZE | -0.027** | |
| | (0.013) | |
| R&D | 10.847*** | -11.138*** |
| | (3.536) | (3.838) |
| Political ties | 0.273 | -0.182 |
| | (0.181) | (0.240) |
| Leverage | | 0.621*** |
| | | (0.118) |
| Growth | | 0.017 |
| | | (0.029) |
| ROA | | -0.582** |
| | | (0.264) |
| Stock returns | | -0.168*** |
| | | (0.031) |
| Abnormal volatility | | 1.741*** |
| | | (0.564) |
| Abnormal turnover | | 0.324** |
| | | (0.133) |
| Constant | 0.656** | 0.729*** |
| | (0.286) | (0.185) |
| Log likelihood | | -4442.623 |
| Chi-squared (d.f.) | | 156.56(19) |
| Prob > chi$^2$ | | 0.000 |
| Observations | 13,054 | 13,054 |

The dependent variable is corporate fraud (i.e. accounting fraud and market manipulation), which equals to one if a firm commits corporate fraud and zero otherwise. The control variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

**Appendix 3.7**

Mutual funds and power balance

| Variables | P(F) | P(D\|F) |
|---|---|---|
| Mutual funds/Top1 | -0.547*** | 0.826*** |
| | (0.139) | (0.242) |
| Other institutions | -0.450 | 0.640 |
| | (0.472) | (0.734) |
| Firm size | -0.057*** | |
| | (0.013) | |
| Duality | 0.063* | |
| | (0.033) | |
| Board meetings | 0.031 | |
| | (0.035) | |
| Big4 | -0.016 | |
| | (0.053) | |
| SBSIZE | -0.023* | |
| | (0.013) | |
| R&D | 9.667** | -12.638*** |
| | (4.062) | (4.676) |
| Political ties | -0.128 | 0.239 |
| | (0.216) | (0.324) |
| Leverage | | 0.607*** |
| | | (0.149) |
| Growth | | 0.028** |
| | | (0.013) |
| ROA | | -0.793*** |
| | | (0.292) |
| Stock returns | | -0.108*** |
| | | (0.028) |
| Abnormal volatility | | 0.786*** |
| | | (0.276) |
| Abnormal turnover | | 0.297** |
| | | (0.130) |
| Constant | 0.166 | 0.940*** |
| | (0.288) | (0.207) |
| Log likelihood | | -2017.174 |
| Chi-squared (d.f.) | | 75.59(19) |
| Prob > chi$^2$ | | 0.000 |
| Observations | 13,054 | 13,054 |

Mutual funds/Top 1 ownership is calculated as the ratio of mutual fund ownership to largest shareholder's ownership of a listed firm. The control variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

## Appendix 3.8

Impact of changes in mutual fund ownership on accounting fraud

| Variables | P(F) | P(D|F) |
|---|---|---|
| Mutual_diff | -4.170*** | 5.401*** |
| | (1.345) | (1.938) |
| Other institutions | -0.732 | 1.124 |
| | (0.466) | (0.827) |
| Firm size | -0.063*** | |
| | (0.013) | |
| Duality | 0.068* | |
| | (0.037) | |
| Board meetings | 0.034 | |
| | (0.039) | |
| Big4 | -0.014 | |
| | (0.064) | |
| SBSIZE | -0.027* | |
| | (0.014) | |
| R&D | 7.784 | -10.034 |
| | (5.166) | (6.135) |
| Political ties | -0.238 | 0.426 |
| | (0.194) | (0.311) |
| Leverage | | 0.677*** |
| | | (0.148) |
| Growth | | 0.043** |
| | | (0.018) |
| ROA | | -0.883*** |
| | | (0.221) |
| Stock returns | | -0.115*** |
| | | (0.031) |
| Abnormal volatility | | 0.869*** |
| | | (0.297) |
| Abnormal turnover | | 0.338** |
| | | (0.147) |
| Constant | 0.353 | 0.739*** |
| | (0.290) | (0.223) |
| Log likelihood | | -2018.096 |
| Chi-squared (d.f.) | | 87.72(19) |
| Prob > chi$^2$ | | 0.000 |
| Observations | 13,054 | 13,054 |

Mutual_diff measures the changes of mutual fund ownership between year t and year t-1. The control variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

## Appendix 3.9

Governance variables included in both commission and detection models

| Variables | P(F) | P(D|F) |
|---|---|---|
| Mutual funds | -4.592*** | 9.025*** |
| | (0.969) | (1.544) |
| Mutual funds*SOEs | 2.256 | -8.350 |
| | (4.089) | (5.492) |
| Other institutions | -0.696 | 0.969 |
| | (0.601) | (1.080) |
| Firm size | 0.053 | -0.217* |
| | (0.080) | (0.114) |
| Duality | -0.075 | 0.294 |
| | (0.260) | (0.444) |
| Board meetings | 0.141 | -0.152 |
| | (0.189) | (0.279) |
| Big4 | 1.408** | -1.397* |
| | (0.654) | (0.733) |
| SBSIZE | -0.042 | 0.004 |
| | (0.054) | (0.071) |
| R&D | 2.067 | -3.508 |
| | (9.020) | (11.203) |
| Political ties | -0.309 | 0.589 |
| | (0.237) | (0.403) |
| Leverage | -0.012 | 1.224*** |
| | (0.010) | (0.310) |
| Growth | -0.001 | 0.062** |
| | (0.001) | (0.030) |
| ROA | 0.097 | -1.719*** |
| | (0.161) | (0.606) |
| Stock returns | | -0.215*** |
| | | (0.064) |
| Abnormal volatility | | 1.669*** |
| | | (0.566) |
| Abnormal turnover | | 0.504* |
| | | (0.272) |
| Constant | -2.015 | 4.147** |
| | (1.477) | (1.922) |
| Log likelihood | | -1993.223 |
| Chi-squared (d.f.) | | 216.74(29) |
| Prob > chi$^2$ | | 0.000 |
| Observations | 13,054 | 13,054 |

All of the variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

**Appendix 3.10**

Changes in mutual fund ownership following accounting fraud

| Variables | P(F) |
|---|---|
| Accounting fraud | -0.005** |
| | (0.002) |
| Firm size | -0.007*** |
| | (0.001) |
| Duality | -0.001 |
| | (0.002) |
| Board meetings | 0.002 |
| | (0.002) |
| Big4 | 0.005*** |
| | (0.002) |
| SBSIZE | 0.001 |
| | (0.001) |
| R&D | 0.049 |
| | (0.045) |
| Political ties | -0.001 |
| | (0.002) |
| Leverage | -0.001** |
| | (0.001) |
| Growth | -0.001*** |
| | (0.001) |
| ROA | -0.001 |
| | (0.001) |
| Stock returns | 0.016*** |
| | (0.001) |
| Abnormal volatility | -0.033*** |
| | (0.004) |
| Abnormal turnover | -0.007** |
| | (0.003) |
| Constant | 0.130*** |
| | (0.010) |
| F-statistic | 68.38*** |
| R-squared | 0.073 |
| Observations | 13,054 |

This Table displays the result of an OLS regression model. The changes of mutual fund ownership between year t+1 and year t are used as the dependent variable and regressed on accounting fraud and control variables. The control variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively.

## Appendix 3.11

Governance and financial variables included in both commission and detection models

| Variables | P(F) | P(D|F) |
|---|---|---|
| Mutual funds | -4.592*** | 9.025*** |
| | (0.969) | (1.544) |
| Mutual funds*SOEs | 2.256 | -8.350 |
| | (4.089) | (5.492) |
| Other institutions | -0.696 | 0.969 |
| | (0.601) | (1.080) |
| Firm size | 0.053 | -0.217* |
| | (0.080) | (0.114) |
| Duality | -0.075 | 0.294 |
| | (0.260) | (0.444) |
| Board meetings | 0.141 | -0.152 |
| | (0.189) | (0.279) |
| Big4 | 1.408** | -1.397* |
| | (0.654) | (0.733) |
| SBSIZE | -0.042 | 0.004 |
| | (0.054) | (0.071) |
| R&D | 2.067 | -3.508 |
| | (9.020) | (11.203) |
| Political ties | -0.309 | 0.589 |
| | (0.237) | (0.403) |
| Leverage | -0.012 | 1.224*** |
| | (0.010) | (0.310) |
| Growth | -0.001 | 0.062** |
| | (0.001) | (0.030) |
| ROA | 0.097 | -1.719*** |
| | (0.161) | (0.606) |
| Stock returns | | -0.215*** |
| | | (0.064) |
| Abnormal volatility | | 1.669*** |
| | | (0.566) |
| Abnormal turnover | | 0.504* |
| | | (0.272) |
| Constant | -2.015 | 4.147** |
| | (1.477) | (1.922) |
| Log likelihood | | -1993.223 |
| Chi-squared (d.f.) | | 216.74(29) |
| Prob > chi$^2$ | | 0.000 |
| Observations | 13,054 | 13,054 |

All variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.

**Appendix 3.12**

Mutual funds, SSSR and accounting fraud

| Variables | P(F) | P(D|F) |
|---|---|---|
| Mutual funds | -3.097*** | 4.496*** |
| | (0.528) | (0.705) |
| Other institutions | -0.338 | 0.474 |
| | (0.479) | (0.729) |
| Firm size | -0.056*** | |
| | (0.013) | |
| Duality | 0.061* | |
| | (0.032) | |
| Board meeting | 0.030 | |
| | (0.035) | |
| Big4 | -0.023 | |
| | (0.054) | |
| SBSIZE | -0.022* | |
| | (0.013) | |
| SSSR | -0.041 | |
| | (0.030) | |
| R&D | 9.445** | -12.860*** |
| | (4.013) | (4.730) |
| Political tie | -0.102 | 0.199 |
| | (0.208) | (0.310) |
| Leverage | | 0.619*** |
| | | (0.156) |
| Growth | | 0.029** |
| | | (0.013) |
| ROA | | -0.799*** |
| | | (0.202) |
| Stock returns | | -0.105*** |
| | | (0.028) |
| Abnormal volatility | | 0.792*** |
| | | (0.279) |
| Abnormal turnover | | 0.322** |
| | | (0.134) |
| Constant | 0.168 | 0.954*** |
| | (0.294) | (0.198) |
| Log likelihood | | -2014.017 |
| Chi-squared (d.f.) | | 107.24(20) |
| Prob > chi2 | | 0.000 |
| Observations | 13,054 | 13,054 |

SSSR equals to one if a firm-year observation has completed the split share structure reform and zero otherwise. The remaining variables are defined in the Table 6.1. ***, ** and *, denote statistical significance at the 1%, 5% and 10% levels respectively. P(F) is the probability of fraud commitment and P(D|F) is the probability of fraud detection conditional on fraud commitment.